

SPRING COMES TO THE DESERT

by

Jim Conrad

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THE ESCAPE

On the day after Christmas in the year 1987, Henry and I escape toward the southwest. Henry is the old Volkswagen bug I drive.

Out of Kentucky and down through western Tennessee, across the flooded Mississippi at Memphis, then around Little Rock and into Arkansas' Ouchita Mountains we go; for three days getting stranded here by an unannounced snow. Finally, on a blessed sunny morning, southwestward again, this same day the graceful, moisture-loving forest yielding to northeast Texas' stunted oaks and pines. In the afternoon, on Interstate 30 heading into Dallas, the sun in my eyes and the air smelling of dust, pine resin and Henry's hot oil, I begin thinking that just maybe this escape might succeed.

Central Texas comes on flat and in gentle rolls, and most of the time there's not really anything to be called a forest or a woods. Brady, Hext, Teacup, Telegraph, Carta Valley... These town names along our route southwest through southern Texas sound good and appropriate for a landscape where now on the horizon appear flat-topped mesas straight from the Roy Rogers movies of my childhood. Chest-high shrubs and occasional cacti, yuccas and agave plants make up the vegetation. We pass miles and miles and hundreds of miles of south-Texas roadside barbed-wire fence. In late afternoon, despite the wide-openness, it's hard to find a place to camp. Plenty of dirt roads lead into the scrub toward ranches, old mines and indefinable spots, but beside each trail entrance there's a sign saying KEEP OUT. Sometimes nearby on a fencepost hangs a sun-bleached cow's skull. Finally I find a place just as the sun goes down.

Next day, just north of Del Rio, Texas, about five miles north of the Rio Grande and the Mexican border, Amistad Reservoir comes up. A sign points toward a none-fee, National Park campground offering no hookups. About thirty recreational campers, house trailers and fifth-wheels are parked in a congenially random manner. The RVs bear license plates from Michigan, Colorado, Ontario... Next to the lake, around an orange, wind-whipped fire blazing beneath willow-like trees that are not willows, several retired-looking men sit hunched-up in aluminum-framed lawnchairs. They give Henry and me the eye, trying to identify my blue and white license plate. I guess that soon I'll know each of them by name and city of origin.

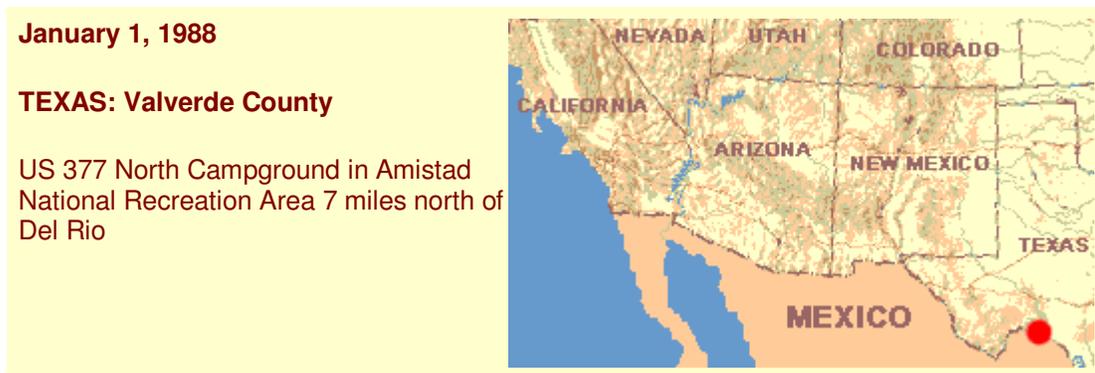
I pull next to a gray, brittle-looking bush heaving mightily in the wind. For a while I just sit in Henry, looking around. The wind is a hard one so when finally I get out and begin putting up the tent, the tent's nylon sheets pop like snapping whips and fly all over me. Once the whole tent balloons full of air, drags me smack into the bush, and I can feel the old men behind me laughing and shaking their heads. Nonetheless, while I work, here's what goes through my mind:

Now I'm on the northeastern fringe of the vast Chihuahuan Desert. Now each day on long walks taken into this scrub I shall, moment by moment, gradually and properly, introduce

myself to deserty things, and become sensitized to this land's arid feelings and manners of beings...

For a month, this spot next to the gray, brittle-looking bush will be my home.

DOG-BILL'S WALK



This story begins on a cold morning with wet wind blowing hard off Amistad Reservoir. Beneath the willow-like trees I bake cornbread in a skillet and scramble eggs with jalapeño peppers while hot tea brews in a cast-iron pot. Wind makes the fire burn too hot. Orange flames sputter, and smoke keeps close to the ground.

With the last cup of tea finished, I discover myself uncertain as to how to begin this project. Finally I just decide to get together some books and my binoculars and walk into the desert, which begins right beside my tent. Very much conscious of, and enjoying, my moment of "starting something big," I begin walking down a wildlife trail among the willow-like trees, my eye fixed on the broad horizon of gray, waist-high scrub before me, almost fearing it.

"Howdy!" greets a sparkly-eyed little man with a bushy, gray beard. This morning he's been standing near his blue, rusted-out van parked across from the toilets. He's the one who last night listened to big-band music on the radio.

"I see you got binoculars, too," he says. "You a birder like me?"

Bill Miles, from Shirland, Illinois, laughs as if he's just heard the world's best joke, just because he's found a fellow birdwatcher. Hearing that today I want to learn the local plants, he leads me to the site next to his, to a run-down aluminum trailer with three large, plastic garbage-bags of squashed beer cans propped against the outside wall, and two yelping pit-bulldogs chained to a post. Here I'm introduced to Bill Stout, a fat, red-faced man of about sixty, mostly toothless and covered with dog hairs. This second Bill, whom I'll now call Dog-Bill, knows his plants so he invites Bird-Bill and me for a walk.

"This gray-leaved shrub that makes up 95% of the vegetation cover around here is called Cenizo," he begins. "The big beer-joint in town is called the Cenizo Inn, you might want to know. Well, the word cenizo in Spanish means 'ash colored,' I reckon. Over here, between your fingers you crush the leaves of this little shrub and tell me what you smell. Smells like medicine, don't it? Well, that's Creosote-bush. Now, here's a little shrub you can make tea out of. It's called Mormon Tea. Its flowers come out in little cone-like things. And here's Allthorn, which really does look like it's no leaves, but "all thorn," hee hee hee, but right after rains, sometimes it has real tiny little leaves that fall off pretty quick. And here's Basket-grass, which the Indians used to make their baskets from..."

Dog-Bill's breeches keep falling down, exposing his red rear-end, but he's so absorbed in his lecture that he doesn't seem to notice or care. Bird-Bill clearly is accustomed to Dog-Bill's manner of doing things.

Walking through the Cenizo, speaking professorially, now Dog-Bill turns to cacti. He shows us the abundant flat-jointed species called Nopal, which Mexicans like to eat. Next comes the Rainbow Cactus and the Nipple Cactus, each about six inches high and oval-shaped, and adorned with short, star-like clusters of spines. Dog-Bill is especially fond of the red-fruited Christmas Cholla, shaped like branched pencils mounted one atop the other, but for me the most interesting species is the one called Horse-crippler. It's about eight inches wide, with most of its body buried beneath the ground. Only the broad, low-lying crown of its head is exposed to view, armed with vicious-looking clusters of long, stiff spines that certainly could cripple a horse. Finally Dog-Bill shows us various species of yucca and agave, the most common ones being the Torrey Yucca and the Agave Family member called Sotol. After about three hours of botanizing, the Bills return to camp to rest but I stay in the sea of cenizo. Wanting to fix each of the new plant species in my mind, I plan to take a second look at each one.

However, when I begin moving through the Cenizo, quickly two facts become apparent. First, I can't find the more interesting plants. Second, since I'm not using the paths that Dog-Bill followed (I simply can't find them!) I'm crashing through the brittle scrub tearing my bluejeans, snapping off entire cenizo branches, and generally feeling more than a little inelegant with my scrub-walking.

By dusk I realize that Dog-Bill had been able to so easily find all the rarer things because in this gray sea of stems and leaves he'd memorized the precise location of each interesting plant he'd wanted to show me. He'd given me the impression that in this desert Horse-crippers, Mormon Tea and Basket-grass are as common as weeds but, at least in the area around the US 377 North Campground, these plants are rare or uncommon.

