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Trapping on the farm.

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TRAPPING ON THE FARM

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TURNING PESTS INTO PROFITS.

EVERY FARMER finds it necessary to kill certain animal pests in order to keep them from injuring his property or crops. This he sometimes does by means of poison, but more often he employs traps. A knowledge of the traits and habits of the animals and of proved methods of capturing them is important if he is to combat them successfully. Besides such out-and-out pests as rats, mice, and pocket gophers, some other animals are occasionally harmful, but having valuable skins and being classed as fur bearers are given special consideration.

The lively demand for all kinds of fur puts into the pockets of American trappers millions of dollars a year, which, until the harvest, has not cost them a single effort. Moreover, several of the furry tenants of the farmer not only are not pests, but are useful while alive. Foxes, for example, destroy many rabbits and mice, both of which when abundant are very destructive to fruit trees and crops. Skunks are exceedingly beneficial, for they feed almost entirely on mice, grasshoppers, crickets, white grubs, and other farm pests. It is only in exceptional cases that either foxes or skunks attack poultry; it is far better to keep poul-

try in suitable inclosures or to kill the individual animal which is doing damage than to adopt a policy of general persecution toward the tribes to which the few offenders belong.

The food habits of other fur bearers are usually of less importance. Weasels are excellent mousers; minks feed on frogs, fish, mice, and other small animals; while raccoons and opossums eat, in addition to a wide variety of neutral or harmful small animals, many kinds of vegetable food of little or no direct value to man. Muskrats and beavers live on wild products of marshes and woodlands, and only in rare instances are their burrows or houses objectionable.

In short, speaking generally, fur animals transform uncultivated and useless materials into valuable peltries, without expense or attention on our part. They are doing this throughout the country. When the corn is in the crib, and the landscape has been browned by frost, farm lads take down their traps with happy expectation and set out to gather unearned increments of fur.

The purpose of this article is to explain methods of trapping the small wild animals of the farm, methods of preparing skins of fur bearers for market, and methods of improving the fur catch from year to year.

HOW TO CATCH PESTS.

The most destructive group of pests on the farm includes the small gnawing animals known as rodents. Among them are house rats and mice which have been brought to this country from the Old World, and several kinds of native rats and mice, as wood rats, rice rats, cotton rats, kangaroo rats, meadow mice, pine mice, white-footed mice, and pocket mice. Ground squirrels of several kinds are found throughout the Western States and in many localities are very destructive to forage and grain. Prairie dogs of the plains region, related to ground squirrels, also destroy a great deal of forage in the vicinity of their "towns." Here and there woodchucks, or groundhogs, also related to ground squirrels, are destructive to field and garden crops. In mountainous and timbered regions porcupines are more or less destructive to orchard and other trees. These animals

are all easy to trap, the main difficulty being that they frequently occur in great numbers.¹

The styles of traps shown in figure 1 (*A* and *B*) are used extensively in catching all kinds of rats and mice. Such traps

B8926; B58M; B506M

FIG. 1.—Types of Traps Used for Catching Small Rodents.

A, Type of trap with wooden base in common use for catching rats and mice; *B*, metal trap for rats, mice, and small squirrels; *C*, wire rat trap. The last operates best when covered with a piece of burlap or with a box having a hole in one end through which rats may pass directly into the trap.

are usually baited with a piece of nut meat, pumpkin seed, or rolled oats, as may be convenient. It is advantageous to use more than one kind of bait at a time, inasmuch as these animals sometimes take one kind of bait in preference to an-

¹ See Farmers' Bulletin 932, "Rodent Pests of the Farm," for further details regarding combating some of these rodents.

other. House mice have a habit of following the walls of a room as they run about, and a trap placed behind a table leg or small object where mice naturally run need not be baited. House rats are sometimes wary and difficult to catch in traps set in the ordinary way. A small steel trap set in a pan of bran or oats and carefully covered will usually catch

B1260M

FIG. 2.—Box Trap for Catching Rabbits, Squirrels, and Other Small Animals Uninjured.

It may be baited or set without bait in a runway. Details of construction are shown in figure 3.

Wild rats and mice may be trapped readily at the entrances to their burrows or in their runways, the traps and the manner of setting them being the same as employed in catching house rats and mice. Prairie dogs, ground squirrels, and woodchucks are usually caught in steel traps set at the entrances to their burrows. Sometimes it is not necessary to cover the traps, but as a rule it is advisable to press them well into the earth and cover them lightly with grass or leaves, or whatever may be at hand. A trap should always be chained to a stake or other firm object so that an animal caught in it can not descend into its burrow or escape with the trap.

Porcupines may be caught by means of an apple, a carrot, or a bit of green corn placed in a crevice behind a No. 2

the shyest of rats. It is well to scatter small pieces of meat or bread over the bran. The wire trap shown in figure 1C is more effective when covered by a piece of cloth or by a wooden box having a hole in one end through which rats may pass directly into the trap.¹

Wild rats and mice may be trapped readily at the entrances to their burrows or in their runways, the traps and the manner of setting them being the same as employed in catching house rats and mice. Prairie dogs, ground squirrels, and woodchucks are usually caught in steel traps set at the entrances to their burrows. Sometimes it is not necessary to cover the traps, but as a

¹ For full directions for destroying these pests, see Farmers' Bulletin 896, "House Rats and Mice."

or No. 3 uncovered steel trap, as these animals are quite unwary. They may also be caught in traps set at the entrances of their dens, which are often located in cliffs.

