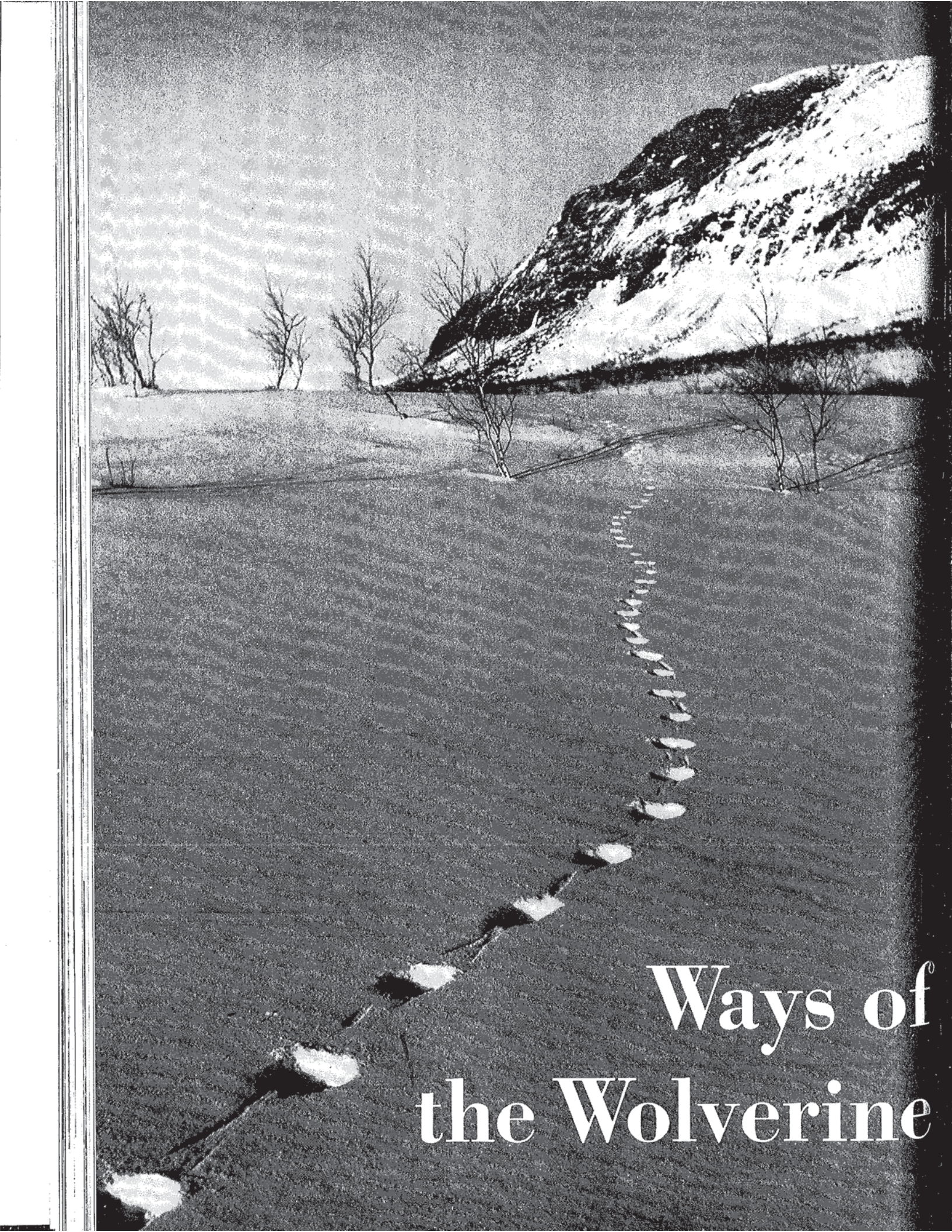