That night I huddle next to the campfire with Bob, Clay, John and Floyd, and while they tell of epic wars with legendary fish and improbable boat-motors I stare into the orange flames, still feeling the Cenizo pulling at my legs. The thing is, I'm not so much astonished that Dog-Bill could have memorized the exact locations of each of those plants as I am

surprised that he so easily, even without trying to do so, created the illusion that several very rare plants were quite common.

What else in this desert -- in this life -- might be more rare -- more precious -- than at first it seems?

A GULLY-MUD SKULL

January 15, 1988

TEXAS: Valverde County

US 377 North Campground in Amistad National Recreation Area 7 miles north of Del Rio

Days and nights at Amistad pass calmly and pleasantly, with Sundays and Thursdays being little different from Tuesdays and Fridays. Each morning after the campfire ritual I take a long walk, usually accompanied by Bird-Bill. Dog-Bill's hysterical pit bulls, very slow pace and tendency to sleep late keep him from being invited along. Bird-Bill and I return from our walks carrying deer skulls with antlers attached, rocks adorned with crystals and fossils, and lists of birds and cacti.

In the afternoons I wander alone, or for hours just sit watching the coots on the lake. Slowly I recover from the excesses of Christmas in Kentucky. Though I treasure my family, I have many issues with the consumption-oriented underpinnings of my culture. Leaving right after Christmas and coming into the desert was like walking out of a tedious Italian opera buffa into an elegant, crystalline Bach fugue.

As in a fugue, the desert-understandings coming to me from this edge-of-the-desert are understated and often cryptic. In order to show you one way in which I am communicating with the desert, let me describe today's experience with a sun-bleached skull found half embedded in gully mud not far from camp. I didn't know from what kind of animal the skull had come so from the little library in Henry I pulled out one of the Peterson Field Guide Series, A Field Guide to the Mammals: North America North of Mexico, by Burt and Grossenheider.

Now, the number of teeth in a mammal's skull varies from species to species, but all the individuals within a species generally bear the same number. Thus domesticated dogs possess forty-two teeth while domesticated cats have thirty. These teeth are arranged in particular ways, with every tooth belonging in one of the following categories:

- * incisor
- * canine
- * premolar
- * molar

Moreover, the distribution of an animal's kinds of teeth can be described schematically with "dental formulas." In the back of my mammal book dental formulas are explained and formulas for many mammal species are given. After reviewing the formulas' formats, I figured out the gully-mud skull's dental formula as the following:

	incisors	canines	premolars	molars	total
UPPER	3-3	1-1	3-3	1-1	16
LOWER	3-3	1-1	2-2	1-1	14

In the above formula the first number 3-3 means that in the upper jaw's left side three incisors are found, and three are on the right. The next number, 1-1, means that one canine is on the right in the upper jaw, and one is on the left. The formula goes on to show that the skull has sixteen teeth in the upper jaw and fourteen in the lower, for a grand total of thirty teeth in the whole skull.

The gully-mud skull's entire formula wasn't immediately obvious. While the skull's incisors and canines were easy to identify (incisors bite and are up front, while canines stab and are right behind the incisors), I couldn't decide where the premolars ended and the molars began.

Nonetheless, the teeth could be counted. The gully-mud skull had thirty teeth, with sixteen in the upper jaw and fourteen in the lower. Referring to the field guide's chart I found only two genera with that precise configuration of teeth -- the genus *Leptonycteris* (the longnose bat) and the genus *Felis* (cats). Since *Leptonycteris* possesses eight incisors while *Felis* bears twelve and the gully-mud skull had twelve incisors, just using part of the dental formulas, I figured out that the gully-mud skull belonged to some kind of cat. So, what kind of cat was it?

Also in the back of the mammal field guide are photographs of a selection of mammal skulls. The only *Felis* skull pictured is the mountain lion. The gully-mud skull is shaped very much like the mountain lion's but it's much smaller. According to the field guide's species-distribution maps, the following species of the genus *Felis* may be found at Amistad:

- * mountain lion
- * jaguar
- * ocelot
- * margay
- * jaguarunde

The book doesn't mention it, but everyone knows that the domestic cat also is a member of the genus *Felis*, and they're found here, too. In fact, Bird-Bill says that sometimes people from Del Rio "drop" their unwanted cats at this campground so that often a real cat-problem develops. In short, my gully-mud skull may belong to a margay or one of those other rare cats but I suspect it's just a housecat's skull.

The process just described might seem a bit monotonous. The pleasure the process brings can only be understood in terms of its being a meditation that calms and focuses in a healing, nurturing way...

FOUR DESERTS FROM A WET TENT

January 20, 1988

TEXAS: Valverde County

US 377 North Campground in Amistad National Recreation Area 7 miles north of Del Rio

While most days at Amistad are sunny and pleasant (though usually very windy), for the last three days and nights a kind of wetness that's half heavy fog and half drizzle has clouded around us. The wind is almost vicious.

During these days and nights I've stayed in my tent just keeping warm, reading. Especially I've been reading about deserts. Here is some of what I've learned:



First, I've been wondering about the words "chaparral" and "scrub." My Webster's Dictionary claims that the restrictive meaning of "chaparral" defines a community of shrubby plants, especially evergreen oaks, in southern California. In the more general sense, chaparral is a thicket of "shrubs, thorny bushes, etc." Thus, this cenizo-dominated vegetation at Amistad is chaparral in the general sense, but not in the specific sense. Also the dictionary describes "scrub" as "short, stunted trees, bushes, or shrubs" growing together thickly. Therefore, our general-sense chaparral also is scrub. It appears that the terms chaparral and scrub can be used interchangeably.

In this tent I've learned that North America is home to four main hot deserts. The term "hot desert" excludes regions of the far North which, because of low precipitation rates, may be classified as deserts, despite snow and ice covering the land. Today I have designed an itinerary that will carry us through all four of the U.S.'s hot deserts. Here is a list of those four deserts, in the order in which we'll visit them:

THE CHIHUAHUAN DESERT:

We're at the edge of the Chihuahuan now. This desert extends farther south than any of the other three. In fact, over 90% of the Chihuahuan lies in Mexico, mostly in the Mexican states of Chihuahua and Coahuila. The Chihuahuan's distinguishing features are its great diversity of cactus species, and the fact that it's a high-elevation desert. Mostly it occupies a plateau region above 3500 feet in elevation, between the Eastern and Western ranges of the Sierra Madre Mountains. Because

of the elevation, winter temperatures in the Chihuahuan can remain below freezing for over seventy hours, and summer temperatures average ten to twenty degrees cooler than in the Sonoran Desert.

THE SONORAN DESERT:

Shaped like a horseshoe fitted around the head of the Gulf of California, about two-thirds of the Sonoran lies in Mexico, in the states of Sonora and Baja California Norte. In contrast to the Chihuahuan, most of the Sonoran lies below 2000 feet in elevation. Of all the deserts, the Sonoran offers the greatest diversity of species.

THE MOJAVE DESERT:

The smallest of North America's deserts, the Mojave lies mostly in southern California and the southern quarter of Nevada. Its topography is dominated by north-south running mountain ranges. Three-fourths of it lies between 2000 and 4000 feet; one of my books calls it a "cool" hot desert.

THE GREAT BASIN DESERT:

Besides being our largest desert, the Great Basin Desert is the most northerly of our four and, lying mostly above 4000 feet, it's also our highest. Stretching from southern Oregon to northern Arizona, and southwestern Wyoming to along the Nevada/ California state line, it's our coldest hot desert. Whenever the books refer to the Great Basin Desert, invariably they use two words: "saltflats" and "sagebrush."

Here's some more desert information: About one-seventh of the earth's land is classified as desert. If we consider our four deserts as just one big North American desert, it ranks fifth in size among the world's. Larger than our desert are, in order of descending size, North Africa's Saharan, the Australian, the Arabian, and southwestern Russia's Turkestan Deserts.

There are reasons why deserts are where they are. Here's one of the main ones:

Hot, moist air rises at the earth's equator. Since cool air holds less moisture per unit volume than warm air, and since the equator's warm, moist air cools as it rises, it dumps part of its moisture load at the equator, and that's why many equatorial regions are so lush. When this rising, drying-out equator-air can rise no farther, it splits into two streams - one flowing northward and the other heading toward the south.

