

# Some members of the subfamily Caprinae



chamois



Rocky Mountain goat



takin



serow



muskox



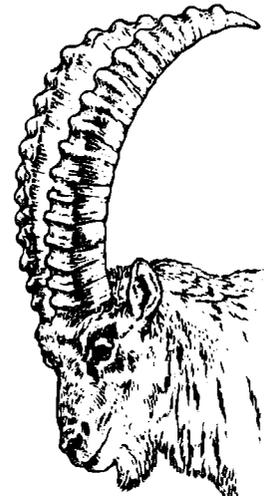
Himalayan tahr



wild goat



Kashmir markhor



Alpine ibex



Spanish goat

DRAWINGS BY RICHARD KEANE



Marco Polo sheep



Rocky Mountain bighorn sheep



mouflon



Punjab urial



bharal or blue sheep



chiru



Dagestan tur



aoudad



saiga

(Some taxonomists place chiru and saiga with the antelopes, not with the sheep and goats and their allies.)

George B. Schaller

# STONES OF SILENCE

Journeys in the Himalaya

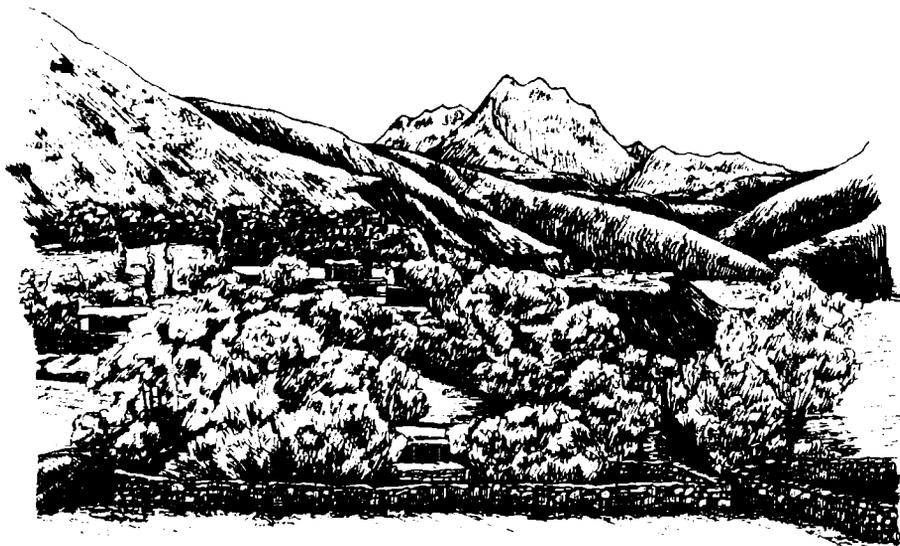
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# The Snow Leopard



When the snow clouds retreated, the gray slopes and jagged cliffs were gone, as were the livestock trails and raw stumps of felled oak. Several inches of fresh snow softened all contours. Hunched against December's cold, I scanned the slope, looking for the snow leopard which was somewhere a thousand feet above near a goat it had killed the previous day. But only cold prowled the slopes. Slowly I climbed upward, kicking steps into the snow and angling toward a spur of rock from which to survey the valley. Soon scree gave way to a chaos of boulders and rocky outcrops, the slopes motionless and silent as if devoid of life.

Then I saw the snow leopard, a hundred and fifty feet away, peering at me from the spur, her body so well molded into the contours

of the boulders that she seemed a part of them. Her smoky-gray coat sprinkled with black rosettes perfectly complemented the rocks and snowy wastes, and her pale eyes conveyed an image of immense solitude. As we watched each other the clouds descended once more, entombing us and bringing more snow. Perhaps sensing that I meant her no harm, she sat up. Though snow soon capped her head and shoulders, she remained, silent and still, seemingly impervious to the elements. Wisps of clouds swirled around, transforming her into a ghost creature, part myth and part reality. Balanced precariously on a ledge and bitterly cold, I too stayed, unwilling to disrupt the moment. One often has empathy with animals, but rarely and unexpectedly one attains a state beyond the subjective and fleetingly almost seems to become what one beholds; here, in this snowbound valley of the Hindu Kush, I briefly achieved such intimacy. Then the snow fell more thickly, and, dreamlike, the cat slipped away as if she had never been.

Having visited many of the earth's wild places, I am well aware that a wilderness that has lost its large predators, whether wolf, snow leopard, or other, lacks an essential ingredient. I can feel the difference; there is less vitality, less natural tension. But my meeting with the snow leopard went beyond this. It occurred in 1970 during my first visit to the Chitral region of northern Pakistan, and over the next four years when I spent a total of about six months there, the snow leopard represented not just a rare and beautiful cat whose habits I wanted to study, but also the symbol of a search for something intangible that seemed forever elusive.

Some 4,500 square miles in size, Chitral encompasses the drainage of the Kunar River in the northwestern corner of Pakistan bordering Afghanistan. Until 1969 the area was a semiautonomous state presided over by a royal family whose ruler was called the mehtar. After Pakistan's independence in 1947, the royal family progressively lost power until, just before my visit, the government incorporated Chitral into the Northwest Frontier Province. With this decline, many members of the royal family abandoned their

mountains for such cities as Peshawar and Rawalpindi, and correspondingly neglected their properties, including the private hunting preserves. With restraints removed, villagers killed wildlife, and by the time I arrived only tiny remnants persisted where once animals had roamed by the hundreds. However, a few preserves had been at least casually maintained. One of these was the Chitral Gol, a valley belonging to the mehtar, just west of Chitral town. The finest remaining herd of markhor goat in northern Pakistan was said to inhabit this valley, and snow leopard were known to frequent it too. It seemed like an ideal place to begin my research in the northern mountains, and, after obtaining permission from the royal family, I spent the first of several months there.

The Chitral Gol is about thirty square miles in size, all of it consisting of rugged mountains up to 17,600 feet. One stream drains the area, and perched on a bank above its turbulent waters is a partially collapsed hut of earth and rough timbers that once provided royal hunters with shelter; it became my home during this first visit. There was nothing suggestive of charm and comfort in the hut, nor, for that matter, in the valley as a whole. Nothing had prepared me for such winter bleakness as in the Hindu Kush. Usually an area looks desolate only until one sees the details, but here even they seemed forsaken. The area lies beyond the monsoon's influence, and its vegetation belongs to the steppes of Central Asia rather than to the Indian subcontinent. Southern Chitral, including the Chitral Gol, does have forest, stands of spruce and fir and evergreen oak, but somehow the trees have the stark look usually associated with desert or arctic wastes. One's main impression is of barren slopes, subdued in hue, surmounted by peaks flinging themselves up into the realm of perpetual snow. The ground is almost bare, consisting of crumbly shale which gleams gunmetal-gray in the wintry sun. Except for an occasional tuft of grass or a timid forb, there is only sagebrush, but the pale-leaved plants are stunted and submerged into the landscape.

A path led from the hut through patches of conifers upward until trees gave way to alpine meadows. My eyes passed over these bare

slopes to the crest of the ridge where cloud shadows wandered; on our left was a colossal limestone cliff, its upper ramparts sprinkled with snow. Pukhan, our guide, was in the lead. An angular, gap-toothed fellow with a perpetually seeping nose which he wiped on the sleeve of a faded tweed overcoat, he was one of several game guards in the preserve. Following him was Zahid Beg Mirza, the curator of Lahore's Punjab University Museum, whose interest in wildlife had brought us together. I plodded along in the rear, stopping occasionally to watch birds, using the halt as much to rest as to identify the species. Here at 8,000 feet, few birds remain during winter. Crested black tits flitted among fir trees, nutcrackers hurried by, and once a black-throated jay investigated me from a low bough.

Pukhan had loped ahead and now waved to us, excitedly pointing to the limestone cliff. At first I saw nothing, but finally spotted several markhor, faint brownish dots lost in the immensity of rock. Hastily fastening my spotting scope to its tripod, I watched the goats I had traveled so far to see; the long, slow process of gathering data had begun. There were sixteen markhor, including two males, five females, and nine young. Twinning was obviously common and the survival rate of young seemed good. Scattered over the cliff, the animals foraged on plants that had somehow found a foothold in cracks and bits of level ground. Though stocky in build, the goats were incredibly agile, traversing ledges so precarious that footholds seemed more imaginary than real. The single adult male caught my attention. A magnificent animal, at 150 to 200 pounds about twice as heavy as the nondescript females, he was beautifully adorned with long spiraling horns and a white, flowing neck ruff. Poets may praise the deer and nightingale; I celebrate the wild goat. A markhor male standing on a promontory, ruff shining in the sun, is a far different goat from the small, disheveled, smelly beast that domestication has produced. The male's black tail was folded up over his rump, a characteristic of rutting goats. I looked forward to the rut, for at no time of the year are hoofed animals more active and is social organization more distinctive than during the mating season. We watched

the goats for an hour, until they filed out of sight behind a spur, and then we continued our trek up the slope.