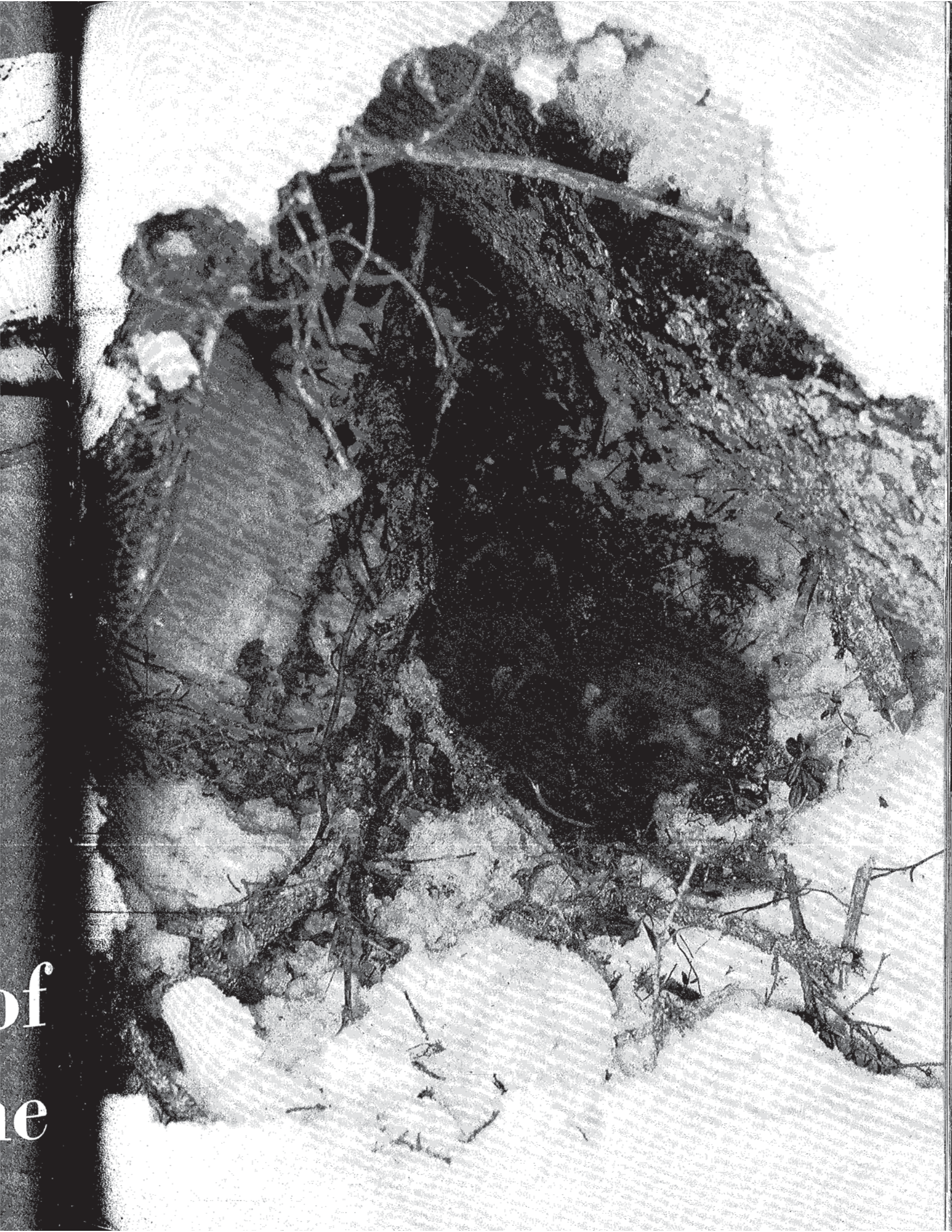




