ANIMAL GUIDE

NORTH AMERICAN WILD ANIMALS

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BY

CHAS. K. REED

With Sixty Species of Animals in Natural Colors from Original Paintings

By HARRY F. HARVEY

1915

CHAS. K. REED, WORCESTER, MASS.

INTRODUCTION

It is now nine years since the first publication of our "Bird Guide." After which followed the "Flower Guide," "Water and Game Birds," "Western Bird Guide" and "Tree Guide." All of these have met with popular favor and have been adopted in many schools and colleges as the standard text books for field work among the instructors and students. During this period we have had many requests from all parts of the country for other additions to this set of books, to be in pocket size and with COLORED ILLUSTRATIONS. As a book on animals has been the most frequently called for, we decided to purchase a set of paintings by the artist Harry F. Harvey, covering the greatest number of species. These we have had reproduced by the latest and best method, and the results are shown in this book.

Our hope is that it will meet with the favor and approval of those interested in this subject, as well as our former guides have done.

The illustrations show how the animals look in their native environments, and in the text we have tried to give an idea of their more prominent characteristics and general habits.

One really cannot go out with this book, as with the birds and flowers, and make a study of the animals, as so few of them are to be seen, especially during the day. If we consult any Dictionary or Encyclopedia we find, generally, the name and brief description, with possibly a small illustration in black, of some European species which is very misleading.

These COLORED ILLUSTRATIONS are all of North American wild animals and we hope will aid in the identification to those who are looking for help along this line. CHAS. K. REED.

Worcester, Mass., January, 1915.

NORTH AMERICAN WILD ANIMALS

Of which the meat is used for food.

Elk or Wapiti
Moose
Caribou
Deer of all kinds
Antelope or Pronghorn
Mountain Sheep
Mountain Goat
Bear, except early spring
Buffalo or Bison
Armadillo
Musk Ox
Hares, all varieties
Rabbits, all varieties
Raccoon
Opossum
Squirrels
Manatee or Sea Cow
Peccary
Woodchuck

There are several of the other animals which are made use of on camping trips, but it requires the skill of an experienced cook as well as a good appetite to make them desirable.

FUR BEARING ANIMALS

North American.

With the highest market quotation for first-class skins as listed January 1, 1915.

Black Fox	$1,500.00	Black Bear	$15.00	Coyote	$3.50
Silver Fox	1,500.00	Lynx	12.00	Raccoon	3.00
Polar Bear	100.00	Marten or Sable	10.00	Skunk	3.00
Grizzly Bear	75.00	Beaver	10.00	Wild Cat	2.50
Otter	30.00	Red Fox	6.00	Gray Fox	2.50
Cross Fox	25.00	Mink	5.00	Badger	1.25
Wolverine	20.00	Wolf	4.00	Ermine	1.00
Fisher	17.50	Civet Cat	.75	Muskrat	.35

Many of these skins are sold by furriers under other names after being dyed black or brown, and with several of them the long outside hair is plucked, leaving the under fur like velvet when finished. The muskrat when plucked and dyed becomes the Hudson Seal.

HOOFED ANIMALS.	Moose, elk, caribou, deer, buffalo, musk ox, goats, sheep, antelope, peccary.
FLESH EATERS.	Bears, raccoon, mountain lion, lynx, wild cat, ocelot, wolf, coyote, foxes, martens.
GNAWING ANIMALS.	Beaver, porcupine, squirrels, hares, rabbits, rats, mice.
INSECT EATERS.	Shrews, moles, bats.
WINGED ANIMALS.	Bats.
POUCHED ANIMALS.	Opossum.
TOOTHLESS ANIMALS.	Armadillo.
SEA ANIMALS.	Whale, walrus, sea lion, seal, manatee.

MOOSE

Alces americanus.

This is one of the largest of our North American wild animals, and is also found over a larger area than most of the deer family, being quite common from Newfoundland to Alaska, throughout Canada, and the most northerly of the United States.

They are cumbersome and awkward looking, in height at the shoulders upwards of six feet, and nearly nine feet in length. Their hair is very coarse and long, especially on the upper part of the neck, and also below on the throat, from which hangs a hair-covered cartilage called the bell. This sometimes reaches the length of eighteen inches, but usually is only ten or twelve inches long. A large male will weigh about fifteen hundred pounds, and the flesh of these animals is considered superior to any of the deer family.

Their skins are also in demand for making some of the best grades of leather. When properly tanned it is very pliable and will outwear most any other leather. Their antlers are very massive and of different form from others of the deer. At the point they broaden out into a wide palm, from which the points at very irregular intervals project from an inch in length to sometimes over a foot. The total spread of both antlers will vary from three feet to over six feet, and a single antler from one has been found to measure on the under curve from the skull to the longest point five feet.

Their ears are large and they are very quick to detect any unusual sound. The nose is large, being much wider at the nostril than in the middle of the head, which brings the upper lip and nostril forward so that it overhangs the under lip. The skull bones are very thick and solid, making with the immense antlers a weight which it would seem almost impossible for them to carry for any

great distance without rest. But their habits prove this to the contrary, as when disturbed or frightened, they will rush off with enormous speed, which can be kept up for miles. With nose high in the air and antlers laid back, fallen logs and through thick woods does not seem to impede their wild rush. They, during the summer months, feed about the streams and ponds, on the young shoots of water plants, or for change of food will ride down some young tree from which they will eat the leaves and tender branches.

Like the elk, they will wade into the water until covered, to keep away from the flies and mosquitoes. In winter they are to be found on the higher grounds, among the evergreens where they feed upon the moss and bark from the trees.

ELK or WAPITI

Cervus canadensis.

Seeing a large pair of antlers of this animal, one might easily form the opinion that the animal was of immense size. If measured, their height at the shoulder is only about six feet and a half and the length of the animal less than eight feet and weight about three hundred pounds. Their antlers vary very much in size and thickness. They usually have from six to eight points on each antler and these are long enough so that when standing on their points a man may walk through them. Of course this would be considered an exceptionally large set. They shed these immense antlers each year in early spring, and the new growth is very rapid, being very soft and porous and covered with a soft velvet which remains on until the horns have their full growth and be-

come hardened, which usually requires about five months. This velvet is then removed by rubbing against trees until it is entirely gone. They are getting to be very rare east of the Rockies and are usually found in small herds of a dozen or more or perhaps only a pair. After the breeding season they congregate in large herds, sometimes in favorable localities to the number of several hundred. They do most of their feeding in the early morning and evening, remaining quiet during the greater part of the day. Their food consists largely of the leaves and tender twigs of a large variety of trees, or of grass and weeds. If disturbed the bull elk will give out a sharp whistle of warning to the others of the herd, and from that instant they are all on the lookout for any danger. During the winter months they feed out in the open more on grass and moss which shows above the snow.

In the hottest weather they have the same habits as the moose of resorting to the ponds and rivers in which they will stand with

only the head above water. This they do to protect themselves from flies and mosquitoes. The female will breed the third year, giving birth to one or two and sometimes three fawns. There are several varieties of the elk west of the Rockies, from New Mexico to Oregon, the greatest difference being in their coloration, due probably mostly to the climatic change. The more northern varieties usually having heavier antlers, the hair longer in winter and a little darker color.


HARVEY

CARIBOU

Rangifer caribou.

This particular representative of the reindeer family ranges from northern Maine to Newfoundland, whence a somewhat smaller species extends north to the Arctic barrens and frequents the coasts of Greenland. Both groups alike are distinguished from others of the deer family by their antlers, always being more or less palmated, also the female as well as the male have antlers, those of the female always are much shorter and less in number of points than with the male. One feature of them all is the spike or palmate growth which branches out horizontally above the brow, frequently to the end of the nose, and in the size of the antlers of the males, which generally are very long and curving, and having from thirty to as many as sixty points on the prongs or palms. When we see the

great size of some of them we wonder how they can be grown in so short a time, as the antlers are shed each year.

The caribou lives upon the mosses and lichens found in his native haunts of snow and ice, but he is also fond of the sedge grass in the marshes. To aid him in obtaining this, nature has furnished him with broad, flat, cloven hoofs, which bear him equally well over the soft fields of snow or the yielding surface of miry boggy bottoms. He is one of the best of travelers, graceful and rapid, with his long swinging stride, and proving so tireless that it is impossible to keep his trail. His scent is very keen and if approached must not be with the wind, even if he can see you there is a doubt in his mind whether to leave or not, but not so if he once has the wind in his favor, there is then no chance of getting him.

In size the woodland caribou is about six feet long and four high at the shoulders, while his weight will vary from two hundred

and fifty to three hundred pounds. A provision wonderfully adapted to the low temperature at which he must maintain his existence is the thickness of his covering, for, except the musk ox, no animal wears so heavy a blanket. This is composed of a dense woolly underfur, through which penetrate the long coarse outer hairs, designed especially to shed moisture and thus keep the under layer dry and warm.

It is the custom of these deer to assemble semi-annually in large herds and migrate, with the change of seasons, to better provided or more sheltered feeding grounds. Owing to the greater mildness of its usual range, the southern species has less need for so universal a departure, although not infrequently seen in just such bodies and with just such a purpose in view. The flesh is darker than the venison of most deer and is considered far superior in flavor.

VIRGINIA DEER

Odocoileus virginianus.

East of the Rockies this is one of the most abundant of the family. Adult specimens are a trifle over three feet in height at the shoulders and weigh from one hundred and twenty-five to two hundred pounds. Their antlers vary greatly in size and shape, some spreading very wide and the points curving inward until they sometimes nearly meet, while others are more straight and stand much higher above the head. They also vary very much in the number of points on the antlers, some having only one, when it is called a spike horn, others having as many as twenty. Four points on either side is the usual number. During our cold winter weather the hair is of a more grayish color than in the summer months, and is much longer and more brittle. These animals become very tame in cap-

tivity, and in the wild state are becoming a nuisance to the farmer who is raising garden truck or young fruit trees.

At the present writing (1915) the game laws of New England protect them, allowing them to be shot only for one month. Under these protecting laws they are becoming very abundant and unsuspicious. It is not uncommon to see an albino (or pure white deer) during the hunting season. They shed or drop their antlers during the early summer, and have a new growth again within three or four months. These new antlers are covered with a velvet growth which remains on while the horns are in a soft or porous condition, later this velvet being rubbed off by the deer on trees and bushes while feeding. They are very quiet during the time when the new antlers are growing and remain in the heavy timber most of the time. The female, or doe, does not have antlers, and the young, or fawn, is lighter in color and spotted. They are all very graceful in their movements, the young especially so after a few

months old. They have become so accustomed to the presence of man that they have been known to stray into the city streets and trot along as if they were in their native elements. In such cases it is usually some dog that will startle them and they are off in a hurry. In the woods, away from civilization, they are always on the alert and looking for danger. If startled the buck will signal danger with a stamp of his hoofs, a shrill whistle and throwing up his tail, showing like a white flag, he is off with his companions for a safer locality.

MULE DEER or BLACK-TAILED

Odocoileus hemionus.

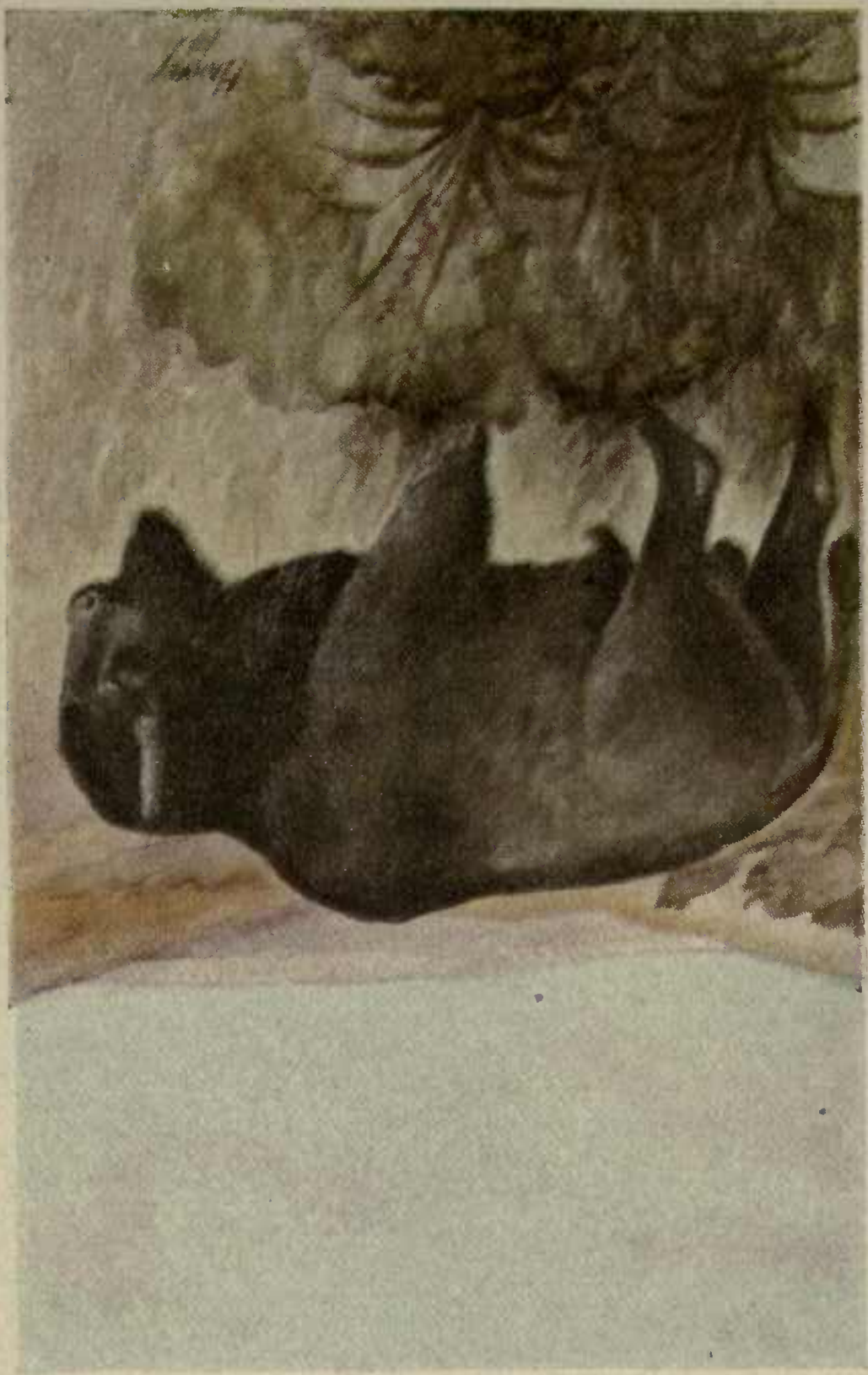
The mule deer, so called from its enormous ears, ranges throughout the Rocky Mountain regions and as far east as Manitoba and Texas. It is at once our largest and most stately representative of its family, measuring between six and seven feet in length, standing over three feet high, weighing two hundred pounds or more, and carrying high in the air its proud head adorned with many-branched antlers, the points of which are usually longer and more pointed than the eastern variety, also having more in number, rarely less than eight.

This member of the deer group is also known as the "black-tailed" because the tail, which is naked at the base, then covered for some inches with white hair, is tipped with black at the end, but

the name applies more truly to a Pacific Coast variety and would better be reserved for that alone. A third title by which it is designated is more fitting, being that of the "jumping deer" and having reference to the peculiar gait. It does not gallop, as does its Virginian cousin, but progresses by a series of leaps, springing upward with a quick jerky bound, propelling itself into space for some distance and landing on all four feet at once. It covers ground at a surprisingly swift pace, with this curious motion, although possibly less able to maintain its speed for as long a time as do some of his kin.

In spite of any such handicap, however, and relying upon his pale reddish coat in summer with the change to steel gray in winter to help conceal his whereabouts, the mule deer is a fearless wanderer. Whether in the badlands, among the foot-hills in the deep canyons of river beds, high up on the lofty plateaus, or in the sloping valleys along the mountain side, he shows a security of

footing and boldness that reminds us of the bighorn. Like the latter, too, he is often hunted for the excellent eating which he affords, and still more for the trophy of his handsome antlers. The chase furnishes much diversion, as it usually leads through country of wild beauty and much variety of scenery and has as its object an animal gifted with keen senses and native shrewdness sufficient to make the pursuit sportsmanlike in the extreme. Only too popular has it proved and to-day we are in grave danger of paying for it a price we can ill afford; namely, the extinction of a unique and graceful creature which might have yielded both pleasure and profit far longer, had it been adequately protected. Especially unfortunate is this result since the victim is one whose chosen haunts preclude injury to man from his presence and also render it difficult to preserve him in captivity in climatic conditions other than those to which he has become accustomed.



BUFFALO or BISON

Bison bison.

This magnificent animal, who once roamed by the millions over one-third of North America, from the Great Slave Lake to northern Mexico, and from the western slopes of the Appalachians to Nevada, has now less than seven hundred wild representatives in one single, desolate spot southwest of the Great Slave Lake. In captivity perhaps one thousand may still be found, of which the largest herd, containing over one hundred head, is in the Blue Mountain Park in New Hampshire, less than fifty in the once famous Yellowstone Park preserve, and the rest scattered in private collections, zoological gardens, etc.

This wholesale diminution of their number furnishes an unparalleled illustration both of man's thoughtless avarice and of the

truth that mere size and strength, unaccompanied by intelligence, are insufficient to prevent extinction in the animal kingdom. When he might have overwhelmed his enemy by his mass alone, this dull-witted beast ofttimes preferred to stand idly by and, in stolid ignorance, watch the slaughter that was to mean the extermination of his kind. One unique factor in hastening the final result was the completion of the Union Pacific Railway in 1869. This divided the main body of the buffalo family into a northern and a southern group, destined again never to be reunited. At the same time, by furnishing better means of transportation, it stimulated the demand for the highly prized flesh and hides and thus proved of twofold importance in increasing the rapidity of destruction.

Both in size and general appearance this big creature would seem more than the equal of any other of our hoofed animals. He stands over five feet from the ground, measures some ten feet in length, and weighs almost a ton. His bulkiness is further in-

creased by the shaggy hair which, though short and light on the back part of his body, forms a dense mat of dark brown over the high hump, shoulders and fore-legs, while the head is bowed down by the weight of the heavy frontlet and thick beard. Huge herds of these enormous beasts, numbering hundreds of thousands each, were wont to live on the rich pasturage of the great western plains. There, to protect themselves from flies and other pests, they practiced the peculiar defense of wallowing in the damp swamp lands until the body was covered with a coat of mud which, when dried, would serve as an armor for many days. These "wallows" are still to be found where every other evidence of their former occupants has long since passed away. In autumn, whole tribes would migrate southward, following well-established trails and traveling much faster than their awkward frames would cause one to suppose.

MUSK OX

Ovibos moschatus.

From the sixty-first parallel of latitude, north as far as land extends, are to be found the last survivors of a family which, as fossilized remains tell us, once roamed over North America. How they eke out an existence on the limited fare of mosses and lichens obtainable in their haunts of ice and snow is an unsolved problem, but they somehow manage, not only to keep alive, but to appear well-nourished even during the dark coldness of winter. The name is due to a peculiar musky scent which emanates from the body and also flavors the flesh; this taint is confined to the males, and in them varies with age and condition, being least objectionable when they are fat, and practically absent in the young; the immediate

dressing of the carcass is also a preventative, and when free from this unpleasantness, the meat is considered excellent eating.

Few animals present a more odd and interesting appearance than does this rare northern creature. The first thing to impress us is the magnificent horns of the male. These meet at the middle of the massive forehead in two flattened bases, as wide as the entire width of the brow, and, after extending downward and slightly outward from the cheeks for a short distance, end in a decided upward and forward curve almost on a level with the eye. These horns vary in length from twenty-four to twenty-six inches and, in no animal save the mountain sheep are these features more prominent and noteworthy.

In height the musk ox stands about four feet, in length measures some six feet, and weighs, on an average, approximately four hundred pounds. Far larger does he look, though, as he stands with his long, shaggy, dark brown hair, matted tightly over his

shoulders, but elsewhere falling about his frame almost to the ground, nearly covering the short legs, and quite concealing the three-inch tail. Under this thick blanket we should find, were it near the cold season, a heavy warm underfur of lighter color, through which neither frost nor snow could find its way.

Although we should not suspect it, either from the length of limb or the general structure of the body, he is both quick and sure-footed. A partial explanation is that each foot is equipped with an inner and pointed hoof as well as an outer and rounded one, a provision which enables him to make rapid progress over ice and among the steep and slippery rocks where he dwells.

MOUNTAIN GOAT

Oreamnos montanus.