Near the base of the cliff, just above where sheer rock gives way to scree, I could see a cave. When Pukhan saw me examine it through binoculars, he told Zahid something in Urdu, and Zahid, as my interpreter, relayed the information that black bear used the place as a winter den. The Asiatic black bear has a wide distribution from Iran eastward to Indochina and Russia, including the forests of the Himalaya. Distinguished by its long black hair and a white blaze on its chest, and weighing between 150 and 300 pounds, it is a powerful beast whose short temper the villagers justly fear. Bears were unfortunately rare in the Chitral Gol—no more than one or two visited the valley judging by spoor—and I never saw them there. Although the cave tempted me, it was not until a subsequent summer trip that I had an opportunity to explore it without fear of arousing a dozing bear. Carrying a lantern and rope and followed by a reluctant Pukhan, I clambered into the cave. There were two chambers, the largest nearly 40 feet long and 30 feet high. Old bear droppings littered the floor, peculiar droppings resembling dried coal tar laced with grass. A few also contained walnut shells and markhor hair, the latter probably scavenged from a dead animal. This small sample of droppings gave no idea of the actual range of foods eaten by these bears. I have examined autumn droppings in the Dachigam Sanctuary of Kashmir and found acorn, walnut, hackberry, grape, maize, rosehip, apricot, apple, wasps, and feathers, to list a few items. At one end of the cavern was a tunnel just large enough for me to squirm through. Leaving Pukhan at the entrance, I entered, my lantern piercing a darkness that had never seen light before. The tunnel slanted down, then up, and after about 30 feet opened into a chamber some 15 feet wide. The place was disappointingly empty: no bones, no nest material, nothing but smoothly worn bedding sites where generations of bears had slept.

We labored up toward the head of the valley. Oak had ceased to grow at 8,500 feet and now at 10,500 the conifers almost gave out.

Mountains should be climbed at one's own speed, step by step, only the present occupying the mind. As he trudges along leaning into the slope, a climber's view tends to be limited to the ground at his feet, and I did not like what I saw, for the terrain was riddled with livestock trails and droppings of domestic sheep and goats were everywhere. The vegetation had been devastated by domestic herds which forage here in summer; all grass was gone and so were most forbs. Only those plants that could somehow deter the voracious mouths managed to survive, among these being small pincushions of *Astragalus* and *Acantholimon* whose long spines, like those of porcupines, protect the splendid but unpluckable leaves and flowers. Almost no wildlife existed in this wasteland: once a black-naped hare skittered off, and later a rattling *kak-kak* revealed a small covey of chukor partridges.

Reaching the crest, we looked down a ravine toward the main Chitral Valley and the rampart of peaks beyond. Scattered far below were tiny fields wherever chance had made the ground fairly level. So much terrain, yet so little of it can sustain life! On a patch of snow were tracks of a large cat. I measured them: about 4 inches long and 3 wide. Only snow leopard or perhaps lynx could have made these prints, and full of anticipation, I hurried along, looking for other spoor. Soon I came upon a scrape in the soil, two parallel grooves made by a cat raking its hindfeet on the ground. This, I knew, was a means by which large cats such as leopard, lion, and tiger mark their range, leaving a sign of their presence. A snow leopard had patrolled the ridge, and during the long descent toward our hut my mind was occupied with devising a means of arranging an encounter with the cat.

Snow leopard are creatures of high altitudes in the mountains of Central Asia. Their range extends from the Hindu Kush in Afghanistan eastward along the Himalaya and across Tibet, and northeastward over the Pamirs, Tien Shan, and Altai to the Sayan Mountains near Lake Baikal. A rare, shy inhabitant of remote habitats up to an altitude of 18,000 feet, the snow leopard had never been studied in

the wild. Although the naturalist Peter Pallas carefully distinguished snow leopard from common leopard in 1779, accounts nearly two hundred years later still said little more about the cat's habits than that it moves seasonally up and down the mountains following such favored prey as ibex and bharal. Not even zoos provided much information. In 1970 a total of ninety-six snow leopard were in zoos but of these only twenty had been bred in captivity, a dismal record. It was known that the gestation period is 96 to 105 days, that there are usually two to three cubs in a litter, that the eyes of young open after about a week, and that the first teeth erupt at about three weeks. But the snow leopard's life remained unwritten.

At dusk we reached our hut, weary but exhilarated with so many new sights and impressions. Sher Panah lit a fire and soon brought us strong sweet tea. Sher, like many Chitrali men, was short, angular, long-faced, and slightly bowlegged. His usual job was cooking for the staff of the royal household, but as I discovered later, his culinary talents were held in such regard that there was general rejoicing whenever he accompanied me on a trip, as he later did on all my journeys through Chitral. He took care of camp, and knowing my needs and idiosyncrasies, made certain that our travel went more or less smoothly. In remote areas, among villages which may not have seen a foreigner for many years, it is essential to be accompanied by a local person not only to allay suspicions, but also to act as interpreter. Most people in the mountains speak only their local language, whether it be Khowari and Bashgali in Chitral, Burushaski in Hunza, or Kohistani in parts of Dir and Swat, to name only a few, and to ask even a simple question could be tedious. If, for instance, I wanted to know how many markhor were in a particular valley, I might ask Zahid in English, while he, in turn, inquired of Sher in Urdu, who then queried the guide in Khowari. A lively discussion lasting several minutes would ensue until a monosyllabic reply filtered back to me.

No dictionaries are readily available for local languages, but Eric Newby in his amusing travelogue, *A Short Walk in the Hindu Kush*, mentions a Bashgali-English phrase book:

*Notes on the Bashgali (Kafir) Language*, by Colonel J. Davidson of the Indian Staff Corps, Calcutta, 1901, had been assembled by the author after a two-year sojourn in Chitral with the assistance of two Kafirs of the Bashgali tribe and consisted of a grammar of the language and a collection of sentences.

Conversations around the turn of the century must have been heroic in this area if the phrase book is an indication.

"I saw a corpse in the field this morning."

"How long have you had a goitre?"

"Thy father fell into the river."

"I have nine fingers; you have ten."

"I have an intention to kill you."

"A gust of wind came and took away all my clothes."

"A lammergeier came down from the sky and took off my cock."

Not all these phrases were of use to me.

Crowding the fire for warmth and light, Zahid and I wrote our notes while Sher prepared dinner in a nearby lean-to. Eventually he brought pieces of boiled goat and *juwari*, a flat, thick, unleavened bread the size and weight of a discus. In these mountains it is best to eat the local cuisine as much as possible, rather than a poor imitation of the Western one. Dinner signified the end of our day, for as night cold gripped the valleys, a sleeping bag provided the only cozy haven. By eight o'clock we were in bed.

Zahid and I soon settled into a daily research routine. He took Pukhan to look for markhor near the hut, while I wandered down-valley each dawn. At first the route passed through a gorge so narrow that the stream filled its floor, and the trail had to trace ledges, surmount ice-glazed boulders, and cross the torrent on single trembling logs. Sun seldom penetrated this gloomy defile and even the birds had a somber plumage. Occasionally a whistling thrush, blue-black and with a yellow bill, skulked among the willows. A few wall creepers, so inconspicuously gray that I seldom saw them, haunted

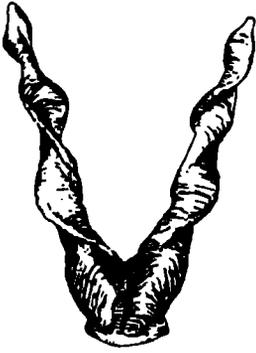
the shadows; when flushed they bobbed off like butterflies, revealing crimson wings. Where the slopes retreated, the trail climbed high above the stream. Often only a foot or so wide, it presented a marvelously sporting proposition, especially when slippery with snow and ice. With so little vegetation to hold the soil, constant avalanches of scree eliminated sections of the path and an occasional lone pebble or boulder hurtled down with remarkable velocity. But from this trail I could observe markhor easily on the opposite side of the narrow valley. Even the falling rocks conferred a benefit: markhor may dislodge stones as they walk and it was this clatter that sometimes made me aware that the goats were nearby.

Most hoofed animals must forage some eight to twelve hours daily, and consequently markhor are usually on the move all day with only a lessening of activity between 10:30 A.M. and 1:30 P.M. while they rest and chew cud. The markhor's range seemed to have little food, and I was curious about how the animals might obtain an adequate diet, one enabling them to survive the stresses of winter. A grazer and browser like a markhor would seem to have ample food available, even in a place like the Chitral Gol where livestock has devastated the slopes. But not only must food be available, it must also be nutritious enough to sustain life. Animals prefer the young, growing parts of plants to dormant or dead ones because the former contain more protein and have fewer indigestible fibers. Furthermore, availability does not necessarily mean palatability. Some plants are too prickly to chew, and others, such as sagebrush, juniper, and mint, contain aromatic chemicals that are toxic, capable of causing death if an animal eats more than its system can degrade in a given time. Although markhor ate a variety of plants, including a sourdock and the foliage of *Pistacia* trees, their main food was the leathery leaves of evergreen oak. With a fat content of 4 percent and a protein content of 9 percent, these leaves were relatively nutritious. Markhor nibbled leaves off low-hanging branches, often standing bolt upright, but not satisfied with that, they also leaped up into the trees, bounding

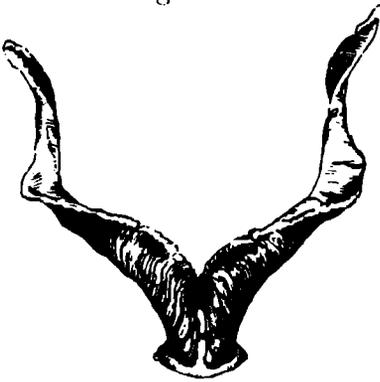
like monkeys from branch to branch in search of tender leaves. It was startling and incongruous to look 15 to 20 feet up into the crown of an oak and see several of the goats there, calmly munching. However, oak leaves were not a preferred food. When two years later there was a huge acorn crop, markhor almost disdained leaves to eat mast. In a severe winter, when snow covers their forage and the nutritional value of leaves is low, markhor may find it difficult to survive. Those animals that have stored fat while on the high summer pastures can draw on reserves until spring brings a new flush of green. But young of the year use much of their extra energy to grow, entering the winter quite lean, and many apparently succumb to the stresses of that season, judging by the population statistics I collected during my daily rounds. An average of 1.3 young accompanied each adult female in November, when about six months old. A year later only about 0.5 per adult female remained, a drop of nearly 60 percent.