Cottontail rabbits are frequently destructive to young fruit trees and garden truck. They may be caught in box traps similar to the one shown in figures 2 and 3, baited with sweet apple, carrot, or pumpkin, or they may be taken in shelter traps, such as illustrated in figure 4. Where rabbits are abundant, shelter traps are occupied by them more or less regularly during the day. A dog trained to

FIG. 3.—Details of Construction of Rabbit Trap Shown in Figure 2.

hunt rabbits will give warning when one is inside a trap. To prevent the quarry's escape a stick with a disk at the end of it may be thrust into the entrance, after which the top of the trap may be opened and the animal caught in the hand. The skins and flesh of trapped rabbits are superior to those of rabbits which have been shot.

In many of the Western States the rodent most destructive and most difficult to capture is the pocket gopher, which spends most of its life underground. Owing to its subterranean habits it has been found expedient to devise special kinds of gopher traps (fig. 5). In making its burrows the gopher throws up on the surface of the ground the dirt it excavates. The trapper, opening a fresh mound, sets a gopher trap well within it and covers the opening behind the trap with a piece of sod, or whatever may be at hand.

It is possible to catch gophers in No. 0 steel traps, but the process is more laborious than that of catching them in the traps specially designed. When steel traps are used, a main burrow is located by prodding with an iron rod, then a piece of turf is removed from it and an excavation made deep enough to allow the trap to be set flush with the bottom of the burrow, after which the piece of sod which was removed is returned to its place. Gopher traps do not require bait.

Besides the rodents, which constitute the majority of farm and garden pests, there are certain other creatures which are

FIG. 4.—Shelter Trap for Catching Cottontail Rabbits.

After a stick having a wooden disk at the end is thrust into entrance, the cover is lifted and the rabbit is captured by hand.

sometimes obnoxious; among these are stray cats, which too often destroy useful birds. The removal of such animals may be effected with neatness and dispatch by means of the trap shown in figure 6, and graphically described in figure 7. One can be made by any ingenious boy at very slight expense. Fresh meat or fish should be used in baiting it.

In many localities one of the worst farm pests is the crow, which is often destructive to grain, eggs, and young chickens. Crows may be caught in steel traps, size No. 1

or No. 2, carefully covered with soil and baited with whatever they are destroying—eggshells, for example.¹

Such hawks and owls as are destructive may sometimes be caught in small jump traps placed on top of high posts overlooking poultry yards, the trap being fastened securely to the post (fig. 8). As soon as the need of protecting chickens or other animals has passed, the pole traps should be removed so as to avoid risk of killing other birds.

Another pest is the English sparrow, which destroys no small amount of grain during the ripening period. The

FIG. 5.—Traps Especially Designed for Catching Pocket Gophers.

traps shown in figures 9 and 10 catch these sparrows very satisfactorily. Rolled oats or crumbs of bread should be scattered around and beneath these traps to attract the birds. In catching sparrows one should be very careful to see that no native birds are destroyed.²

HOW TO CATCH FUR ANIMALS.

The devices intended for capturing fur animals are numberless, ranging from simple deadfalls (fig. 11.1), constructed on the spot out of such convenient materials as saplings and

¹ See Department Bulletin 621, "The Crow and Its Relation to Man."

² See Farmers' Bulletin 493, "The English Sparrow as a Pest."

slivers, to patented products of factories. Although certain styles of traps may be used for catching many different kinds of animals, others are used exclusively for a single species having peculiar habits which make ordinary traps ineffective. The assortment of traps here illustrated, while by no means complete, is sufficient for capturing all of the animals included within the limits of this article.

B1259M

FIG. 6.—Cat Trap Designed by the Biological Survey for Catching Vagrant Cats and Disposing of Them Humanely.

Construction and operation are shown in figure 7.

Steel traps (figs. 12 and 13) and other traps likely to be carried away by the animals caught in them are either chained fast to a stake or other immovable object or attached to a grapple or clog which yields when the captured animals make their first frantic efforts to escape, but which can not be dragged far. A sapling makes an excellent drag, the chain being attached 2 or 3 feet from the larger end, which makes it move more or less crosswise and soon become fastened in bushes or weeds. Trap chains should always include a swivel.

In setting a trap a careful trapper always springs it several times, to assure himself that it is going to work properly. Before the trapping season opens, steel traps should be cleaned, the joints oiled, and any necessary little repairs made.

STRIPED SKUNKS.

The striped skunks are found in almost every part of the United States. Sleeping by day in burrows or beneath stones, buildings, or trees, they come forth at night to feed

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FIG. 7.—Details of Operation of Cat Trap Shown in Figure 6.

In this illustration the near side of the trap is removed, showing the treadle, *T*, pivoted so as to pull the prop, *P*, under the edge of the box when the box is raised. A cat in reaching for the bait, *B*, tips up the treadle and springs the trap. As the box falls, rod *R*, coming in contact with the cat's back, releases an ounce of carbon bisulphid, which quickly and painlessly asphyxiates the animal.

on insects, small animals, and carrion. Sometimes, but not often, they destroy poultry. Among the signs revealing their presence are numerous shallow pits 1 or 2 inches deep, noticeable in fields and pastures where white grubs are uncarthed by these keen-scented animals; these pits are conspicuous late in fall, when repeated frosts have laid vegetation low. The holes the animals occupy are clear of spiders' webs, have a slight skunk odor, and frequently have a few

skunk hairs about the entrance. Their droppings, consisting largely of the hard parts of insects, are readily distinguished from those of other animals of their size.