Ways of the Wolverine



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WOLVERINE ON THE ALERT is seen in typical pose here, as it sniffs the air. More cautious than most animals, even in

safe situations, creature will habitually seek high ground when awake, but when exhausted will go to sleep anywhere.

This animal inhabits a vast area to which it is peculiarly adapted

By PETER KROTT

FEW LARGE MAMMALS were as little known as the wolverine, until recently. In fiction, this animal is usually cast in a role best described as "the demon of the North." In scientific treatises—and, incidentally, in all too few of them—the data concerning wolverines are often both incomplete and incorrect. Yet we should not be surprised that this is so: the wolverine lives in very small numbers in some of the most solitary and inaccessible regions on earth. It is restless, extremely cautious and suspicious of man. Therefore, even the most enthusiastic field zoologist, roving the northern forests, will seldom meet a wolverine, let alone be able to study one closely.

In his excellent study of the wolves of Mount McKinley for instance, the mammalogist, Adolph Murie, says that he never saw a wolverine, even though he frequently identified the animals' tracks. Murie found it no trouble, however, to see and study the *rest* of the fauna of Mount McKinley National Park. Until recently, then, one may say that writers of fiction and zoologists alike depended for wolverine lore upon what they heard from others. In America, their principal sources of information were Indians and trappers and, in Europe, the Laplanders. And how unreliable these informants were! Indeed, there is no animal that the people of the northern regions detest more. It is easy to imagine the tales they tell.

WOLVERINE ON THE PROWL climbs on to fence about author's cabin. Notoriously mischievous, the wolverine will make



WOLVERINE AT PLAY momentarily pauses while rolling in the snow, a very frequent habit even when animal is traveling.

DURING almost twenty years of residence in Northern Europe, I have come in very close contact with this strange animal. As I grew more and more interested, I finally decided to remove to the land of the wolverines for a certain time, so that I might literally live *with* them and study their behavior. This seemed the only practical way to learn something of the habits of these shy animals.

In the forests of Sweden, where I undertook my major experiment, four wolverines—which I took from their

apparently wanton havoc of everything within reach; but playful exploration is part of animal's way of learning.





WINTER HABITAT of the wolverine is seen above—powdery snow of lakes and coniferous forests surrounding the Pole.

nest as cubs and bottle-fed at home—were invaluable animal assistants. My wolverine children were always able to move about freely. When they did not need the bottle any more, they began to roam far out into the land of the wolverines, which extended for many miles beyond my cabin door. But these hand-raised animals never lost their ties to me and my wife. They visited our cabin, allowed us to follow them on their secret paths, and finally also brought us in contact with the wolverines living wild in our area.

WOLVERINES are the largest of the mustelinae—a subfamily that includes the mink, marten, weasel, and ferret—and they are closely related to the martens, with which they share some common characteristics. The Old World and New World wolverines have been considered in the past to be different species, but most students presently regard them as only subspecifically distinct, with *Gulo gulo gulo* in the Old World and *G. g. luscus* in the Western Hemisphere. My own opinion is that even subspecific separation is based on characters too trivial for this degree of recognition. The skull material which I have examined and compared does not reveal distinct differences between the two. Nor can they be divided on the basis of the size and the quality of their pelts. The fact seems to be, rather, that geographically, from Alaska in the west until one reaches Manchuria in the east, wolverines decrease in size continually but insignificantly and that, proportionately, the quality of their pelts decreases somewhat. But the differences are very small and one is amazed at the uniformity of the species in its vast area of distribution.

Dr. Knorr spent several years in Scandinavia studying the wolverine, first in Finland and then in Sweden. His book, *Demon of the North*, was published in the U.S. by Knopf.

TODAY, the wolverine is an animal of circumpolar distribution, primarily inhabiting the northern coniferous forest region. It cannot, however, be found everywhere in this region and, even where found, it is only sparsely represented. In contradistinction to most other northern beasts of prey, the wolverines' area of distribution has hardly decreased in historical times. Man has driven them only from some southern fringes of their habitat, such as some parts of the U. S., southeast Canada, Estonia, Latvia, Lithuania, northeast Poland, and some Russian provinces.

The length of the wolverine's body is little more than three feet, and eight inches of this length consists of tail. The height at the shoulder is about seventeen inches; the weight can be upward of seventy-seven pounds, but the average weight of adult males I have seen in Europe is about fifty-five pounds. Females are a quarter to a third lighter and also smaller. The animal is built for endurance. Indeed, it is lumbosacally overbuilt; the extremities are acutely angled when the animal is in motion, the soles of the feet are thick and the whole muscular system is highly developed. The wolverine's locomotion on the ground can be compared to the snapping of a spring. The wolverine becomes sexually mature in its fourth year, but the sutures of the skull are grown together at eight months and the teeth are also fully developed.