I usually wandered downstream as far as Merin, not far from where the river joins the main Chitral valley. The royal family had a large bungalow at Merin, but one by one the heavy log and earth roofs had collapsed until only two rooms remained usable. I often stayed here after heavy snows in late December made the trail into the upper valley too dangerous to use. Several stony fields were at Merin and large herds of domestic goats; wood collectors from town made daily visits, and herdsmen lopped branches off the oaks to feed their livestock. Although their habitat was being destroyed, the markhor themselves were not molested while I worked in the valley. Years ago so many markhor lived here that herds with 100 or more animals were common. Now average herd size is 9, and the largest I saw numbered 35. After meeting certain markhor repeatedly in the same area, I soon learned that the Chitral Gol population was divided into six loosely organized herds each of which favored a specific part of the valley. Some adult males were exceptions in that they roamed widely both alone and in small groups.

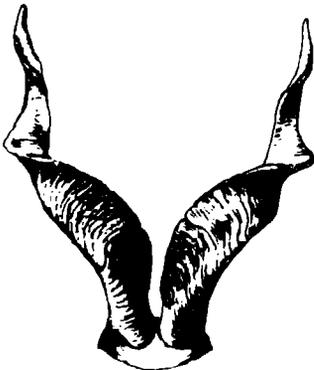
MARKHOR



*Straight-horned*



*Astor*



*Kashmir*

Based on a detailed knowledge of the population, I estimated only 100 to 125 markhor in the valley. And this is the best reserve for the species in existence.\*

The markhor as a species is restricted mainly to Pakistan, but small populations also exist in eastern Afghanistan, in adjoining parts of Russia, and along the western rim of the Vale of Kashmir. It is essentially a goat of low altitudes, requiring only cliffs in areas with little precipitation, deep snow being especially avoided. Although they may ascend to 13,000 feet and above in summer, they prefer altitudes of 7,500 or below for the winter. Markhor differ somewhat in appearance from area to area. West of the Indus, between the town of Quetta in Baluchistan and the northern edge of the Indus Plain, are the straight-horned markhor, also known as Sulaiman or Kabul markhor, depending on the area. Its straight horns are twisted like corkscrews. By contrast the Astor markhor

\* The Chitral Gol was opened to trophy hunting in 1977, a sad action by a country which has otherwise made progress in wildlife conservation.

along the upper Indus and its tributaries has widely flaring horns with at most one-and-a-half twists, and the so-called Kashmir markhor of Swat, Dir, Chitral, and neighboring Afghanistan has only moderately flaring horns, but with as many as three complete twists.

Having recently completed a study on lions in the Serengeti National Park of Tanzania, where one is nearly always within sight of wildlife, I found these mountains depressingly continent. After hours of hiking I would encounter a small markhor herd or two, and with luck something else, perhaps a yellow-throated marten. On the trails were the tidy, spindle-shaped droppings of red fox, but one rarely met one of these nocturnal predators. At least the droppings revealed what the foxes ate—yellow-necked field mice, Turkestan rats, rosehips, *Pistacia* and other seeds, and around human habitations, scraps of goat skin and maize. The reserve is much too small and prey too sparse to support resident large predators, and only at intervals did wolves or snow leopard pass through.

In fact I met wolves there just once. Although it was only 2:40 P.M. the sun had already vanished behind a ridge. The whole valley had the pallor of ice, and the huge limestone cliff was imprisoned by clouds. Shivering, I pressed into a rocky niche so as not to disturb a herd of nine markhor feeding nearby. Suddenly two wolves raced into view, side by side, along the contours of the slope. Startled, all markhor bolted for a cliff about two hundred feet away, all, that is, except one young which mindlessly veered alone up the slope. But the wolves did not see it. The smaller of the two wolves came to within thirty feet of a markhor before halting at a precipice; the other wolf, a handsome buff and gray male, pursued another markhor onto a cliff and was almost close enough to grab it when his foot slipped on an icy ledge and he wisely gave up the quest. The two wolves joined, angled up the slope, and vanished. While all other markhor remained irresolutely on the cliff, a young male headed alone up the mountainside, crossing the wolves' trail. Had the wolves tarried nearby they might well have caught him. Having first seen the

panicked youngster and now the needlessly bold male, it did not surprise me to learn later that predators kill a disproportionately large number of males and young.

Although these various encounters with animals fascinated me, it was the snow leopard that became my private quest. Sometimes in the mornings I found the fresh tracks of one which I then followed with the hope of at least seeing a shadow vanishing among the rocks. But the views were so wide that even a distant cat could easily detect my approach and retreat. Following an old set of tracks at leisure was often more enjoyable than tensely tracing a fresh one. Once I traveled for five hours along a fir-covered ridge while deducing a snow leopard's doings from its spoor. It was piercingly cold at 10,000 feet, not a breath of wind, nor a cloud. To the north snow peaks speared the sky. I first found the pugmarks among tracks of black-naped hares, meandering as if the snow leopard was searching for one of these animals. Then the tracks of the cat headed straight to a huge fir, and in the needles beneath it made a scrape—a calling card. After plodding steadily through the snow for a while, the snow leopard halted at a fox dropping, probably sniffing it. A few minutes later it left the crest to detour to another fir, which it circled, perhaps looking for the scent marks of other cats. Farther on, beneath two sentinel firs, it deposited its own mark, another scrape. Although usually solitary, snow leopard nevertheless are members of a community. By leaving signs of its presence—scrapes, feces, and urine mixed with scent—each snow leopard in an area learns not only that someone else has been at a particular spot, but also probably who it was, about how long ago it was there, and in the case of a female, whether she was in heat. It is no coincidence that snow leopard leave their calling cards on prominent locations such as at solitary trees, on hilltops, and on mountain spurs. The tracks I was following veered off the crest, then down the slope, and soon after that, where the snow gave out, I lost them. With wildlife depleted and livestock carefully guarded near the villages in winter, snow leopard must travel far for a meal. I followed tracks for a total of twenty-six miles in Pakistan

and Nepal and in that distance saw sign of only one hunting attempt, a successful stalk of a bharal or blue sheep. As with most large cats, hunts end in failure more often than not. C. H. Stockley, in his book *Stalking in the Himalayas and Northern India*, relates how he once watched as "a snow leopard suddenly raced across the hollow in which they [ibex] were feeding and made an attempt on a buck, which started away just in time. The leopard's outstretched claws raked a great lump of hair from the ibex's coat as it wheeled away. . . ." The extent of a snow leopard's travel remains unknown, but it must be considerable in areas where prey is scarce. Once we waited a month for snow leopard in the Golen Gol, another Chitrali valley, and only once did a cat travel through.

Hunting accounts written in the late nineteenth and early twentieth centuries rarely mention snow leopard because the authors seldom met one of the cats, even after months and years in the mountains, which is not too surprising, for only those animals that remained elusive survived. In Kashmir they were legally treated as vermin until 1968. For example, in the course of many Himalayan trips, the naturalist A. Ward sighted five solitary snow leopard and a group of three—and he shot five of the eight. I could not depend on luck alone to meet a snow leopard. Having observed and photographed tigers in central India by tying out domestic buffalo as bait, I decided to try the same technique here. I sent Sher to purchase three goats and these I tethered where I had seen snow leopard spoor, feeding the animals oak leaves and water as needed. Each morning I checked them, full of anticipation, and each morning three lively goats greeted me with cheerful bleats. Snow leopard are known to hunt by day as well as by night. For instance, the Indian mountaineer Hari Dang saw them stalk bharal three times, tahr once, and snowcock once, all in daytime. This being so, I built a small blind of juniper boughs near one of my baits and spent many hours there quietly waiting. My presence did not disrupt the rhythm of life in the valley. Flocks of yellow-billed choughs floated on updrafts along the cliffs just above me, their effortless motion producing a kind of transitory art as they

traced wind patterns in the sky. Sometimes a markhor herd moved into view. The rut had begun, and the dominant male in each herd remained close to any female in heat, holding himself erect, trying to impress her with his beauty and other males with his power. Sometimes he enhanced his presence by spraying urine over himself, dousing his chest and face; his beard possibly acts as a sachet. A female may respond to a male's persistent attention by running away, but the male follows and the two race over slopes and among trees.

Mountains usually give me a sense of space, but in the Chitral Gol the views were always blocked by slopes and peaks, hemming me in except at night. Tucked into my sleeping bag, with the mountains dissolved into formless darkness, I gazed at the clouds drifting by until I was almost dizzy from hurtling through space and only the scent of juniper and the whispering stream far below reminded me of my mountain perch. No snow leopard passed my blind while I was there. But two days after I discontinued the vigil, one detoured to my blind and even entered it before continuing up the slope without touching the nearby bait. Two weeks of effort had produced no result.