Because of reasons relating to the Coriolis force and the fact that at the two poles all this equator-air just can't find enough landing-room, much of the dried-out air descends to the Earth far before it reaches the poles -- in the regions of the Northern Hemisphere's Tropic of Cancer and the Southern Hemisphere's Tropic of Capricorn. As this descending air above the two tropics warms, its capacity to hold moisture increases. This increasing capacity translates into lower relative humidities. In short, this air is dry.

Therefore, the world's major deserts lie clustered along the two tropics. Along the Northern Hemisphere's Tropic of Cancer lie our North American deserts, the Saharan, Arabian, Indian and Iranian. Along the Southern Hemisphere's Tropic of Capricorn are found the Australian, Kalaharian, Namibian, Atacaman and Patagonian.

Deserts also form because of rain-shadows. The Great Basin Desert lies considerably north of the Tropic of Cancer, so its location is explained by the rain-shadow phenomenon. Think of moist winds blowing toward the east, coming off the Pacific Ocean.

Encountering California's Sierra Nevada Mountains, they find no place to go but up. The rising moist winds cool and drop their moisture loads on the western slopes, providing water that flows into the rich Sacramento and San Joaquin Valleys. When the warming, dried-out winds descend on the eastern slopes and stream eastward across the Great Basin, they're rained-out desert winds.

Other reasons for deserts exist, too. But in this wet tent, the two main causes outlined above are enough to think about.

GRAWINGS, NIBBLINGS & SCATS

February 3, 1988

TEXAS: Valverde County

US 377 North Campground in Amistad National Recreation Area 7 miles north of Del Rio

This chaparral -- this horizon-to-horizon ocean of dry, chest-high Cenizo with occasional emergent yucca and agave -- is the scene of a population explosion of Back-tailed Jackrabbit, Eastern Cottontail and White-tail Deer. On a typical five-mile morning walk, five or more deer are spooked from hiding places along the trail. They bound away blowing snorts and flashing white rump patches, warning other deer that I'm coming. Maybe a dozen jackrabbits and as many cottontails also are spotted, leaping and dodging, struggling mightily to escape, as if my very eyes were red-tailed hawks swooping down for the kill.

In places, not a single cenizo bush remains not severely damaged by these animals' bark-gnawings and branch-tip croppings. Many large stem bases are completely girdled. Rabbit tooth-marks are plainly chiseled in the debarked wood. Later in spring these girdled stems will die. The gnawed areas show up as bright, straw-colored splotches on the cenizo's dark-gray stems.

The most conspicuous sign of this awful excess of rabbit and deer consists of the droppings these animals leave behind. In places their excreta lies as thick as chicken manure in a farmer's pen. Both jackrabbits and cottontails leave dry, spherical, pellet-like scats ("scats" is a general term for animal droppings) that look like marble-sized, dried-out balls of varnished, yellow sawdust. The handlens shows this "sawdust" to be clippings of grass stems and leaves that are in such an undigested state that it's hard to see how the animals could have derived much nutrition from them. The only difference I find between jackrabbit and cottontail pellets is that the jackrabbits' are slightly larger, averaging about half an inch in diameter, while the cottontails' are only about 3/8 of an inch.

Deer scats found here also are pellet-like, averaging about 5/8 of an inch long. The ones I'm seeing are not spherical, but rather oblong, often bearing "nipples" on one or both

ends, and though they're composed of straw-like clippings like the rabbits', they're darker in color. Olaus Murie in his Peterson Field Guide entitled A Field Guide to Animal Tracks points out that animal droppings vary in size, texture, form and color, depending on the food that's been eaten, and thus on the season. For instance, a plant-eater's dry winter food might produce hard, compact pellets, but the same animal's excreta developed from moist summer food may be deposited in a rather less compact state. In fact, Murie's book includes an entire page of drawings portraying eight different varieties of white-tail deer droppings.

On the dirt road leading through the chaparral between camp and the US 377 bridge, appearing nearly every morning are fresh deposits of long, greenish-black scats composed mostly of hair, feathers and bone. The beginner might guess that these mystery scats were being left by armadillos, simply because the size seems right and armadillos are common here. But then Murie reminded me that when armadillos root in the ground looking for their fare of insects and grubs they swallow plenty of dirt. Naturally this dirt causes their scats to be thick, chunky, gritty affairs with rounded ends, very unlike the slender objects being found on the bridge road. Moreover, armadillo scats wouldn't contain bone and hair.

After rejecting armadillos, for a moment I wondered whether I might be finding skunk scats, for around here we have spotted, striped, hognose and possibly hooded skunks. However, Murie's skunk scats also lack long-drawn ends.

So, mostly because of the scats' shape, composition and size, I settle on the dog family. Coyote and wolf scats are larger than the ones being found. That leaves foxes. Burt and Grossenheider's A Field Guide to the Mammals places Amistad Reservoir within the distribution areas of the kitfox, red fox and gray fox. One of the campers here claims that early one morning he saw a kit fox in the bridge area, so maybe that's our scat-leaver..

BIRD LIST #1: THE DESERT'S EDGE

February 7, 1988

TEXAS: Valverde County

US 377 North Campground in Amistad National Recreation Area 7 miles north of Del Rio

If this morning for three hours you could have tolerated the 35^o, wet, quarrelsome wind and walked with me through the cenizo uplands and along Amistad's shore, here are the birds you'd have seen:

1. Double-crested Cormorant
2. Northern Shoveler
3. Cinnamon Teal

4. Great Blue Heron
5. American Coot
6. Common Snipe
7. Killdeer
8. Greater Yellowlegs
9. Ring-billed Gull
10. Mourning Dove
11. Belted Kingfisher
12. Flicker
13. Golden-fronted Woodpecker
14. Ladder-backed Woodpecker
15. Say's Phoebe
16. Tufted Titmouse
17. Verdin
18. Bewick's Wren
19. Cactus Wren
20. Mockingbird
21. Blue-gray Gnatcatcher
22. Ruby-crowned Kinglet
23. Water Pipit
24. Loggerhead Shrike
25. Yellow-rumped Warbler
26. House Sparrow
27. Western Meadowlark
28. Brewer's Blackbird
29. Red-winged Blackbird
30. Yellow-headed Blackbird
31. Great-tailed Grackle
32. Brown-headed Cowbird
33. Cardinal
34. Brown Towhee
35. Black-throated Sparrow
36. Lincoln's Sparrow
37. Song Sparrow
38. White-crowned Sparrow

Despite the cold wind, this is a pretty good list! About a third of the species, those in blue letters, seldom or never are found east of the Mississippi River, so to an Easterner like myself, they're good sightings. Over a third of the species seen today are just overwintering at Amistad.

Probably the Cinnamon Teal was the day's highlight, because I've not seen one since I arrived here a month ago. It accompanied three Northern Shovelers floating in a small inlet. Its small size was a good fieldmark, as was its ruddy color. I double-checked this identification because my field guides' distribution maps indicate that in the winter Cinnamon Teal are not supposed to range this far east in Texas. The largest bird was the Great Blue Heron, with a wingspread of about six feet. Maybe the prettiest was the Yellow-headed Blackbird, the male of which looks like a blackbird with its body's front third dipped in yellow paint, and its shoulders daubed with white. The female shows less yellow and is brownish instead of black. Certainly the brightest bird was the Cardinal, which seems just as common here as in the East.

The day's most dramatic observation was made right beside Henry as I was returning from the walk. Each morning several campers toss onto the gravel parking area handfuls of grain for the hoards of blackbirds hanging out in the Seep-willow thicket surrounding camp, singing loudly and almost constantly from dawn to dusk. These flocks are remarkably integrated. About half are Red-winged Blackbirds, about a quarter are Great-tailed Grackles, and a quarter are Brown-headed Cowbirds. Usually four or five Brewer's Blackbirds also are present. When this flock swarms into the parking area and begins feeding, sometimes several hundred House sparrows wing in out of nowhere to join them. On about every third day the single Yellow-headed Blackbird spotted today appears among them. When this immense flock is settled in the parking area with its thousands of members quarreling among themselves, fluttering wings, singing... it's spectacular. And when a camper door swings open or a dog walks by, causing the whole multitude to rise up en masse, it's breathtaking! I've had to string a tarp above my tent to protect it from droppings...