Skunks are generally caught in No. 1 or No. 2 steel traps set unbaited at the entrances to their dens. The stake to which a trap is fastened should be set the full length of the chain from the hole to enable the trapper to dispatch his catch with as little unpleasantness as possible.

When a den is inhabited by more than one animal, time may be saved by setting several baited traps in its vicinity instead of setting one trap at its entrance. Skunks are often caught in baited traps set for foxes, and in places where their odor would be objectionable they may be caught in box traps baited with meat and then drowned without being removed.

A trapped skunk, approached slowly and quietly, so as not to alarm it, may be killed, without its discharging scent, by a sharp blow across the back with a stick.

Skunk skins should always be freed from fat and cased flesh side out.¹

SPOTTED SKUNKS.

B7714

FIG. 8.—A Great Horned Owl Captured in a Small Jump Trap Placed on the Top of a Post.

Little spotted skunks. They are found in the Southern and Western States. Their habits and signs and the methods of catching them are similar to those relating to the large skunks. The size of steel traps suitable for spotted skunks is No. 1.

¹ See Farmers' Bulletin 587, "The Economic Value of North American Skunks."

MINKS.

Minks are found throughout the greater part of the United States and Alaska. They do not occur in arid regions, as they are dependent on water and are usually found near streams. They feed on fish, frogs, crawfish, and other small animals and birds. Their tracks in snow or sand along streams indicate their presence. They are usually caught in No. 1 steel traps set in holes in the banks of small streams or in driftwood, a chicken or rabbit head, a fish, or some muskrat meat being placed in the hole beyond

FIG. 9.—Sieve Trap for Catching English Sparrows.

A chip is placed between the end of the prop and the edge of the sieve. When a number of sparrows are congregated on the bait a quick jerk on the line entraps them. They may then be driven through a small door near one corner of the trap into a box or wire cage.

the trap. A bait inclosure may be built of sticks or stones where there is no natural cavity. Another plan is to set a trap about an inch under water on the top of a stake or pile of stones between the abutments of a bridge, or between large bowlders or ledges, where it is necessary for minks to swim in following a stream; a fish or meat bait is suspended about 10 inches above the trap.

Mink skins should be cased (see fig. 20) on long, narrow stretchers flesh side out.

WEASELS.

The large northern weasels, brown in summer and white in winter, are sold in the white dress as "ermine," a name originally applied to a similar animal of the Old World. Only those living in regions having considerable snow turn white in winter, and only the white skins have much value, although brown skins are usually salable at a small price.

The animals roam widely on dry ground, feeding mainly on mice, ground squirrels, and other small mammals and on birds. Owing to a fierce desire to kill far beyond their needs they are sometimes very destructive to poultry; they leave their victims untouched except for a bite in the neck or beneath the wing, and fowls in this condition furnish a sure evidence of their presence. When running the weasel makes two tracks, one a little in advance of the other, its leaps covering 12 to 16 inches of ground. It may be caught in No. 0 or No. 1 traps set under fences, buildings, or fallen

FIG. 10.—Funnel Sparrow Trap. Designed by the Biological Survey.

This is made of $\frac{3}{4}$ -inch-mesh poultry netting or sand screen, the near side of which, in this illustration, is raised to show the interior.

trees, or wherever it is known to run. A mouse, English sparrow, or chicken head hung 8 or 10 inches above the trap may serve as bait.

Weasel skins should be cased the same as mink skins (see fig. 20).

OTTERS.

Otters are comparatively rare animals, but, being extensive travelers, are likely to appear now and then in any of the larger bodies of water, as fish are their natural food. They move about in the daytime and thus may be seen either fishing or at play. In the wilder regions they resort to steep banks of streams, down which they slide in play, plunging into the water below. For catching otters double-

spring No. 3 steel traps are used, set 2 or 3 inches under water at the foot of a slide or where the animals are likely to pass in their fishing.

Otter skins are cased flesh side out.

WILDCATS.

Wildcats, known also as bobcats, are found in timbered and mountainous regions, especially where there are cliffs

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FIG. 11.—Deadfall and Wolf Set.

A, Deadfall made entirely of wood with an ax only; a bottom log, a fall log, four guide posts, one of which has a horizontal branch, a hook, and a pedal stick are the main parts. It is built in front of a bait inclosure. B, Wolf trap bedded for a blind set between yucca plants; any dirt on the canvas not used in covering the trap will be removed and the stake will be driven out of sight.

and broken rock, in which they like to have their dens. They are active by day as well as by night, much the same as house cats. They feed on birds and small animals, and in some localities are destructive to poultry and lambs. Their tracks resemble those of house cats, except that they are much larger.

Wildcats are caught in No. 2 or No. 3 steel traps covered with grass, leaves, or dirt, according to surroundings, and baited with meat, as rabbit or muskrat, fastened about 2 feet above the trap or placed in a crevice behind it.

Wildcat skins should have the feet left on them. They are usually cased flesh side out, although some trappers open them and dry them flat.

CANADA LYNX.