Then one morning, as I approached Merin, Pukhan hurried toward me, waving his arms and pointing with his stick. "*Burdum!*" he called, using the Chitrali word for snow leopard as he held up two fingers to indicate that there were two of the cats. A goat was dead. Peering through the scope I saw my first snow leopard. She reclined on a promontory with a small cub beside her, a tiny black and white puff of fur. She watched as several jungle crows descended to the kill, the tip of her long tail flicking, and then stalked to the goat to protect it from these scavengers as well as from the Himalayan griffon vultures that circled overhead. The cub soon retreated into a rocky cleft, but its mother remained in the open. After a few hours I decided to find out how close an approach she would permit. Casually I meandered up the slope, alternately sitting and drawing closer in a seemingly purposeless manner until at 250 feet I halted. Crouched on a boulder, she stared at me with frosty eyes. I left her then, but

returned several hours later with another goat. As I approached she slid backward off her rock. Molding herself to the contours of boulders and shrubs, she became almost invisible as she glided uphill to an enormous rock behind which she halted to watch me, only the top of her head visible. I left the goat tied to a sapling. And exhilarated by her casual acceptance of me, I ran down the mountain and up the valley to Kasawere to pick up my sleeping bag, then back to Merin to spend the night, needing only one-and-a-half hours for a trip that normally required over four.

At dawn I took my scope and began watching the snow leopard from the valley floor. The cub was clambering among rocks about 15 feet from its mother when suddenly, as if needing reassurance, it bounded over to her to touch its forehead against her cheek. It ate from the goat carcass for forty minutes, then returned to its mother and rubbed cheeks with her in greeting, licked the top of her head, and vanished from sight into its rocky cleft. I guessed that the cub was about four months old, probably born in August and conceived in May, though according to the local people, snow leopard usually court in March or April. Two weeks pass before a newborn cub can walk and not until four weeks of age does it venture from its den, judging by zoo observations. With cubs being relatively immobile for the first two months of life, a female needs secluded haunts and easily available food to raise a litter successfully. Pukhan told me that this female had been seen with two cubs a few weeks earlier. Somehow she had lost one. Nevertheless, it was remarkable that even one survived. With wildlife so scarce, snow leopard must depend increasingly on domestic sheep and goats. Droppings revealed just how important livestock was to the cats in this area: 45 percent contained livestock remains. Slow to kill and eat, the cat with its prey is soon discovered by a herdsman who either chases it away or shoots it. In winter, desperate for food, snow leopard may skulk around village huts to snatch unwary dogs or claw their way into livestock sheds. Cornered by irate villagers, the timid snow leopard may then be beaten to death with staves and axes. Although a snow leopard is

as large as a regular leopard—a female at the Bronx Zoo weighed seventy pounds, a male eighty-seven pounds—and potentially dangerous, no record exists of one having become a man-eater.

I decided to spend the night near the leopardess and her cub, and in the fading light unrolled my sleeping bag on a level ledge 150 feet from her. As soon as I was settled she returned to her kill. Here in this unpeopled night world, the mountains were hers, the eternal desolation of rock and snow investing her with an archaic permanence. Soon darkness engulfed us, and then there was only the sound of wind sweeping along icy mountain flanks and occasionally the grating of tooth on bone.

The moon surmounted the ridge, turning the slopes to muted silver, but the kill remained deep in shadow. Still later it began to snow, moist flakes that soaked through my bedding. When the rocks finally emerged from darkness, I rolled up my sodden belongings. In the fog and swirling snow I could just see the snow leopard, dry and protected in the shelter of an overhang. I had learned nothing new that night, but the hours of silence, the celestial beauty of the mountains in the moonlight, and, above all, the knowledge of having been a part of the snow leopard's world filled me with quiet ecstasy.

Within three days the snow leopard became remarkably tolerant of my presence, permitting me to approach to within 120 feet before retreating. However, the cub seldom showed itself. The female spent much of each day near her kill to protect it from scavenging birds. In addition to crows, griffon vultures, and an occasional golden eagle, the kill had attracted five lammergeier (bearded vultures)—two adults and three juveniles—which banked past the cliffs on eight-foot wing spans as they surveyed the kill site with ruby eyes. Lammergeier are known to carry bones high up into the air, then drop them onto rocks so as to obtain marrow from the shattered fragments. Almost daily I presented the snow leopard with a fresh goat, enticing her to remain in the area. Usually she killed it after dark, but late one afternoon I witnessed the event.

After watching the goat intently for forty-five minutes, she slowly

moved down the slope, body pressed to the ground, carefully placing each paw until she reached a boulder just above her prey. There she hesitated, then suddenly leaped to the ground behind the goat. The startled animal whirled around with lowered horns, and equally surprised, the snow leopard reared back, swiping the air once with her paw. But when the goat turned to flee, she lunged and with one smooth motion clamped her teeth into its throat while grabbing its shoulders with her massive forepaws. Slowly the goat sank to its knees. A light tap from her toppled it on its side. Crouching or sitting, she continued to grip its throat until after eight minutes all movement ceased.

Abruptly, one night the snow leopard and her cub departed. I traced their tracks uphill through a stand of conifers to some precipices and then paused. Should I follow or leave them in peace? Deciding on the latter, I reluctantly turned back down the slope. For one week they had provided me with a unique experience, and I longed for the day when I might renew our acquaintance.

It was now December 21. My survey of wildlife in the Chitral Gol was finished. Zahid had returned to Lahore some days ago, and it was time for me to go too. Loaded with heavy packs, Pukhan, Sher, and I left for Chitral town the following morning. The trail angled up the slope to the crest of a ridge where we stopped to rest. Under our feet, far below, was the town, another world with buildings and terraced fields. Across the valley rose peaks, jagged and hard, and to the north, filling the head of the valley, was Tirich Mir, at 25,290 feet the highest peak in the Hindu Kush. It alone had distinction in these anonymous mountains; it alone possessed the mind and lingered in memory. "Clouds hang heavy upon Tirich Mir like sorrow upon a man," goes a Chitrali saying. But even when it wore such a shroud of clouds, one's eyes still searched for the mountain as if only it provided permanence in an ever-changing world.

As we rested, the mehtar, H. H. Saif-ul-Maluke, came hiking up the trail with an entourage of nine. Home on a school holiday, he was en route to his preserve. A pleasant young man of about nineteen,

he was growing his first moustache and stroked it surreptitiously as we chatted about wildlife. His round face held genetic memories of Mongol hordes, of the horsemen of Genghis Khan, but there was a softness in his eyes and a laxness in his temper, as if his blood had forgotten its past. He had never ruled this small mountain state. Early in the 1950s, his father had died in a plane crash and his uncle, Prince Asad-ur-Rehman, took over as regent. Prince Asad was weak, lacking commitment and a firm hand, and little effort was made to improve the conditions of his desperately poor subjects. As family properties began to crumble, Asad withdrew from the turbulence and problems of this world to prepare for the next. Finally the government deposed the family and took over full administration of the state. After wishing the mehtar a pleasant journey, we descended the barren slope toward town, a slope which within living memory had been forested.

Chitral town is essentially a bazaar, a row of shops lining nearly a mile of unpaved road which is muddy in winter and dusty in summer. Each shop consists of an open-fronted shack with wares lining the walls while the proprietor hunkers in the center. Most shops specialize in such items as bolts of cloth, aluminum pots, dried apricots and walnuts, or cigarettes. Some feature a few tinned foods, very ancient and rusty, and others sell rough chunks of salt resembling cloudy quartz. Goats, stripped of their hides, hang head-down in butcher shops, and draped over poles like grotesque pieces of cloth are their fat-lined mesenteries. Shoemakers fashion sandals out of old tires. In winter the proprietors hunch over reticent wood fires burning in kerosene tins. With brown mantles called *chogas* drawn tightly around their shoulders against the chill, they spit dejectedly into the road. Chitral is a town of idle males, Muslim dogma having banished women to the seclusion of their homes. Men stand around in huddles or sip milk tea in restaurants, loitering the hours away. Once Chitrali men dressed in handsome clothes made of brown felt cloth, but most now wore seedy, ill-fitting jackets and overcoats donated by foreign charitable organizations. Only the fact that every-



one wore a *bakhol*, the flat, curled-up felt cap that is the badge of every mountain man, prevented an aura of complete dereliction.

Like many peoples whose lives follow a fixed and dreary pattern, Chitrali men are inveterate gossips. I was a new zoological phenomenon and rumors about me were rife. The vacuous gaze of idlers followed me as I walked through town and my doings were invariably reported to the local political agent. It was said that I could hypnotize snow leopard and pick them up in my arms. And, more vexing, it was said that I was here to establish a missile base. In a part of the world which has a phobia about spies, the latter rumor could affect my work. In India someone had whispered to a government official that I might be a CIA agent with the result that I was denied further research permits. Although this is a well-known technique of Indians to eliminate foreigners for ignoble personal reasons, I was afraid that these baseless rumors about me in Chitral might have a similar effect. Fortunately, they did not.

Downslope from the bazaar, past some government barracks and past fields that served as the town latrine, was the so-called royal palace. Perched on a bank above the Kunar River, the palace was

but a small fortress built of timber and earth, with squat, rather sinister towers and high walls. From outside it had an abandoned look; inside, past a high iron-plated gate, was a courtyard with rusting cannons and crumbling battlements. Staircases in the buildings were treacherous, broken and dark, and the hallways and rooms were hollow with plaster flaking off the walls, little more than repositories for dusty trophy heads of Marco Polo sheep and markhor. Ancient retainers, as decayed as the fortress, scuttled down its passages. Only the banquet hall had a semblance of former glory. Of moderate size, with gold-painted woodwork, the room displayed various photographs: of previous mehtars, all bearded and corpulent; of family portraits, showing only the males; of troops arranged in neat formations; of confident British political agents who had held the real power in this area since the 1890s. The neglect of the palace was depressing; I felt a sadness, a sense of irretrievable loss over an era that had already vanished into history, yet persisted into the present, unwanted, unmourned, hundreds of years of history ending in a pathetic ruin.