Curiously like the huge buffalo in general shape is this mountain loving creature who dwells among the high peaks of the Rockies and Cascades, from Alaska to California, being most numerous in British Columbia. There are in both animals the sloping hindquarters, humped shoulders and stocky legs; also a like lowered posture of the head, with mane above and hanging beard beneath; but, while both have a very shaggy appearance, with this the comparison must cease, for, instead of the dark brown of the buffalo, this inhabitant of the snowy heights wears an underfur of yellowish white, concealed by an outer coat of long white hair, which corresponds with the hue of his surroundings and protects him by allowing his presence to pass unnoticed.

In marked contrast to the whiteness of the body, stand out the jet black eyes, horns, and hoofs. The horns curve backward and are sharp-pointed, but short, measuring only from five to ten inches, while the hoofs are furnished with a rubberlike cushion on the inside and a keen edge on the outside, to carry their wearer equally well over ice or rocks. Full use does he make of this convenience for he proves false every suspicion of awkwardness founded upon his clumsy frame. No animal in all our land is more adept at climbing or more fond of the apparently inaccessible than is he. The ascent and crossing of perpendicular walls is his peculiar delight and he never chooses a flat or smooth surface for his travels if he can possibly find a steep or rough one.

This able climber indeed owes his preservation and safety not to size, quickness of motion, or cleverness, but solely to the difficulty and danger of man's attempts to reach his native haunts. He is considerably larger than a full grown sheep, measuring four

feet in length, three feet in height, and weighing about one hundred pounds, but he much resembles that animal in proverbial innocence. "What fun is there," one hunter asks, "in shooting down a creature who, when once he knows you are after him, dodges behind a wall of rock and, picking his way calmly across its smooth and perfectly vertical surface, will look behind every now and again, as if teasing you to follow him?" In consequence of this lack of suspicion, he falls an easy prey to the few sportsmen who have sufficient patience and boldness once to approach within gunshot.

The mountain goat lives on the lichens found above the timber line and, unlike most inhabitants of that high zone, is seldom forced into the valleys by winter, preferring rather to pick up a scanty fare by pawing the snow from the lichens.

ROCKY MOUNTAIN SHEEP

Ovis cervina.

This dweller among our high mountain peaks is also very properly known as the "bighorn" because of the size of the horns, which, on the male, curve backward and outward for a distance of over four feet, measuring on the outer curve of the horn, sometimes making a complete circle, and measure at the base more than a foot in circumference. The entire length of the body is not much greater than that of the horn, being only about four and a half feet long, and his height is even less, as he stands not quite three and a half feet from the ground. The average weight of a ram is about four hundred pounds. The ewes are smaller in every particular, being only three feet long and weighing one third less, and with short, flat, erect horns, measuring but five to eight inches.

The color is a dark grayish brown on the back, shading to a white about the tail and on the under parts, in winter the whole coat is lighter than in summer, but the older rams uniformly have less deep coloring than the younger at all seasons.

While not found in as high altitudes as the mountain goat, yet the bighorn makes his home thousands of feet above the sea level. There, among inaccessible cliffs, the young are born, usually but one at a birth, although occasionally two and from the first are able to follow the mother and to aid in their own protection. For subsistence, the mountain sheep must depend upon the scanty grass and herbage, but in some mysterious way they are always able to remain sleek and well-fed, even during the winter snows, although they seldom venture down into the valleys. Among their fastnesses they travel in flocks, and whenever they stop to feed post a sentinel at whose slightest warning of danger they are up and away, over peaks, along ravines, down cliffs, by a maze of paths known only to

themselves. Indeed they seem to prefer the most dangerous routes and the most rugged crags, on the loftiest projection of which one sometimes may be seen, silhouetted against the sky like a statue.

Thanks to their vigilance and swiftness, they are more than a match for their wild enemies and their number might soon increase were it not for man. The hunting of such game is too fine a sport and the horns too highly prized a trophy to be foregone lightly; but his fleetness and sure-footedness, his grace of movement and of posture, have made this noble creature such an object of admiration that no one will regret that many states are protecting him by law to prevent his extinction.

WHITE MOUNTAIN SHEEP

Ovis dalli.

Of the seven varieties of mountain sheep found throughout the western part of our country from Alaska to northern Mexico, none is more attractive than this inhabitant of Alaska and the Yukon Territory. In size it is smaller and more slender-bodied than the bighorn, and the horns are less magnificent, but any inferiority is more than counterbalanced by its beauty. All through the cold winter, its covering is a long, heavy blanket of pure white, and, in a pleasing contrast to this, stand out the amber yellow horns which, in most of the species, preserve the same peculiar curves as do those of the bighorn. Clad in this garb, and its horns but reflecting the sunlight, it sports unobserved amid its snowy rocks with quite as much security as its southern neighbor feels among his

native peaks. From May to September, its color does not really change but becomes so shabby, as the fur is thinned for summer, and so discolored by dirt that the whole creature takes on a reddish hue, and is little esteemed for its appearance.

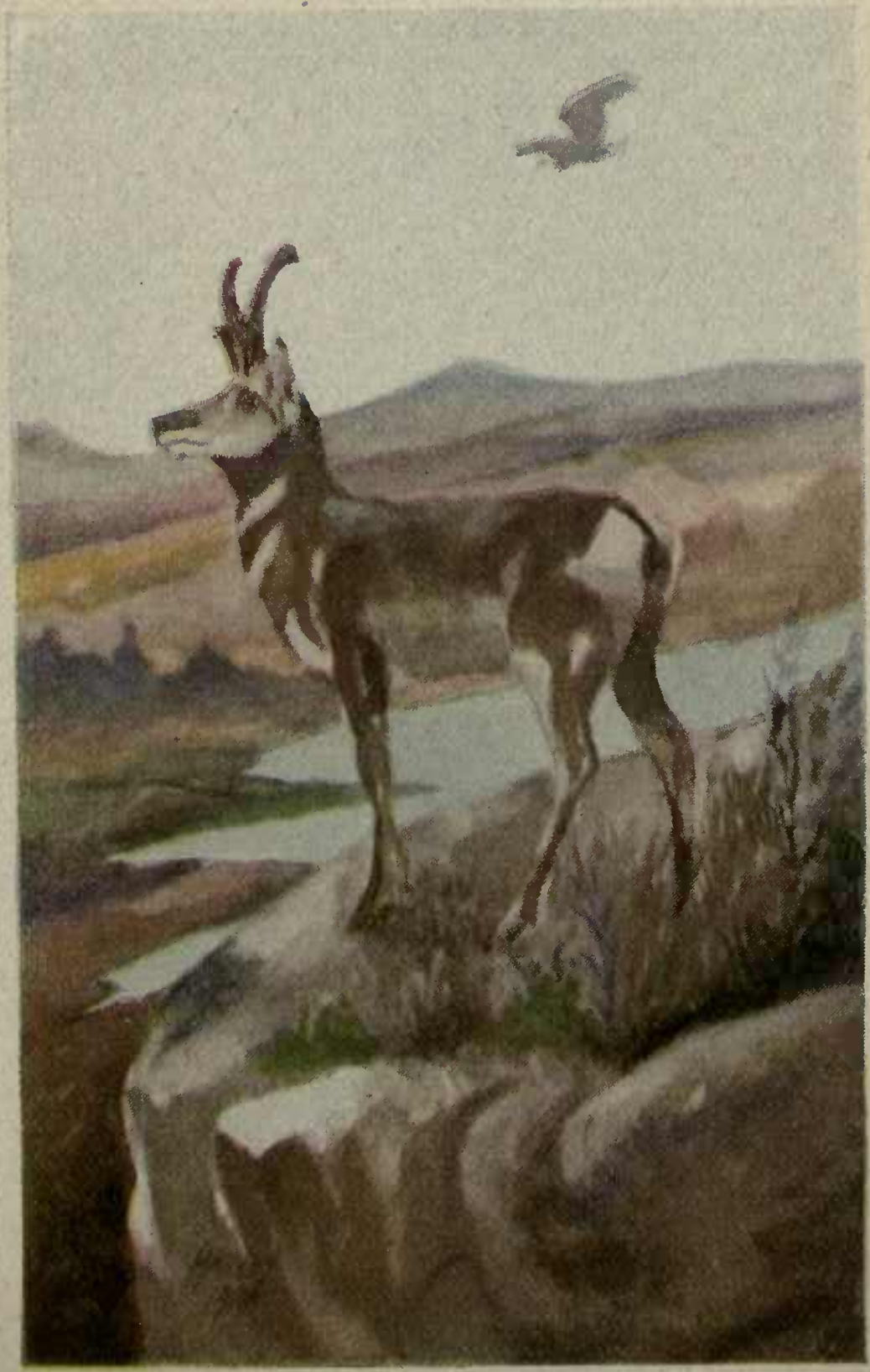
Formerly far more abundant than at present, the decrease of its numbers at last called forth enough attention to demand legal protection, but the law passed has proved too lenient and more stringent measures must be taken if we are to save from extermination this unique animal.

An interesting peculiarity of some of this species is noticed in the horns, whose shape differ altogether from the typical circular horn of the mountain sheep, as they start from the forehead in a more outward curve, bending downward but still further out, and ending in another outward, but upward turn. Although this singularity is well worth noting, these individuals present no other marks of distinction and are not classed as a separate species.

BLACK MOUNTAIN SHEEP

Ovis stonei.

Another species does exist, however, which has not only the spreading horns of the variety just described, but also a difference of color and range, although much the same in size. This is the black mountain sheep found a little further south in British Columbia, near the Stickins River. The upper parts of the body are brown, so dark in comparison with the whiteness of the white mountain sheep as to suggest the name black. In the southern portion of its territory this coloring is much darker than further north, but is always in strong contrast to the preceding.



ANTELOPE or PRONG HORN

Antilocapra americana.

Once ranging in large bands over all the open plains west of the Mississippi, from southern Canada to Mexico, there now survive but a few scattered remnants of the family of which this North American creature is the sole representative. Alone and unrelated it stands, and, although called an antelope, is distinguished forever from the true antelopes of the Old World by the yearly shedding of the horns as well as by the prongs which grow out about midway of their length, while it is quite as markedly separated from the deer tribe by the hollow structure of these same horns.

The rapid diminution of its numbers has aroused sufficient sentiment to protect it by law in most localities and we must hope that the precaution has not been taken too late. Doubly necessary does such action appear when we consider that this distinctive species

thrives on none but the selected fare of its native prairies and that it is almost impossible to be preserved by breeding in captivity. It is not a large animal, standing a trifle less than three feet high and in length about four feet, with the stately head bearing straight aloft the black horns, which are about a foot long, the stiff little mane, the shapely ears, and the slender and delicately molded legs all contributing to a grace and beauty surpassed by no other animal.

Its coloring of light brown above and white underneath, with the bars of brown on the throat and the effective combination of dark and light on the face add still further to the pleasing picture. The odd patch of white on the body near the base of the tail has a peculiar function since the hairs of the surface can be made to assume an erect position at the same time that a musky odor is given off. This display, doubtless originally intended as a signal or warning to its own kind, has often proved its danger because of the clew thus afforded of its whereabouts, as the prong horn trusts

largely to his swiftness for safety, and well he may, for he is one of the fleetest of all our animals and this conspicuous spot betrays his direction long after he would otherwise be out of sight.

Another source of trouble is his curiosity. He always seeks to investigate any new sight or quick motion, and advantage has frequently been made of this trait to lure him within shooting distance. If given a chance, especially the females in defense of the young, they prove ready antagonists, dealing sharp and by no means futile blows with their rapid hoofs. The kids, usually two are born in the spring and remain with the mother until early fall, when the bucks return, and all seek a warmer southern home for the winter season.

PECCARY

Tayassu angulatum.

The pig-like peccary, akin to the famous wild boar of European countries, is found from Arkansas and Texas south throughout North America. His bristly hairs are banded with black and white, giving him a grizzled appearance, while the short, erect ears, the prominent mane, the long fringe of hair beneath the throat and the stripe of white, extending from between the shoulders down under the neck are noteworthy features of his description. In size he is not a very formidable fellow, standing only a little more than a foot from the ground, measuring three feet in length and weighing about fifty pounds. He might easily, however, become a dangerous foe, as indeed are his kindred of South America, by means of his powerful tusks. Of these there are two in each jaw, which, al-

though hardly visible beyond the lips, are double-edged, extremely sharp, and curved in such a manner as to be capable of inflicting most serious wounds. Our northern species seldom uses these weapons against larger game than the reptiles and birds upon which he feeds, seeming when attacked to prefer escape by flight, if possible.

An old and experienced boar usually leads the small drove of ten or a dozen peccaries in its wanderings through the forests in search of fruits, nuts, seeds, roots, etc. True to the established reputation of hogs, these wild members of the same family are greedy eaters and do not scruple to appropriate to their own use any crop of grain they may be lucky enough to find in their rambles. They, at least, partly pay for the treat, however, by the large number of worms and insects they manage to consume. For a resting-place the drove usually chooses some hollow in a tree, or possibly the deserted burrow of another animal. Into this retreat they enter

in their own fashion, each backing in as far as he can go, and the last comer must keep guard as sentinel at the opening of the hole.

Localities much frequented by these odd creatures may be recognized as favorite haunts by the strong and unpleasant odor peculiar to them. It is due to a gland near the top of the hind-quarters and, if the peccary is killed for eating purposes, this gland must be at once removed; otherwise the whole body becomes tainted. The flesh of the females is considered better than that of the males, but at best the meat is wholly lacking in fat and is both dry and insipid.

Although not rated among wild animals as possessing a high grade of intelligence, yet this small beast is able to hold his own among the fierce inhabitants of tropical thickets.

GRIZZLY BEAR

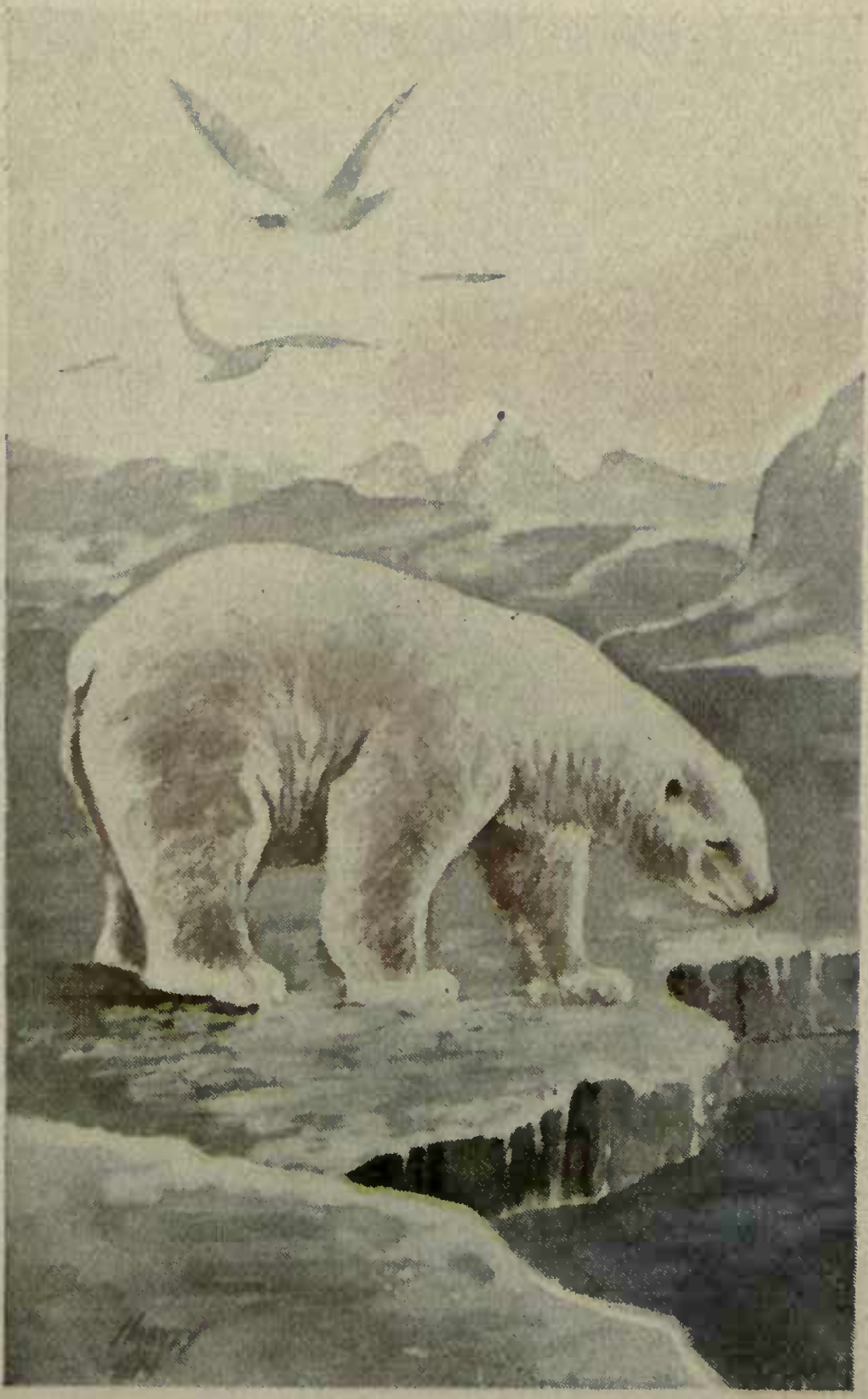
Ursus horribilis.

The Latin adjective "horribilis," signifying "to be dreaded," is very fitly applied to this huge and powerful creature who owns no superior among the wild animals and, although seldom attacking man, is very quick to take offense and, when once on the aggressive, has proved most formidable, as many a pioneer tale avouches. While in those early days not uncommonly found from Alaska to Mexico, at present it is rarely seen south of British Columbia, although it doubtless still roams about the solitudes of secluded mountain fastnesses. Our aborigines gave testimony to its prowess by the wearing of necklaces made from the claws, a form of adornment reserved only for the Indian brave able to slay a grizzly and thus forever hold a place of undisputed honor in the tribe. Ter-

rible, indeed, are these claws, measuring as much as five inches in length, and curved for convenience in holding the prey while the piercing sharpness penetrates far within. Equally sharp and strong are the keen-edged teeth and the massive forelimbs possess sufficient might to down most of its victims with a single blow.

Nor do its ferocity and natural weapons have to make up for any inferiority of size, since of all bears it is the largest, having a length of from six to eight feet, a girth of about the same dimensions, and a weight of from six to ten hundred pounds. In its gait it may be ungainly, swinging its bulky frame from side to side as it lopes along at an awkward pace, and seeming to beat time by the rolling motion of its big head, but, in spite of all this, it manages to get over the ground at a very creditable rate of speed. Neither has it any fear of the water, as it is an excellent swimmer, and only in tree-climbing does this species, at least when full grown, prove less skilful than others of its family.

While the typical grizzly is dull brown several varieties of coloring all the way from brown to dark gray have been noted, having, however, the common peculiarity that many of the coarse wiry hairs are tipped with silvery white to produce the grizzled appearance suggestive of the name. Truly strange have been the changes since this most terrible of beasts confidently exacted its tribute from all four-footed dwellers in its native wilds, not excepting the mammoth buffalo, who was forced with the rest to furnish a regular share of its support. To-day this particular victim has wholly disappeared and the lordly conqueror has been forced further back, until compelled to eke out a humble existence on acorns, nuts, fruits and berries, with the addition of occasional small game as a mean substitute for the prizes that were once his.



POLAR BEAR

Thalarctos maritimus.

Although not infrequently marooned on a drifting iceberg and so carried south much against his will, the polar bear is at home in the far north where the silvery white coat serves as his best protection all the year round. A big beautiful creature he is, standing over four feet high, measuring from seven to nine feet in length and weighing from eight hundred to fifteen hundred pounds. His long neck and shapely head add a certain stateliness to his appearance while the broad flat paws seem a fitting support for the massive frame.

Large as he is, his size detracts not at all from his ability as he is probably the fastest and most enduring swimmer of all his kin and has the peculiar power of being able to make excellent prog-

ress over the ice floes of his native clime. For this purpose, nature has equipped the soles of his big feet with a hairy pad, which serves not alone to prevent him from slipping but also as a warm blanket in his contact with the frozen surface.

Thus, equally at his ease on ice or in the water, he may be seen, in company with his mate and the two or three cubs, hunting for the clumsy seal or huge walrus, which he will have little difficulty in securing for their meal. A favorite method of attack is, after once spying out the prey quite off its guard on some distant ice cake, to approach by alternate swimming and diving until within easy reach, when he will suddenly appear from underneath the water and cut off all hope of escape. He is also often successful in tilting the cake at such an angle that the unfortunate occupant must of necessity fall off into his very jaws. During the short Arctic summer a few berries or roots may be a welcome change of fare, but, for the most part, an occasional salmon or other fish must

suffice to vary the usual diet. On the journeys for food, the whole family may make their way from one sheet of ice to another until they are far out at sea and sometimes carried away to unfamiliar shores, where they must appease their hunger by invasions among domestic flocks.