Like most mustelinae, the wolverine has numerous and very active glandular organs, of which we mention here a pair of anal pouches that secrete a malodorous, yellowish-green fluid (in my opinion, however, of a far less unpleasant odor than that of the skunk). The wolverine is able, incidentally, to spray this fluid for a distance up to nine feet. The yellowish spot on the animal's abdomen further points to the existence of glands in front of the genitals, something not often found in the animal kingdom. Like the marten, the wolverine also has a spot in the throat area: in the wolverine, however, this is much smaller. Frequently it is scattered in little dots, and sometimes the spot is missing altogether. The possible glandular nature of this has not yet been investigated.

The fur of the wolverine, in my belief, the most wonderful fur ever borne by an animal. Presumably due to the specially wide angle of insertion of the straight bristles and of the long, only slightly curled (and never matted) woolen hair, the coat never hardens, even at freezing temperatures. The Eskimos prize the fur of the wolverine for facial protection and pay the trappers a good price for it.

It seems odd that a virtually omnivorous beast of prey of considerable size should be ecologically bound to the northern coniferous forest region. Still, this is a fact, and one for which in my opinion the wolf is responsible. The wolves apparently confine the species *Gulo* to the swamp areas of the coniferous forest region. Populations of wolves are much smaller in these wooded localities than in treeless ones. Furthermore, the wolf cannot more in large swamps during the snow-free season. Finally, the wolverine, when engaging a wolf in a powdery snow of the wooded areas, proves superior—as I have had occasion to see. If the wolverine has to deal with several

wolves, he can always rescue himself by climbing a tree. In the treeless mountains and tundra proper, on the other hand, the wolverine enjoys none of these advantages. For that reason, they have seldom been found there in the past. But, interestingly enough, the wolverine has appeared in the realm recently: in some of the northernmost regions of Russia, for instance, and even in Greenland, where he had not been seen from time immemorial. Evidently, now that civilization has brought man success in his struggle against the "plague of the wolves," the wolverine has been able partly to occupy the vanishing wolf's ecological niche.

Wolverines are not nomadic animals, as many people have thought. Each inhabits a definite—although very large—territory. In Scandinavia, I found one male to about a half-million acres. These territories have a rather strange population structure. A male wolverine shares his vast realm with two or three bitches, and does not allow another male to enter his territory. Yet the male actually associates with the bitches for only a few weeks during the rutting season. Each bitch, in turn, inhabits a small subterritory within the male's larger preserve all by herself. In such a subterritory, another bitch is not tolerated. It was very interesting for me to observe that individual wolverines show mutual, strict respect for these territorial boundaries.

The animals recognize the territory peculiar to each

individual by its feces, by the scent of the individual's spoor and, above all, by the scent marks that the animals post regularly by rubbing their ventral sides at certain points. Besides all this, the wolverines mark their territories—as do dogs—by the discharge of urine.

WOLVERINES do not wander aimlessly about their territories, but stick to certain trails. These, however, are not narrow paths but, rather, strips of terrain about half a mile in width. These trails are not like those of other northern game: for the most part, they run in wide, serpentine lines with frequent changes of direction. The vast extent of wolverine territories makes it impossible to say when, exactly, the wolverine will appear at a certain point on its trail. When the animal scents a carrion or suspects danger, it leaves the trail at once.

The diet of the wolverine is markedly different from that of other carnivores. Above all, it is a carrion-eater, preferring this to any other food. But the wolverine feeds on other things, too. In the early summer, for example, the eggs of ground-breeding birds are a favorite meal. It searches for clutches mainly on the banks of rivers and lakes, and in swamps, and does not despise the eggs of even the smallest warblers. Later in the summer, the larvae of wasps constitute the daily menu, despite the stings of the furious insects. Be the nests terrestrial or arboreal, for days on end our animal does nothing



SUMMER HABITAT is shown here. Type of country remains the same during both seasons, but in winter the animal can cover

a wider area safely, hence is more predatory. During summer, its range is narrowed and its diet also includes vegetation.

but search for and greedily plunder the wasps. Then berries replace wasp larvae as a favorite food and, for weeks, the wolverine, like the bear, feeds only on the berry flora of the North, unconcerned with the kind of berries it is eating.