I once asked Prince Asad how long his family had ruled Chitral. "I am not certain," he replied vaguely and softly with a dreamy smile. "We have no written history. The family probably started here with one of the sons of Babur's brothers in the 1500s." Descended on his father's side from the great Turkish conqueror Timur and on his mother's side from Genghis Khan's second son Chaghatai, Babur rose to power in Samarkand and Kabul and in 1526 became the first Moghul emperor after defeating the ruler of Delhi. However, Prince Asad's family did not attain power in Chitral until late in the seventeenth century and then it was shared with the Khushwaqt family of northeastern Chitral.

The recent history of Chitral is one of intrigue, murder, and treachery. In 1892 the death of Aman-ul-Mulk plunged Chitral into anarchy. In his fascinating book, *Twenty Years in the Himalaya*, Charles Bruce notes: "On his death there were only two serious claimants for his throne, his eldest legitimate son, Nizam-ul-Mulk, a hand-

some and weak man and considered immoral even by Chitrali standards, and his younger brother, Afzal-ul-Mulk, by no means a bad person at all, although his instincts were ferocious, almost tigerish." He demonstrated the latter on his father's death by killing several of his brothers and forcing Nizam to flee. His uncle Sher Afzal thereupon invaded from Badakshan, which adjoins Chitral in Afganistan, and surprised Afzal in the Chitral fort. Afzal was killed. The British, who had by that time established themselves in the neighboring Gilgit Agency, backed Nizam, and they sent a small military mission to place him on the throne. But knowing British prejudices, this military presence bothered the local nobles, for each felt that he would, in Bruce's words, "no longer be able to sell his subjects as slaves in the open market with impunity." While this was happening, Drosh, a town about twenty miles downstream from the palace, was taken over by Umra Khan of Jandol and his Pathans from the southwest. Then in 1894 Nizam was murdered by his brother Amir-ul-Mulk and the nobles revolted against the British. About a third of the British force of 150 was destroyed and the rest retreated into Chitral fort. For forty-six days during March and April of 1895, the soldiers remained under siege. A column of troops from Gilgit and another from Peshawar, which fought its way northward through truculent tribal territories that had never before been penetrated by the British, relieved the fort and installed a new ruler, Shuja-ul-Mulk.

The British now had the power, the rulers the privileges, and the life of the villagers went on much as before. Ten percent of the annual harvest still had to be paid as tax to the ruler. But now there was peace. With remarkable prescience, Sir Aurel Stein, the greatest of the scientist-explorers in this part of the world, predicted problems after a visit to Chitral in 1906:

The very *pax britannica* must earlier or late raise grave economic problems; for the population, no longer checked by slave-selling and feudal fighting, is bound to increase rapidly, while the reserve

of arable land still unoccupied is likely to be exhausted within a measurable period.

Chitral had 55,000 people in 1895 and has three times as many today. All arable land is under cultivation, yet there is a desperate food shortage. Many men leave the mountains each winter for temporary jobs in the cities; flour, rice, and sugar must be flown in by military transport planes to augment the meager local supplies. And the government aggravates shortages by its mere presence. Government offices alone need 10,000 manloads or 800,000 pounds of firewood per year. Each office is allowed one manload per day, yet one seldom sees a fire. Wrapped in overcoats, shawls, and caps, officials shiver through their duties. Where is the allocated firewood, I wondered? Office workers divide it up to take home, for on their meager salaries they cannot afford the five rupees or about fifty cents which a load costs. Goats damage the hills, yet their milk is needed, and from the sale of meat and hides a villager can earn a little cash. "Chitral was once a land of just enough," Wazir Ali Shah, the extra assistant commissioner and a man from an old Chitrali family, said to me one evening. "But now there is not enough." We sat cross-legged in front of his fireplace, absorbing the warmth, and eating bits of roasted lamb. The fire and food were in my honor and I felt guilty that I, an outsider, was also depleting the resources.

Most Chitrali nobles have now withdrawn from the area or into themselves, but not Prince Burhan-ud-Din. He looks like the reincarnation of a mehtar from the past century but acts like a boisterous bear, hugging friends in the bazaar, passing candy to children, and inviting stray foreigners such as myself to his home for a meal. Something of an evangelist, he may boom to a departing visitor, "Let me give you a message for your country. Let there be peace among men." Burhan has perfected the Pakistani art of being friendly and hospitable, but remaining remote. I sometimes stayed at his home for days, yet learned little of the man himself, and according to Muslim custom, never even glimpsed the female members of his household.

Our animated discussions frequently revolved around wildlife. Burhan, now as in the past, liked to stock his winter larder with markhor, and even though it was illegal, he still invited guests to shoot in his private reserve.

"Only a few hundred markhor are left in Chitral," I would argue. "Just as you strive for peace among men, so you ought to fight for peace between man and beast. The Muslim religion teaches not to kill except in times of need. And you don't have need and besides you set a bad example to the villagers."

"Yes, yes, yes," he would reply. "You are right. There is too much shooting. I am worried about the ibex in my reserve in Agaram. You must go there to see how many there are. Take my gun and shoot as many as you need. Have you eaten ibex? No? They are very good."

For all his effort to comprehend a new order of things, he remained a prisoner of a pattern of being, and at no time was this more evident than with the incident of the snow leopard. Burhan has a markhor reserve at Tushi, about eight miles north of town. The reserve consists of a piece of mountain slope adjacent to the road and at that time contained about 125 markhor. I seldom watched these animals because most adult males had been shot, leaving the population with an atypical composition. Attracted by the prey, an occasional snow leopard came to Tushi in winter. I had asked Burhan to notify me if one did so, and on January 15, 1973, a runner arrived at the Chitral Gol with a note announcing the presence of a cat. On January 17, I arrived at Burhan's house.

"Where have you been?" he greeted me. "You are too late. My keeper shot the snow leopard yesterday. It was killing my markhor."

I was stunned. The deputy commissioner, the divisional forest officer, and several other officials were at the house for a luncheon. Not one deplored the killing, even though snow leopard were legally protected. We all went out to look at the fresh skin grotesquely stuffed with straw and hanging in a shed. I joined in the lunch, a sumptuous meal of rice, spiced hamburgers, chicken curry, and stewed apricots followed by green tea, but I had no appetite. Seeing

my dejection, Burhan suggested that I stay for a few days in his hut at Tushi in the event that another snow leopard might come. I agreed without conviction.

Crowded between road and mountain on a fragment of ancient riverbank, the Tushi hut was a gloomy place surrounded by winter-bare apple and apricot trees. Clouds rolled gray against the mountains and I felt imprisoned by this waste of stone. I need to establish empathy with an area before I can devote myself to it; here I felt like an alien. The character of a region has much to do with the character of the person describing it, for we see our own heart in a landscape. I knew that in part my melancholy was based on the pervading presence of man in these mountains: I seek the unpeopled world. My spiritual home lies in the Alaskan wilderness where I did my first wildlife studies, and once adopted, a wilderness becomes not just an entity but a state of imagination. Nothing had prepared me for these wounded hills of the Hindu Kush.

I tied out two goats hoping to bait in snow leopard. While scouring the slopes for fresh tracks, I had found four recent kills, three male markhor and a young, but these probably represented the last meals of the cat whose empty skin I had just seen. My search for fresh spoor was unsuccessful. But at least I had followed fox trails, observed markhor young in play, seen two golden eagles swoop at a hare. . . . And suddenly one morning a goat lay dead on the scree. I focused my scope on the site, but noted only a disheveled carcass. Perhaps, I thought, a wolf had killed the goat, eaten its fill, and moved on. Yet some magpies sat expectantly nearby as if afraid to approach. I looked again, and the rocks moved; stone turned to life, as like a gray haze a snow leopard departed with a motion so smooth it barely conveyed a sense of movement. It was a female. She hid that day somewhere among the precipices while scavenging birds stripped her kill. I tied out another goat and waited. At 4:45 P.M. a lammergeier flushed from its rocky perch. Creeping down the slope was the snow leopard, but instead of attacking the goat she calmly

waited for an hour behind some sagebrush until dusk blurred her outline. Soon after, a brief dark struggle.

This female roamed through the same area as had the dead male. Do snow leopard travel in pairs as some naturalists assert? During my wanderings I came across twenty-nine sets of tracks of which twenty-five were of solitary individuals and the rest of pairs, and the Indian mountaineer Hari Dang met twelve lone snow leopard and four pairs. Obviously the cats tend to be solitary. When two or three are together they may comprise a male and female, a female with fully grown cubs, or litter-mates. However, the sexes of slain or sighted animals are seldom reported. In 1972 a villager in the Kesu Gol, between Chitral and Drosh, shot a group of three snow leopard which consisted of a female with two large cubs, male and female. An animal may be solitary yet not necessarily asocial. Residents in an area know each other and possibly meet on occasion and share a kill, as is the case among tigers. Unfortunately I could not unravel the details of the snow leopard's social life.

Lying behind some boulders at dawn, I watched the snow leopard and filmed it. Several magpies were there already, teasingly hopping within six feet of the cat and nimbly leaping aside when she lunged; vultures glided in and settled on the surrounding rocks. It was now fully light and the snow leopard became uneasy about being in the open. Three times she walked away, but returned with a rush to chase magpies from the carcass. Finally she departed, moving across the scree and along the base of a cliff until she vanished around a spur of the hill. It was the last time I saw her. My first encounter with a snow leopard in the Chitral Gol had left me exhilarated, but this one left me regretful and melancholy, as if seeing something beautiful fade away forever. It reminded me of these words by the Roman poet Virgil: "There are tears in things, and all things doomed to die touch the heart."