Although usually timid and unaggressive beings in their dealings with man, the female with her young often proves an exception to the rule. She has good cause, however, for her irritable temper, as the cubs are born soon after she begins to hibernate and the spring finds her thin, half-starved and with all a mother's jealousy and fear for her offspring. The male does not hibernate, but, after seeing his mate safely disposed of in the cleft rock or under the projecting ledge which is to be her winter shelter, returns to his ordinary duties of active life.


HARVEY

BLACK BEAR

Ursus americanus.

Formerly having the widest range and being the best known of the whole family, this typical American bear still preserves his species in the largest numbers and frequents lonely mountain tracts and heavily timbered forests north and south, from the Atlantic to the Pacific coasts. This good fortune is due chiefly, however, to his wholesome fear of man, for valuable to the colonists for fat and flesh, most highly prized of all was the beautiful fur. Unlike the covering of the other bears, this possesses an exceptional softness and smoothness of texture, while the glossy jet black adds a richness equal to that of many of the distinctly fur-bearing animals. This handsome coloring more than compensates for his inferiority to the grizzly in size, as shown by the average length of but five

feet and the difference in weight, as he is usually at least one hundred pounds lighter, may well be sacrificed for greater shapeliness and ease of motion. Fully able to hold his own in a swimming contest with his bigger cousin, he excels at climbing, making his way up any tree or out on any branch strong enough to bear him.

Indeed he must often practice this method of approach to find his favorite dainty, since nothing is so toothsome to black Bruin as wild honey. To get it, he will not only scale almost any kind of tree, but will withstand the stings of its guardians, while making an opening large enough to admit his huge paw, and feeling more than repaid for his trouble, as he licks off the sweet, comb, honey, young and all. While some individual members of this group may always crave animal food, most of them are quite content with an abundance of berries and fruit, unless, however, they may gain access to a pig-pen, as, without exception, they are inordinately fond of pork. The juicy sap of growing corn furnishes another

pleasing change of diet, but they are ever cautious in their trespass within the bounds of cultivation.

Although as a rule watchful, rather than aggressive, yet, if once on the warpath, they show all of the natural bravery of their tribe and, with their powerful fore paws, can administer death-dealing blows in rapid succession. Such is their resistance to ordinary wounds that a heart-penetrating rifle ball is the only effectual means of compelling final surrender.

The inquisitive disposition of these creatures was recognized as a proof of intelligence by the Indians. Only with true compunction would he slay his dumb questioner and then performed certain rites to show his grief for the dead and his esteem for the surviving kindred. It should be noted that the "Cinnamon" bear of the Rockies and west has not a separate classification, as formerly, but is a brown phase of this same species.

RACCOON

Procyon lotor.

This clever and enterprising animal, familiarly known as the "coon" is found throughout the United States and in the western part of our country, as far north as Alaska. Unlike many of our wild creatures, its numbers are increasing even near thickly settled localities and under apparently unfavorable conditions. In length it measures about thirty inches, being thick-set in form and ordinarily clumsy and deliberate in movement. Its covering consists of what we might term two coats; next to the skin is a gray woolly fur through which projects longer hairs of a mixed gray and black color; these two layers together form such a thick protection that it is necessary for the wearer to hibernate only during the most extreme cold weather. The short, bushy tail is a grayish white,

conspicuously marked with rings of black. The general effect of the varied coloring of the raccoon is very handsome and its fur is much used for driving garments, carriage robes and the like.

The Latin title "lotor" means "a washer" and has reference to one of the peculiar customs of this animal; namely, that of always washing his food, especially meat, by thoroughly sousing it up and down in water. He often chooses to go hungry rather than dine without this ceremony and is not content unless allowed to perform it for himself. In order to indulge it more conveniently, he prefers his home in a hollow tree to be situated near a pond or stream. As for his diet, it may be said to include everything that comes in his way, and comprises vegetables, fish, fowl, or meat. Green corn is a favorite delicacy, while prey from a neighboring hen-roost, or oysters clawed from the mud at low tide are always welcome additions to his fare. He is, in fact, one of our most omnivorous eaters and is as fond of drink as of food, even being

a tippler of fermented liquor, if he but has the chance. Most of his foraging is done at night and it is then that he may be surprised and trapped, or chased by a good "coon dog" until forced to take refuge in a tree from which the sportsman easily dislodges him. Coon suppers are a popular feasting frolic in many places where he is hunted and the flesh is both tender and toothsome.

In the south the raccoon is held in high favor, and wherever he is known his amusing and inquisitive nature makes him an entertaining captive, while because of his affectionate disposition and retentive memory he may be readily trained as a most excellent pet. THE CIVET CAT (*Bassariscus astutus fluvus*), found only in the extreme southwest, is about the same length as the raccoon, and the only other animal having a tail banded black and white.


HARVEY

MOUNTAIN LION or COUGAR

Felis couguar.

This animal called "cougar" from an abbreviation of its South American name and known as mountain lion from its uniform brownish drab color, as "puma" and panther from its leopard-like movements, and as painter from the name given it by the first settlers, is as widely distributed as this list of titles implies, formerly ranging from the Canadian border south throughout our country and still to be found in the mountain tracts and undeveloped lands of the west and south.

Many stories have been told of its attacks upon human beings, and the quickness with which the colonists contrived to rid their settlements of its presence might seem to prove at least a foundation of fact to some of them. If so, the painter well learned his

lesson, for although slinking and prowling enough about hunters' paths, he displays a wholesome dread of any personal encounter with them.

This fear of man is his only fear, however, since almost all wild animals, at some time or other, furnish prey to this big cat, of lithe frame and long body, measuring five or six feet exclusive of his two or three foot tail, he is the best climber of his tribe and admirably fitted to spring down from some overhanging tree or ledge directly upon the unconscious victim, for whom he has been lying in wait. When too hungry to choose this uncertain way of getting a meal, he will pursue a crafty still hunt, sneaking about until he sights his game, then approaching it noiselessly with the marvelous leaps which his long muscular legs make possible and at last pouncing upon it with one swift, silent dart. By this means he brings to earth such able creatures as the mountain sheep, mule deer, peccary, etc. At any time he may dine at his ease upon fish,

wild fowl, rabbits and all of the smaller mammals, and often wreaks dire havoc if allowed to lurk in the vicinity of a cattle ranch or sheep fold, since the flesh of colts and lambs is considered an especial delicacy by him.

The puma's home depends chiefly upon the character of the country where he lives. In rocky regions he will make his lair in a crevice between the cliffs, but in the woods, a hollow log, stump or tree will please him quite as well. In the badlands he contrives a sort of burrow in the wash-out holes, while best of all perhaps he likes a den under a pile of brush or undergrowth in some thicket. Their kittens, usually from two to five in number, are peculiar in that their tawny fur is marked with dark spots, giving them more resemblance to most cats than have their parents. At the age of six months these spots begin to fade and soon entirely disappear.


HARVEY

CANADA LYNX

Lynx canadensis.

From southern Yukon to the northern United States is found this American representative of the lynx family, although as he demands for his home the most dense of forests and the most desolate of rocky caverns, his range is constantly becoming more restricted with the further development of our country. A very typical specimen of his tribe he is, being characterized by the usual disproportionally long legs, a tail so short as to be almost invisible, a ruff of hair hanging from his cheeks down over his throat, and the straight, stiff, black tufts protruding above the ears. His fur, moreover, has the soft, thick texture and the loose, clinging quality for which his kind are so highly prized, while the blended effect of

light gray spotted with a darker shade detracts not at all from its beauty.

Among his native haunts this indistinctness of coloring adds greatly to his protection since it serves as a perfect disguise against almost any background. It is also of immense assistance to him in securing his food as his success often depends upon his ability to remain unseen until his prey comes within reach. His length of limbs, however, indicates that he may, upon occasion, prove an excellent hunter, although one would hardly call his gait graceful, as he travels in springing leaps, arching his back as he leaves the ground, and coming down on all four feet at once.

Thanks to his broad and hairy paws, this curious motion is attended with the utmost stillness and he may alight in equal security on the yielding crust of snow or dry leaves and brittle twigs, with no danger of warning a possible victim of his approach. His skill both at swimming and climbing offers him a wide selection from

which to choose his fare, including fish, birds, wild fowl, and all of the smaller mammals, but in spite of this, the cold frozen winter must hold in store for him many hungry days and nights, when all his powers will be called into force to keep him from actual starvation.

The lynx is not a large animal, measuring about three feet in length and standing from eighteen to twenty-four inches high. He is, nevertheless, far more formidable in appearance than in disposition as the staring big eyes and long coarse whiskers give the square, flat face an expression of exceeding ferocity, while in reality he is a very unaggressive beast, making it his chief care to put as much space as possible between himself and any prospective enemy. If cornered, however, he shows himself no coward and proves beyond all question that his policy is neither to give or receive quarter.

WILD CAT

Lynx ruffus.

Once common throughout most of our country, the wild cat has largely disappeared with the devastation of the forests, which were both his hiding place and hunting ground, but he may still occasionally be found from Nova Scotia to Florida, east and west, wherever overgrown and rough regions afford sufficient seclusion and means of livelihood. The several varieties of this species differ much in coloring and in their wide range, have been given many names, such as "Bob-cat," "Bay Lynx," and "Red Lynx." All alike, however, whether the background of their fur be lighter or darker, a more grayish, reddish, or yellowish brown, are distinctly marked with very dark brown or black spots which produce a uniformly brindled appearance. All of them, too, are characterized by the

short stubby tail, not more than six or seven inches long, always bushy and never tapering as is that of their domestic namesake. Their length, including the tail, measures about three feet, while they stand from twenty to twenty-four inches high and weigh from eighteen to twenty-five pounds. They are by no means unattractive creatures, as the effect of the markings is often very handsome and they always possess the grace and ease of movement peculiar to their tribe.

Left to their own devices, they are peaceful enough and inclined to be shy and retiring at the approach of an enemy. Once forced to the defensive, nevertheless, they become the most savage of animals, fighting with both teeth and claws, showing no mercy and never yielding until absolutely helpless. They catch their prey, not by pursuit or valor, but in the stealthy manner of all cat-hunting, either creeping upon it unaware, or lying concealed in wait for it. They are not particular as to what their food is, which at times may

consist of some small bird, but usually seeking their regular meals from more substantial game, such as owls, grouse, partridge, mice, squirrels and rabbits, of which the last is perhaps the most staple article of diet.

They are expert tree-climbers and frequently choose for a home the hollow of a tree, or more often a fissure down among the rocks, lining their nest with moss or dry leaves to make it soft and comfortable. Although they may prefer the darkness or at least twilight for their excursions abroad, they delight to come out of their den and bask in the warm sunshine of some sheltered ledge quite as does our household pet before an open fire. Indeed they betray their distant relationship to this familiar favorite by showing no aversion to the society of humankind, since they have often been known to remain even after a community has become well settled and to seek accommodations elsewhere, only when compelled by the scarcity of a food supply.

OCELOT

Felis pardalis.

The ocelot is found within our borders no further north than southern Louisiana and Texas, as most of its range is in South America. It is also known as "Tiger Cat" and very properly, since it possesses alike the feline virtues of beauty and gracefulness and the feline vices for cunning and ferocity. In height it stands a little more than a foot from the ground, its entire length is about forty-five inches, of which the tail measures about one-third, and the weight from thirty to forty pounds. A distinguishing feature about its appearance is the direction in which run the stripes or blotches of black adorning its reddish gray coat. These vary with each ocelot as to the size and shape, but on them all, and on them alone of all animals, they lie lengthwise of the body. The under-

parts of the creature are white with black spots or light brown, the markings of the legs resemble those of the body and the long tawny tail is almost encircled with dark rings. Owing to the striking contrast between the light background and the dark streaks or lines, whose pattern is ever different, yet always displays the beauty of some regular design of its own, this species is one of the most handsome of the cat tribe and the fur is valued accordingly in the manufacture of fur luxuries both at home and abroad.

In common with most of his kind, the ocelot is an expert climber, scrambling up a smooth tree trunk with all the agility of a young kitten. Indeed, in the forests of his native haunts, and he seldom chooses to show himself in the open country, much of his time is spent up among the branches. He prefers these leafy abodes, not alone for the exercise and pleasure it must give him to sport with his lithe form in such airy places, but also because it is up there that he secures much of his food. To be sure he is per-

fectly able to catch the smaller quadrupeds to be found on the ground and among the rocks; and these he does delight to hunt in true cat fashion, creeping stealthily up within leaping distance, whence, with one dart, he may pounce upon his unsuspecting victim. But he has a particular liking for birds, so, when he chooses to dine upon them the easiest plan is to post himself among the lower boughs and simply to lie hidden until one comes along, when, with a leap there will be no more bird, but the most innocent looking big fawn-colored cat, contentedly washing his paws.

Incredible as it may seem, these creatures, who are naturally so savage, become very amenable in captivity and show much affection for their keepers. Especially is this true if they are taken when young, or if their confidence and regard are won by some tid-bit or some pleasing mark of attention.

GRAY WOLF

Canis occidentalis.

This animal, probably but a geographical variation of the European wolf, was once common throughout North America. While called the "timber wolf," because of a preference for forests from north to south, it was by no means confined to these, but was also especially numerous upon the western plains. With the advance of settlements its extermination became absolutely necessary and bounties were placed upon its scalp. The vigorous warfare in consequence waged against it has been so effective that to-day the range is restricted to the most heavily-forested parts of the Rockies, the desolate regions about Hudson Bay and the badlands of the west, which are to be reclaimed from wildness only with great difficulty because of the nature of the soil.

Although the most typical American representative of the family in both general appearance and habits, there are, nevertheless, many differences in coloring and local range. In general, however, all varieties are a dark gray with more or less of a yellowish or rufous tinge.

In size they usually measure about four feet, with the addition of a tail about one quarter the length of the body and stand some two feet from the ground. The home may be a den among the rocks, the hollow of a fallen tree-trunk, or an underground burrow, where the young, from six to ten in number, are born each spring. These remain with the mother during the summer, being trained in the art of getting a living for themselves, while the father-wolf brings them such supplies as are necessary to assist in their efforts. By fall they are ready to take their place in the pack, after which the lair is used as a good retreat in which to rest after battle or to hide by day, as they are creatures of the night, but little in evidence except under cover of darkness.

Their method of hunting is to attack the prey outright and run it down, and truly small need have they of stratagem, for, because of their unsurpassed speed and strength, no animal can hope to escape them. Only very rarely does it happen that superior cunning is able to save an unfortunate upon whose trail they have once started. All sorts of wild beasts are acceptable to them and domestic sheep are a favorite booty. In this country there has been few instances of attacks on human beings, but there is no good reason to suppose this due to any compunction on their part, as their kindred of Russia have no such scruples; the large number of wild prey whose abundance and extermination were contemporary with their own is a more natural explanation of their leniency. Particularly fond were they of the buffalo meat, and little suspected, as they consumed the young, sick, and wounded of these in the midst of the stolid herds, that their own family, like that of their victims, was destined to disappear forever before a new and unknown enemy.

COYOTE

Canis latrans.

The coyote, or "prairie wolf" as it is called in contrast to the gray or timber wolf by the difference in habitat, was formerly all too common throughout our country from north to south, being most numerous on the Western plains, but at present is rare anywhere, although its range includes remote regions from Alaska to Guatemala. In such solitudes, at dead of night and often at the near approach of dawn, may be heard his high-pitched cry, half howl, half yelp, easily distinguished from the deep bass growl of his gray neighbor, and from which he receives his Latin name "latrans" meaning "barking."

Most of the marauding is done during the darkness, when these sly creatures slink forth in packs to secure their prey; hares, chip-

munks, ground squirrels and mice are their staple diet, but these are often supplemented by various game birds and young fawns. The latter are about the largest animals against whom they voluntarily wage war, for, unlike most of their family, the coyotes are cowardly beasts and lack much of the reputed ferocity of their kind. Like most cowards, however, they put on a sufficiently bold front to terrify their inferiors and, in Yellowstone Park, have proved such a menace that every means has been taken for their extermination.

In their dealings with men these wolves are perfectly harmless beings whose worst fault is the persistency with which they follow camping parties in the hopes of finding waste scraps of food. Indeed, there appears to exist a sort of good-fellowship between them and the Indians of the West and Northwest, the descendants of those aborigines to whom they owe the common name "coyote." They also seem to have taken into their nature some of the wily

caution of the Redman, for it is almost impossible to catch them in traps. No matter how temptingly baited, the stratagem is almost invariably discovered and left untouched. Their greed may become their final destruction, as they cannot so readily detect poisoned meat, which has been one effective method of reducing their numbers.

Although varying considerably with location in respect to both color and size, they may safely be termed small in comparison with other wolves, as the usual length is between forty and fifty inches. Because the hair is longer and thicker, and the tail more bushy, this difference is easily underestimated, and with the tawny coat mixed with black and white above, the whitish shading below and the black tipped tail, they are never unattractive. The fur, although soft and fairly luxuriant, is of too poor a quality to bring a high price, but is used, to a certain extent, in the manufacture of lap-robes, coats and gloves.

RED FOX

Vulpes fulvus.

The red fox is the most typical of North American foxes; well-known, widely-distributed, of several color phases, and always with the proverbial cunning of his kind. His range extends throughout North America from the Arctic Circle south to Virginia and his coat of reddish yellow varies somewhat with the location, being lightest in the desert regions and darkest in the forests and its more northerly range. Besides his general coloring, other distinguishing marks are the grizzled appearance of the hind parts of the back, the white throat, the white on the under parts of the body and the white tip of the tail. The tail is about one-third of the whole length, measuring about thirteen inches while the body itself is but twenty-four. The weight of an adult will vary from seven to fifteen pounds, averaging about ten pounds.

Because of his ability to look out for himself, his numbers are increasing and very probably he finds man to-day a far less deadly foe than the large wild beasts in the past. For a home, the fox has a burrow where the five to eight young are born each spring, but he prefers to spend most of his time in the open. From some lurking-place he goes forth to seek his prey, which may be a rabbit, woodchuck, rats or mice, or, if fortune favors him, a tender chicken or young duck. If he lives near the shore he may "go fishing" at low water for crabs and other sea food. His excursions usually take place at night and it is a frequent custom for the marauder to scurry back as soon as his booty is secured and devour it in his den.

For ages "wise as a fox" has been a proverb and this member of the family keeps up the traditional reputation. Especially does he show his wit, when hunted, where the odds are decidedly against him, his cleverness at escaping horses and hounds has been

sufficient to keep the sport popular for generations. Feigning to be dead, lying prostrate on a steep slope in the expectation that the hounds will rush past him in their headlong speed, tempting them to follow him over thin ice, strong enough for him, but too frail for them; these are but suggestions of his many stratagems. Perhaps the most amusing of these tricks is his habit of baffling the hunter by some false move and, after cunningly making a detour to some point behind his would-be pursuer, he follows at a safe distance, as if laughing at the joke.

There are two color variations of the red fox, known as the "cross fox" and the black or silver fox. The fur of these two and also of the red fox itself are much prized, that of the black and silver variety being the most valuable of any pelts and together the three form an important article of our export trade.

BLACK FOX

Vulpes fulvus argentatus.

The black fox is a slightly more northern variety of the red fox species, being found from Alaska to Manitoba and occasionally farther south, although rare throughout its range. In the typical form it is also known as the "silver fox," both from the snow white tip of the tail and from the white tips on the black fur and the more grizzled appearance of the hind parts. As it occurs, however, in the same range as the cross fox and mixes freely with the latter, there are numerous variations from the type and sometimes even an entirely gray or wholly black specimen is found.

For centuries genuine black fox fur has been esteemed among the three or four most valuable ones. Kings and queens have placed upon it their sanction as the only fur that will retain gold

tipping upon its hairs and so alone fitted for their adornment. Wealth and discrimination everywhere have followed their decrees and because of the demand thus created there arose a new industry some twenty-five years ago, namely the raising of foxes for the profits from their skins. The fact that millions of dollars are at present represented by the development of this venture seems to justify us in considering the black fox from a commercial point of view.

The important truth at the basis of the whole undertaking is that the world's supply of furs from wild creatures in a natural state must decrease. This needs no further argument than references to the Russian sable, the Alaskan seal, the slaughter of both of these being now curtailed by law, and the sea otter, which is practically extinct. In our country a little more than the lifetime of one generation has witnessed a noteworthy disappearance of many of the smaller fur bearers, who were formerly not uncommon, and

this must constantly happen as their hiding places make way for towns and cities.