IN THE summer, wolverines do not usually prey on living animals, for their way of hunting makes that almost impossible. Unlike the cats, they do not lie in wait for or stalk their victims. Unlike the wolf they do not chase their prey swift-footedly to death. Rather, the wolverine pursues slowly but with enormous endurance. In the snow-free season, our animal has, of course, no chance to do this: the other northern game is far superior to it in swiftness. Further, wolverines cannot move with stealth. They make, in fact, no effort at all to suppress noise: compared to them, bears move almost inaudibly. In the summer, therefore, the intended victims of the wolverine are almost always warned of an approach in time to escape.

In winter, this situation changes fundamentally. The snow, of course, allows the wolverine to make a more silent approach. But, more importantly, in the snow our animal is far swifter than its victims. With widespread digits, the wolverine moves effortlessly even in the softest powder, excelling all other northern mammals. In the winter, then, it becomes a terrible enemy, preying even on the moose and the lynx. In Northern Europe at this time of year, wolverines are the scourge of the Laplanders' domesticated reindeer while in summer, when the reindeer calves are born, they are less harmful.

The appetite of the wolverine is relatively modest. Once full, our animal is not even interested in an arctic hare that may arise out of the snow only a few yards away. Furthermore, it is not generally known that wolverines establish large "food depots." Digging deep holes either in the swamp, in soft ground, or in the snow, they store the remainder of the prey they have killed or the carrion they have found. These caches are neatly covered with earth or with snow, but the animal is able to find them

again with unmistakable certainty. If the nature of the ground is not suitable for building such caches, the wolverine takes its food up into a tree—in most cases a pine tree—and hides it very skillfully at the angle of branch and trunk. The food is pressed so tightly into these angles that not even severe storms dislodge it.

THE rutting season of the wolverine comes between April and August. Like many other members of the weasel family, wolverines have a prolonged gestation period. The bitch brings forth an average of two to three young some time between February and April. The beginning of the rutting season and, of course, the birth season, seems to be related to the latitude and altitude of the wolverines' territory; high latitude and a far northern latitude cause a delay. A bitch is in heat only every two to three years; the male therefore need associate only with one of the bitches in his territory for a short time each year.

The cubs, which weigh only some three and a half ounces at birth, remain blind for about four weeks. They are suckled by their mother up to ten weeks. Their first solid food are pieces of carrion from the caches set up