Also found during today's walk was the rear half of a Whitethroat Woodrat -- one of the fabled "packrats" or "traderats" that in TV westerns always steal old cowpokes' gold watches, leaving acorns in return. With white belly and feet, and rusty-gray upper body, packrats are readily distinguishable from common house rats, or Norway rats, because their habits are different, and house rats bear scaly, not hairy tails, as do packrats. Not far from today's half of a rat rose a typical packrat home, consisting of a large jumble of woody seep-willow sticks and dry horse-turds practically burying a much branched, spreading, two-foot tall Nopal cactus. Why this particular packrat was only half there, I haven't a clue. Owl, fox... ? It'd been cut in half as neatly as if with a packrat-guillotine.

BIG BEND'S FIRST LESSONS

February 9, 1988

TEXAS: Brewster County

K-Bar Campsite in Big Ben National Park; elevation about 3000 feet.



Now knowing, more or less, what winter at the edge of the Chihuahuan Desert is like, having settled into a daily routine and having been accepted into the society of old fishermen daily congregating below the seep-willows, on a certain day, almost surprising myself, I leave Amistad to begin this trek through four deserts. My immediate goal now

becomes to experience winter deep inside the Chihuahuan Desert, not just realities at its edge.

Heading west on US 90 toward Marathon, the land undulates like the ocean swelling at a storm's edge. Always it becomes drier and drier and sometimes the Genizo, *Leucophyllum frutescens*, disappears, but then great waves of it come back again, and then it disappears once more. At Marathon I turn south onto US 385, passing a sign saying, "Big Bend 69 miles." At Panther Junction Park Headquarters I explain my project to a ranger and request a cross-country backpacking permit good for three weeks.

"First of all," says the ranger, "if you've come to learn about winter in the Chihuahuan Desert, you've just about missed it. Another week or two and it'll start getting downright hot, and what passes for spring in these parts will come on fast. Second, if you've never walked cross-country in the Chihuahuan, I strongly suggest that you park your car at one of our designated primitive campgrounds and, using it as a base you can return to each night, take some day-hikes into the desert -- make some 'test walks' before you really take off." I'm given a map.

The ranger's proposal sounds reasonable so a camping permit is requested for a spot on the map referred to as K-Bar. Heading to K-Bar I visualize arriving in a cozy little spot surrounded by a few acacias and mesquites, and maybe with a spring nearby, and some trash. But K-Bar turns out to be nothing but a turn-around at the end of long, straight, pot-holed gravel road, with no trees, no water and no garbage. Nothing but open, sun-baked, wind-swept barrenness. I turn off Henry's engine and hear wind whooshing around his corners. The sunlight is heavy and shadows are desperately black: dust, gravel, sunlight, wind... To the west rises very rugged, picturesque Emory Peak, elevation 7,835 feet (2,388 m). I'm at about 3,000 feet.



The dominant plant here is Creosote-Bush, *Larrea tridentata*. Covered with small, dark-green, gummy leaves, it's almost waist high. Two kinds of knee-high, ashy-white shrubs

grow between the creosote-bushes. One is a small close-relative of Amistad's Cenizo; it's Purple Cenizo, *Leucophyllum candidum*. The other is a kind of *Parthenium*. Also lots of winter-killed gray and white bunch- grasses with blades tattering in the wind. Interesting peaks and cliffs lie a few hours walking distance off.

This whole flat landscape tilts toward the northeast. Some kind of magnificent geological force has been at work here. A couple of miles toward the south, a small, rocky hill rises from the flatness so I begin walking toward it.

Quickly I learn that Big Bend feels different from Amistad. The cenizo at Amistad was thornless so even when I had to plow through it I didn't get scratched. Here, among the creosote-bushes grows an abundant, pernicious kind of agave with sharply pointed leaves, called Lechuguilla, *Agave lecheguilla*. Spiny cacti, so easy to walk into, also are much more common here than at Amistad.

Here jackrabbits, *Lepus californicus*, flee much more fearfully than did the ones at Amistad. Though the sky is blue, somehow it seems to be brooding. The wind feels raw and threatening. As I walk across this isolated, wind-thunderly stage, a certain kind of lonely apprehension builds in me. Plucking some creosote-bush leaves, I sniff their medicinal odor, just to bring to mind Dog-Bill teaching me the plant, he with his red face and his breeches falling down, and now somehow I feel better.

As I walk, lechuguilla becomes the thing I focus on most. Picture this: Surely at one time or another you've had the agave called burn-plant or aloe vera. Burn- plant is closely related to the lechuguilla and looks a lot like it, except that the lechuguilla is dried-out looking, has rock-hard spines on its leaf-tips, and bears low spines along its blade margins. Lechuguilla grows in bunches, so usually between ten and thirty plants form a dense, impossible-to-walk-through thicket. In most lechuguilla thickets there's at least one plant sending up a flower stalk six to thirteen feet high. When any agave flowers, it dies - - its leaves and flower stalk wither and fade. Looking across the desert now I see thousands of spent lechuguilla flower-stalks. I'm reminded of the old Ben-Hur movie when the warrior multitudes marched with their spears silhouetted against the anxious, pre-battle sky...

Back at Henry, bending over to untie my over-the-ankle hiking shoes, I find the entire top of my left foot's wool sock soaked with blood from a deep puncture. While cleaning this cut I notice on my left leg's opposite side a lechuguilla spine still sticking one-quarter of an inch into my flesh. From the right leg I remove three cactus spines, one buried half an inch beneath the skin. I'm embarrassed. I'm supposed to be able to do better than this. If each day I am as reckless as today, I'll ruin my legs.

Curiously, however, as much as I feel chastened, also I feel pleased. It's as if I have signed up to study under a master philosopher -- an unseen desert guru -- and now I find that if I do not complete my studies properly, I'll suffer from his severe discipline. But if I truly learn about the desert here -- if I survive -- the experience will be exquisite.

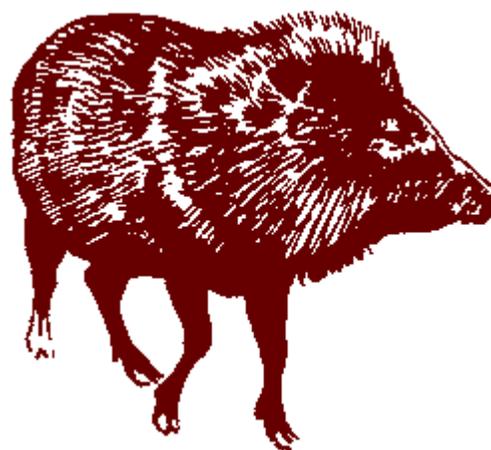
SEVEN PECCARIES

February 10, 1988

TEXAS: Brewster County

K-Bar Campsite in Big Ben National Park; elevation about 3000 feet.

Sometimes a story stays with you, all out of proportion to its importance. Such a story once was told to me by an old Maya Indian with whom I was working in the tropical lowlands of northern Guatemala. In that lush, exotic jungle full of poisonous snakes, big wildcats and streambank crocodiles, my friend told me that in the jungle the thing he most feared was the javalina -- the wild pig my mammal books refer to as the peccary. Vividly I remember Don Antonio saying:



"Usually those pigs run from you. Problem is, they're unpredictable, or maybe just stupid. You surprise a herd and they're just as likely to run at you as away from you. They have tusks that can rip your legs apart. If they knock you down, they can cut your whole body to shreds. And if you ever get between a mama javalina and her piglets, well compadre, you better just say your Hail Mary's!"

So today I'm walking down a dry, rocky canyon not half a mile southwest of Panther Junction Park Headquarters. Suddenly I feel the ground being jarred and I hear gravel being knocked loose. One big peccary scrambles up the slope to the right; six smaller peccaries scramble up the slope to the left. That must be mama on the right and at least one or two of those piglets on the left must be hers, and I don't even know what a Hail Mary is.

The smaller ones stop about thirty feet away while Mama stands less than twenty. Mama turns her side toward me, raises the coarse gray/black hair on her back like a tomcat getting ready to fight, and emits a strong, skunky odor.