The promoters of the fox farms realize this and their first interest has been to secure the sure perpetuation of a prolific standard type. For this guaranteed pairs bring as high as from twenty to forty thousand dollars for pure black foxes for breeding. The London market, which is the center of the world fur trade, estimates that it could dispose of five thousand pure pelts from such sources yearly, without lowering the prevailing price, which ranges from an average of five hundred dollars for an ordinary skin, to fifteen hundred or more for prime and exceptionally perfect skins. The years that must pass before any such number can possibly be furnished, assure investors that there is no danger of the market becoming overstocked.


HARVEY

ARCTIC FOX

Vulpes lagopus.

A very interesting animal is this inhabitant of the far north, who rarely is found south of the Canadian line, and who changes his coloring with changes of season or of place. In the middle portion of his range he is bluish brown in summer and pure white in winter, while in the extreme north he keeps his snowy covering throughout the year and when found farthest south is known as the "Blue Fox" because of his unvarying coat of blue. These differences are a remarkable illustration of the ways and means by which nature contrives to protect and preserve creatures who, on account of climatic or other adverse conditions, seem unusually prone to extinction. The Arctic fox is also provided with an underfur next his skin as an additional protection against the coldest weather, shed-

ding this at the approach of spring. In length he measures about three feet and is unlike others of his family in having less pointed ears and muzzle, while, as a convenience for his slippery journeys over ice and snow, his feet are shod with a thick woolly covering of hair.

Like his giant neighbor, the walrus, this northern resident is fond of company and the burrows are dug in communities of twenty or more in one suitable sandy spot. During the warm season the colony is in no danger of want, as the chief food supply of birds, birds' eggs and the rat-like lemmings, peculiar to the north, is to be found in abundance; but with the migration of the birds and the approach of the death-dealing cold of winter, this fox would fare hard had not his natural cunning taught him to provide a supply of lemmings, caught when fat and plentiful. These he has buried a few inches beneath the surface, where the temperature is low enough to preserve them, and on them he must now depend. At this time

the younger members of the tribe travel southward, thus serving the double purpose of lessening the number to be supported and also training themselves for the fortunes of life and of war.

Crafty this creature is in the matter of securing a livelihood, but he is less clever than most of his kind in avoiding the traps of human ingenuity. We sometimes wonder whether this unsuspicious disposition is not due rather to lack of acquaintance with the new enemy than to any inferiority of wits. Be this as it may, he is easily caught and furnishes no small revenue because of his valuable fur. The white phase is prized most highly, although the pelt in any coloring brings a good figure. The experiment of raising these foxes for commercial purposes is being tried on some of the islands off the Alaskan coast and at present promises to be a successful venture.

GRAY FOX

Urocyon cinereoargenteus.

Although it may be found as far north as Massachusetts and New York, the gray, or Virginian fox, is as the second name implies, the fox of the southern United States. For several reasons this species is more dependent upon the forests than the northern variety and does not take kindly to remaining in the vicinity of cultivated lands. In the first place it prefers to find a home for its young in the hollow of a stump, tree, or log, rather than the burrow which seems more satisfactory to the red fox. Then, while endowed with much natural trickery and slyness, it apparently has not the same capacity for premeditated shrewdness and is more easily outwitted by its human foes. As it lacks the bold fearlessness which characterizes its ofttimes too familiar thievish cousin, the wooded tracts

afford grateful seclusion and protection. Possibly a trifle inferior to some of its kind in speed and endurance, it excels at climbing trees, although this ability may at times prove a doubtful advantage if tempted to use it, an unlucky fugitive grows weary of his flight for safety and places himself in a fine position to be shot.

Fortunately, the power of self-preservation bestowed upon this small creature, which appears so unequal to the marvelous cunning of others of his tribe, are offset by the fact that his body, while but little shorter, as it measures about thirty-nine inches, is more slender and may thus far less quickly attract attention. Furthermore, the gray coloring above, shading into a rusty red on the sides and yellowish white underneath, renders a very inconspicuous hint of his presence. The same indistinction of coloring aids indirectly to safeguard its wearer by being valued the least of any fox fur, consequently does not bring a high enough price to ever encourage his pursuit.

As the peculiar sign of his species, the gray fox adds to the bushy appearance of fox tails in general a contribution of his own, for a ridge of coarse long hairs grow out in a perfectly erect position from the upper surface of this appendage, giving it an unusually bristly effect. At the root of the tail, as is the case with all but the Arctic members of the family, are glands containing a secretion which emits a strong and unpleasant odor, very penetrating and lasting. This is the means by which hounds are enabled to keep the trail of a fox long after he has disappeared from view and the fox himself, seeming to realize this, uses every trick he knows to break the line of scent and so throw his pursuers off his track. Other animals, especially cats and horses, have shown unmistakably their dislike for this smell by their unwillingness to enter enclosures tainted with it.

SABLE or MARTEN

Mustela americana.

In the days when the first trappers roamed the wilderness of what is now Canada and the northern United States, the American sable was so numerous that the skins were annually exported by the thousands. To-day because of the high value then set upon their rich brown fur with its remarkably fine texture, its soft downy warmth and the beauty of its gloss, these animals, who are more properly called martens, are rare everywhere throughout their range. Had they not been aided in their unequal conquest with man by natural shyness and unusual powers of reproduction, they would probably long since have become practically extinct. As it is, they withdraw as far as possible from civilization into mountainous

regions or heavily timbered forests, especially preferring the evergreens, whence the name "pine marten" is sometimes applied to them. Fortunately like the mink, they are fully competent to cope with any wild enemy they may find in these haunts, and once freed from the plots of human ingenuity, lead a very comfortable life.

Although they measure but seventeen inches in length, without the bushy seven-inch tail, yet these four-footed creatures seem far too big for the dwelling they often select, which is none other than a hole high up in some tree. It may be just a hollow in the trunk or the deserted nest of some large bird or squirrel, but it must be cozily lined with moss, grass and dry leaves before the new tenants feel perfectly at home. Occasionally a household may be established in the crevice of a rock, but even then much of the time will be spent running gracefully up and down the tree trunks, or lurking among the branches with silent furred feet and all ready to

pounce swiftly out on any unwary squirrel or bird who may chance to pass that way.

The marten, however, is by no means confined to one manner of getting his living. Besides his still-hunting, he may any day enjoy the more active and sportsmanlike manner of following the scent of a hare when his keen sense of smell and a combined policy of watchfulness and persistent pursuit usually outwits the mere speed of his miscalculating victim and secures him the prize. Then there are always rats, mice and snakes to be had for the taking which with the capture of a game fowl now and then may seem sufficient variety to satisfy a most discriminating taste.

FISHER (*Mustela pennanti*) is a larger and heavier form of marten, measuring thirty inches or more in length. Its habits are much the same, but its increase in strength and ferocity is much greater in proportion, even with its increase in size. The fur is considered as about twice the value of the marten.

MINK

Putorius vison.

Few animals are given as many and as diversified powers both for getting a living and for self-preservation as fall to the lot of the mink, who is still to be found not infrequently throughout North America, excepting in the extreme north and south. Equally fitted for quickness, whether on land or in the water, is the long, slender and supple shape and equally does he divide his time between the two, with a slight preference, perhaps, for the latter, seeing that it offers safer quarters and more easily captured food. He has spread before him, for most of the year, an exceptionally varied bill of fare, without the trouble of hunting at all, he may regale himself on mussels, various shellfish and even dead fish cast up along shore. Most fond of diving and swimming, he is seldom unable

to procure a meal of good fresh fish, caught right at his own door in the pond or stream beside which he has chosen to dwell.

Then, in the marshlands near his home, he may, at short notice, pick out the plumpest wild duck and the most tender of frogs and meadow mice, or, going out of the swamp, up into the woods, find great sport in the sly chase of a partridge or grouse, where his keen sense of smell and quickness of movement are most of all displayed. To be sure in winter the choice may be more limited, but yet there are always rabbits to be had by this knowing little hunter and usually an opening somewhere along the bank to admit him to his favorite fishing grounds under the ice.

All in all, we fancy that few wild creatures have more chance for real enjoyment than does this active, strong and wonderfully versatile animal. Especially to be congratulated is he that each of his haunts holds a peculiar place of refuge as well as a food supply. To escape danger he may dart behind a log and down into

the water, slip his slim form into any cranny big enough for a rat, or scuttle quickly away among the grasses, up a tree, or out of sight under the leaves.

Small fear need he have of the enemies of his own wild sort, but the valuable covering of the nineteen-inch body and the seven-inch, thick, round tail make him well worth taking by human foes and even the able mink falls a prey in large numbers to their deceiving traps. The fur, varying in color from a yellowish brown to a very dark brown, is esteemed highly for the glossiness of the outer long hairs and the soft warmth of the underfur. Alaska furnishes the best quality, but wherever found the darker shades always command a good market value. Those skins which are taken in the southern and through the middle west are usually much lighter in color and of far less value.

BADGER

Taxidea taxus.

This odd looking beast who seldom ventures out by day, and who if surprised by being discovered on those rare occasions when he does, simply spreads out his broad flat body as closely to the ground as possible, trusting with good reason to be taken for nothing more interesting than a hummock of grass. Is fairly common, if not often seen, from Yukon south to Mexico and Texas, and east to the Great Lakes. The cautious disposition which leads this clumsy creature to defer his journeys abroad until after dark is a great aid to the preservation and increase of his kind, as is also the fact that his long sharp teeth possess the peculiar power of locking themselves into any enemy upon whom they once get a grip.

As he is some two feet in length, he is one of the largest of the

ground dwellers and so comparatively safe from their attacks as well as provided with abundant food from their number. With his short, but extremely strong front limbs and his big curved claws he can make his way into any of their holes faster than they can hope to escape and lives at his ease upon the prairie dogs, ground squirrels and field mice he thus unearths. Nor does he at all scorn still smaller fare, such as beetles, grasshoppers, snails or worms, while wild bees and wasps are an especial dainty, to whose vain stings his long dense hair and thick hide offer an impenetrable shield.

For his own home he must tunnel out a much larger space than that occupied by most of his neighbors, which, to be sure, may betray him to the trapper by its difference in size, but also, at least in earlier days when whole tribes of badgers lived near together in sandy soil, has proved treacherous footing for many an unwary traveler. Inside of the burrow will be made a carefully lined nest of dried grass, and here, too, will be stored a quantity of dried grass

and sedges, rolled up into hard, tight balls, as food for the mother and the three or four little badgers who are to arrive in due season. In the same warm underground chamber the family will pass the cold winter, but as they are fat and well nourished when they enter, they spend most of this time in sound motionless sleep, with no thought or need of food, and somehow manage to come out in the spring still sleek and in good condition.

The silkiness of the heavy covering of this animal and the striking appearance of the distinctly marked black and white head give the fur a fair market value, although the grizzled gray coloring, shading into a tawny or russet with an irregular mottled blackish effect above rather detract from its richness.


HARVEY

WOLVERINE or GLUTTON

Gulo luscus.

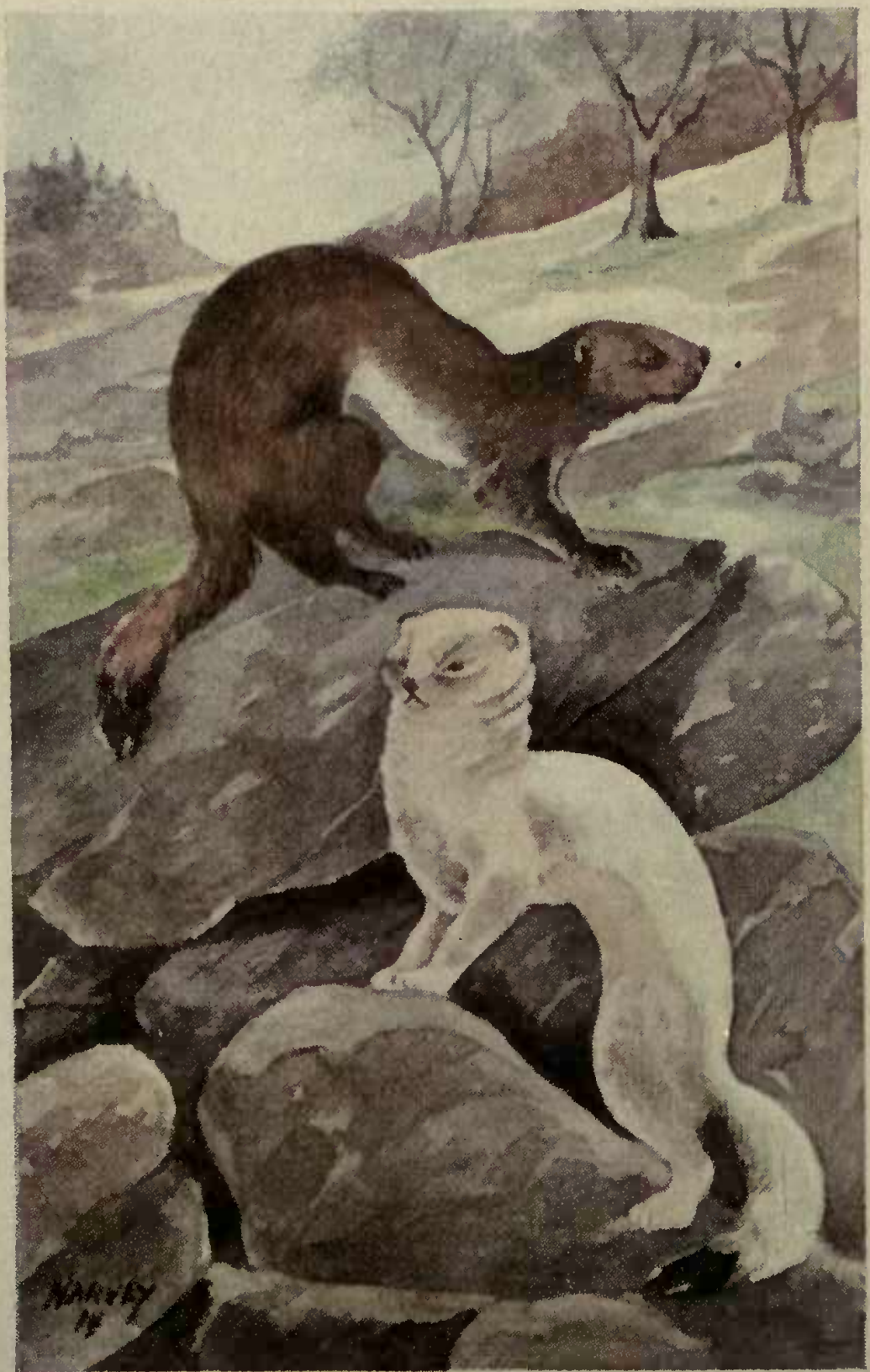
With shaggy coat, big broad flat paws covered with thick hair and a strong heavily built frame, the wolverine is well fitted for his wandering life in a northern range, which, beginning at the limit of trees, extends to the Great Salt Lake, although he is extremely rare south of northern New York. Bearing the unenviable reputation of the worst thief in all the animal world, he is known as "mountain devil" to the Indian and trapper, whose supplies, however well hidden, are often ferreted out by his most acute sense of smell and whose traps he considers his own property, emptying them of their contents at his pleasure and not infrequently lugging off the trap as well as the bait and game. He is also called "carcajou."

Another name, given to him in the northwest, is hardly more complimentary, being "skunk bear" and suggested alike by his bear like clumsiness, the low hanging posture of his head and tail, and the foul odor with which he soils any food which he cannot consume, thus rendering it worthless to any other creature. For, in spite of the greedy and gorging nature, which has caused him to be everywhere called "glutton," he often finds it impossible to devour all he has killed, since his mad passion for plunder has no limit whatsoever.

Although he retains some of the quick and elastic freedom of movement characteristic of the weasel family to which he is distantly related, his bulky form and covering make long continued running or climbing rather too much of an exertion so he has become proficient in the art of prowling and tramping. Unwearied at this style of hunting is he, keeping it up day in and day out, and, by the aid of sullen shrewdness and his wonderfully developed power of scent,

slaughters enormous quantities of the helpless young of other animals, and many of the smaller quadrupeds themselves, to say nothing of wild fowl and other birds, rats, mice, reptiles and insects.

The blackish brown body of the wolverine is marked with two bands of a lighter shade of yellowish brown, one running from either shoulder down over the flank and meeting the other at the base of the bushy tail. In length they measure from thirty to thirty-six inches, of which the tail is from eight to ten inches. For a home they dig a burrow in the ground, in which, usually during June, their four or five young are born. While not taken in such large numbers as are the martens and fishers, they are persistently hunted by the trappers. Most cleverly planned and concealed must be the device to catch them. Their fur, while much longer, is considered of more value than either of the above.



WEASEL or ERMINE

Putorius noveboracensis.

The weasel, among whose fifteen species are included some of the smallest carnivora in existence, is common throughout North America. In actual length they may vary all the way from six to sixteen inches, but all have such insignificant bodies and such blood-thirsty temperaments that the contrast affords the most striking characteristic of the whole family. A peculiarity of this family is the tendency for the general reddish brown color which it wears in summer to turn white during the winter, this change being more marked in the species farther north. In this white phase they are called "Ermine" and their fur is considered as most valuable for trimming or linings, being used with the highest priced furs.

The one here chosen as a type, as do several others, keep the

tip of the tail black all the year round, which seems at first thought an apparent oversight on Nature's part and doomed to attract unwished-for attention to its wearer, but it has just the opposite effect; namely, to disguise the whereabouts of the rest of the animal by its own conspicuousness. Doubly possible does this result become when we take into account the elasticity of the slender form which may lie in any direction whatsoever from the very prominent tail.

It is, first of all, to this elasticity that the ferocious creature is indebted for his marvelous ability as a hunter. Because of it he can work his way into any burrow, no matter how small the entrance, or how complicated and numerous the passageways, and can follow the smallest of his prey in its windings through the narrowest crack or crevice. Another weapon of hardly second importance is his highly developed sense of smell, which both locates his victim for him at the start and enables him to keep its trail in the

pursuit. In addition to these two physical qualifications, there is the desire to kill for killing's own sake, to which testimony is often borne by the number of untouched dead left behind him, and his fearless courage which apparently has nothing but contempt for the size or strength of a larger foe.

Besides mice, rats, ground squirrels, the eggs and young of birds and other such proportionate booty, he never hesitates to pounce upon rabbits, ducks, chickens and game fowl, and fastening his sharp teeth together with a fatal snap, sucks their blood in savage satisfaction, or in still more savage glee leaves them as mute memorials of his prowess. Even to the presence of man he manifests supreme indifference, and if cornered or trapped will fight as long as life remains.

BEAVER

Castor canadensis.

Although formerly, widely distributed throughout North America, the beaver has been hunted so persistently that he is now practically extinct except in the northeastern part. His value consists in a beautiful soft thick grayish brown underfur, which remains after the long chestnut-colored hairs have been removed and is highly prized for ladies' coats, hats, fur trimmings, etc. While he is one of the largest of our rodents, measuring about forty inches, including the ten-inch paddle-shaped tail so useful to him in swimming, he is best known, not by his size, but by his skill in building the dams, which take first rank among all feats performed in the animal world.

The purpose of these great dams, which may reach several

hundred feet in length, is to protect the home of the builders by keeping the water deep enough to cover the entrance. This home is usually a burrow in the bank and, as the dyke causes the water to rise around and about it, the height is increased and the structure strengthened by poles and mud, until the typical "Beaver Lodge" results rather from the flooding due to the dam than from any deliberate plan. To find material these industrious creatures must often fell trees, frequently a foot in diameter, which they do by gnawing parallel grooves around the trunk and chiseling out the wood between with their strong sharp teeth, then gnawing other circles deeper in and repeating the process until the tree falls, usually into the water. At once they begin to trim off the branches, the bark of which furnishes them with their chief food, many of them being fastened under water for their winter's supply. Next, the wood is cut into lengths of from three to five feet and dragged to the edge of the stream, from which it may easily be floated to the

appointed place. The construction is most cleverly contrived, the larger logs being held firmly together by smaller twigs and mud plastered down so securely with the fore feet as to make the dam absolutely water-tight. It is widest at the base where the pressure is the greatest, and, if the current is strong, may present a convex surface to break the force of the water. During the fall each year it is thoroughly inspected and the weak spots reinforced against the coming storms. The greater portion of the beaver's labor is performed at night and the amount of work accomplished as well as its durability prove him possessed of industry and skill second to none of the wild creatures, and possibly superior to any other of them.