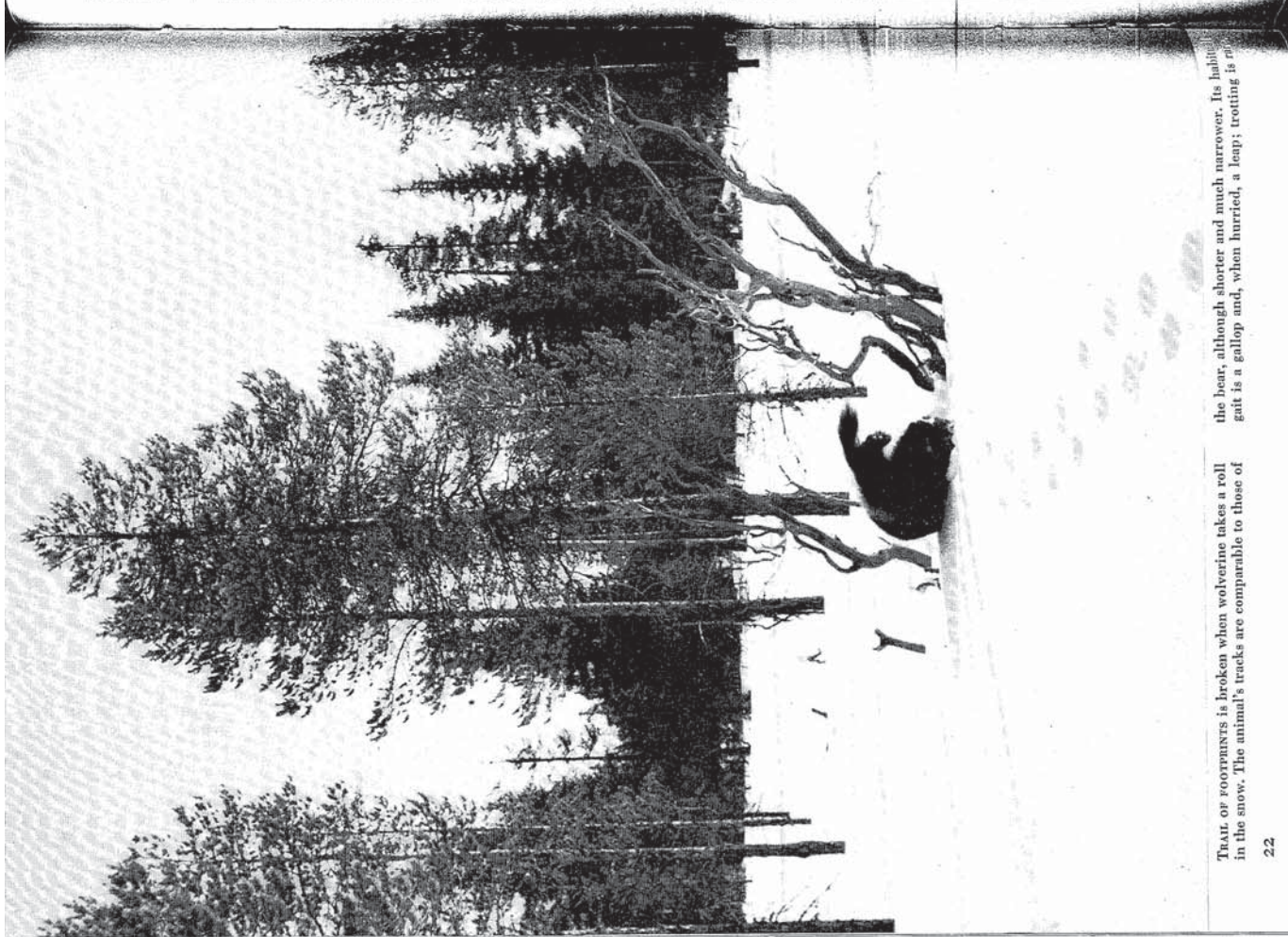


CLIMBING A TREE, wolverines try to reach food cached in branches. Normally, food is hidden in holes in the ground.

SWIMMING is common means of sport and travel in the lakes that dot wolverine country, and may also have hygienic use.

the bear, although shorter and much narrower. Its habit of gait is a gallop and, when hurried, a leap; trotting is rare.

TRAIL OF FOOTPRINTS is broken when wolverine takes a roll in the snow. The animal's tracks are comparable to those of



by the mother. She carries these goblets—well mixed with saliva—to the den and regurgitates them in order to give them to the cubs. The young remain in their nest for six to eight weeks, and then leave it under the watchful eyes of their mother and move gradually farther and farther away with her. Already, in their first autumn, they will follow her on long hikes. As early as their fifth month, they are well acquainted with the ways of marking a territory and are masters in the hiding of food in caches and trees. However, the young wolverines are able to prey independently on larger living animals only in the second winter of their life.

The young, who have no contact with their father, stay with the mother up to the age of two years. For that length of time, they are also tolerated by the male within the confines of his territory. Later, the young bitches are driven away by their mother and young males by their father, unless there is a vacancy in the territory.



YOUNG WOLVERINE sucks the contents of bird's egg. Eggs are found in ground-breeding species' nests by rivers or swamps.

UNLIKE many other animals, the wolverines do not know inactive periods. Most of the time, they adhere to a peculiar rhythm of sleeping and waking: three to four hours are devoted to sleep, they are active for the same length of time, and then the cycle repeats. However, they will sleep through days of heavy snowstorms or unusually heavy rain. On the other hand, dry weather with a stiff wind, a full moon, or a bright aurora will keep a wolverine specially active and it will not rest for a full twenty-four hours. Strong hunger also keeps a wolverine awake.

Our animal spends most of its life on soft ground, in the snow or in swamps. Its normal gait is the gallop. If the snow is very powdery or the wolverine is in a great hurry, it leaps. Unlike the dogs, wolverines seldom trot. Their tracks show mostly the characteristic pair-step of the martens: they take maximal advantage of the ground. In deep snow a wolverine digs itself forward

like a lemming and, particularly when playing, rolls along with repeated somersaults. Our animal likes to climb and can climb head-down but, unlike arboreal martens, never jumps from one tree to another. However, I have observed a wolverine hanging by hind legs only from a strong branch nine to twelve feet above the ground and swinging freely!