In situations like this with large dogs, always I hold my ground and make a noise. That's what I do now. I stand in one spot, clap my hands and yell. And then the whole troupe of tuskers runs away.

End of story...

BIG BEND BACKPACKING TRIP #1

February 10, 1988

TEXAS: Brewster County

K-Bar Campsite in Big Ben National Park; elevation about 3000 feet.

After three days of "test walking" around K-Bar, this morning at dawn I strap on my backpack and head west-northwest down the dry stream bed, or arroyo, passing about a hundred feet north of camp. One thing learned during these last days' test walks is this: Walking cross-country through lechuguilla is crazy. It's better to walk in dry arroyos and on regular trails. Here are my notes from this walk:

FEBRUARY 13

During the walk's first moments down the arroyo I see two signs of spring along the arroyo's banks:

- * Seep-willows, *Baccharus glutinosa*, bear fresh, green, six-inch-long, leafy sprouts
- * *Condalia*, *Condalia* sp., shrubs are flowering inconspicuously, being visited by bees

At noon, reaching Tornillo Creek, which the ranger had said probably would be dry, I find a stream of clear, cold water about a yard wide, and I'm very relieved. Already my shoulder muscles burn from the weight of extra water being carried in the backpack. The moment I see the stream, the backpack comes off, I drink all the water I can, and dump most of what's left.

Despite the stream of water's narrowness, Tornillo Creek's sandy bed is about a hundred feet wide and strewn with uprooted willows and large boulders, obviously deposited by huge amounts of floodwater. On sand next to the stream many footprints of peccary, mule deer and coyote appear. Bordering the stream, ten foot bands of blindingly white, crystallized residues of soluble salts left by vigorous evaporation of water encrust the sand. Imagining the salts to be mostly or entirely table salt, I examine the white powder with my handlens but see no cubical crystals. Moreover, instead of tasting salty, it's bitter. Apparently it's some kind of carbonate.

Here in the first half of February, six species of wildflowers blossom along the stream!

Most transfixing is the fourteen-inch high, blue-blossomed lupine called Big Bend Lupine, *Lupinus havardii*, a species that, in the whole world, is found only in this region -- it's endemic to this area. A member of the Bean Family, it bears tall spires of pea-like flowers. Its leaves are hand-shaped, usually bearing seven radiating leaflets.

Nearby grows an evening-primrose with 2-inch wide, yellow flowers. Because its fruits are bottle-shaped, the books call it the Bottle Evening-primrose, *Oenothera primiveris*. It looks

more like a dandelion than an evening-primrose. Its leaves and flowers arise from one spot on the ground and its leaves even look like a dandelion's.

Also nearby grow two members of the Mustard Family, a yellow-flowered one called Fendler's Bladderpod, *Lesquerella fendleri*, and a white-flowered one called Bicolor Mustard, *Nerisyrenia camporum*. And here's a blue-flowered Bean-Family member called Nuttall's Locoweed, *Astragalus nuttallianus*, and, finally, the Desert Marigold, *Baileya multiradiata*, also dandelion-like, with outrageously bright-yellow and large blossoms. Each of these wildflowers is so large and robust that seeing them now fills me with summery feelings. I'd not expected such exuberance as this, this early in the year, not even in Big Bend.

FEBRUARY 14

At noon the thermometer on my backpack reads 78° in the shade and sunlight stings my skin. Sometimes hot winds come down the canyon whipping up from along the stream fast-moving clouds of white salts. While one such cloud storms around me I stick out my tongue and the cloud tastes bitter. Seeing my reflection in the binoculars' objective lenses, I'm astonished at how sunburned I am, and at how the hair of my beard and scalp sticks straight out, in unmanageable shocks. Very wild, very isolated and somehow violent this region seems to me and it's beginning to leave its imprint on me, and I am satisfied.

During parts of two days, for about twenty miles, in the sands along the Tornillo, I follow a set of human footprints. The prints display a cross-hatched pattern so in my thoughts I refer to the one who walked before me as Cross-Hatch. I assume that Cross-Hatch is a Mexican heading north to a better life.

Now, always I've considered myself to be an exceptional backpacker. With one sweep of my eyes I take in the topography before me, note the presence of spiny plants or muddy ground, analyze the general difficulty or desirability of a hundred different potential routes, and then quickly come up with the best path. Thing is, along the Tornillo, Cross-Hatch seems always to have anticipated each of my perfect choices...

Even when I can't say why one possible route is superior to another, and choose one path over the other from what seems to me pure whim, inevitably Cross-Hatch has chosen that way before me. Visiting a cactus needing to have its spines examined, I find that Cross-Hatch has had his own reason for circling that cactus, too. Now the river makes a grand loop. Instead of staying right on the sands next to the trickling water I cut across the uplands, even though it's thick with Cat-claw Acacia, *Acacia greggii*, Cross-Hatch has made the same decision. Later in the day, when the heat is bad and adventurous routes seem less desirable than just trudging unthinkingly along the water's edge, when the same kind of short-cut opportunity offers itself, I choose not to take it. Of course, Cross-Hatch was in the same mood, so I suppose he had been hot and tired, too.

On any long walk, in one's memory the miles blend together and it's easy to forget whether a particular scene was an hour ago or five hours ago -- or today or day-before-

yesterday. It's like being on a ship in the ocean knowing that the ship is going forward but feeling that it's just sitting still. It's almost a kind of meditation.

Today, with Cross-Hatch, this meditation becomes a dance, and when he chooses the same resting-rock that attracts me, he is my dancing partner, always faithful, never forceful. Once I think of jaggging away from my chosen route -- going cross-country for no reason at all, just to see if at that precise moment in his own journey Cross-Hatch had yielded to a similar notion.

But, I don't, and just follow Cross-Hatch's lead.

FEBRUARY 15

Abandoning both the Tornillo and Cross-Hatch, this morning I cross the uplands to the east and walk southeastward along a one-laned, washed-out, rocky and crooked gravel road. At the "primitive campground" called McKinney Spring the first real tree seen since Amistad appears. It's a Cottonwood, genus *Populus*, with its buds bursting, issuing two-inch long, glossy-green shoots bearing this year's beginnings of stems and leaves. Maybe this tree was planted by someone years ago, and I thank that person. Now I cannot avoid sitting for half an hour, simply drinking in these trees' peaceful symmetry and fresh greenness.

In the evening, after a long day of hiking a Burrowing Owl, *Athene cunicularia*, hoots its *Oooh, oh-oh call*.

FEBRUARY 16

At Roys Peak Vista Camp, beside an old shed more fallen down than standing, a fifteen-foot tall, mostly leafless Mesquite, *Prosopis juliflora*, stands with branches heavy with mistletoe, *Phoradendron* sp. The mistletoe's tiny flowers draw a variety of pollinators. On the shed's corrugated tin wall, long ago someone penciled in Spanish, "*Pasaron dos mojados*." "Two wetbacks passed through..." We're about twenty miles northwest of the Mexican town of Boquillas. Above these words is drawn an airplane of the type used by the U.S. Immigration Service. Almost I hear voices in this shed... "*¡Aiiiiii! ¡Viene un avión! ¡Cabrón!*"

FEBRUARY 17

At 9:00 AM five mule deer, *Odocoileus hemionus*, atop a hill not fifty feet away look very much like the white-tailed deer seen at Amistad, except that these have black-tipped tails, and their manner of bounding across the landscape is different. For an instant during each leap, mule deer sail with all four feet off the ground, and with their hooves held pointing backwards. Their flight could not be more buoyant and graceful.

These mule deer sightings are made during this morning's three-hour walk between the primitive campsites called Willow Tank and Ernst Tinaja. The landscape consists of low, rocky hills vegetated with creosote-bush, sotol, grasses, cenizo and candelilla.

FEBRUARY 18

For a couple of days I've been walking toward the southeast, paralleling the Tornillo, passing far south of the spot where I entered it. Now I cut back toward the west, find the Tornillo's streambed, and begin heading northwest again, toward K-Bar. Here the Tornillo is completely dry -- nothing but sand and boulders. The last three springs visited were dry, so I'm very low on water and I'm a bit worried. Here the Tornillo's sandy bed is "braided," consisting of several dry, interconnecting channels. The whole system is about a third of a mile wide.