The lynx is confined mainly to Canada and Alaska, but occurs occasionally in the northern and more mountainous States. It lives almost exclusively in timbered regions and feeds mainly on rabbits, but grouse and other small creatures are frequently among its victims. Adapted for living in snowy regions, it has extraordinarily large feet, the tracks of which are easily distinguishable from those of wildcats.

The size of the steel trap generally used for lynxes is No. 3 or No. 4. It may be set, well covered, before an

B1264M: B1257M

FIG. 12.—End-spring Steel Traps are Used Almost Exclusively in Catching the Larger Animals.

In some cases the chain is fastened to a stake, in others it has a clog or grapple at the end.

inclosure baited with meat, or beneath a bait fastened to a tree 3 or 4 feet from the ground, the trap being set about 2 feet from the tree and having brush arranged on either side so as to cause a lynx to pass over it in approaching the bait.

Lynx skins are cased fur side out, special care being taken to preserve the feet.

FOXES.

In the United States there are three types of foxes, the red, gray, and kit foxes. Of the three, the red fox, including the color phases known as the cross and silver foxes, is the most difficult to catch and has the most valuable fur. While all these animals subsist mainly on rabbits, ground squirrels, mice, and insects, they are fond also of many kinds of fruit; their droppings usually contain hair and frequently seeds. Their tracks resemble those of a small dog, but are usually slightly narrower, farther apart, and more nearly in a straight line.

Red foxes are keen-scented, suspicious animals and have a wholesome fear of man, so that the trapper must take special care to outwit them. Traps and the ground where they are set must be free from human

B1257M

FIG. 13.—Single and Double Spring Jump Traps. Largely Used Where End Springs Would be Inconvenient.

odors. Steel traps are cleaned by boiling them with twigs of spruce, fir, hemlock, birch, or sassafras, whichever may be at hand, or by burying them or leaving them in running water for a day or two. After being cleaned they are handled only with leather or waxed cotton gloves and are kept in a clean bag or basket until set.

Preparations for the trapping season go on continuously. The breeding dens, hunting grounds, and peculiar habits of the animals are studied at every opportunity. Tracks in mud, dust, and snow, hair around burrows and on fences, and droppings along unused trails and lumber roads show where they range.

In well-watered regions traps are frequently set in springs which do not freeze over except in very cold weather. For making a water set, a pool not less than 4 feet wide is necessary. Several weeks before the trapping season opens a stone or turf is set in the pool, as a baiting place, about 2 feet from the edge and slightly above the surface of the water. Midway between it and the shore, mud from the bottom of the pool, in which the trap is to be embedded, is piled up nearly to the surface. By the time the trapping season opens everything about the spring has assumed a natural appearance. Then the trapper, walking in the bed of the stream, proceeds to complete his set. He uses as a bait part of a woodchuck, rabbit, muskrat, skunk, cat, or fowl that has been kept out of the way of insects until it is badly tainted. He sets a No. 2 or No. 3 trap in the place prepared for it, and on the pan puts a piece of moss which sets well above the water and covers most of the space within the jaws of the trap. The trap chain is fastened to a stake driven into the bottom of the pool or to a drag, consisting of a stone or pole. The trapper must do all this without leaving any telltale odors on the ground.

In making a land set, the bed for the trap is made by digging a hole in the ground barely large enough to contain the trap, but deep enough for the stake and chain by which it is fastened to be concealed beneath it. The earth removed should be placed on a piece of cloth, and any of it that is not used in covering the trap should be carried away. In placing a trap in its bed care should be taken to have it rest firmly all around so as not to give way under pres-

sure on any part but the pan. To keep dirt from falling beneath the pan and prevent the trap from springing, either a light wad of clean cotton should completely fill the space beneath the pan, or a sheet of thin paper should cover the trap. The trap is covered with dry earth, free from sticks and pebbles, the top layer being like the surrounding surface, making the location of the trap invisible. In winter, to keep them from freezing in, traps are bedded in chaff, dry leaves, or twigs or needles of pine, spruce, or hemlock trees.

Foxes often follow paths or trails, as may be ascertained by observing their tracks, and, taking advantage of this, trappers set traps where a passing fox in stepping over a log or stone will naturally place his foot. The carcass of a horse or other large animal placed near a trail attracts animals that way. They may also be lured by a scent made from trout, eels, or other oily fish left in glass jars a few weeks, or until the flesh has dissolved; the resulting liquid is then covered with a layer of fat which has a strong odor very attractive to carnivorous animals. This scent may be made more effective by the addition of beaver castor or the scent glands from muskrats.

These and similar scents are relied upon to lure foxes to what is known as the blind set (fig. 11*B*), which is made in cleared ground away from trails and water. A field or pasture which foxes are known to traverse is selected and an ordinary land set made there as already described. After a trap has remained bedded for several days and every trace of it has been obliterated, the trapper smears the soles of his shoes with the scent, goes to the trap, and spreads some of the scent on stones, stumps, or grass near it, using a small new paint brush kept in the scent can for the purpose. In looking at traps, and this should be done every morning without fail, they are not to be approached any nearer than is necessary.

Gray and kit foxes are not especially wary. They are readily caught by the methods used in taking red foxes.

Fox skins should always be cased fur side out, the feet and tail being carefully skinned and pinned out to hasten drying.

WOLVES.