Wolverine endurance in locomotion is incredible: they are able, when pursued, to cover over forty miles without rest. I once checked the distance covered by an eight-month-old male in one night. It was twenty-one miles!

It seems to me that the wolverines' sensory organs are not more highly developed than those of other mustelids, even though some advantage might be assumed for an animal that holds its own so successfully. The wolverine's senses of smell and hearing, while excellent, seem inferior to those of the wolf. On the other hand, wolverines take precautions more often than other animals. Even in what appear to be safe situations, they move to elevated terrain features, climb rocks and treetops or cock themselves on hind legs like a hare. They will even on occasion rise on their hind feet like a bear.

The wolverine plays more than other beasts of prey, almost more than the otter, which is well known as an animal extremely fond of play. The wolverine may play by itself, with an object, or with a partner; he plays



WOLVERINE CUBS, alone, play in underbrush. Born between February and April, cubs are two-thirds grown by late fall.

ADULT WOLVERINE at the left shows typical yellowish stripe extending from shoulder to tail and highly-prized long fur.



READY TO LEAP, a wolverine stands tensely poised. Easily covering five feet in high jumps, creature is less skillful

both as a cub and as an adult animal. The consequences of the wolverine's fondness of play are all too well known to northern trappers. They break into cabins, carry away traps, snowshoes, and skis, tear covers and tents, and make general havoc. But the great activity of the wolverine expresses itself not only in playing, but also in the animal's *ability to learn*, which is considerable. By ability to learn, I mean the individual animal's capacity to change behavior in certain situations, without these changes of behavior being caused by nervous processes accompanying growth and maturation. Our animal behaves very plastically; in many sensory phases, the wolverine is able to learn something that is quite new to its innate modes of behavior.

THIS love of play and ability to learn are, I believe, the basis of the wolverine's extraordinary ability to evade dangers. In that respect, they are far superior to any other northern mammal, including the wolf. They soon learn what is and what is not dangerous. Of course, many elements play a role in helping the wolverines to evade dangers that other inhabitants of their territory cannot escape: their unusually great endurance, even in deep snow; their habit of describing wide, serpentine lines that frequently change in direction; their strength, extraordinary for their size; their formidable dentition; and, above all, their habit of fleeing whenever something appears to be strange. I have often seen a bitch forsake her young unhesitatingly—and, in most cases, in good time—when a hunter came close to the nest. On the other hand,

as broad jumper. Despite its ability to climb, and unlike the arboreal martens, wolverine never jumps from tree to tree.

a cornered wolverine is the worst enemy one can imagine. After all we have seen here, we should not be surprised that it is extraordinarily difficult to hunt the wolverine. A diminution of their numbers is possible only if one locates their nests, kills the young, or takes them alive to the zoo. But even that sounds simpler than it actually is, for the natural habitat of the wolverines is vast and their nests sparsely scattered and hard to find. One seldom succeeds in catching a wolverine in a trap. Even when so caught, it bites off the trapped limb and escapes—as a cripple. In addition, wolverines show considerable immunity to poison. They can even take strong doses of strychnine without dying, as I had an opportunity to observe in Finland. Indeed, the bad name these animals enjoy rests not so much on the actual damage they inflict upon man, but rather on the fact that they are so difficult to catch or to kill; for we detest most what we cannot subdue. All the superstition of the North regarding the wolverine can be attributed to this apparent invincibility.

WOLVERINES are, of course, also capable of quite different behavior. With the same perfection with which they learn to avoid dangers and evade man, wolverines brought up with the bottle learn how to live with man. My wife and I raised thirty young wolverines altogether and we concluded that no wild animal brought up by man becomes more faithful to his nurse and remains so even as an adult. At first, this may sound strange, but it is not. It is only striking—like so much in nature—which is always full of wonders.

DEER-COUNTRY RUN is caught by camera. Wolverine moves along fixed trails, but these are not narrow paths. Rather,

they are strips of terrain up to half a mile wide, usually winding and seldom coinciding with routes of other animals.