At noon, feeling very hot and thirsty and with my eyes hurting from the sun's glare, across the Tornillo's shimmering bed I spot a thirty-foot tall, gray-green tree swaying gracefully in the wind, looking impossibly inviting. For twenty minutes I walk toward it. Finally, twenty feet from the tree I can feel cooler, somehow moister air, and hear the wind restfully streaming through its boughs. Seeing that it's a Casuarina, *Casuarina* sp, an Australian species now planted in arid regions worldwide as windbreaks and for firewood, I have mixed feelings. Always I dislike seeing exotic species planted by man in places where native species should be given the chance to develop, but right now this Casuarina's shade is generous and much needed. For an hour I cocoon in the refuge of its deep shadows.

At 2:00 PM, powerful, brown dust-devils, or whirlwinds, develop on the Tornillo's flat bed. In a bluff's shade it's only 75° but on the river bed one foot above the sand, in the shade, it's 87°. Sunlight on my skin feels so hot that it's hard to believe it's this cool. According to my reckoning the part of the river with water in it should be less than three hours away. But I'm almost desperate for water so irrationally I keep thinking, "What if I've made a mistake in my navigating? What if I'm in the wrong river bed? Several times I sit down and triangulate my position on the map, using distant peaks as reference marks. Intellectually I know I'm not lost. But it's a fight to keep from panicking.

FEBRUARY 19

Having yesterday afternoon reached that part of the Tornillo with water in it, this morning I pee on a Devil Cactus and see one of its long thorns move. The "thorn" is an inch-long, straw-colored walkingstick, of the insect family *Phasmatidae*, related to the praying mantis. I'm accustomed to seeing walkingsticks only in mid and late summer.

At 9 AM I enter the dry arroyo heading back toward Henry at K-Bar. I spot a yard-high, wiry bush that when I passed here six days ago certainly was not flowering. Now it bears several tiny, purple, Pea-Family blossoms with feathery sepals. It's the Feather Dalea, *Dalea formosa*.

At noon I reach Henry, very thirsty, very hot, very hungry, and very content to have experienced these last six days.

BIRD LIST #2:

Big Bend as Spring Begins

February 17, 1988

TEXAS: Brewster County

Big Ben National Park; elevation about 2800 feet. Three-hour, early-morning hike between the primitive campsites called Willow Tank and Ernst Tinaja. The landscape consists of low, rocky hills vegetated with Creosote-bush, Sotol, grasses, Purple Cenizo and Candelilla.

If during this three-hour walk you had been with me, these are the bird species you would have seen:

BIRDLIST #2: THE DESERT IN WINTER

1. Scaled Quail
2. Chihuahuan Raven
3. Cactus Wren
4. Curve-billed Thrasher
5. Loggerhead Shrike
6. Pyrrhuloxia
7. Black-throated Sparrow

This is the smallest number of birds I've ever seen after three hours of watching. It's because now we're in a habitat so arid that only species that are "desert specialists" can survive. All eight species listed above are non-migrating permanent residents, and all were spotted in the uplands between springs. Around the springs, among copses of small willows and mesquites, other bird species do appear -- Ruby-crowned Kinglets, Mockingbirds, Bewick's Wrens, House Finches, White-crowned Sparrows, Green-tailed Towhees...

Of the seven birds in the list, Black-throated Sparrows were the most conspicuous, often appearing in flocks of fifteen to twenty individuals. Back at K-Bar on recent afternoons as I sat reading in Henry, a certain Black-throated Sparrow often perched atop Henry's open door, not three feet from me. They are attractive little birds.

During my walks often I hear a couple of high-pitched notes, which I've discovered to be the warning calls being made by nervous Scaled Quails. Soon after such warnings, usually a covey of thirty to fifty quail explode into the air. When they land a safe distance from me, each bird runs -- not hops or flits -- to a hiding place. At K-Bar, each afternoon a

flock of fifteen congregates to peck in the dust where recently a camping party tethered its horses, leaving seed among the hay and dried horse manure. Sometimes not fifteen feet from Henry, with me inside, the quail gather in a tight circle in the dust, with their heads pointing outwards, and then peck at such a frenetic, almost comical pace that they kick up dense dust-clouds. Each bird bears a conspicuous, pale head-crest that in late-afternoon light glows brightly, conveying to each bird the appearance of wearing a crown. What handsome, good-natured birds these are.

Yesterday for nearly two minutes I watched a Loggerhead Shrike chase a smaller bird, probably a Black-throated Sparrow. The two birds flew high into the sky and zig-zagged wonderfully and desperately, finally disappearing beyond my range of vision. Despite this enmity between the two species, this morning I've seen several shrikes perched on old flower-stalks of Sotol and Lechuguilla, and a couple of times perched nearby were sparrows. Perhaps shrikes attack only those birds whom they sense to be enfeebled, and the healthy sparrows behave accordingly.

"Chihuahuan Raven" is the new name for the bird that for years I've called "White-necked Raven." This species is smaller than the Common Raven, has a higher-pitched voice, and is something of a Southwestern specialty. Often I've seen it in northern Mexico's desert. Though the Chihuahuan Raven is completely black, sometimes it bends its head over in such a way that a few white feathers across the upper back become visible. This bird's Latin name is *Corvus cryptoleucus*. *Corvus* is the name the ancient Latin-speakers used for crows and ravens. The *cryptois* is from the Greek meaning "concealed," and *leucusis* from the Greek meaning "white." It's the raven with concealed white feathers.

BIG BEND BACKPACKING TRIP #2

February 21, 1988

TEXAS: Brewster County

Hiking into the foothills just south of the Chisos's highest peaks, elevation averaging maybe 4500 feet.

Now I walk into the foothills just south of the Chisos's highest peaks.

FEBRUARY 22

On the first morning of this walk I find a Torrey Yucca, *Yucca torreyi*, about eight feet tall, with stiff, bayonet-like, green leaves atop a rough stem mostly covered with down-hanging dead leaves... and it's flowering. Its two-foot high inflorescence of two-inch long, cream-colored flowers is abuzz with honeybees and flies. Thinking I recall that yucca flowers are edible, I pop a blossom into my mouth. Like rose-scented talc, it's bitter and perfumy. No, I'll not eat another, at least not raw.

At noon, with a white flower one inch high atop an egg-shaped body two inches high, and bristling with short, thin spines, I find our first blossoming cactus. The book says that within its distribution it's the earliest cactus to bloom; its name is simply Early-bloomer, *Echinocactus intertextus*.

FEBRUARY 23

At Dodson Spring I stand beside a pool of much needed water; covered with green algae. It's a zoo of five-inch long horsehair worms not much thicker than a real horse hair. I can't imagine how such a slender worm could possess enough musculature to squirm as vigorously as it does. Nearby a backswimmer jerkily swims upside down, like a disoriented aquatic cockroach. Sometimes it rests at the water's surface, replenishing its air supply by poking the tip of its abdomen above the water's surface. Dipping water into my hand I see pinhead-sized copepods, water-fleas, and myriad glowing specks of other forms of microscopic life. While I gratefully fill my canteens from this spring an amber-colored vespid wasp lands at the pool's edge and inserts its mouthparts into the green scum there. A brilliant glisten forms where its mouthparts touch the water.

At 3 PM at about 4400 feet I spook the first White-tail Deer seen since Big Bend. At Amistad white-tails were abundant while mule deer never were seen. Here the common deer of the lowlands is the mule deer, while white-tails live only at the higher, moister elevations. According to Big Bend's naturalists, these high-elevation white-tails constitute a relict population left from the Ice Age when Big Bend's climate was cooler and moister. Apparently Big Bend's white-tails constitute a genetically isolated race smaller in stature than typical white-tail deer, and endemic to the Chisos and a few nearby ranges. This race is referred to as the Sierra del Carmen White-tail Deer. At this time in history the climate here seems to be warming. Gradually the lowland-living mule deer seem to be encroaching on the white-tail's mountain domain.

FEBRUARY 24

At 9 AM I'm in Fresno Creek as it dips into a ravine so deep and narrow that its almost-vertical walls above me cause claustrophobic feelings. However, in the microhabitat consisting of limestone walls in the ravine's bottom, protected from heavy sunlight and dry winds, a white-blossomed Basket Anemone (or Ten-petaled, *Anemone heterophylla*) makes its home. It's as green and fragile-looking as any Eastern wildflower.