Timber wolves and prairie wolves, or coyotes, are restricted to the Western States. They are so often guilty of destroying domestic animals and deer that they are generally killed whenever possible, and bounties are offered for their scalps in several States. Their presence is made known by their tracks, their doleful howls, and their depredations.

The methods already described for trapping foxes are used for catching wolves. The trapper usually goes on horseback with his trapping outfit, as wolves are not suspicious of horse tracks. Arriving at the place selected for a trail or a blind set, he drops a piece of canvas on which to stand while making the set and is very careful not to step off it or leave anything carrying his odor. Blind sets are often made midway between growths of bushes, yucca, or cactus, 8 or 10 feet apart. A few days after the set has been made the trapper returns and without dismounting from his horse drops some scent among the brush on either side of the trap. The scent may be the one described for catching foxes, or one more attractive to the animals may be prepared as follows:

Put into a bottle the urine from a wolf, the gall, and the anal glands, which are situated under the skin on either side of the vent and resemble small pieces of bluish fat; or, if these can not be readily found, the whole anal parts may be used. In preparing 4 ounces of the mixture use one-quarter the amount of glycerin to give it body and prevent too rapid evaporation, and 1 grain of corrosive sublimate to keep it from spoiling. Let the mixture stand several days, then shake well before using.

Government coyote trappers use with great success what may be called the Bakken prairie-dog set (fig. 14). In a prairie-dog "town" the trapper beds two steel traps about 6 inches apart in the edge of one of the hills and chains them to a stake driven at the mouth of the burrow. A dead prairie dog is placed between the traps and the burrow so as to look as if going into the burrow, and is wired by its head to the stake, the stake, head, and wire being covered with dirt. Beginning near the stake, two shallow trenches are dug, inclosing the prairie dog in an angle to direct a coyote approaching the bait over the traps. In making this set the

FIG. 14.—Diagram to Illustrate the Bakken Prairie-Dog Set, Used Originally by Government Predatory Animal Trappers in Montana.

Part of a prairie-dog mound is cut away and a stake driven there with a dead prairie dog in front as a bait. A trench is dug on each side, and two traps, chained to the stake, are concealed in the soil just beyond. A coyote will not step over a trench to pick up a prairie dog, but will approach the bait over the smooth surface concealing the traps.

trapper invariably works from the opposite side of the mound. No. 3 traps are used for coyotes and No. 4 traps for timber wolves.

Wolf skins should be cased hair side out.

RACCOONS.

Raccoons are found throughout the United States, mainly in the vicinity of ponds and streams. They feed on a great variety of things, including fruits, green corn, fish, frogs, birds, small animals, and occasionally poultry. They sleep during the day in holes in trees or cliffs or supported by crotched branches of trees, and seek their food at night. Their tracks, frequently seen on sandy shores, resemble in outline the shape of the human hand.

Raccoons are usually caught with No. 2 or No. 3 steel traps, which may be set at the entrance to holes in banks, logs, or decayed bases of trees, before a meat bait of some kind. They may also be caught in traps set slightly under water, close to the bank of a stream, by merely fastening to the pan a small mirror or a piece of bright tin, which rarely fails to excite their curiosity. In fastening traps it should be remembered that these animals climb and may lift the chain ring from a stake unless there is a nail or hook at the top to prevent it.

Raccoon skins should be open and shaped as nearly square as possible. The fur is rather thin as compared with that of many of the other fur bearers, and care should be taken not to make it thinner by overstretching the skin.

OPOSSUMS.

Opossums are common in the Central, Southern, and Eastern States, as far north as Long Island, N. Y. They travel by night only, and feed on various kinds of fruits, small animals, insects, and carrion. They climb readily and den in hollow trees or logs and in crevices among rocks. Being unsuspicious they are likely to be found anywhere in woodlands, and are easily caught in No. 1 or No. 2 steel traps having meat baits behind or above them.

Pelts of opossums should always be cased flesh side out, the tail and feet being cut off.

FIG. 15.—Mole Traps.

A, Loop trap ; B, scissor trap ; C, spear trap.

B964M

MOLES.

Moles live entirely underground in burrows made by pressing aside with their large and very powerful forefeet the earth through which they pass. They can not force their way through earth that is dry and hard, and for this reason they are found only where there are frequent rains. When the ground is soft with moisture and earthworms are driven

FIG. 16.—Scissor-jaw, or Gripping-jaw, Trap for Moles.

Phantom view, showing position in relation to a deeper runway of the mole. The jaws must straddle the course of the runway and, in order that they may act quickly, the soil must be loosened with a trowel and freed from obstructions, as sticks, stones, or clods.

up among the grass roots, moles, following them to the surface, throw up unsightly ridges and destroy plants by loosening or breaking their roots. The large Townsend mole of the northwest coast region throws up mounds of earth also which are very annoying in hay and grain fields and even in pasture land, where they cover no small amount of grass. Mole hills consist of pellets or balls of earth, and

are readily distinguishable from pocket-gopher hills, which consist of loose earth without compact form. Furthermore, gophers do not make ridges as moles do.

There are a number of kinds of mole traps on the market. Those designed to spear the animals are not recommended when fur is an object, as they damage the pelt. The scissor and loop traps shown in figure 15 kill the animals without injuring their fur.

FIG. 17.—Choker-Loop Trap for Moles.