MUSKRAT

Fiber zibethicus.

The muskrat is common both east and west from Alaska to Louisiana, being one of the fur animals who reap a benefit from improvements due to civilization. No sooner is an area newly flooded, whether it be by damming back a stream for some manufacturing plant, or in the construction of a reservoir for a great city, or merely to form an artificial pond or ornamental lake, than a colony of muskrats appear, all ready to take possession. They are perhaps quite as safe near human habitations as they were in the days when the uncleared forests held for them so many foes.

They are trapped in immense numbers throughout the country and their fur is one of the most used and yet has a market value the lowest of any of the fur bearers quoted. Unlike most of our

distinctively native animals, the muskrat retains, even in popular usage, the name by which the Indians called him, "musquash," and whatever the strict meaning may be, its sound surely suggests this big rat diving down into the marshy pool, swishing along through the soft mud, or flapping his stiff scaly tail among the rushes as a warning to his mates.

His body tells us where nature intended him to live, for with its dark brown upper parts shading into reddish on the sides and white underneath, it could never be distinguished except by motion from the miry swamp where it looks like nothing but a mere lump of mud. We do not usually think of rats as water lovers, but this one enjoys best his existence when lazily floating about in the sunny warmth of some shallow pool, or on hot summer days in the cool little inlets beneath overhanging branches.

He is an excellent swimmer, for while his feet are only partially webbed, his naked flat tail is curiously carried on edge and

does good service as both propeller and rudder. On land his short legs soon weary of supporting his plump body, which measures about twelve inches, while the tail is of about the same length. He is a sturdy little fellow, and if there seems to him sufficient reason he may wander a considerable distance from his favorite stream.

He is peculiarly blessed with the ability to make for himself either or both of two distinct types of dwelling. If the body of water near which he lives has a high bank, he will dig into this from under water for some ten feet, sloping the burrow upward, and at the end of the passage open up a fine spacious room. If in lowlands he with several others may build of weeds, sticks, etc., a large pile of rubbish, within which they have a room above the water line.

OTTER

Lutra canadensis.

Well known to the early settlers of North America and by them regarded as an important article for trade, the otter has paid a dear price for his handsome skin and to-day is found but rarely, although, nominally, his range still extends from Alaska and Canada, through the Rocky Mountain region on the west and New York and Pennsylvania on the east, to the Carolinas and Florida. The rich brown fur, in addition to a wonderful gloss and silkiness of texture, possesses, when at its best from November to spring, such a beautiful downy thickness that, although designed by nature for his protection, it has proved the source of his greatest danger because of its high commercial value. In common with most of his other features, it is peculiarly adapted to his water-loving habits

and consists of an outer layer of long coarse hair to shed water and so to further his progress through the stream, and an under-layer of fine soft fur to prevent the excessive cold from benumbing his frame during his long winter stay beneath the icy surface.

His whole appearance, indeed, shows how thoroughly the otter is fitted for his life as a fisher. His body, measuring three and a half or four feet, is slim and of equal width from the flat head to the base of the long broad tail, which is also flat and of great convenience as a rudder, while his shapelessness is just the form he needs for his activities under water. His legs are not long enough to be at all in his way, while his webbed feet are the best possible device to propel him in his travels. In search for food he may either dive directly upon the unsuspecting victim or pursue it in its course, darting in and out, up and down, in true fish-fashion and usually beating the fish at its own game. He is a hunter for sport's sake as well as for necessity and slays far more prey than he con-

sumes, often satisfying his dainty palate with one bite from the favorite portion and leaving the rest which sometimes is not despised by his human neighbors. His teeth are exceptionally strong and sharp to give him a firm hold of his slippery booty and his skill at catching fish is in such repute that he is actually kept for that purpose in some Oriental countries. The task of training him is not difficult, as he is easily tamed, quickly understands what is expected of him and soon becomes attached to his owner.

Although essentially water-creatures, otters do not hesitate to make land-journeys from one river to another, going in family parties and following well-defined tracks. A curiously roundabout path do they form, avoiding every manner of obstacle large or small, unless, indeed, a coating of mud or snow allows them to indulge in their decided fondness of sliding downhill.

PORCUPINE

Erethizon dorsatus.

Few animals afford a better example of the protection which Nature devises to preserve from extinction certain species than does this armor-clad inhabitant of the deep forests from southern Maine and the mountains of Pennsylvania as far north as Hudson Bay. It is not of large size, measuring only about three feet in length, including the nine-inch tail, and weighing about thirty pounds. Neither is there any beauty of coloring or of texture in its dark brown hair, which almost conceals the short gray-tipped quills. In these last, however, although they are but from one to four inches long, lies the chief interest of this curious animal. As long as he is undisturbed, his coat of mail rests quietly thrown back over the body and, on first acquaintance, may deceive even the crafty wild folk of

his own forest. But let them try to approach him and how quickly the sheet of muscles underneath forces every quill to an upright position, while one blow from the strong tail where the spines are strongest and thickest, teaches the trespasser a lesson never to be forgotten. Each spine is so loosely attached to the wearer's skin that the power of the blow will drive many of them into the victim's body, especially as they penetrate because sharply pointed. When once in, any attempt to extract them succeeds only in making a bad matter worse, as the point is barbed and works its way further into the flesh with every motion of the sufferer. It is not uncommon for death to follow as the final result of the blow. Hence, although slow of movement and of wits, the porcupine is an adversary whom even the large wild cats fear to encounter and dwells in safety among far larger and more clever animals.

His home is located in a hollow tree, or, more often, in a lair among the rocks. Although somewhat partial to the darkness of

night, he may occasionally be seen during the day, especially in winter, as he hibernates for only brief periods. The young are born in the spring and are usually two in number. In securing his food, this creature follows peculiar methods. Hemlocks, beeches and cotton-woods are his favorite trees and it is his custom to take one tree after another in a straight line through the forest. He begins to eat the bark of the tip-top branches first and systematically gnaws his way to the bottom, then climbs another and does likewise, leaving behind him naked limbs and trees stripped of bark and foliage alike.

The Indians in the past were accustomed to use his flesh for food, his skin for clothing and his quills for decoration of moccasins, hunting pouches, etc.

NORTHERN HARE or WHITE RABBIT

Lepus americanus virginianus.

This is one of the largest of the rabbit family. Adults being from eighteen to twenty inches and the more northern varieties up to twenty-four inches long and averaging from four to six pounds in weight. It is most commonly found in the northeastern part of the United States from northern Maine to North Carolina, along the Alleghany Range.

From the middle or last of February, until the coming of snow, their color is of a dark reddish brown, which usually changes in a short time to be pure white, or, in some cases, white with the patches of brown still remaining during the early part of the winter.

This change of color is their greatest protection, both from the hunter and from their various animal enemies, from the small

weasel to the fox, and also all of the larger varieties of the hawks and owls. They are usually quiet during the greater part of the day, sleeping in dense thickets, and at dusk start out for their food supply, which consists of fresh leaves, grass, roots and the tender bark from young trees. They do not seem to have the instinct of many other animals, like the squirrels, of storing away for future use a supply for the winter.

They are one of the most helpless of the animal family in having no means of defense and have to depend wholly on their fleetness of foot in getting away from the large number of their enemies.

Unlike the gray rabbit, these do not burrow and make a good comfortable nest in the ground, but may be found at home in dense swampy thickets on the border of heavy timber and under the cover of low-hanging evergreens.

They are never abundant in any locality now, where only a few years ago they were to be found common. They are shot by hunt-

ers for the markets, their flesh being considered as equal to most other kinds of wild game and their natural enemies are so numerous that it is almost impossible for any great increase in their numbers.

Their worst enemies are the foxes and owls, the latter hunting them at night when they are feeding, and the foxes while they are half asleep during the day. They breed early in the spring, having several litters during the season, and have from three to six young each time. The young are born with their eyes open and are covered with hair, being nursed by the mother for four or five weeks, when they are old enough to care for themselves. The hides of the rabbit and hare are used quite extensively in the manufacture of the cheaper grade of furs, having the lowest market value.

CONY, LITTLE CHIEF HARE or PIKA

Ochotona princeps.

This small animal, known as the "calling," "crying," or "piping" hare, because of the shrill whistle, which serves both as the ordinary speech of these gregarious little creatures, and with a slight variation, as their note of warning, is really not a typical hare at all, but has a family name peculiar to itself. It is found throughout the western mountain ranges from Alaska to northern California and lives up among the peaks, seldom being seen below timber line. At these high elevations it makes its home, either in a natural crevice or a burrow formed among or between the rocks, coming forth occasionally to sun itself on the sloping ledges, but usually preferring the darkness for its working-time.

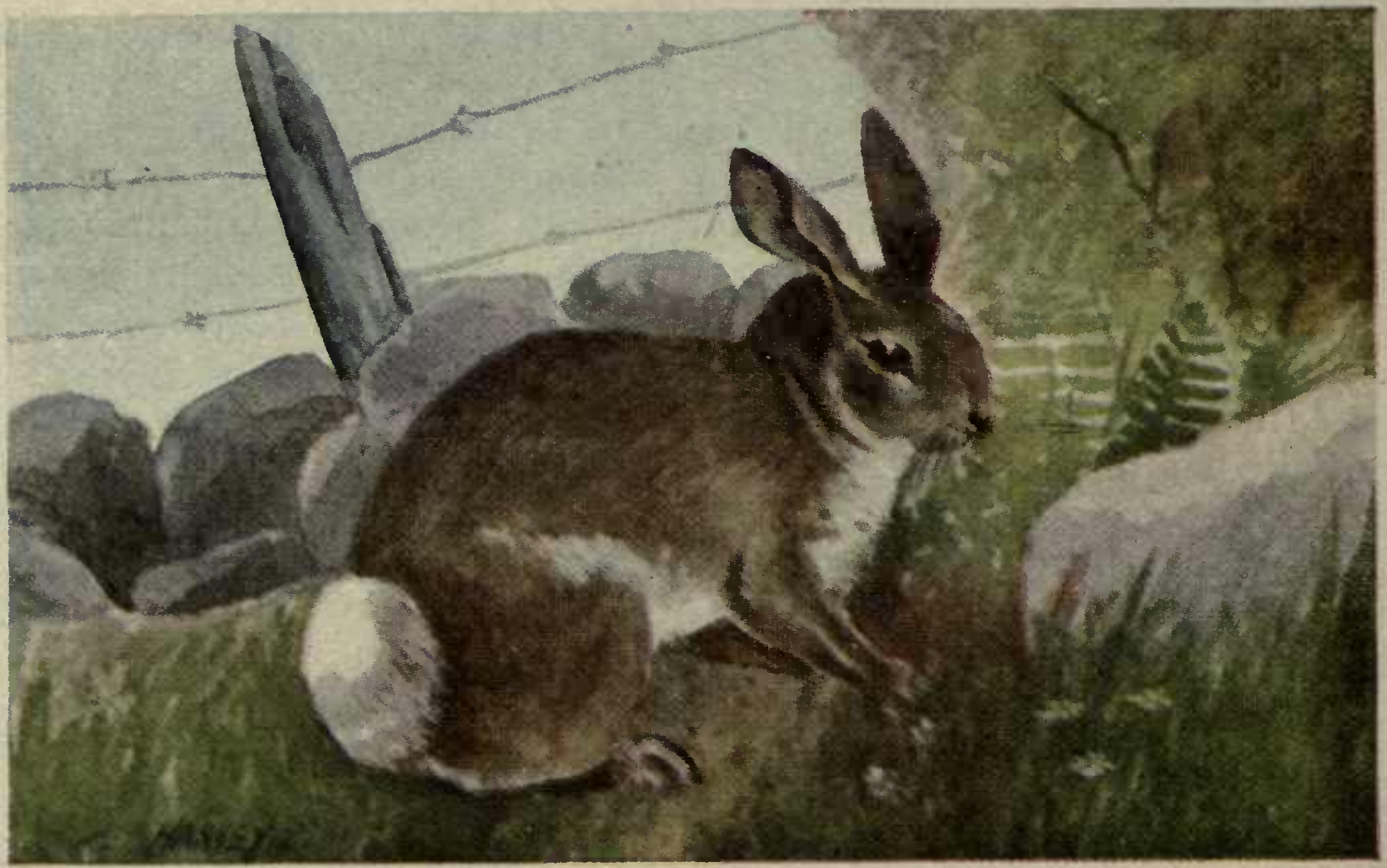
And, indeed, it must have to work hard to pick up a living from

the scanty mountain grass and plants, especially as it does not hibernate but lays up a large supply for the winter. To secure this food, it often travels long distances, for although short-legged, it is exceedingly quick of movement and little disposed to idleness or fatigue. In storing the provision, sometimes a miniature haystack is built up of the gathered grass, or, more providently, upon consideration of the many snowy days during which it must be buried alive, a part of the dried herbage, at least, is tucked away safely in the nesting place. When we remember, however, the meagre vegetation existing on the heights which the pika frequents and the constant drain on its vitality due to the benumbing cold, we are not surprised that in spite of all its activity and foresight, its body is always thin and the general appearance that of a half-famished creature.

At its best, it is a curious object, combining some characteristics of both the hare and the rat, and, perhaps more nearly resembling the guinea pig than either of them. While much smaller than

the hare, as it measures but seven inches, yet the similarity of the coloring might at first mislead an observer into supposing it was nothing more interesting, as its coat of grayish brown is the hare's own hue and designed for the same purpose of protection among the pika's gray rocks. A second glance would speedily detect, however, the shorter hind legs, the close-set rounded ears, with their conspicuous white edge, the absence of any external tail, all features which distinguish it unmistakably from the true hare.

In addition to the disguise afforded by its color, it has been provided with soft hairy pads for its tiny feet that it may make swift and sure progress over the slippery, and often icy, rocks, while the brightness of its bead-like eyes are a true indication of its alert and watchful disposition.



COTTONTAIL RABBIT

Lepus floridanus mallurus.

No animal in our country is better known, more hunted to-day as game, or more relished for food, than this rabbit, whose range extends from New England to Yucatan, with other common varieties further north and west. Were it not one of the most prolific of animals, extermination would long ago have been its fate, because of the value of its excellent flesh and the fair quality of its fur. Upon consideration, however, of its destructiveness and its rapidity of increase, which have made it such a pest in Australia, we can but regard the sport of its pursuit a legitimate diversion, and the resulting trophies an unfortunate necessity.

Nature, to be sure, has done her part in its protection by the gift of a coloring of a gray and reddish brown, harmonizing with

the soil so perfectly as to render its whereabouts inconspicuous. So true is this fact that the rabbit himself has learned to make use of it and often will not believe that he is the object of your attention until your hand is almost within reach of him, when forth he suddenly leaps, and nine times out of ten eludes that particular hand. His stubby legs are too short to make him much of a runner, so he will try to get away into some crevice in the rocks, or some burrow beneath the twisted roots of a tree, from which it is impossible to dig him out. Man is not his only foe, though, and in this case the weasel proves superior to human persistency, as its elasticity of movement allows it to penetrate any such hiding place, subterranean invasion being, indeed, one of its regular sources of food-supply. Besides dogs, the companions of men in their pursuit of him, foxes, mink, skunks and hawks, as well as the weasel, all are his enemies and at their enumeration we little wonder that he always appears to be on the watch and very quick to take the alarm.

The cottontail, whose name was suggested by the fluffy white under-surface of the up-turned tail, measures about seventeen inches in length and weighs, on the average, about two and a half or three pounds, although heavier specimens are often captured. His varied diet includes grasses, clover, berries and leaves from his wild haunts, garden vegetables, buds and twigs of young trees; we must do him the justice to add that he usually commits this last injury only when compelled to it by the hunger of winter.

The young are born blind and naked, in a nest or tunnel dug by the mother and lined with the softest grass and moss and padded with fur from her own body.

NORWAY or COMMON RAT

Mus norvegicus.

We can hardly believe that this creature who now inhabits all parts of the world where man lives was originally a native of western China. Thence for ages he has been making far journeys over land and sea and even to-day rarely does a ship weigh anchor from any port without giving involuntary accommodations to some of these detested passengers. Homely enough are they, with the dull and coarse grayish brown fur, thickly mixed with long projecting black hairs, and with the almost bare tail deeply marked with heavy scales. With the head and thick set body together measuring about ten inches and the tail about the same, they are big fellows and thus easily overcome their smaller and less objection-

able cousin, the black rat, who is doomed to extinction the moment they have invaded his haunts.

Cannibals that they are, they devour him if he does not beat a hasty retreat, but this cruelty is, after all, simply an economical method of getting him out of their way, for they give the same short shrift to disabled members of their own immediate families. They do not, however, lack the power of combining their forces against a common foe and the brown and black rats alike would muster under one standard against a human enemy just as the brown species unite to exterminate its next of kin.

Apparently unable and at least unwilling to live apart from civilized man, they make poorer return for their entertainment than does any other animal. Not only as stray individuals do they pilfer from his larder, gnaw into fragments his garments carelessly left within their reach, steal poultry and carry away eggs unbroken from his henhouse, defiantly rob him of his corn and grain,

but also in hordes they overrun his market places, invade his storehouses, and in the very center of human habitation live most at their ease and unmolested.

And what is the reward of patience that has endured the violence of this high-handed thief? Little, if any, good has he ever done, but at last upon his head rests a sentence that must forever cut short his depredations. Through all these years he has been a carrier of the death-dealing bubonic plague, which has scourged Asia most, but visited Europe and England with woeful disaster at the time of the Crusades, and ever since has had occasional terrible outbreaks, always attended with tremendous loss of life. To our shores this dreaded disease has seldom been brought, but because it has occurred at all the brown rat must pay the penalty. He is most crafty, and exceedingly prolific, since three litters of from eight to twelve each are produced yearly. Stringent and systematic measures should be used to exterminate them.


HARVEY

FIELD MOUSE

Microtus pennsylvanicus.

This tiny creature, whose long list of Latin-named species is out of all proportion to its size, is common from the Atlantic to the Pacific, confining its activities wholly to the outdoor world, with, perhaps, the one exception of harvested crops, and showing a preference for low or marshy meadow-land, although abundant everywhere throughout our fields. The coloring of the upper portion of the body corresponds closely with the soil, being a reddish brown, so the quick movement alone often gives us the first hint of its presence. Its chief distinguishing features are the plumpness of the sturdy little frame in contrast to the slender shape of many mice, the close-set rounded ears and the short tail, measuring about one-third of the entire length, which is about seven inches.

This member of the mouse-family is most disliked by farmers because of his fondness for grain, especially corn. A favorite habit of his is to make a permanent abode in a nest built in a stack of corn and there to live at ease until some winter day he has a rude awakening when the farmer's boy selects that particular shock for the cattle's fodder. Another offense of which he is guilty is eating the bark from trees and here again the farmer and he are at odds, as he has a decided partiality for young fruit trees, and that the barrenness of winter often forces him to this mischief is no fitting apology in the eyes of the farmer. For further food supply he must depend upon grasses, roots, seeds and small insects and, if near the salt marshes, where he delights to dwell, he may find tiny shellfish, well suited to his taste.

His enemies, like his names, seem out of all keeping with his apparent importance, but when we consider his destructive and prolific nature, we are compelled to regard the number of his foes as

a wise precaution against a too rapid increase of his kind. In addition to that well-trained one, the domestic cat, the list includes hawks and crows to pounce on him from above, owls to spy him out in the darkness, foxes always on the alert for him in their pursuit for larger game, and weasels able to slide into his smallest and safest retreat. His short legs and chubby body render escape by flight almost impossible and struggle as he may, the chances are usually against him. If living near the shore he may succeed better as he is able both to swim and to dive and never hesitates to take to the water. As a rule, though, these harmful and interesting little animals can hope to preserve themselves and their offspring only by being as inconspicuous as possible and thus avoiding notice very likely to prove unfavorable.

HOUSE MOUSE

Mus musculus.

Most of us are so well aware of the universal presence of this small creature that it will surprise us to learn that he is not a native of our country at all. Far off in southern Asia was his original abode and from there he has been the constant companion of man in wandering all over the face of the earth. To America he found his way only with the first white settlers, but no sooner were the cabins built than he was on hand to help take possession and ever since has been making himself the uninvited guest in every manner of habitation, in city or country, among rich and poor alike.

In the choice of a nesting-place he makes few requirements. To be sure it suits him better if the entrance into his chamber be no larger than necessary to admit his tiny form; he also has a par-

tiality for cast-off kitchen utensils, such as coffee pots, bottles, cans and the like, while the possibility of an old shoe, slipper or hat, fill his heart with joy. In all cases, however, but two stipulations are absolute essentials. Nor is the first of these two difficult to comply with, for Mr. Mouse, if most greedy, is also most omnivorous in its strict sense of eating everything that comes within his reach. Most householders annoyed by this unwelcome tenant are less acquainted with the second condition of his prolonged stay. He is quite as fond of water as of food and must have at least one good drink daily if he is to remain happy and contented, so would not take up permanent quarters where he is not able easily to satisfy his thirst.