Farther down the ever-deepening chasm a single yellow-blossomed Fremont's Monkey-flower, *Mimulus glabratus*, and several blue-flowered Berlandier's Lobelias, *Lobelia berlandierii*, are blossoming.

FEBRUARY 25

At 10 AM, still in Fresno Creek's too-narrow gorge, I'm surprised to find a tiny woods of thirty-foot tall cottonwoods. Beneath them lies a thick, dry carpet of brown leaves, so crisp

and untattered that they could have fallen very recently. Hearing leaves crunching beneath me and smelling the disintegrating leaves' dust, I'm filled with early-November feelings. But when I see that the tree's branches bear newly expanded, 2-inch wide, yellow-green leaves that glow radiantly, almost wetly, in the sunlight, and that nearby dozens of twenty-inch tall, blue-flowered Berlandier's Lobelias are blossoming, early-May feelings flood into my early-November head-set. How strange to have these distinct season-feelings at the same time.

At 1 PM finally, abruptly and liberatingly, Fresno Creek emerges from its dank, narrow gorge and begins meandering across a broad, flat plain. Here the creek develops a wide, boulder-strewn bed as sun-scorched, dry and windy as was lower Tornillo Creek's. In this mind-numbing, too-bright landscape I spot a tiny creature, a kind of hyperactive mammal sprinting from one rock to the other. It's the Whitetail Antelope Squirrel, *Ammospermophilus leucurus*, and it seems not only to be at home in this sun-scorched landscape but absolutely thrilled to be here. Patterned like an Eastern Chipmunk, it carries its miniature tail above its back in the manner of a Gray Squirrel. My mammal field guide says that this species does not have to drink water! It survives on moisture in its food, which includes insects.

FEBRUARY 26

2:00 PM. All day long... sunlight, dust, wind, now 80°, feeling much hotter in the sun, much cooler in the shade... A large, blackish butterfly, maybe a swallowtail, rushes past, carried in the wind. A poem in Haiku style materializes in my mind and I write it down:

*What's spring in this land?
It's black butterflies
and spines in my hands!*

FEBRUARY 27

At 8 o'clock this morning a Mockingbird, Black-throated Sparrow, Loggerhead Shrike and a Cactus Wren all sing spring songs in the cool morning air. A coyote runs down a dry arroyo. I'll be back at Henry at K-Bar before the sun gets too high.

CACTUS ORIENTATION

February 28, 1988

TEXAS: Brewster County

K-Bar Campsite in Big Ben National Park; elevation about 3000 feet.

THE GENUS *OPUNTIA*

In the creosote-bush/ lechuguilla/ sotol/ clumpgrass flatlands around Henry at K-Bar, three species of pricklypear cactus are abundant; their names are:

Englemann Pricklypear, *Opuntia engelmannii*

Brown-spined Pricklypear, *Opuntia phaeacantha*

Purple-tinged Pricklypear, *Opuntia macrocentra*

As the picture at the right shows, pricklypears look like green, spiny, beaver tails stacked one atop the other, growing in sprawling clumps. Folks around Amistad lump together the Englemann and Brown-spined Pricklypears under the common name of nopal. However, both of these species have differentiated into several taxonomic varieties. Here I've often thought that I'd found what was for me a new species of pricklypear only to discover later that it was only variety of the Englemann or Brown-spined Pricklypear.



Especially on rocky slopes a remarkable non-prickly pricklypear appears -- one with no long spines! It's called the Blind pricklypear, *Opuntia rufida*. Mostly a Mexican species, it enters the U. S. only in Texas along the Rio Grande. This species takes its common name from the fact that despite its spineless condition it is abundantly equipped with tiny glochids. A superstition holds that wind carries these glochids into animals' eyes, blinding them.

Pricklypears belong to the genus *Opuntia*. As with most flowering plants, the species are defined mostly in terms of flower and fruit anatomy -- not characteristics of vegetative, or stem, parts. In the genus *Opuntia* this is especially apparent because many of its species, while bearing flowers and fruits typical of the genus *Opuntia*, possess stems that don't at all look like "stacked, spiny beaver tails."

One large group of non-flat-stemmed *Opuntias* is the cholla group, the members of which look like stacked, spiny cucumbers or pencils. Dog-Bill introduced us to the Christmas cholla, *Opuntia leptocaulis*. The same species grows here, though at Big Bend it is referred to as Tasajillo.

Another cholla found here is the Cane Cholla, *Opuntia imbricata*, growing six to eight feet tall.

Yet a third general class of *Opuntia* consists of several species looking like joined-together, very spiny, longish eggs lying on the ground. Usually these species' joints are so loosely attached to one another that if a trouser leg brushes against them entire joints come loose and stay stuck to the cloth until they are knocked off. These disarticulated joints can root and form new plants, so their weak joint-connections constitute part of the plant's dispersal strategy. Often these species are not noticed until it's too late. The member of this group that I've found here fully deserves its name --the Devil Cactus, *Opuntia schottii*.

In review, at Big Bend I've seen seven species of the genus *Opuntia*-- four pricklypears, two chollas and one devil cactus.

THE GENUS *ECHINOCEREUS*

The next-largest genus of cactus found during my walks here is *Echinocereus*, which usually is easy to recognize because its spines arise from atop ridges extending up and down the cylindrical cactus body, and sometimes spiraling around it. The most common *Echinocerei* found here are the:

- * Strawberry Cactus, *Echinocereus* spp, growing in round, compact clumps about 1 foot high
- * Rainbow Cactus, *Echinocereus dasyacanthus*, about a foot tall and almost white because of its mantle of short, sometimes multicolored spines
- * Pitaya, *Echinocereus enneacanthus*, similar to the Strawberry Cactus but larger and with fewer spines
- * Brown-flowered Cactus, *Echinocereus chloranthus*, which I was calling a rainbow cactus until a flowering specimen was found
- * a little *Echinocereus* that's so uncommon that it has no common name; it's *Echinocereus rusanthus*.

THE GENUS *ECHINOCACTUS*

You'll remember the Horse-crippler, the cactus at Amistad with only its amply spiny crown exposed at the ground's surface. That cactus, which I've not found here, is a member of our third big genus, *Echinocactus*. That genus is famous for its heavy spines and roundish bodies. *Echinocacti* are known as barrel-cacti, and often grow quite large. The largest cactus seen so far is an *Echinocactus*.

The most common *Echinocactus* I've found here is the Eagle Claws *Echinocactus horizontalis*, shown at the right.



The Giant Fishhook, *Echinocactus hamatacanthus*, is a fairly rare species usually found on rock ledges. It's about two feet high and a foot thick, barrel-shaped, and bears reddish spines up to six inches long diabolically hooked at their tips. Just think of what happens to a deer poking its nose into a Giant Fishhook cactus, then trying to withdraw...

Finally, the little Early-bloomer, *Echinocactus intertextus*, mentioned as our first flowering cactus was an *Echinocactus*. That's three *Echinocacti*.

THE GENUS MAMMILLARIA

The last big genus is *Mammillaria*, which takes its name from the Latin word mamill, meaning breast or teat. Visualize this: A cluster of jalapeño peppers has its peppers' broad, round bottoms pointing outward so that the cluster looks something like a green, bumpy ball. Then attach clusters of radiating spines atop each of the exposed pepper-bottoms. Now you have a cactus of the genus *Mammillaria*.

Weniger reports two very descriptive English names for my favorite *Mammillaria* found here -- Nipple Cactus and Little-chilis. It's *Mammillaria heyderi*.

The second *Mammillaria* found here, this one seen only in one area along Tornillo Creek, looks as if it has been gnawed on by rodents. Its lower parts are incrustated with white, corky callus. This corkiness is natural. I'm not sure of what benefit it is to the cactus. This species is called Cob Cactus, *Mammillaria tuberculosa*, because the corky material causes it to look something like a shelled corn-cob.

And that's my seventeen cacti.

SLUMGULLION #1

February 28, 1988

TEXAS: Brewster County

K-Bar Campsite in Big Ben National Park; elevation about 3000 feet.