Phantom view, showing trap placed in position on one of the deeper runways of a mole's system of burrows. The loops should encircle the runway through soil loosened to allow quick action.

Before setting a mole trap it is well to ascertain where the animals are feeding. This may be done by stepping on the ridges here and there, and looking over the ground on the following day to see where they have been thrown up again. Select a straight portion of the runway, open a section of it wide enough to admit the trap, remove stones and other obstacles which might interfere with the operation of the trap, and replace enough of the dirt to cover the burrows. Then set the trap as shown in figures 16 and 17 so the jaws

or loops will be well below the burrow, and make sure that the trap will be sprung when the ridge is thrown up again.

Mole skins should be pinned out on boards and dried flat, flesh side up, as shown in figure 18. After the pins have been driven the skin should be raised from the board to allow the fur to stand erect.¹

MUSKRATS.

Muskrats live in ponds, streams, and marshes. Except in waterless areas, the greater part of California, and the coastal regions of several of the Southern States, these ani-

FIG. 18.—Drying Mole Skins on a Board, Showing the Three Stages of Work on One Skin.

(1) Four pins are first used, one in each corner; (2) 4 intermediate pins are then inserted, the skin being slightly stretched; (3) finally 8 more pins are tacked in, one between each two of those already in place.

imals are found practically throughout North America from the northern limit of trees to Mexico. Although occasionally seen in the daytime, they are mainly nocturnal. They eat vegetable food chiefly, as the fruit, foliage, and roots of lilies and other water plants, but frequently vary this kind of diet with mussels and occasionally with fish.

The presence of muskrats is indicated in several ways. In marshes they build conspicuous houses of mud and weeds for winter occupancy. Those living in streams have holes in banks below the surface of the water. In summer they

¹ See Farmers' Bulletins 583, "The Common Mole of Eastern United States," and 832, "Trapping Moles and Utilizing Their Skins."

make paths of clear water through herbage and mud in shallow places, and leave their characteristic droppings on stones and driftwood. Piles of mussel shells and partly eaten roots are evidence that muskrats are living in the vicinity.

The size of steel trap usually set for muskrats is No. 1. As these animals are quite unsuspicious, traps may be set without bait in their paths or at the entrances to their burrows. Bait, consisting of carrots, parsnips, or sweet apples, may, however, be used to advantage, as muskrats are very fond of these foods. The bait may be placed on a bank, or suspended on a stick above the trap, which is generally a little below the surface of the water. Unless a captured

FIG. 19.—Simple Box Trap for Catching Muskrats in Narrow Streams.

The wire doors being hinged at the top stay closed except when muskrats swim against them from the outside. The wires are long enough to prevent the doors from swinging outward.

muskrat can immediately get into deep water and drown, it is likely to twist its leg off above the trap and escape.

The box trap for catching muskrats in narrow streams, shown in figure 19, may be built of four boards, each 8 inches wide and 42 inches long. The ends of this trap are fitted with wire doors hanging by the upper edge. These doors remain closed by their own weight except when pushed open from the outside. A swimming muskrat can enter it easily but can not escape from it. This trap is held slightly under water by a weight of stones, a funnel of sticks or stones being constructed to guide muskrats into it.

A muskrat skin should have the tail and feet removed and be cased flesh side out.¹

¹ See Farmers' Bulletin 869, "The Muskrat as a Fur Bearer, with Notes on Its Use as Food."

BEAVERS.

Beavers have been exterminated over a very large portion of the country. They are now well protected by law in most of the States in which they are still found, and their numbers and distribution are gradually increasing. Being very shy creatures and mainly nocturnal, they are rarely seen, but their dams and tree cuttings are unmistakable signs of their presence.

They feed mainly on herbage of various sorts and on the bark of such trees as cottonwood, poplar, maple, and birch, which for winter use they cut into pieces several feet long and carry to their ponds to be peeled under the ice during the winter. They build dams to control the depth of their ponds, construct houses, and dig burrows having entrances under water. When they cut their winter's supply of food at some distance from their pond, they drag it over well-worn paths to the water. The trapper frequently sets a No. 4 double-spring trap at the end of these paths where the water is 4 or 5 inches deep, or again at the entrance of a burrow. In any case he provides for drowning a captured beaver by slipping a smooth pole through the ring at the end of the trap chain and driving the small end of it firmly into the bottom where the water is deep, fastening the large end on the bank above with stakes or heavy stones. On being caught a beaver immediately dives, the ring of the trap chain slides down the pole, and the animal, held under water, soon drowns.

The tail and feet of the beaver are not left on the skin, which is stretched flat and as nearly round as possible. The common way of doing this is to sew or lace it to a hoop somewhat larger than the skin. The long podlike glands known as beaver castor, found just beneath the skin in front of the genital organs in both sexes, are in demand by trappers and raw-fur buyers. After they are removed from the skinned carcass the outlets are tied up to prevent leakage and they are hung up to dry in a cool place. They are used by manufacturers of perfumes and by trappers in making scent baits.

HOW TO PREPARE SKINS.

The manner of skinning a fur animal depends on whether its pelt is to be dried open or cased. For an open skin the first cut is made from the point of the chin straight to the

tip of the tail, along the under side of the body. Side cuts are then made to this from the sole of each foot by the shortest routes. The only exceptions to this rule for taking off open or flat skins occur with beaver and mole skins, which do not have the feet and tail left on them and are cut only from chin to base of tail, no leg cuts being made. In peeling the skin from a carcass the knife should be used as little as possible and always with extreme care, as even a small gash in a skin reduces its value.