Nothing less than the tremendous advantage of living right in the heart of a stack of corn, or high up among the dried clovers and seeds of a hay mow now will offset this consideration and induce him to depend upon some distant and inconvenient source for his

regular water supply. Wherever the nest may be, into it will come many of the tiniest babies, naked, pink, little shapes, apparently too frail to have the slightest breath of life in their almost perfectly transparent bodies.

A strong testimony to its natural cunning is found in the large number of devices designed to entrap it and its skill in avoiding all but the latest and most fascinating. The long tail, indeed, may prove a cause of misfortune by getting caught in some of the many snap-traps, but this does not necessarily mean capture since the smooth skin of this appendage may be shed, not without pain to be sure, but nevertheless allowing the heedless owner to make good his escape. As a pet he is entertaining, with his large ears, bead-like black eyes, exhibiting a playfulness and curiosity both amusing and interesting. They are objectionable as such on account of their strong odor when confined.

JUMPING MOUSE

Zapus hudsonius.

Although in many particulars closely resembling the common and other mice, this tiny rodent is classed in a family all his own, which, in turn, is divided into ten distinct species. These differ but slightly in coloring or habits and chiefly in range, so the meadow jumping mouse may be chosen as a representative type. The limits of his range are from Hudson Bay to North Carolina, but his kindred are found throughout North America, from Alaska to California in the West and from Labrador to Mexico in the East. As the name implies, the fields are a favorite resort with him, but he is almost as often found in the woods, swamps, or uplands, never being very common anywhere, but usually most numerous during the month of August. These mice, like most others, are prolific crea-

tures, having usually three litters a year and from three to five young each, but seem to be endowed with less keenness of wits for the protection of themselves, which may account for their scarcity.

If indeed fortunate enough to disturb one of them, we may be deceived, at first sight, into thinking our find nothing more important than a somewhat slender common mouse. His length is much the same, being about three inches, and his reddish brown color is not conspicuous, although there may be more white on the under-parts. He rarely gives the chance for a fair look at him, however, before off he darts through the air when we may catch a glimpse of the long tail, measuring almost twice the length of the body, and bearing at the end a small tuft of hairs. This tail is a most useful part of his equipment, as it helps him to keep his balance and to choose his direction. The first leap will carry him from eight to ten feet, no other animal of his size can cover as much space at one move, and this distance will be equalled in several

successive bounds until he may at last slow down to the space of about four feet, which may be called his usual walking gait. In the meantime, if spry enough, we may have discovered that the extremely long hind legs are the propelling force behind this wonderful jumping, although they seem hardly to touch the ground at all. We cannot hope to approach sufficiently near to observe the pouches on his tiny cheeks, but when told this last distinguishing feature we are quite ready to pronounce him much like the interesting kangaroo, both in appearance and manner of progress.

For food the jumping mouse depends upon grains, seeds and berries and lays by some provision for cold weather. This he seldom needs to use, however, as he has a cozy and softly-lined hole underground, where, curled into a warm round ball, he sleeps away most of the winter months.

GRAY SQUIRREL

Sciurus carolinensis.

The squirrel family is divided into three groups, the tree squirrels which make their homes in tree tops; rock squirrels, which live among the rocks, fences, tree roots, etc., and the ground squirrels, found in the prairie countries. Of the first of these groups, the gray squirrel is a typical representative, having an extensive range, average size and a common coloring. He is well known from southern Canada, throughout New England, south to Florida and Texas, and west to Minnesota and Kansas. In appearance he is one of the most graceful and handsome of the whole family, being shapely and well proportioned in form and of a soft clear gray color above and white below. His beautiful bushy tail measures about half his en-

tire length of eighteen or twenty inches and is a conspicuous adornment as he whisks in and out among bushes and trees.

As nests, these squirrels occupy hollow holes in trees, or build among the branches a framework of twigs, either dry or green ones gnawed off by their sharp teeth. The nest is covered and lined with leaves and moss and makes a soft resting-place for their young, usually from four to five in number, which are born each spring. They, like others of their kind, depend largely upon the summer's toil to furnish the winter's provisions and may hibernate for a short time, although they are often out every day, especially if enticed by the hope of securing food from some regular source.

I have seen few prettier proofs of animal confidence in man's protection than when, at the busiest hours of the day, in the very heart of the crowded city, these sprightly little fellows frisk undisturbed about you, as you walk through Boston Common, or in fact any large park, they will peer inquisitively at you from behind

some seat, as if begging for their accustomed treat and becoming so tame as to take a nut from one's hand. Possibly because of his natural enemies, such as the fox, hawks, mice, and even the roguish red squirrel, whose cleverness delights in stealing his sedate gray cousin's winter supply, the gray squirrel shows himself unusually grateful for the shelter and seclusion offered in our parks or near our homes, and rewards us very often by his friendly and sociable presence.

His gray covering is much admired because of its soft texture and thickness, and is employed to a considerable extent in the manufacture of fur goods, for which purpose the northern squirrels are superior. When we realize, however, the large number of skins required for even one garment, we may well refuse to rob our woods of even that much joyous and harmless life.

FOX SQUIRREL

Sciurus niger.

The fox squirrel, although somewhat rare throughout its range, is found from North Carolina and Virginia, north to central New York and west to the Mississippi Valley, where it is most numerous at present. It is the largest of the tree-dwelling group, having a stout thickset body, about one foot in length, and a handsome bushy tail fully as long. The general coloring is yellowish gray with more or less of a reddish tinge above and a lighter yellow shading almost to white below. It is, however, the most variable in color of any of our squirrels and may be found in many shades, from that just described to jet black, clear gray or pure white. The one distinguishing mark of this particular species is the pure white nose which

is peculiar to the southern fox squirrel alone of all members of the family.

In the homes and habits of these clever creatures are noted differences equal to those in their appearance. In the north they live in the hollows of trees, which they line with bark, soft grass or moss, or build nests of dried leaves on a framework of branches, leaving a small entrance on the side rather than on top that the rain may not find its way in so easily. In the south, they contrive graceful structures of the beautiful hanging Spanish moss whither they like to scurry away with any treasure they may have secured. This fact often furnishes the vigilant observer with a clue that he is in their vicinity, as they, like most squirrels, are very fond of the seeds of pine cones, and, in biting off the outer surface to reach the seeds, drop the scales about the nesting-place. The sight of the chips may betray them to friend and foe alike, for they are much hunted for both their flesh and their fur; the former is esteemed for

its excellent flavor and the latter has as high a value as that of any of their kind.

In the colder climate they store away rather more provisions than in the warmer localities, but they are everywhere careless in this respect when compared with the red or gray squirrels. They seem to trust to good fortune that there will be enough pleasant days even during winter for them to pick up a living and, as they are plucky little specimens of hardihood, they are usually right. When too cold a snap comes they must stay at home in their nest and try to forget their hunger in sleep until the next warm spell.

Because of their size and strength, they have less to fear from the hawks than have some of the others, but the wild cat, raccoon and fox are always on the watch for them.


HARDY

RED SQUIRREL

Sciurus hudsonicus gymnicus.

The red squirrel, or "chickaree," with its three species and fifteen sub-species, is found from Alaska to Arizona and is one of the most common of the squirrel family. It is also one of the smallest, its entire length being only twelve inches, of which the tail measures five. In form it is less graceful than some others as the legs appear to be scrawny in comparison with the body, nor is its coloring of reddish brown above and white beneath as attractive as that of the gray or the fox squirrels. During the winter months this brown becomes more reddish and the pure white is replaced by a grayish tint. In this new garb the little creature frolics on the very coldest days, thus proving that, whatever its inferiority in size, it is second to none of its kind in energy and endurance.

Few animals are more interesting to watch than is this small rodent, and he is also a sociable fellow, with an alert but fearless manner, often seeming to welcome a human companion in the woodland and usually ready to show himself off to advantage. He is always busy and while not enough concerned about property rights to respect even the winter supplies of a neighbor, to say nothing of robbing birds' nests, hunters' traps and farmers' corn bins, he still has to work hard for a living. He prefers two homes, one high up in a tree and here he does not scruple to occupy a deserted crow's or hawk's nest, and another underground. In these hiding places he stows away all sorts of goodies; pine cones, nuts, acorns and apples, to add to his winter enjoyment. The garnering of these keeps him running to and fro throughout the long summer days and until late fall we see him scurrying back and forth laying up his provisions. Almost every winter day he may be found in the hemlock trees, whose cones hold their seeds all winter, adding these

as tid-bits to his fare. No snow is so deep as to make him forget where he has put his treasures and this is all the more to be wondered at because, not content with his two homes, he has many other well-guarded nooks and will bury apples in one hole, tuck half a dozen pine cones in another, and wedge a few acorns into a third. As soon as the first buds begin to swell, the active little fellow finds a new delicacy in maple sap which he collects in a hollow cavity gnawed out by his teeth and drinks with keen relish. He is now safely through the winter and ready for another summer's fun and work.


HARVEY

FLYING SQUIRREL

Sciuropterus volans.

This peculiar and interesting member of the squirrel family is found from northern New York and southern New England to Georgia and west to Louisiana. Although one of the smallest, having a total length of but nine inches, of which the tail measures four, he is also one of the prettiest. His beautiful mole-like fur is ashy brown above and creamy white beneath and of a remarkably soft and silky texture, while his keen, bright eyes are very large in contrast to his tiny face, and the membranes, which aid him in his flight, when not in use, form a fringe of silvery whiteness through which peep the dainty paws.

The name "flying squirrel" is hardly a true title, as, in reality, the little creature cannot fly horizontally at all. A thin fold of skin connects his fore and hind legs. This is an extension of his sides,

and at its greatest width is about half as wide as the body on either side. With this as a parachute and with the assistance of his broad, flat tail, he does indeed make rapid and graceful progress through the air. His usual method of procedure is as follows: by jumps and scrambles he climbs to the topmost branch of some tree, then stretches his parachute to its farthest extent and sails downward thirty yards or more, when, just as we expect to see him touch the ground, he suddenly changes his course and, carried by his own momentum, veers upward at an angle of perhaps sixty degrees and alights safe and sound on another tree trunk, all ready to repeat the performance.

In common with all his family, he is active and frolicsome and we may regret that most of his antics are at night, thus escaping our notice, for they would surely repay careful watching. During the day he rolls himself up into a tiny round ball and sleeps soundly in his nest, which usually is a hollow in some tree, or possibly under

the eaves of some farm house, so he must work as well as play at night, if he is to find his food of acorns, nuts, buds, seeds, beetles and other insects. As he also spends most of the cold weather curled up in the same fashion, he does not need as large a winter supply as do his neighbors and consequently may not have as hard a task to get a living; but as he whisks in and out, up and down among the trees, he appears quite as busy as any of them. If taken when young these squirrels are easily tamed and become most affectionate pets, seeming almost to prefer the society of their keepers to that of their own kind. If allowed in the house, they will make use of the lace curtains and tapestries to run up and jump from, as they would the trees in the woods, to the delight of the children as well as the older ones.

CHIPMUNK or STRIPED SQUIRREL

Tamias striatus.

The chipmunk is one of the best known inhabitants of our woods, as it is found from southern Canada and New York to Georgia and Louisiana and is abundant and easily observable throughout this wide range. In length it is about an average squirrel, measuring some ten inches, but in form and coloring it is one of our prettiest, as the general hue of chestnut is distinctly marked by a black stripe down the middle of the back, a band of light buff bordered by black on each side, and a white line both above and below the eye. Another peculiarity of its own is the cheek-pouches, which are of unusual capacity for so small a creature, since they extend almost to the shoulders and thus enable their owner to make off with far more than he otherwise could.

The pouches are of first importance in collecting his winter supplies, for, although he hibernates most of the time from November to April, he always has enough and to spare for his late fall and early spring banquets. As to food materials he differs little from the rest of his kindred, except that he surely is less guilty than they are in robbing birds' nests, and more guilty in trespassing upon the farmers' crops, as he has a particular fondness for digging up newly planted corn. His only defense must be that the farmer owes him this return for the large number of larvæ of insects, which he consumes during his busy summer.

In the matter of dwelling, however, the little chipmunk surpasses all his kind in cleverness. A hole several feet deep is dug straight down into the earth, then a passageway is run out at right angles to this for three feet or more, after which it takes a turn upward and opens on the main chamber. From this chamber may lead off other ways of access to the surface and tunnels, where the winter

stores are often kept. All of this contrivance is, of course, done with an eye to protection and the skill with which the crafty builder conceals the entrance, avoids making any apparent path to his home and either carries away in his pouches or tramples down with his tiny feet the large amount of dirt excavated is among the highest testimonials to animal intelligence. So successful is he that the weasel alone of all his foes occasionally finds its way into the burrow and kills the inmate by sucking its blood.

Chipmunks are very sociable neighbors, delighting to chat together in time of peace and giving quick warning to one another when danger is approaching. The latter is done by peculiar chirrup-alarms which are passed along from one to another until the whole community is on guard.

PRAIRIE DOG or MARMOT

Cynomys ludovicianus.

Extending for miles along the plains east of the Rockies and also found to the west in Utah and Colorado are the thickly populated villages of these odd creatures. Each settlement forms a unit in itself under the guardianship of some one wise old dog, whose short sharp yelp of warning is responsible for the otherwise inappropriate name. He has general oversight over the hundreds of inhabitants, whose fifteen or sixteen inches in length, including the three-inch tail, might easily escape notice by their close resemblance in color to the reddish brown soil, were it not for their great numbers in certain localities, and standing so conspicuous upon the mounds of earth at the opening of their burrows.

Peculiarly active specimens of the burrowing order and quite

unlike their eastern relative, the woodchuck, little time do they waste sleeping away in their holes, but are up bright and early, hurrying away to their favorite feeding places, transacting the apparently intensely important business of the town, paying short sociable calls on their neighbors and when tired of all this bustling to and fro coming back to rest on the mounds before their own doors, but still keeping a watchful eye on the doings of their small world.

These curious funnel-shaped mounds, about a foot high and three or four feet in diameter at the base, are really the entrances to their underground homes. He much dislikes water, being one of the few creatures able to exist without drinking, and so carefully presses the earth dug out by his excavations into this shape with the opening to the passage beneath, in the center, that no rain may enter his dwelling.

The burrow itself slopes downward at an angle of forty-five degrees for twelve or fifteen feet, then there is the horizontal

runway for some eight or ten feet more, and from this lead off tunnels at a somewhat higher level to the rooms or nests, of which there are often more than one. Into these retreats the busiest community will all scamper with characteristic hurry at the signal of danger, leaving the streets deserted, for although impatient of confinement, they are the most wary of animals.

Of their former natural enemies, the ferret and the rattlesnake, from both of whom their deepest and longest tunnels afford not the slightest protection, are about the only ones who survive in sufficient numbers to do them much harm. Because of their consequent increase and the immense quantities of grass which they consume, they are becoming a decided nuisance to many of the western cattle owners.


HANCY
14

WOODCHUCK or GROUND HOG

Arctomys monax.

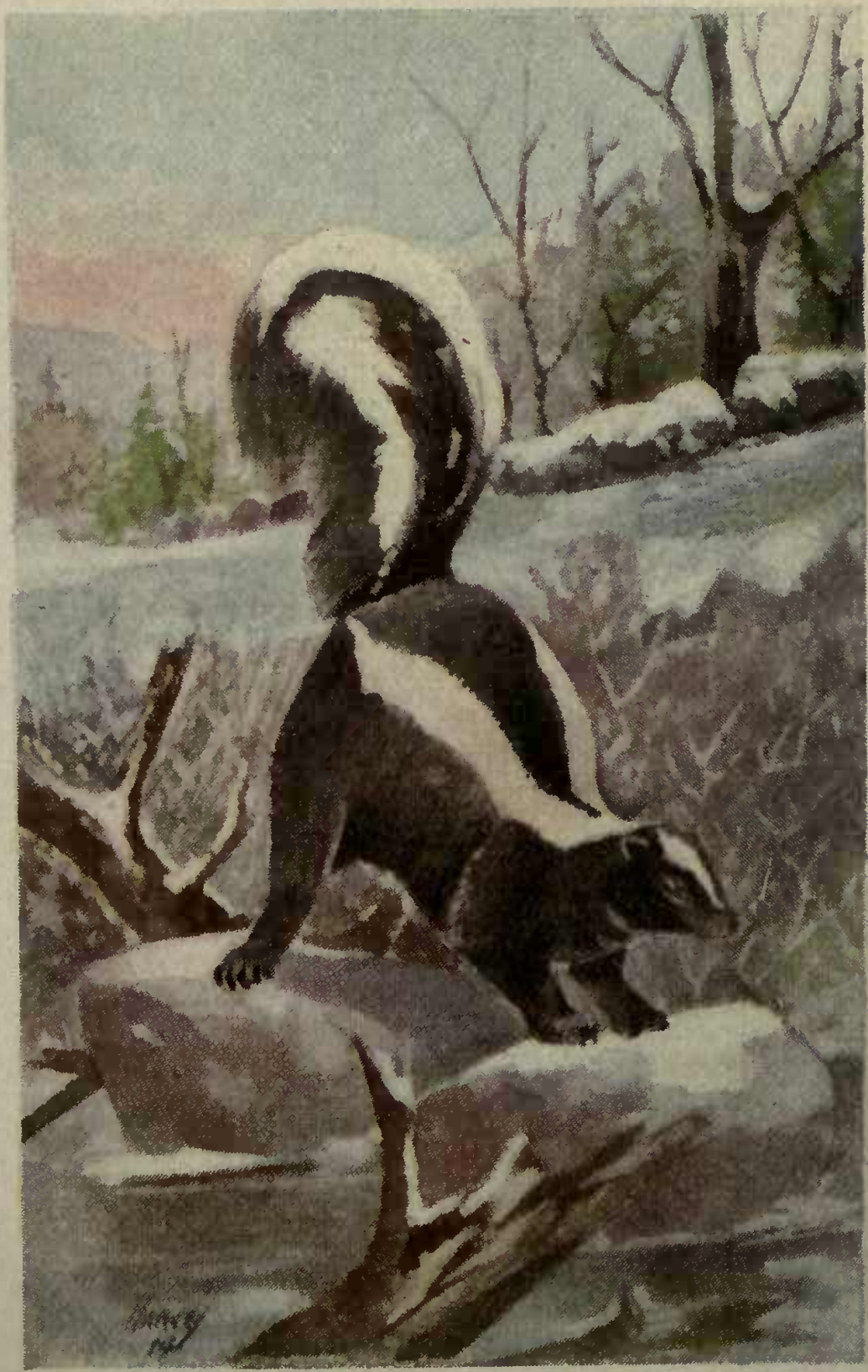
This creature, known to every farmer's boy from New England to Georgia and west to Kansas and North Dakota, belongs to an interesting group called marmots, who are near kin to the squirrels but of heavier build, being the largest of the family and measuring about twenty-four inches in length, with the short tail of about four inches and with the burrowing powers more developed. The woodchuck's short body, stocky form, short legs and flat head are typical of the whole group, as is also his coarse, stiff covering of a brownish gray outer hair, which, when plucked, leaves a thick fine fur that is used in the fur trade to quite an extent. He himself, in spite of the partiality implied by his name, frequents almost equally cultivated fields, pasture, swamp and woodland. Perhaps most often will

his favorite choice for a home be some sandy hillside within easy reach of the water, for he is a thirsty fellow, or in some smooth green meadow, where he has but to pop out of his door to find the luscious grass and fragrant clover upon which he delights to feed.

As a rule both lazy and slow are most of his kind, yet in the digging of his burrow the woodchuck shows energy and haste never again to be equalled or even approached by any efforts of his, unless, unfortunately, he may some day be compelled to use like activity in escaping from an enemy. As if his very existence depended upon the prompt completion of this hole, does he tunnel away, first downward at a slight incline for three or four feet, then a long level passage, to end at last in an upward turn leading into a large round room. The length of the entire opening may be twenty or thirty feet, nor is he satisfied until he has dug out several entrances to his abode, but with the completion of these all his life's work and worries for the year are over. Little does he concern himself

about the four or five little ones which arrive each spring and after only a few weeks are pushed out of the nest as a hint that they are now to shift for themselves, but who often fall an easy prey to their indifferent parents' own arch foe, the wily fox.