Generally my trips to Chitral were made in winter. At that season, when snow lies deep on the ridges and cold grips the crags, most wild-

life descends into the valleys. This is especially true of markhor, which remain at low altitudes from November to May. Snow leopard naturally follow their prey. With wildlife concentrated, it is then relatively easy to make a census and study it. However, to enter or leave Chitral in winter presents various challenges.

Any map will show the bold red line of a road heading north from Nowshera near Peshawar. It enters the hills just before Malakand, crosses southern Swat, and continues through Dir over the 10,230-foot Lowari Pass into Chitral. Indeed, a road is there. But snow closes it around the Lowari Pass for at least six months of the year, and in many places the road is so poorly aligned along geologically unstable slopes that any rainstorm causes landslides, and in the absence of culverts, erodes the surface into canyons. There are three flights a week from Peshawar to Chitral, but many are canceled, especially from December to May, for the Lowari Pass is a notorious breeder of bad weather. Mornings are often clear but by noon clouds settle into the pass. Naturally, flights are scheduled to leave Peshawar around noon. Consequently only three of my nine attempted flights into or out of Chitral left on the appointed day. To obtain a seat on the heavily booked flight is so difficult that one is not easily tempted to give it up and go by road. So on flight day one goes to the airport again to be confronted by a pushing, shouting mob clustered around the check-in counter, everyone burdened with bedrolls, tin trunks, and formless objects tied into cloth, like evacuees from some catastrophe. A hundred years of British rule never taught Pakistanis to form an orderly queue. As often as not I had to brave the mob again to retrieve my luggage after the flight was canceled. After several such futile treks to the airport, especially in winter when bad weather sometimes halts air service for several weeks, I not surprisingly preferred the rigors of the road.

A fast approach by plane robs the journey of anticipation; a slow approach by road always begins with the hope of a pleasant trip and continues with the hope of simply reaching the destination. Either mode of travel has its drawbacks, and one of my road trips, in January,

1973, illustrates a few. Brad House, a former curator of mammals at the Bronx Zoo, had joined me for this trip to Chitral. At the Peshawar bazaar I had to find a taxi willing to take us the 120 miles to Dir, and after considerable haggling over the price, a driver agreed to make the trip for the equivalent of twenty-five dollars. The car had a gasoline leak which filled the inside with fumes, and the tires were so worn that we soon had a flat. Then a wheel cracked. Although we had it welded at a village shop, we soon heard metal grinding on metal again. We continued. North of Mardan the barren hills rise abruptly from the Indus Plain and here the narrow road winds through the mountains. The afternoon passed; it grew dark and a cold rain fell. The occasional roadside shops were boarded up for the night, but finally we saw a tea shop, a poky shack whose kerosene lantern cast a faint light across the deserted village street. We had an omelet, chapatties, and tea, then drove on. A policeman waved us down and told us that bandits had blocked the road ahead. Traveling through the area in 1904, Charles Bruce noted that "it is still unsafe to travel the road without an escort." Now, seventy years later, conditions were just as good. We returned to the tea shop, expecting to spend the night. However, soon two trucks with about a dozen armed policemen arrived, and we joined the convoy which after a few miles halted at a sharp bend in the road. The police leaped from their trucks, rifles ready; flares were shot off, lighting the hills, but there was no one. We continued alone. Rain still poured, and farther on, it turned to sleet; the ruts in the road had become torrents. Approaching the town of Dir, the road climbed steep hills and up these we had to push the car through snow and mud. Finally, at 10:30 P.M. we reached town. After hammering at the door of the Saheed Tourist Hotel we were finally admitted. There was neither heat nor light and our room smelled of urine. Scanning the bed with my flashlight, I noted that the time for the annual change of sheets must be close at hand and I knew that bedbugs and fleas would be my companions. At least it was a place to sleep.

At dawn I went to the bazaar to ask about porters, but the loiterers

there responded with indifferent grunts. Finally one old fellow said he could get the two required porters. Last night's storm had blown over and the day was crisp and clear. It was nineteen miles from Dir to the Lowari Pass, an easy trail with most of it following the snow-covered road. Three miles from the pass is Gujar, a hotel of sorts, an open-fronted shed resembling a malevolent outhouse. The snow drifts around it were decorated with excrement, and inside porters slurped tea, then belched raucously. Brad had dropped far behind, not used to high-altitude hiking, and by the time he arrived it was too late to cross the pass. At dusk the proprietor set up charpoys, beds made of ropes stretched taut over a wooden frame. The following morning Brad wisely decided that mountains were not his *métier*, especially as he had only recently recovered from a bout of pneumonia. He turned back toward Peshawar while I mounted the pass and descended into Chitral, covering the remaining fourteen miles in five hours. The road was soon clear of snow, passable to jeeps.

Narrow and steep and with sharp curves, most mountain roads can only accommodate jeeps. A traveler has two alternatives: take a jeep or walk. The former provides a unique experience, but the latter is safer. Discarded by the United Nations as derelicts, jeeps next become mountain taxis. First the vehicle is loaded with several hundred pounds of flour, rice, or other supplies for delivery to various shops. When the springs are flat, the personal baggage of the passengers is piled on top. And finally some eight passengers crowd onto the load while another three squeeze into the front seat. Each jeep is manned by two persons, a driver and a helper whose task it is to fill leaking radiators and to put rocks behind the wheels whenever the vehicle stalls. Since there are always passengers to push, functional self-starters are considered superfluous. Tires are usually worn smooth and rags may be stuffed into holes to protect the inner tubes. Overloaded, overcrowded, the jeeps careen through the mountains, under only limited control, for the engine is switched off to save gasoline when going downhill. I was usually tensed, ready to leap in case of mishap. Once I kept a morbid tally of accidents in the

Gilgit area: in one month five jeeps fell off the mountains, killing twenty-three persons. In this instance I reached Chitral town at dusk, the trip from Peshawar taking three days instead of one hour by plane.

Solitary, rare, and elusive, snow leopard generally foiled my attempts to study them. The old naturalistic techniques of following tracks, examining feces, and glimpsing an occasional animal were obviously not the best means of studying the habits of this cat. If I could place a radio transmitter mounted on a collar around the necks of several individuals I would be able to locate them by picking up the signals on a receiving set. This technique had been used successfully on grizzly bears, tigers, and other species, and I wanted to try it on snow leopard. In January, 1974, Melvin Sunquist, a biologist and expert in the use of radio telemetry, brought equipment and two box traps in which to catch snow leopard. Mel is tall, lean, and easy-going; he had previously studied sloths. We moved into the Chitral Gol, and as Mel was not particularly fond of climbing, I searched the valley alone for snow leopard spoor but found nothing. Pukhan told us that no cats had been there for several months, and according to Prince Burhan, none had visited Tushi either.

I was concerned. A year earlier I had seen the cats or their tracks in both areas. But I also knew that during the winter of 1971-72, Prince Muta-ul-Mulk, a brother of Prince Burhan, had wantonly shot two female snow leopard at Shogore, near Tushi. That same season at least four other snow leopard were killed in the Chitral Valley. The following winter a male was shot at Tushi. These seven deaths had seriously decimated the valley's population. Now I wondered if there were any left for me to study.

As we waited one day for snow leopard in the Chitral Gol, the game warden, Mirza Hassan, arrived on a visit. Wiry, small, and with eyes that dance like wild mice in his beaked face, he is an exceptional individual. Whereas most officials remain in their offices doing nothing and are proud of what they do, Mirza Hassan toured the district and conscientiously tried to enforce regulations. Earlier

I had asked him to check on the status of snow leopard in various valleys and he had now come to report. His English, while not good, was better than my Urdu, so our conversations proceeded in a style somewhat less than elegant.

“How many markhor you find?”

Consulting a scrap of paper he read: “Drosh Gol—ten, Chinal Gol—fifteen, Garhit Gol—ten, Bombret—twenty-five . . . Markhor too few now,” he concluded. To his total of 120 I added my own censuses of the Chitral Gol and Tushi reserves and estimates for a few other valleys. An optimistic figure for Chitral as a whole was 500–600 markhor. Thirty years ago that many animals lived in each valley, according to old-time residents. Unfortunately the time-honored slogan, “If it moves, shoot it; if it doesn’t, chop it down,” was still vigorously practiced in Chitral even though the deputy commissioner had prohibited all killing of markhor, ibex, and snow leopard the previous year.

Checking his watch, Hassan suddenly interrupted our conversation to kneel, facing Mecca. Five times a day he recited his creed: “There is no God but God and Muhammad is his prophet.”

Then, in his somewhat breathless manner of speaking, he returned to the subject of markhor: “Burhan is causing trouble more than sufficient. He shoot markhor this month. But proof is not present. Forest Department now make court case against Muta-ul-Mulk. Between 15 and 19 January he shoot four markhor.”

I congratulated him on his initiative. Villagers cannot be expected to abide by laws if princes hunt with impunity.

“You know Mikelroy?” he asked. I looked puzzled. “American,” he prompted. “Kill markhor last year and quickly leave.”

Hassan had mispronounced the man’s name, but now I remembered. A representative of the Los Angeles Safari Club had shot markhor illegally.

“We have court case now. We *chalan* him if he come to Chitral again,” concluded Hassan.

The hunter wisely avoided arrest by staying out of Chitral. I met

him the following year, this time shooting Punjab urial, another legally protected species. He was pleasant but limited in outlook, interested mainly in gaining status by adding trophies to his private mortuary. An aim of his life was to kill specimens of each species and subspecies of sheep in the world, and preferably of goats too. He was annoyed that he could not obtain a permit to shoot the rare Walia ibex in Ethiopia. When I pointed out that the animal was on the verge of extinction, with fewer than three hundred left, he emphasized that he too was concerned about conservation. Showing me his Ducks Unlimited tie, he noted: "This cost me three hundred bucks."