For a cased skin (fig. 20), a cut is made from the sole of one hind foot to the sole of the other, on a line running along the rear edge of the hind legs and beneath the tail. The tail is cut along the under side its entire length and the bone is removed. If this is not done the hair of the tail is likely to come out when the skin

FIG. 20.—Cased Mink Skin on Board Stretcher.

This skin, having no dark spots, is entitled to be called "prime," and to command the top price.

is dressed. After the cuts have been made, the hind legs and feet are skinned out to the toes, the toes and the feet being cut on the under side. At this point it is convenient to hang the carcass by the hamstrings on hooks or pegs. After the tail bone has been taken out, the entire skin is turned from the body very much as a glove is turned from the hand. The fore feet

are opened from the wrist to the toes and skinned out in the same manner as the hind feet. The ears are cut off beneath the skin close to the skull and the thick cartilage in them is removed. In order to avoid cutting the eyelids, the knife should be carefully applied close to the skull when the first trace of eyes appears as the skin is being turned from the head. Any fat or muscle adhering to a skin should be removed immediately, as fat causes skins to become brittle and worthless, while muscle invites decay when conditions are unfavorable for rapid drying. This is usually done by drawing the skin flesh side out over strips of board or scantling, rounded on the upper side (fig. 21), and by scraping

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FIG. 21.—Fleshing Beam.

Skins are laid on this to be scraped free of fat and muscle, either when they are fresh or after being soaked in cold water until they are soft enough to be worked readily.

it with the back of a knife, a dull file, or the edge of a square stick of hard wood, the scraping always being done from the head toward the tail.

After being scraped, or "fleshed," skins are stretched as uniformly throughout as possible. Open skins are usually pinned or nailed out on any convenient flat surface, flesh side exposed. If such a surface is not at hand, they are sewed or laced to a wooden hoop or frame of suitable size and shape. Cased skins are dried on stretchers made either

of thin board or metal rods shaped so as to stretch them properly in every part (figs. 20, 22, and 23).

Peltries should always be dried in a shady, well-ventilated place, as an open shed, and not by artificial heat when it can be avoided. In regions where the rainfall is excessive and the air is saturated with moisture, it is sometimes necessary to dry skins near a fire.

In packing furs for shipment care should be taken to arrange them so the fur side of one skin will not be soiled by the flesh side of another.

FIG. 22.—Board and Wire Stretchers Designed for Muskrat Skins.

Skins wanted for home use may be dressed by simple though somewhat tedious methods, one of which is here outlined. A tanning liquor is made by adding to each gallon of water one quart of salt and half an ounce of sulphuric acid. This mixture should not be kept in a metal container. Thin skins are tanned by it in one day, but heavy skins must remain in it longer; they may remain in it indefinitely without harm. When removed from this liquor they are washed several times in soapy water, wrung as dry as possible, and rubbed on the flesh side with a cake of hard soap. Flat

skins are then folded in the middle, lengthwise over a clothes line, hair side out, and left to dry. Cased skins are simply hung up by the nose, hair side out. When the hair is barely dry, and the flesh side is still moist, they are laid over a

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FIG. 23.—Rabbit Skin on Wire Stretcher.

The dark spots on the skin, caused by the development of a new growth of hair, make this skin "unprime" and of considerably less value than if it were fully prime.

spare time it is more satisfactory to send skins to a fur dresser than to dress them at home.

A skin on which the fur is soiled should be cleaned before being stretched. Grease may be removed by a gasoline bath or by hot corn meal or hardwood sawdust rubbed in and shaken out repeatedly and finally beaten out with a

smooth, rounded board and scraped on the flesh side with the edge of a worn flat file or a similar blunt-edged tool. In this way an inner layer is removed, and the skins become nearly white in color. They are then stretched, rubbed, and twisted until quite dry. Fresh butter or other animal fat worked into skins while they are warm and then worked out again next day in dry hardwood sawdust or extracted by a hasty bath in gasoline increases their softness.

The main part of dressing skins consists of the labor applied while they are drying, in order to make them soft and pliable. In skin-dressing establishments this operation is done by machinery for a period of eight hours or more, hundreds of skins being treated at the same time. Home-dressed skins are softened by hand, one at a time. Skins of the same kinds of animals do not always work alike. In some cases it is necessary to return one to the tanning solution once or even twice before it will finally become soft. Unless one has considerable

limber switch. Light-colored furs are stained by blood if it is allowed to remain on them for any length of time. By exercising care the trapper can usually prevent fur from becoming bloody, but when this is impossible the blood should be removed immediately by washing with clear water as long as the water shows a tinge of red. Wet fur should always be dried before the skin is stretched, which can be done by shaking and wiping and applying corn meal or sawdust.

Fur that has been made up into wearing apparel may be freshened by laying it flat on a table and rubbing into it, thoroughly, flake naphthalene. The naphthalene has only to be shaken out when the cleaning is done. Garments that are badly soiled should have the lining removed and be separated into their main parts. These may be washed separately in warm water, with any kind of soap that is suitable for washing woolens, rinsed until clean, and then dried in sunshine where there is a breeze to carry away moisture and keep the fur in motion. When almost dry the parts should be worked in the hands and beaten, after which they are ready to be reassembled in the garment.