The burrow once done, the "ground hog" proves himself true to his second title by henceforth making it his sole care to eat all summer long with occasional short excursions to a nearby orchard, or possibly garden, to vary his diet. Sometimes, when surprised or when feeding, he will assume the quick upright posture so characteristic of the squirrels, but for the most part he is awkward and clumsy in both movements and gait. The height of his ambition now is to see how much fat he can grow, to last him while he sleeps away the cold winter days in his burrow.



SKUNK or POLECAT

Mephitis mephitica.

This animal, which is so well known because of its offensive but effective means of defense, is found throughout the United States and Mexico, but is most common in the northern part of this range. In size and somewhat in appearance it resembles a cat, being about eighteen inches from the nose to the root of the bushy tail, while the latter itself is fourteen or fifteen inches long. The exact color and markings of the fur vary considerably but the general effect is much the same; bands or stripes of white on a background of dark brown or jet black, making a conspicuous and distinguishing combination.

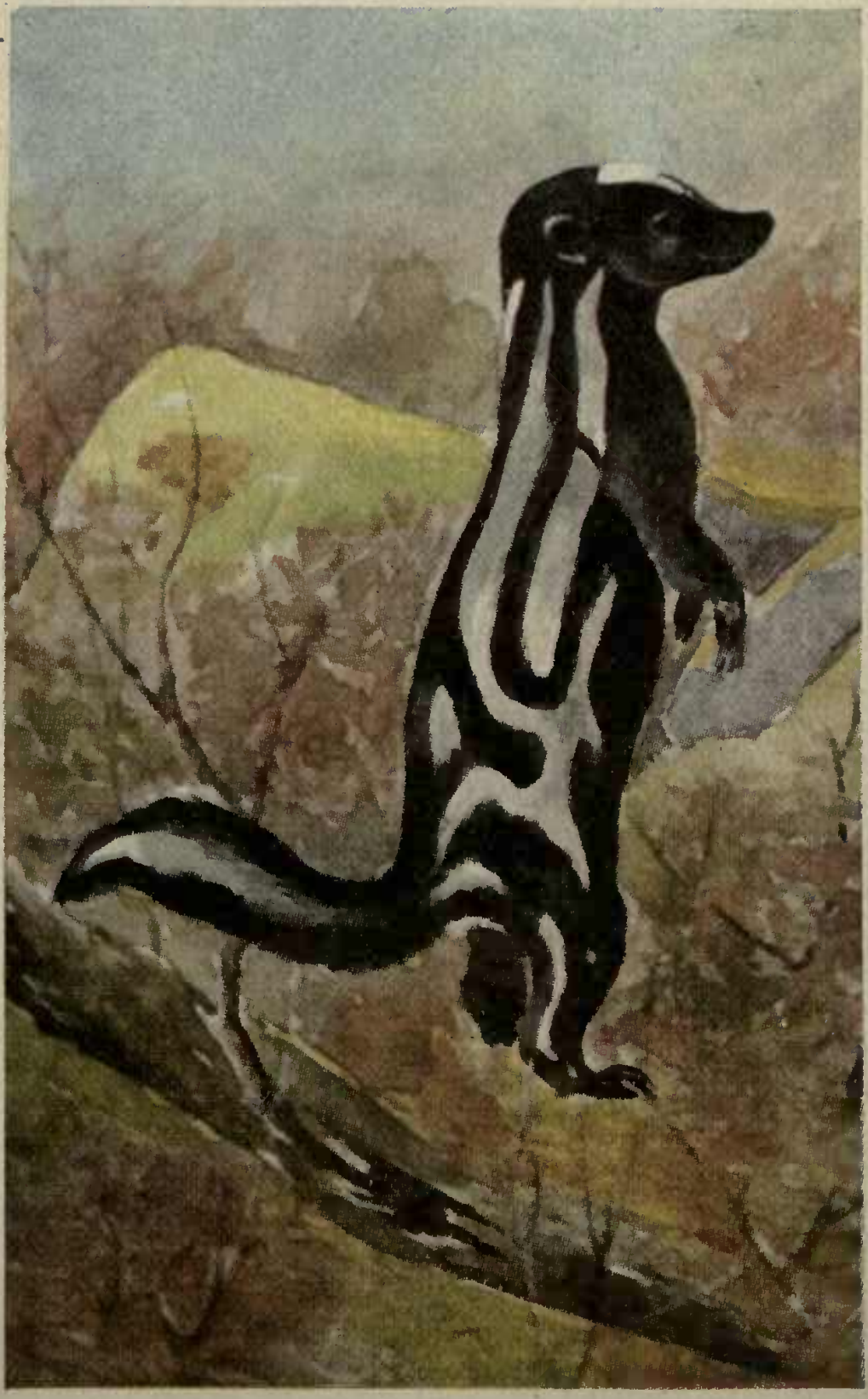
The skunk lives in burrows dug in the ground by its strong claws and, while a favorite sport may be a thieving expedition at night to a near-by poultry yard, its principal food is obtained in a

manner far more helpful to man. The small creature is, at most times, an omnivorous insect eater and, with his family of from six to ten each season, consumes immense quantities of beetles, grasshoppers and the like; he is also very fond of mice and other small field animals.

The secretion, which has brought the skunk into such disfavor, is contained in two glands situated at the base of the tail and may be retained or expelled at will. On the approach of a foe the tail is raised to a perpendicular position, the back is turned toward the enemy and the ill-scented fluid ejected, sometimes to a distance of from twelve to eighteen feet. The odor is most penetrating as well as enduring and no other animal seems inclined to prove his valor by a contest with so well-armed an adversary unless forced or surprised into doing so. Some authorities tell us that this liquid is of medicinal value in the treatment of asthmatic ailments; as they also add, however, that its continued use causes the patient to emit its

own vile smell, we can hardly predict a wide popularity for this remedy.

Since the beaver, marten, mink and otter have become more rare, the heavy, lustrous fur of the skunk has been extensively used in the manufacture of fur neckpieces, muffs, garments, etc. This thick covering is a very necessary protection to the animal itself, as he spends the greater part of the cold weather in the open. It is, to be sure, his custom to hibernate in some burrow in the deep woods for a short time each year. Here, two or three families may sleep away the very coldest months, all together in one hole; but early in February they are astir and again busy at their task of finding a living.



SPOTTED SKUNK

Spilogale phenax.

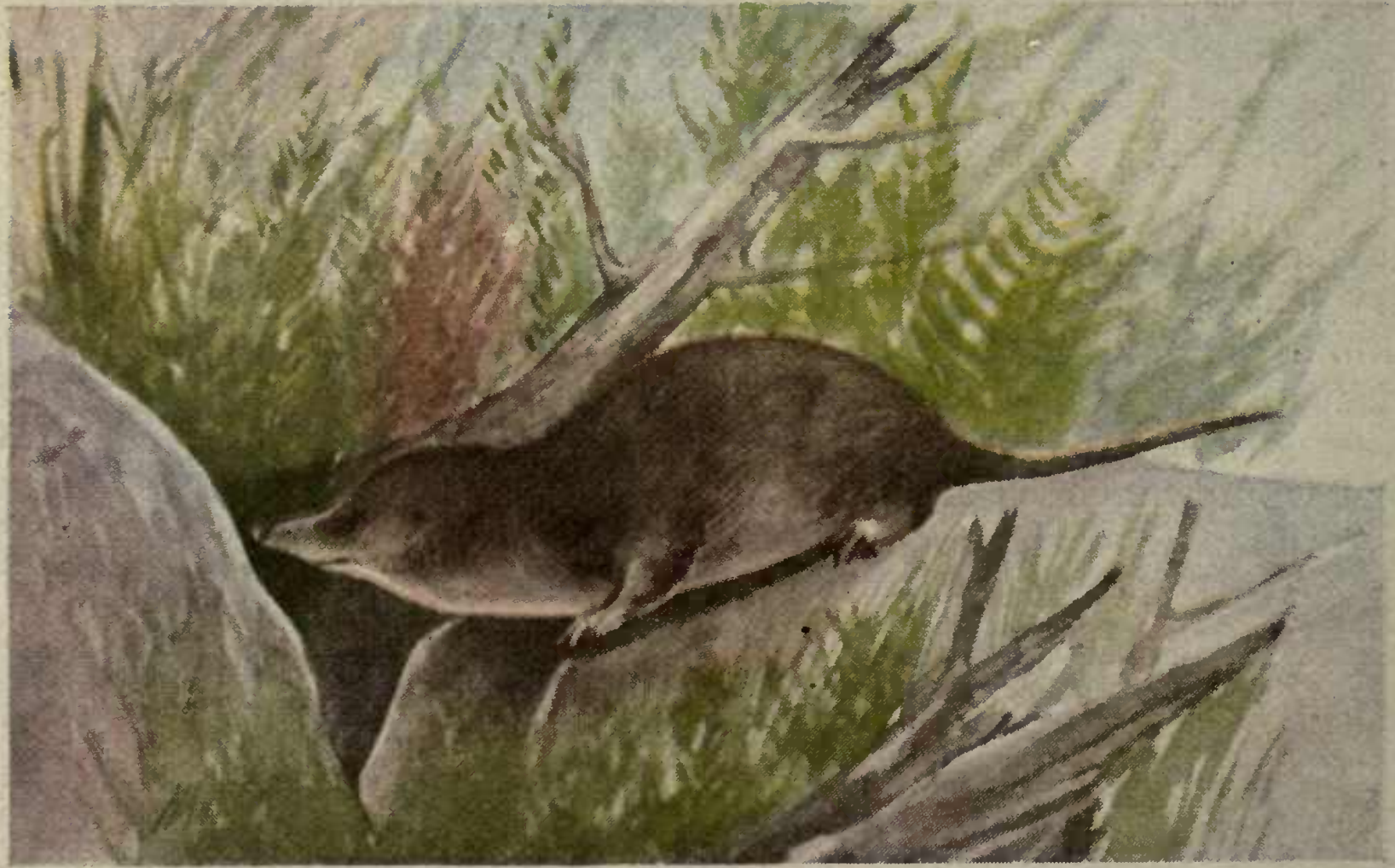
The spotted skunk is of more southern range than is the common variety, being found from Kansas to Mexico, and on the Pacific coast, north to Washington and west as far as Utah. Within these limits even the sight of him is a bit of rare good fortune for he is almost wholly a creature of the night, coming out after dark to catch the mice at their play or to surprise some drowsy little bird. He also may pay a quiet visit undetected at these hours to some neighboring henhouse, but then will disturb nothing more than a few eggs which the farmer surely owes him for all the insects, beetles, grasshoppers, rats and mice he destroys. Once in awhile his usefulness is duly appreciated, and by lure of tempting dainties, he is induced to take up his abode under or near a dwelling for the express purpose of rid-

ding it of these last two pests. Then, although he is provided with the formidable weapon of defense peculiar to his kind, he becomes very tame and proves himself a true ally of man.

A sleek and beautiful creature is he, smaller in length than the northern skunk, but of more slender and shapely form, and of far more graceful movements. His fur, also softer and thicker, is strikingly marked with alternate bands of black and white, running for the most part lengthwise of the body, and always handsome in their pattern, although varying much in the dozen or more different species.

Nimble and quick at climbing, he does not need to confine his selection of a dwelling to a burrow either dug by himself or made over to him, whether voluntarily or otherwise, by the previous tenant. In some localities to be sure, as in the lowlands beside a river or along the coast, this is just the best possible sort of a home and he has no scruples about appropriating to his own use any he may be

lucky enough to secure. On the open plains where there is not a wide choice of shelter he may conclude that it is worth his while to excavate a hole for himself beneath a concealing cactus or some other of the few large plants. Once in the wooded country, however, he takes no such pains, since hollow stumps and logs are always to be had for the mere finding, and these when comfortably lined with dry leaves, make the coziest beds. But most of all do the spotted skunks abound where there are plenty of rocky hiding places, and best of all do they like to make their dens down among the crevices where they scramble in and out with an ease and freedom of motion that would much surprise those whose acquaintance with their family is limited to their more bulky and clumsy cousins.



MOLE or SHREW

Scalops aquaticus.

Although the common mole exists only in the eastern part of our country from southern Canada to Florida, yet allied species of such close resemblance are found further north and west that his habits should be well known everywhere. Few creatures, indeed, are more interesting and few are also more misunderstood or less rewarded than is the steady little worker underground. Nature has shown a proper economy in withholding from him an external ear, which would prove but a hindrance to his progress, while his eyesight is so deficient as to require no more light than the dimness of his dark recesses. All his ambitions and powers are directed toward one single and most important end; namely, ridding the top soil of the innumerable pests, worms, insects and their larvæ that do

such incalculable damage to every crop and against which our boasted human wisdom can contrive no defense.

He will die of starvation rather than live on a vegetable diet and his appetite for worms is so voracious that his death is only a question of hours when deprived of them. Valuable, therefore, for both his sake and our own, is a knowledge of the real purpose of the mole, whose study also reveals a striking example of the fitness with which many an animal is designed for an appointed task. His six-inch body possesses a cylindrical form which allows free passage through any opening large enough for the head and shoulders. Then there is the remarkable adaptation of the short gray fur, whose velvety smoothness and straight erectness of direction aid his convenience and preserve his cleanliness by readily shedding the dirt with which he comes in contact. Even more noteworthy are his instruments for digging. The snout-shaped head ends in a sharp nose which projects half an inch beyond the mouth and is equipped with

a hard, flat point to be used exactly like a drill in boring his way into the earth. Next the short but powerful fore limbs set in motion the broad flat feet, perhaps the most interesting feature of all. Curiously like hands do they look, the palms always turned upward, ready for work at shortest notice, and armed with five big claws, marvelously quick at both chiseling and shoveling the soft sandy surface in which their owner delights to tunnel.

In one variety numerous in the eastern United States and found especially in low swampy localities, the useful nose is adorned with a peculiar tip, having some eighteen rays projecting from a common center and giving the species the appropriate name of "star-nosed mole" (*condylura cristata*). The fur of these different moles, although so very small, is used quite extensively in the linings of the most expensive garments.

LITTLE BROWN BAT

Myotis lucifugus.

This representative of the only order among mammals endowed with the power of true flight is common everywhere in North America, east of the Rockies. Weird creatures of the twilight are they, spending the bright hours of sunshine hanging head downward and clinging with sharp curved claws to the roof of some secluded cave, the trunk of a thickly foliaged tree, or the rafters of an old barn or garret. At the approach of darkness they awake and begin their airy flitting to and fro in the quest for all the tiny insectivora upon which they feed.

So rapid and noiseless is their flight that in the uncertain light and shadow they invariably startle us and give the impression of being uncanny wanderers from some spirit world. Almost as thin

as gossamer is the membrane which serves them instead of wings, and except by examination we could hardly believe it consists of two layers, one stretched over the fore limbs and a second extending from the sides of the body and hind legs. Unreal for an animal appear the long-fingered hands which support their framework, spreading it at their pleasure and folding it down about the body like a garment during their daytime naps.

So apparently supernatural is the ability to avoid all obstacles in their swift darting motion that the naturalist has suspected them of possessing some sort of a sixth sense. Finally, for the purpose of study, one unfortunate specimen was totally deprived of its vision, but the result was not as disastrous as might have been expected, as after a short time, it easily resumed its quick and safe course. By similar experiments it has been proved that this wonderfully discriminating choice of direction is due, in a large measure, to peculiarly sensitive nerves in the delicate membranes, as well as in the

unusual structure of the ear and perhaps in the nose. By the thoughtful mind this remarkable gift will at once be compared to the singular faculty by which a blind person so often and so ably "feels his way."

As suggested by the name, the little brown bat is one of the smallest of the family, measuring less than three and one-half inches long. Common, however, in the Middle States and found both north and south, is a cousin of darker shade, who is more than an inch longer, and an expanse of wing of more than a foot. This second species, the "large brown," or Carolina bat (*Vespertilio fuscus*) is interesting not alone because it usually appears only after twilight is deepening into night, but also because it may sometimes be seen in winter, when other bats have taken their departure for warmer climates.


Harney

VIRGINIA OPOSSUM

Didelphis virginiana.

Adult specimens of this peculiar animal vary considerably in size, measuring in length from twenty-six to thirty-six inches including the tail, which is about three-quarters the length of the body. The color is grayish white, with the legs and feet more brown than gray.

They usually nest in a hollow of some decayed tree, or in a hole dug under the roots of a tree or stone, which they line with leaves and moss, and in which their young are born, from six to ten in number, and at that time are less than one inch in length.

For two or three weeks the young are blind and remain quiet. They do not remain in the nest as do most other animals, but are placed by the mother in a sac or pouch, where they remain and nurse

for about five weeks. During this time they have grown rapidly, their eyes have opened, and they are able to begin to care for themselves, somewhat. They return to their home before daylight for rest and sleep in their mother's pouch; this they do for several months.

They spend the days in some secluded place, if pleasant, where they will be in the sun, or if stormy in some sheltered place protected from the weather.

At night they come out for their foraging for their necessary food, which consists of a large variety, both vegetable and animal. They are especially fond of the fruit of the persimmon tree, many forms of insect life and small rodents, also the young and the eggs of birds.

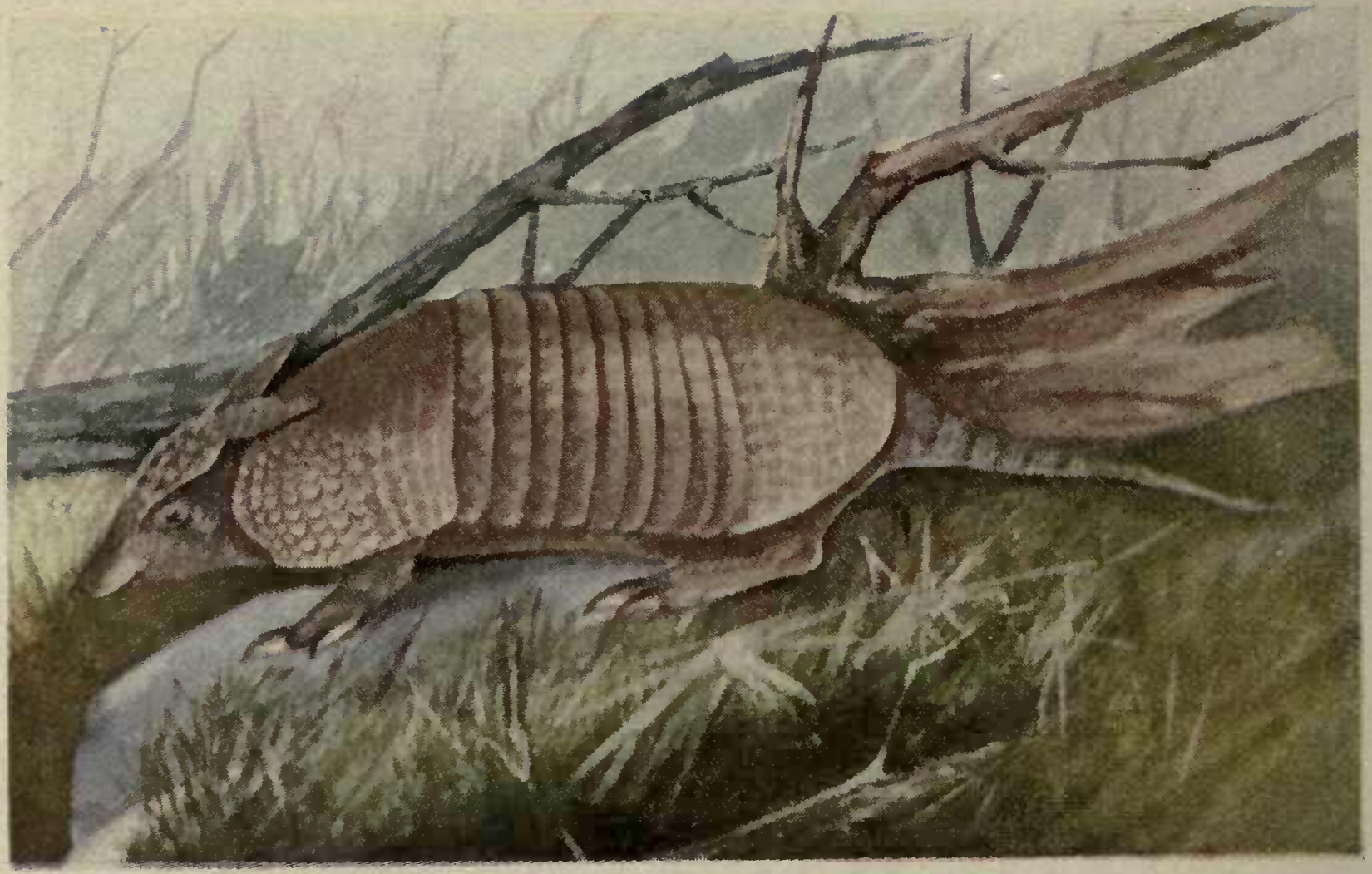
The opossums are great climbers and are perfectly at home among the tree tops. Their front feet are provided with five sharp claws and on the hind feet the fifth toe is similar to the thumb of a

person's hand and they make use of it grasping a limb as one would with the hand. The tail is also prehensile, so that they use it in climbing or hanging from a limb in reaching for fruit, or for a limb below them.