My conversation with Mirza Hassan turned to snow leopard, but he had little to report. He had just spent three days in the valleys of Rumbur, Bumburet, and Birir, to the south of the Chitral Gol, but the Kafir people there had seen no recent sign of snow leopard. Sometimes blond and blue-eyed, the Kafirs are of unknown origin. Kafir means "unbeliever" and to Muslims their culture is anathema, for they believe in not just one god but many, their women are not secluded, and during the *pore* festival in September a strong man is selected to service childless women. In 1893 the Amir of Afghanistan forcefully converted the Kafirs in his country and only those who fled to Chitral retained their way of life. However, even there cultural change is accelerating. Once, for example, they made life-sized wooden statues of men and of figures on horseback, impressive grave monuments in memory of prominent persons, but this art form has now been discarded.

I hired Subidar Afzal to help in our search for snow leopard. As a retired member of the Chitral Scouts, a paramilitary unit in charge of border patrols, he knew the area well. When he reported that the Golen Gol, about twelve miles from Chitral town, might be a good place for snow leopard, we decided to move there. A few miles upstream from town the Kunar River divides, one branch becoming the Arkari and the other the Yarkhun, which has its headwaters in the northeastern corner of Chitral some hundred and fifty miles

away. We followed the Yarkhun by jeep to near the mouth of the Golen Gol, and from there porters carried our belongings up a gloomy gorge until the valley widened and the villages of Golen and Bobaka could be seen against the slope. There was a foot of snow and the cliffs had an icy sheen; even the stone huts radiated an iron coldness. Unable to rent a room, we slept in a partially built shop. Fortunately Sher Panah found two rooms for us the next day. That night a snow leopard passed the village, overlooking the one goat bait we had tied out. The cat came downvalley, following the base of a cliff, and at a boulder field deep under snow it leaped from stone to stone down to a stream, where it walked along the edge to several ice-glazed rocks. There it jumped six feet onto one rock, seven feet to another, its claws raking the slippery surface, and with a final leap, reached the opposite bank. Skirting the village, it traced a stone wall, angled up a scree slope, and zigzagged up over a precipice. We were elated: surely another cat would soon pass by.

Our life settled into a daily routine. Mel studied the brown dipers which were abundant along the stream. Though it was only mid-February these hardy birds were already courting. Each pair claimed some 1,400 feet of river and defended its territory vigorously against other pairs. Occasionally one stood before its mate and with raised bill and quivering wings burst into strident song. Alone or with Subidar Afzal I explored Golen Gol, which wound about twenty-five miles into the mountains. The valley was once famous for its wildlife, but markhor were now gone and ibex rare. Upvalley from our base were three more villages, tiny clusters of huts in a narrow defile tied together by a snow trail.

One day we went beyond the last village, beyond Ustor where the valley narrows then rises abruptly at an ancient landslide. A stand of junipers grows here, a stand which will soon die by the ax, judging by the many raw stumps protruding from the snow. I particularly like these mountain junipers; their bark is ragged, their trunks gnarled, their branches tattered. Unlike the majestic firs, these trees are approachable, comfortable. They have a pungent, wild odor and

white-winged grosbeaks like to feed on their berries. We walked slowly, scanning the slopes for ibex trails. After two hours the peaks retreated to form a mile-wide flat; we were at 10,600 feet, at a place called Rogenali. Three huts cowered in this expanse, so much a part of the landscape that from a distance only a thin column of smoke rising through the hole in a roof revealed them to be more than snow mounds. As we drew closer, I could see firewood stacked beside the walls, and by a haystack several sheep hunched against the cold. A few cottonwood and birches grew nearby, mutilated, their branches lopped for livestock fodder. Two dogs barked. Like most of these mountain dogs, their ears had been cut off. Villagers like to lop things. Two men came to the door, both dressed in coarse brown cloth and wearing goatskins tied with thongs to protect their feet. They invited us into the guest room where, taking off our boots, we settled ourselves cross-legged on a layer of straw in front of the fireplace. Soon the kettle boiled for tea, and later, for dinner, we were given boiled potatoes with salt. I like Pakistani hospitality. Even the poorest villager offers what he has with lack of servility, with individual dignity. It grew dark as we sat in the dim light of the fire—the poor cannot afford candles or kerosene lanterns—and the three men gossiped in muted tones. They gave off a primitive odor, half-human, half-animal, a mixture of sweat, smoke, and farmyard. There was no trace of Western culture to distort the evening. Here it was easy to see the excesses of civilization in perspective, to realize the value of simplicity. I would not want to return to such an existence, but made aware of the waste in one's own life one makes a silent promise to conserve. My ancestors lived like this. And perhaps some day my descendants.

The following morning one of the men took me southeast, up a valley toward some glaciers. It was piercingly cold, around 0° F. judging by the way the snow squeaked beneath my boots, and the sun remained only a pale disk behind a veil of cloud. Deprived of the sun's radiance, the peaks were dead, desolate piles of rock and ice. First we walked on the overflow ice of a stream, and then plodded

through knee-deep snow. High above we saw ibex tracks, but no sign of the animals themselves. We ate our lunch, a lean meal of dry bread, while stamping our feet to keep warm, and then it was time to return home. The guide checked the slopes once again, more from habit than hope, but this time he handed the binoculars to me with a grin and pointed. Far away and very high were ibex, dark spots near the crest of a ridge. I counted six females, three young, and three subadult males with scimitar-shaped horns no longer than eighteen inches. Several of the animals were feeding. With snow lying belly-deep they had to use a special technique to find their forage. An animal faces uphill and paws vigorously with a foreleg, sweeping the snow backward and sideways; then it nuzzles around in the crater for something edible, expending much energy for a mouthful—or perhaps for nothing at all. In winter ibex often descend from the high crags to seek food on the lower slopes, although these have mostly been denuded by livestock, and watching the animals as they dug so laboriously for each morsel, I wondered how they could survive severe winters. The amount of energy needed to keep warm, plow through snow, partake in the rut, and in the case of females, nourish a fetus, must be so great that the balance between survival and death from malnutrition is tenuous indeed. In northwestern Chitral, near the Dorah Pass that leads into Afghanistan, I once made a vegetation survey in prime ibex habitat where livestock had ravaged the slopes. At first glance, there seemed to be abundant forage, but the surviving plants consisted mainly of unpalatable species. Only 2 percent of the groundcover was made up of well-liked grasses and forbs.

Fortunately the ibex as a species is adaptable, existing over a vast range in a variety of habitats. Of the four subspecies, only the Walia ibex lives in a moderate environment. All others are exposed either to searing heat or cold, where life is barely endurable. The Nubian ibex inhabits the deserts of Egypt and the Arabian Peninsula, the Alpine ibex the high altitudes of Europe, and the Kuban ibex the western Caucasus; the Asiatic ibex, which I was now observing, ranges from

the Hindu Kush across the Pamirs and the Tien Shan to the Sayan Mountains in Russia, as well as along the great Himalayan chain eastward to the Sutlej River. All day the valley had seemed bitter, the peaks pitiless, the antithesis of life. With the ibex herd above us, I felt somehow less alone and the mountains became more companionable.

Subidar Afzal and I returned to our hut at Golen the following morning. Two days later one of our goats lay dead, its demise advertised by cawing jungle crows. I hoped our wait for the snow leopard was now over, but when I checked the carcass and saw the deeply slashed throat I knew that a wolf had killed my bait. Cats are tidy killers. Although uncommon, wolves are obtrusive and herdsmen cordially dislike them for their habit of sweeping into a herd, killing an animal or two, bolting some meat, and vanishing as suddenly as they arrive. C. H. Stockley witnessed such an attack:

He then spurred suddenly in the most amazing manner into the middle of the flock and pulled down sheep after sheep with such wonderful speed and dexterity that there were five lying on the ground within a distance of thirty yards. . . . He came up on the right side of each sheep . . . and, seizing the galloping sheep behind the right ear, jerked its head downward and inward so that it pitched on its nose.

Having waited in the Golen Gol for twelve days, I decided that Mel could continue the vigil with Sher while I checked for snow leopard in other valleys. Subidar Afzal and I left on foot for Chitral town where I again visited Mirza Hassan, the game warden, who invited me to his room. It was bleak and impersonal, so typical of those belonging to itinerant officials who have with them only a bedroll, a change of uniform, and some toilet articles. Like most civil servants, he could not afford to bring his family to Chitral during his tour of duty. No wonder everyone applies for transfer as soon as they are assigned to the mountains. We sat on his bed and drank tea and nibbled crackers I had bought in the bazaar. The temperature in

the room was near the freezing point. My one recurrent wish was to be really warm, warm all over, not just hands or front or back or whichever part of my body happened to be near some puny fire. I inquired about snow leopard. Yes, Hassan said, one had been seen near town. But he was obviously preoccupied with another matter and finally asked:

“The dying man? What happened?”

It took me a few seconds to realize that he referred to an incident in the Golen Gol. One morning, near our hut, I saw blood spattered all over the snow. A messy way to butcher a goat, I thought. Later that day I discovered that during the night a villager had shotgunned another in a dispute over a woman. And now I learned that, according to bazaar rumor, the wounded man had crawled to my bed to die in my arms.