Furs are frequently injured by certain insects. Raw skins, especially those more or less greasy, are very attractive to larder beetles and some of their relatives, both in the larval or immature form and in the adult stage. Fur, as distinguished from the skin on which it grows, is eaten by larvæ of the clothes moth. Trouble from both of these pests may be avoided by keeping furs during warm weather in tight tin or sheet-iron cases, and placing in an open dish 1 ounce of carbon bisulphide to each 6 cubic feet of space when the case is finally closed. The gas arising from this liquid when mixed with air makes a violent explosive, for which reason it should never be used in the presence of fire. Dressed furs may be protected from moths by brushing and combing them thoroughly out of doors in bright weather and immediately tying them up in a sack of heavy paper or of closely woven cotton cloth. Raw furs should be either dressed or disposed of before the advent of summer, if possible, to prevent them from being injured by insects or the action of fat.

HOW TO HAVE MORE AND BETTER FUR.

Reports recently received by the Biological Survey from a large number of raw-fur buyers generally agree that the supply of wild fur has decreased greatly since 1910. In many of these reports the shrinkage is estimated at from 25 to 50 per cent in 10 years. A review of the great fur sales recently held in this country shows that the stock disposed of was brought from all parts of the world to supply the American trade. Manufactured furs in 1919 cost approximately 200 per cent more than the same grade of furs bought two years before, and skins of animals formerly regarded as having little or no fur value were made up into garments selling at from \$100 to \$150 each. All this goes to show that the demand for fur is far greater than can be met. Evidently the time is at hand when steps should be taken to increase and improve the fur supply. Trappers, dealers, manufacturers, and wearers, possessing in the aggregate a tremendous moral and financial influence, want more and better fur.

Among the bad practices which have reduced the number of fur bearers are: (1) Using poison, which kills many animals that are not found before their skins are spoiled; (2) smoking animals out of their dens, which often suffocates them instead of forcing them out; (3) destroying dens, which either leaves the animals without suitable places in which to rear their young or drives them out of the neighborhood altogether; (4) trapping early in fall, which catches animals having small, unprime pelts before they are old enough to be suspicious of traps; and (5) trapping late in spring, which destroys breeding females with young.

If no early or late trapping were done there would be fewer animals taken, but on the other hand the value of the catch and the number of animals left to breed another season would be far greater. Skins are prime for about two months after the molt is completed, and during this time they have no dark spots on the flesh side. They are worth much more when prime (fig. 20) than when unprime (fig. 23). Muskrat and beaver pelts are best in February and March, while those of other fur bearers are best from late in November till about the end of January.

The wild as well as the domestic animals on a farm require food and shelter, and while the farmer is providing as a matter of course for his domestic stock, he will, if wise, be mindful also of the needs of his wild tenants. If he regards his barns as factories for producing milk, meat, and wool, he may as well consider the fox den in the hill pasture and the big hollow sycamore by the creek as fur factories and preserve them accordingly. If he sells only his excess domestic stock, he also will cease trapping the wild "stock" while there are enough fur bearers left on his land to insure another year's fur harvest.

It is as logical to try to make farms produce more fur as to make them produce more beef. The important point is to have people understand the possibilities of increasing their income in this way. When this point is fully appreciated they will uphold State laws which forbid the use of smoke, poison, or other chemicals in taking fur animals, and forbid the destruction of dens and trapping on land of another without written permission. Such laws are already in force in several States, and will undoubtedly be operative in all the fur-producing States in the near future.

The measures thus far considered for increasing and improving the fur output have all been along the line of conservation. Beyond conservation, and surpassing it, are sound constructive measures by which a great and permanent improvement in wild fur may be accomplished. So thoroughly has the animal life of North America been investigated that we know in what region to find the best foxes, the best skunks, the best raccoons, the best muskrats, and the best of every other kind of fur bearer. Nearly all these animals have been bred in confinement, and although only two or three have actually been farmed, there is no reasonable doubt that under favorable conditions all can be propagated on fur farms for distribution on preserves in State and National forests or other public domain, and on private lands set aside by agreement with the owners, where they will be fully protected and from which they will spread when the natural limit to their abundance has been reached.

Just as State game farms raise and distribute game for sportsmen to shoot and State and Federal hatcheries raise

and distribute fish for anglers to hook, so should there be State and Federal fur farms for raising the largest and best-furred animals to be found on the continent for stocking preserves for the benefit of trappers. Possibly here and there a hunter or a poultryman may be inclined to oppose this suggestion, but the hunter may be reassured by the fact that game and fur animals are naturally coexistent and that until steel traps and firearms appeared there was an abundance of both. As to the poultryman's losses due to fur animals they are, in the main, preventable; the price of one fox pelt is sufficient to pay for a good-sized vermin-proof chicken run.

It should not be forgotten that the natural and ordinary food of fur animals consists mainly of materials for which mankind has little or no use, and that certain of these animals render the farmer a positive service by ridding his orchards, fields, and pastures of some of the worst pests infesting them. Generally speaking, therefore, the project to increase and improve fur animals would result in turning useless or harmful organisms into valuable peltries. It would also enable the farmer, when the regular duties of his farm are at their lowest ebb, to reap a self-raised harvest of fur which has cost him nothing and which probably has been developed in his service.

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