If slightly wounded or made captive in any way they have a habit of feigning death so successfully as to deceive any one, but if left alone for a moment they quickly come to life and are up and off as lively as ever.

When camping in the south, the opossum will often get into the box of provisions and get caught in that way. Their flesh is very palatable and is considered a luxury by the negroes and by many hunters.

They dislike the cold weather and at that time are rarely to be found, except in warm days of sunshine, when they will venture forth in quest of food and possibly for a warmer location.



ARMADILLO

Tatu novemcinctum.

This single representative of a well-known South American family is found in our country on the dry plains of Texas and Arizona where its range extends south beyond our borders. Like the porcupine, it furnishes a noteworthy illustration of Nature's protective methods. The body is completely encased in a coat of armored mail, presenting an almost invulnerable surface to an enemy. In our species this hard, bony shield comprises three distinct portions; a solid covering over the shoulders, into which the head and fore feet may be drawn, a second similar one over the hind quarters, which likewise protects the hind feet; between and connected with these two, as well as with one another, are parallel rows of bony scales, running across the body. The number of these bands is

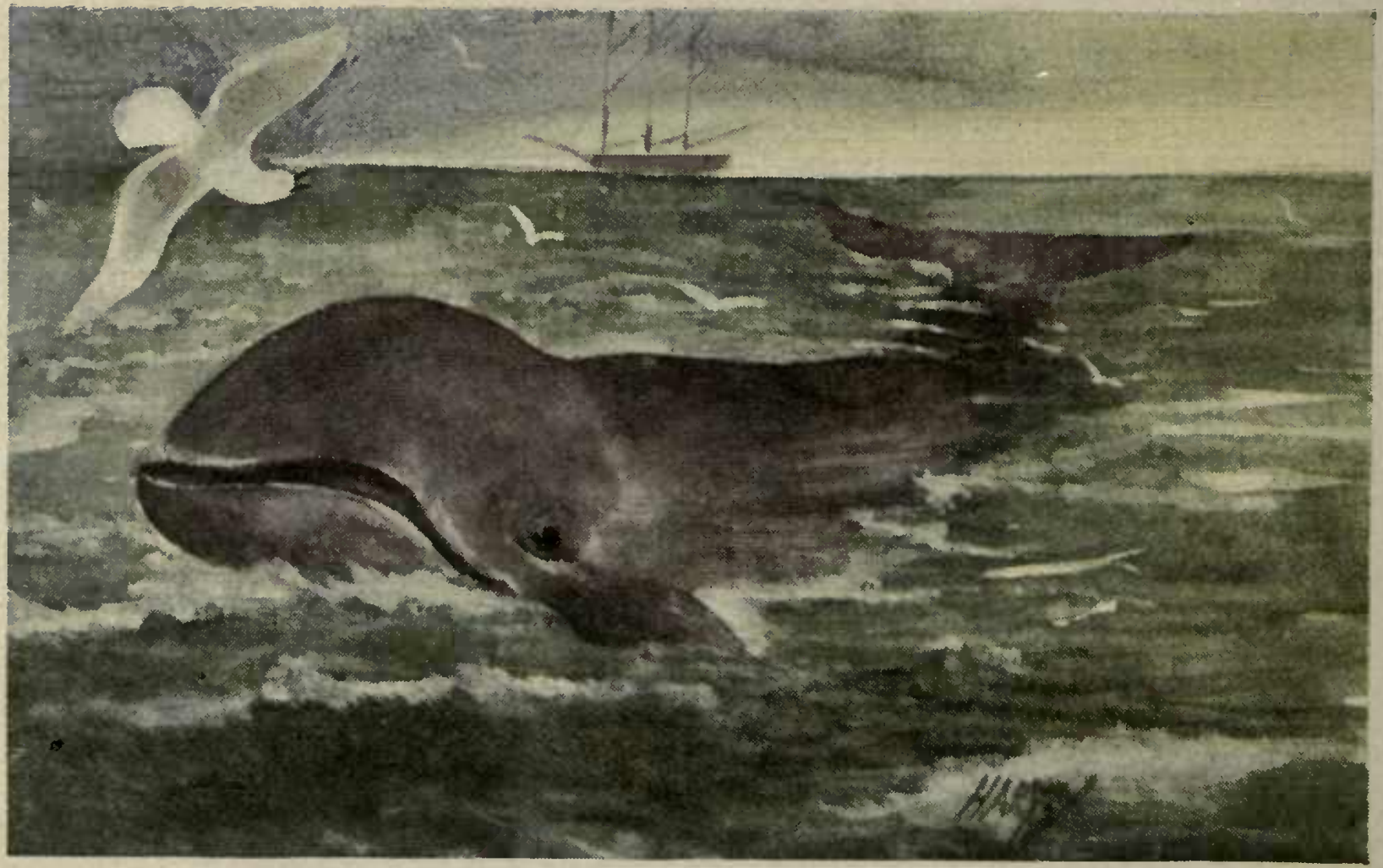
denoted by the Latin *"novem cinctum,"* meaning "nine banded," other varieties being known as three banded, six banded, etc., in the Latin equivalents. There is, to be sure, one of the family whose covering is in three solid plates, but the banded members have the advantage of flexibility, being able to roll themselves up into a well-nigh impenetrable shell in order to escape an attack.

The color of this odd but wonderfully equipped creature is a brownish black above and yellowish white on the under-parts. The total length is some thirty inches, of which the tail, also surrounded with horny rings, measures about fourteen.

In habits as well as appearance this animal affords many interesting features. Its home is a burrow in the sandy soil, which, by means of the powerful claws, can be excavated with astonishing rapidity. The habitations are often situated near ant-mounds to allow easy access to one of the staple articles of food, but it is not at all exacting in the choice of its diet and seems to relish equally vege-

table matter, birds' eggs and young lizards, mice and snakes, while regarding as a particular delicacy the carrion of some unfortunate beast. This variety possesses more virtue than the description might imply as it produces a quality of flesh so excellent as to cause the chief motive for hunting the armadillo.

This is another of the large class of animals who prefer darkness to light for their travels abroad and, when we consider the wild creatures of the tropics who are its natural enemies, we wonder little at this manifestation of caution. In addition to the defense of its covering and the swiftness with which it can excavate a place of retreat from its pursuer, it is further endowed with a very acute sense of hearing and with a rate of speed, for a short distance at least, out of all keeping with its bulky and weighty frame.



RIGHT WHALE

Balaena glacialis.

This huge inhabitant of the North Atlantic, who has an average length of fifty feet and a girth of thirty or forty, so little resembles any other mammal that it was formerly classed with the fish. Its study by naturalists, however, has shown that the structure of its body and the dependence of its young upon the mother for life and food prove beyond doubt that it is of true mammal type.

Unquestionable as this is, Nature has done her best to fit this curious creature for existence in the elements supposedly suited to fish alone. She has given him a fishlike shape to enable him to make the best possible speed through the water, she has taken away any hairy covering that might hinder his progress and bestowed instead a thick layer of fat just beneath the skin to protect him from the

freezing Arctic cold, while the uselessness of legs has been avoided by changing the fore limbs into paddles and enclosing the hind ones in the body, where a rudimentary form of them still exists. Only one condition of life escapes her skill; the whale can breathe nothing but air and must rise to the surface to get it. Even here she has modified the matter by making it possible for one long breath of one to two minutes to last him during a ten to twenty minutes' stay under water, nor did she forget to adapt his tail peculiarly to this difficulty by a horizontal shape, differing from that of his fish neighbors, but just what he needs for the quick upward stroke when he must go to "blow." In this connection it should be said that the "spouting" at these times is due to the rapid condensation of the warm vapor of the breath when it strikes the chill atmosphere, exactly as moisture collects on a window pane against which we breathe, and had nothing to do with any water taken in by the whale with his food.

The hundreds of gallons that do find their way into his ample mouth, where the jaws are sixteen feet long, seven wide, and ten high, are readily disposed of by the great whalebone sieve. Most interesting is the half ton or more of this huge drain, composed of perhaps three hundred black blades, hanging down from the roof of his mouth on each side, with the lower edges frayed into silky, but tough, brushes, all so flexible that it folds back when the mighty jaws are shut. But, gliding along with them wide open, does this monster scoop in the smallest sea food, which is the only size his gullet of two inches in diameter can swallow, and not until he has his cavernous mouth full, does he force out the water through his effective sieve and retain the prey to be consumed at his leisure.


HARVEY

WALRUS

Odobenus rosmarus.

There are few more ungainly beasts than these strange inhabitants of the Arctic waters. They usually travel in herds and, as a single male measures ten or twelve feet in length and often weighs a ton, we may readily understand why a group of them has been called "one moving mass of heaviness." Each walrus alone presents a well-nigh uncanny appearance; first, there is the shapeless bulk of the body and the rolling, lumbering gait, due, in part, to the enormous size of the creature, but still more to his means of locomotion, as the fore limbs are free only from the elbow and the hind ones are enclosed in the body almost to the heels, while the flippers, which must do the service of feet, have broad, flat, webbed surfaces, little

fitted to produce speed or grace. The next most prominent feature is the protuberant muzzle, large enough to accommodate the two big tusks, which hang down from the upper jaw and measure about one foot in length although they are often longer, and have been known to weigh ten pounds each; the small eye and the absence of an external ear are other interesting characteristics of this family.

The food of this huge walrus seems inappropriate, as he lives on mollusks and fish dug from the mud with his tusks; also seaweed and a number of aquatic plants. Among themselves they are peaceful and almost affectionate creatures, as is shown by their behavior when they desire to make an expedition on land. Each beast, as soon as he has touched shore, stretches himself for a comfortable rest, only to be butted by his nearest neighbor as a gentle hint to move on and make way for the second comer. This is repeated again and again until the whole herd of perhaps several thousand have found room. The entire proceeding is taken as a mat-

ter of course and no remonstrance is offered at the constant interruption of their repose.

Naturally disposed to quiet, they seldom begin an attack against an enemy. On the defensive, however, they prove a dangerous foe, since the whole herd takes up the quarrel of any member and, with the indescribable bellowing peculiar to them, rushes upon the adversary. Here, again, the tusks are useful, this time as their weapon, and with it they are a match for even the polar bear.

The walrus has long furnished the Esquimaux with food, fuel and light, but is now being hunted by far more systematic methods. The hide, oil and ivory all have a sufficiently high commercial value to tempt men to undergo the risks incurred in the pursuit of this animal and, as a consequence, its numbers are rapidly diminishing.

SEA LION or HAIR SEAL

Zalophus californianus.

The sea lions, also known as "eared" seals, because, unlike the true seals and the walrus, they have clearly defined external ears, are divided into two classes: fur-seals, famous for their covering, and hair seals, which lack the thick underfur that makes the former so valuable, but have some commercial importance because of their hides and oil. Both classes have the same characteristics and the Californian one, while belonging to the second, is a representative type. His native haunts are off the coast of California, among the Farallone Islands, and the Cliff House rocks, but he is not infrequently seen in captivity, being an interesting attraction at Zoological Gardens, circuses and other animal exhibitions. They are more easily trained than might be supposed from their clumsy appearance

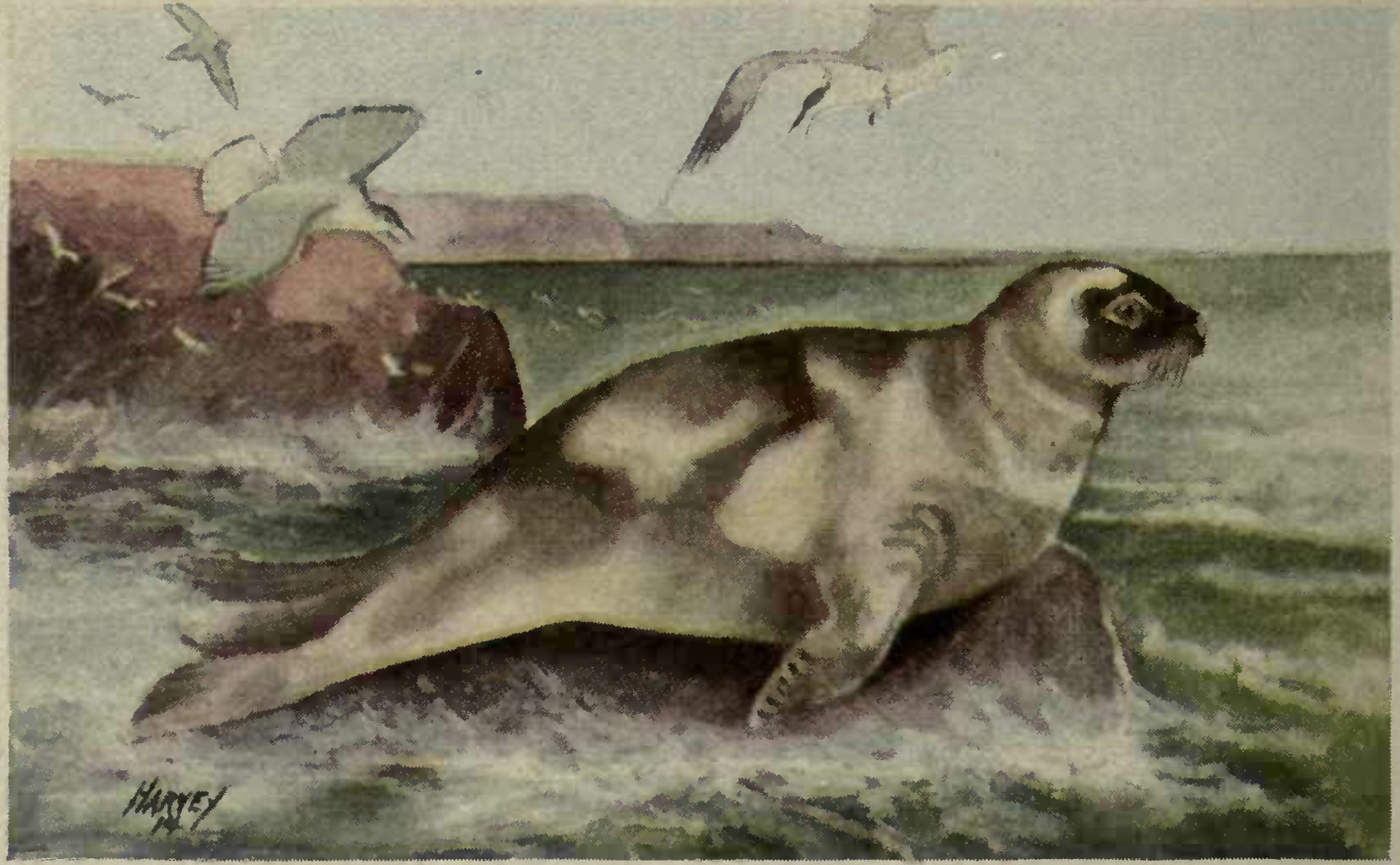
and they are clever at understanding a trick and willing to perform it. It is surely curious to see these ungainly beasts balancing colored balls or lighted torches on their pointed snouts and rapidly tossing them from one to another, seldom missing the catch. They are also active in climbing the rocks and cliffs and their hind-flippers are so far free as to allow them to walk after their own fashion.

The coloring of the sea-lion is a chestnut brown, which varies slightly with change of season or age, being darkest in summer and on the younger lions. The head is distinguished by the prominent curve of the crown and the well-defined slope above the eye, giving the dog or lion-like profile, from which comes the name. The males are much larger than the females, weighing from four to five hundred pounds, and measuring seven feet or more in length, while the female may be from one to two feet shorter and weighs less by one or even two hundred pounds.

The amount of food consumed is enormous. They have been

accused of feasting on the valuable salmon of the western coast but systematic investigation has proven this report to be wholly false and they are quite content with squids, crabs, shellfish and sea fowl. For some undiscovered reason, they have a fondness for round pebbles, of which they swallow large quantities during their lifetime.

A noteworthy peculiarity of the sea-lion is his bark, which is short and sharp, sometimes resembling a howl, but never a growl or roar like that of some of the other eared-seals. At the breeding season this species, like others, repair to their breeding places or "rookeries," where the young are born, after which the polygamous males select stations and assemble their harems. There is constant fighting among them to prevent encroachment on their territory.


HARVEY

HARBOR SEAL

Phoca vitulina.

Also called the "common" seal, this is the best known representative of the true seal family and is found along our north Atlantic shores as far south as New Jersey, while a closely related species frequents the Pacific coast south to California. The family is also designated by the term "earless" seals, since the absence of an external ear distinguishes it from the eared seals, but other marks of difference are seen in the shorter neck and the hind-flippers, which are always bent backward. As a result of this last peculiarity, this group are more clumsy on land, being compelled to make their way by a wriggling motion of the whole frame and, while often seen just out of the water upon the sand or rocks, usually remain near their natural element.

Well fitted to this seafaring existence is the shape of the body, which tapers from the middle toward each end, and the flippers, so unwieldy for walking, perform the best possible service as a propelling and guiding force.

Like all their kind they are gregarious, especially during the breeding season, when more time is spent on shore than at any other period, but with none of the accompanying disorder characteristic of the sea-lions. The young, usually but one in number, is covered at birth with a thick, yellowish wool, which is soon replaced by the ordinary hair, and it is then ready to take to the water. It still remains, however, with its parents, who show great solicitude for their offspring and do not hesitate, if need be, to sacrifice their lives for its preservation.

While somewhat migratory with change of season, the name "harbor" denotes that they are not fond of the deep sea, but prefer to remain alongshore, frequently swimming far up into the

mouths of rivers and hunting for their food in quiet inlets. They doubtless consume large quantities of fish, but are otherwise perfectly harmless and entirely valueless to civilized man, although held in high favor by the Esquimaux. In length they measure some four feet and present a speckled appearance as the short stiff hair, with no underfur, is most often yellowish gray with black spots, although it may be dark brown with the spots of a lighter shade.

While not equal to the eared-seals in activity or intelligence, yet they may be easily tamed and display much affection and gratitude for any attention bestowed upon them. On land, water and ice alike, nevertheless, these quiet and inoffensive creatures find foes ready to take advantage of their unsuspecting temperament and their helplessness when pursued. Large numbers annually fall a prey to the shark, swordfish and polar bear, to make no mention of those shot in wanton cruelty by man to whom they can bring no possible profit.

MANATEE or SEA COW

Trichechus latirostris.

Although once common all along our southern shores, the manatee, which receives its name from the Latin "manus," meaning "hand," because of the resemblance of the use of its flippers to that of hands, is now found only in the estuaries and lagoons of Florida and Mexico. The similarity in general outline between the upper portion of the body and that of the human form is also said to have been the foundation of the famous mermaid legends, especially since the female, clasping her young to her breast, often shows her head above water. Most of the existence of the manatee is, however, spent floating beneath the surface of the bays and river mouths where it lives, using its round flat tail as a propeller and rudder, although it seems to have too little intelligence or initiative to care much which way it shall go.

In appearance, these creatures are among the most odd of any on either land or sea, but they are more like the seal than any other animal with which we are at all familiar. They have been found to measure from eight to thirteen feet in length and to weigh from five hundred to twelve hundred pounds. The extremely thick skin is dark gray in color and gives, at first sight, the impression of bare nakedness, although a close inspection may reveal a few scattered bristles on its wrinkled surface. The flesh has been esteemed as of excellent flavor, and this fact, combined with the value of the skin for strong leather, and of the blubber for oil, has been largely instrumental in bringing about the decrease of their numbers. Today, fortunately, they are under state protection which encourages the hope that there may be at least no further diminution of this harmless and interesting family.

An account of its peculiarities would be incomplete without reference to its manner of feeding upon the seaweeds, grasses, and

other plants, all of which are eaten under water. First, it uses its hand-serving flippers to draw the selected morsel within convenient range; then, the nourishment must be tender as well as toothsome, for in place of front teeth, with which to bite off its food, it is taken by the two curious flap-like contrivances which form the upper lip. Upon the approach of the flippers, these are distended and suck in, as it were, the bit of leaf or grass presented to them, after which the flaps close up the opening and that portion of the meal is secure. The manatee does not take kindly to captivity and, although occasionally displayed in exhibitions, usually lives but a short time. In the study of these animals, no one has ever heard a specimen emit any sort of a sound.

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