Hassan knew a man who had trophy horns in his home and he offered to show these to me. We walked through a maze of narrow and muddy lanes flanked by high stone walls behind which hid flat-roofed bungalows and small gardens with apricot and mulberry trees. Hassan entered one courtyard and I waited at the gate while he announced our arrival, warning all women that a stranger was near. Several trophies hung on the veranda. I measured each one, a 45-inch markhor, a 40-inch ibex and others, dusty mementos of once-vital beasts. As I worked, another villager came to watch. He told Hassan that he had some urial trophies and would show them to me if he would not be arrested for possessing them. He was assured that there was no law against owning horns. One subspecies of urial sheep, the Ladak urial, occurs in the mountains along the major river valleys. During the 1930s the mehtar used to send his men into the hills to drive sheep down the forested slopes to where they could be shot easily in the open near what is now the Chitral airport. These slopes are now bare of trees and the urial is so rare that I never saw any in Chitral.

I was particularly interested in ascertaining the age of each trophy. Horns continue to grow throughout the life of an animal, most so

when there is nutritious food available and least so during winter. This fluctuation in growth rate produces an easily visible winter "ring" each year, enabling one to age trophies precisely. The oldest markhor in my notes died at the age of thirteen years, the oldest ibex at fifteen, the oldest urial at ten and a half. All these trophies were large enough to rate entries in the obituary columns of record books. Remembering that the world-record markhor measures 64 inches and ibex 56 inches, some hunters bemoan the fact that they have never seen, much less shot, a beast of such size. However, for horns to reach record length, good nutrition and a long life are needed, a combination that few animals now enjoy.

Subidar Afzal and I then walked the eight miles to Tushi, but no snow leopard had visited the area. We continued north to Shogore, inquiring of travelers and villagers about the cats. One, we were told, had passed through recently. From Shogore we continued up the Arkari, along a foot trail which first wound up over a cliff and then traced a turbulent stream whose course alternately passed between gorges and by clusters of huts perched on alluvial fans and raised banks. We stopped at one hut to talk to Gulbas Khan, a game watcher employed by Prince Burhan. Tall and strong, Gulbas approaches life with great zest; I was pleased when he agreed to accompany us. It began to snow. At dusk we reached the village of Mizhigram where I hoped to speak with the owner of a private shooting reserve called Besti, probably the finest ibex area left in Chitral. I had visited Besti to study ibex the summer of 1972 and now wanted to check the area again, this time to look for snow leopard. The owner was gone for the winter, but the caretaker invited us in to spend the night. It was still snowing when we left the next morning. After two hours the Besti Valley joined from the left and we ascended it over a narrow trail obliterated by snow and avalanches. Crossing unstable scree slopes high above the river, I found it disconcerting to have the trail slump away underfoot, and I was quite willing to have Gulbas in the lead. Finally the valley widened and ahead we saw the village of Besti squeezed so tightly against the mountain slope that one man's

veranda is another's roof. Hill people must conserve space; land suitable for agriculture is too valuable to waste on houses. A tiny room with a bed of straw and a fireplace became our home. The Subidar made tea and baked juwari bread on the hot coals. Meals become the main diversion in a life of waiting. In these mountains one must always be resigned to waiting for something, for the snow to stop falling, for porters to arrive; only a small fraction of the total time is spent in actual research. Here in the village the people waited too, for spring. They almost hibernated. Only one snow trail left the village. Occasionally someone hurried between huts, cloak pulled over head for warmth. It was silent, a medieval silence without motors and few sounds beyond the muted voices of men and livestock.

Still the snow fell. Determined to do some fieldwork, I walked up the valley a short distance, but soon stopped, realizing the futility of my venture; with the snow and clouds roiling low on the slopes, I could see little. Suddenly the ground quivered, the tremor lasting several seconds, and like giant beasts shaking themselves, the peaks discarded their mantles of fresh snow. Avalanches rumbled, the valley hummed and vibrated, and sharp ice crystals borne by gusts of wind pierced my face. Only I seemed stable in a white, moving void.

Next morning the snow stopped and the clouds began to disperse, revealing the dim lines of peaks and an occasional fragment of ice against a brilliant sky. Breaking trail with my snowshoes, I plodded in the lead while Gulbas struggled behind. Although snow may isolate villages for weeks, the local people never developed snowshoes to ease their travel. Avalanches constantly funneled down ravines before fanning out in the valley, and I viewed these shimmering cascades with trepidation. Certainly they made my choice of route of more than casual interest. Halfway up a slope, in a gully swept clear of snow, we spotted an ibex herd with seven animals; later we met another, this one with nine animals, again feeding on an avalanche path. Obviously the ibex sought such snow-free sites where food could more readily be found. The second herd contained two magnificent males, their knobby horns sweeping up and back for almost 40 inches. Un-

like the drab-brown ibex males of Europe, the Asiatic ibex is strikingly adorned with a grizzled white face, a silver saddle, and white rump which contrast with the rest of his dark pelage. As I watched the animals the last wisps of cloud withdrew. Soon heat waves quivered over the snow, dancing among the ice monuments, and once again the landscape was full of motion, brilliant with an unrelieved radiance that had an almost hallucinogenic quality. On this day and the next I found 8 ibex herds, totaling 40 animals. Gulbas told me that perhaps 200 survived in the 55 square miles of the Besti drainage. His estimate seemed accurate. The Besti Valley divides near the village and previously, in August, 1972, I had surveyed one of these branches, the Gulumbukt Valley, and found 72 ibex.

I enjoyed those summer days in the Gulumbukt. From my tent camp at 11,300 feet, on a level place among stone corrals, I had roamed the hills, climbing high up on the sagebrush slopes until only the silver bulk of Tirich Mir and I had the sky to ourselves. I had meandered up the valley through the flowers, white daisies, yellow louseworts, purplish mints, and, hidden in the grass, edelweiss. I liked to find a rocky niche protected from the wind, where, sitting quietly, I ceased to be an intruder. Sometimes a skink basked in the sun with me. I was surprised to find these lizards as high as 14,500 feet. Long-tailed marmots had dug their burrows where soil was sandy and vegetation lush. At this season they urgently stuffed themselves to grow fat enough to survive their long winter sleep. Sometimes I watched ibex, and one afternoon I spotted a herd of 31 males moving far up the valley. After collecting my sleeping bag from camp, I followed the herd. The valley ascended in a series of huge steps, level green turf dotted with yellow cinquefoil alternating with precipices and boulder fields down which a stream cascaded. Dusk overtook me at 14,000 feet. Marmots scolded, a harsh *bri-bri-bri*, as I unrolled my bed on a bar of glacial silt. At dawn I continued, up toward the sun that crept down the peaks and glaciers. At 15,000 feet there was a pond at the base of a moraine, and along its shore were tracks of hare and marmot, but not ibex. I climbed on, over the moraine, its sur-

face gray and tossed, and then along a scree slope toward a col. Here at 16,000 feet, among the great ice-carved peaks, where only the hardiest plants can survive, I again found spoor of the ibex herd. Moving upward, the animals had foraged on isolated plants, nibbling on purple vetch and yellow-flowered *Draba*. Scattered, procumbent, and hidden in the protection of boulders, plants grew too sparsely to support a herd; each tuft of grass was its own oasis. The ibex had moved over the col into the valley beyond, but I did not mind. Wandering these heights, the hard rock underfoot, seeing an eagle against the sky, was reward enough.

In my mind I had passed to another world and returned. I had to leave the enchantment of the high summer pastures for the icy bleakness of Besti in winter. I wanted to flee; I wanted flowers and grass. There were no snow leopard here, and the following morning, in a snowstorm, we left. At the entrance to the village is a boulder into whose surface someone long ago chipped crude figures of ibex and wolves. When the huts of Besti have turned to dust and the last ibex has vanished into the belly of a hunter, these petroglyphs will remain, speaking of the past in a silent voice to silent hills.



By the end of February I had checked for snow leopard in many valleys. I had evidence of four or possibly five animals in about 1,200 square miles of mountains. Four years earlier, after having observed my first snow leopard, I left Chitral with the expectation of returning to study the cat. I had waited too long, and now it was too late; I could not justify a lengthy project on so few animals. I also had to leave Chitral to observe the birth season of Persian wild goat. Mel remained for another week, still hoping to trap a snow leopard, but after a month and a half of effort he too gave up and left the mountains. In only four years the status of the snow leopard in Chitral had changed from tenuously secure to seriously threatened. The animals had been shot neither for their hides nor in defense of livestock, just wantonly because they were there. No snow leopard visited the Chitral Gol during the winter of 1973-74, and none did so in 1974-75 either, according to a letter from Sher Panah. After that I did not seek further news. Markhor may still scamper over the precipices of the Chitral Gol and chukor may cackle among the sagebrush, but one of my dreams vanished with the last snow leopard. I do not want to return to the valley.

The snow leopard as a species is not threatened with imminent extinction, but in Pakistan, where possibly fewer than 250 survive, its future is not assured. Will Pakistan's mountains soon be deprived of snow leopard as the plains have already lost lion, tiger, and cheetah? Legally all hunting is prohibited, as is the sale of pelts, but it is difficult to enforce laws in remote mountain tracts. Besides, snow leopard do prey on livestock, something a villager cannot be expected to tolerate unless he receives compensation for his losses from the government. In conservation both idealism and realism must be served. Because of these problems it is all too easy to leave the snow leopard to its fate. It survived the icy rigors of the Pleistocene, when many other species vanished from our earth, and it has so far survived the onslaught of man on its mountain realm. But I know that the Chitral Gol does not feel its soft tread anymore and that many other valleys too are deprived of its presence. Imagine the peaks without snow leopard.

Though the cats can perhaps survive in zoos as relics of a better past, it is a sad compromise. The mountains gave man soil, provided him with food, and stored his water, but he has taken almost everything, leaving the earth's bones bare. The snow leopard might well serve as symbol of man's commitment to the future of the mountain world.