My Grandmother Taylor in Kentucky tends to make up words as she needs them and to resurrect old-time ones that everyone else has forgotten. For her the word slumgullion means "a haphazard mixture of things." She can't recall whether the word is made-up or an old one. Whichever pedigree the term has, here I mean to offer miscellaneous notes that don't fit elsewhere.

ITEM: ANOTHER PECCARY STORY

On my last day at K-Bar a young man from Minnesota drops by. Taking a break from my typing, I listen to his peccary story. Late yesterday afternoon as he was driving on the main highway near Park Headquarters he came upon a small herd of peccaries. He stopped, stepped outside, and began tossing pieces of tortilla to them. As the peccaries ate, he threw the scraps nearer. Eventually the largest peccary took a tortilla from his hand. Of course this was pretty dumb, for what if the next time the peccary meets a human it remembers its earlier tortilla picnic, approaches the human, the human panics and does something to unnerve the pigs, and then -- as Don Antonio in Guatemala suggested they might -- the peccary runs the wrong way, slashing its sharp tusks back and forth?

ITEM: A ROCK SQUIRREL

The other day in a rocky gulch behind park headquarters I spotted a Rock Squirrel holding motionless atop a large boulder as I walked by. Rock squirrels look like regular park squirrels except that they are entirely gray instead of having white underparts, and they don't hold their tails above their backs. Though Rock Squirrels usually create dens beneath boulders, they are fine tree-climbers when trees are present. This species is one of the few mammals in these parts active during the day.

ITEM: CHEWED-UP CACTI AND LECHUGUILLA LEAVES

Often I find patches of very spiny cacti that have been chewed on by large herbivores, probably either mule deer or peccaries. For me one of the greatest mysteries in this desert is how animals can eat spiny cacti without damaging their lips, tongues and intestines. In several peccary scats I've found glochids and a few spines. Similarly, very often I find stiff leaves and even entire plants of the leg- mutilating Lechuguilla lying on the ground, chewed up. After examining footprints around lechuguilla-eating sites for three weeks, I'm satisfied that it's peccaries chewing them. The long leaves are not actually consumed, but rather it appears that the peccary just chews on the leaf's lower half until it's no longer juicy. A Park-Service, self-guiding, nature-trail leaflet declares that deer eat lechuguilla flower-stalks and birds eat lechuguilla seeds. Prehistoric Indians roasted lechuguilla stalks and some Mexicans still make soap from its roots, and twine and rope from its fibers.

ITEM: THE DESERT SKY

Because of the absence of cloud cover and humidity in the air, at night the desert sky is almost unbearably clear and deep. During my visit Jupiter and Venus are quite close to

one another. Using only 10 x 50 binoculars I can see four of Jupiter's moons. If the day sky is occupied by white, puffy cumulus clouds, the most distant cloud bottoms merge with the desert horizon. Farther east, because the air contains so much moisture, such near-horizon clouds usually fade into the horizon's milky haziness. This desert sky inspires a person with expansive feelings. At Park Headquarters I heard a native Westerner who'd just returned from the East exclaim, "Oh, how wonderful to be back where I can stretch my eyes... !"

ACROSS THE CONTINENTAL DIVIDE

March 1, 1988

NEW MEXICO: Hidalgo County

Coronado National Forest three miles east of the Arizona border and fifteen miles north of the Mexican border, in the Peloncillo Mountains. Elevation between 6000 and 7000 feet.



Leaving Big Bend, now we head north through Alpine and Marfa, then at El Paso enter New Mexico and continue west on I-10. At Las Cruces we climb fast toward a moody, close-up horizon. Clouds boil over some kind of earth-rim, then skate low right above us. Eighteen miles west of Deming a sign reads "Continental Divide/ Elev. 4585 feet." I look around at nothing but some low hills miles away and along the road a grassy flatness punctuated with a few scattered Soap-tree Yuccas about fifteen feet tall and I ask Henry how anyone could make a divide out of this. A few miles later I notice that the chugging sound emanating from the little hole in Henry's muffler isn't as labored as it was before the "Divide," so maybe earlier we were climbing up, and now we began coming down. Still, this seems a pretty tentative way to divide a continent.

We're heading toward the Peloncillo Mountains Wilderness Complex in the easternmost unit of Coronado National Forest, the southernmost national forest in the western continental U. S. It's down in the boot-heel of New Mexico, where New Mexico, Arizona and Mexico all come together. Two of my books place this area in the Chihuahuan Desert but another shows it as an undefined spot between the Chihuahuan and Sonoran. I consider it a transitional zone between the two great deserts. I'm curious to see what kind of forest might exist in such an out-of-the-way place, but the main reason for going there is that after Big Bend I'm aching for cool, shaded moistness.

Twenty miles of rough gravel road south of Animas brings us there. Suddenly the wind gushing through holes in Henry's rusted floorboard feels surprisingly cold. A heavy overcast forms above us for the first time since leaving Amistad, and then about a hundred raindrops splash onto Henry's windshield. Though we must be high in elevation, at no time during the last fifty miles have we climbed steep slopes -- it's all been gradual, with the only hints that we've been climbing being the change in weather and Henry chugging a little louder than usual.

Coronado is a laid-back national forest with no formal campgrounds and nobody around -- no rangers and no campers. Rolling, windswept, grasslands break into medium-size hills, trees appear, and that's the forest. The feeling is more of suddenly penetrating a region of valleys with incidental hills between them, than that of entering a place where hills rise from a plain. Maybe the distinction is more important psychologically than ecologically. On the valley floor trees stand between ten and twenty feet tall. On the slopes they're more scraggly and widely spaced, and seldom rise higher than ten feet.

This forest feels strange. A certain disjointed or "crooked" feeling permeates the cold, tingling-fresh air. It'll be fun to identify things, to see if the plant and animal species here are as exotic as the forest's feeling.

DENIZENS OF A STRANGE-FEELING FOREST

March 2, 1988

NEW MEXICO: Hidalgo County

Coronado National Forest three miles east of the Arizona border and fifteen miles north of the Mexican border, in the Peloncillo Mountains. Elevation between 6000 and 7000 feet.

We pull into an empty, seldom-used, very informal campground next to a stream. The most common tree around us is the Emory Oak, *Quercus emoryi*, with black bark breaking into rectangular blocks reminiscent of an alligator's hide. Curiously enough, the valley's second-most common tree is the very unrelated Alligator Juniper, *Juniperus deppeana*, so called because its bark also looks like alligator hide.

Farther upslope two species of pine dominate -- the Mexican Pinyon, *Pinus cembroides*, with needles in clumps of both twos and threes, and the Chihuahua Pine, *Pinus leiophylla*, with needles in clumps of three only. My books list four species of pinyon pine found in the western U. S. Pinyons are especially interesting because of their half-inch long, edible seeds. On trains in northern Mexico often I buy pinyon seeds being hawked by Indians at train stations. Sometimes at mid slope Silverleaf Oaks, *Quercus hypoleucoides*, appear, their leaves curiously white-hairy on their undersides.

Especially on the lower, relatively moist slopes a single species of blossoming wildflower offers a hint of springy feeling. It's Fendler's Pennycress, *Thlaspi fendleri*, a Mustard-Family member with a head of white flowers. It's found in mountainous piney woods throughout most of the Southwest. Also, a red-stemmed bush of the Heath Family flowers conspicuously with pinkish, goblet-shaped flowers. It's the Point-leaf Manzanita, *Arctostaphylos pungens*.

I'd supposed that at this elevation (between 6000 and 7000 feet) winters would be too cold for cacti to survive. However, fairly common along rocky ridges I find our third species of cholla, one called the Handlegrip Cholla, *Opuntia spinosior*. Standing three to four feet high, it's similar to the Cane Cholla seen at Big Bend, except that its bumps, or tubercles, are smaller. A species of pricklypear new for us is the Clock-face Pricklypear, *Opuntia chloritica*, with their beaver tails stacked atop a massive, cylindrical, tree-like trunk very effectively armored with a mat of heavy spines.

Similar to our already familiar Strawberry Cactus and closely related to it is Fendler's Hedgehog Cactus, *Echinocereus fendleri*. Also common here is the Comb Hedgehog Cactus, *Echinocereus pectinatus*, which is cylindrical and averages about ten inches high. Finally, I've found one specimen of the Red-goblet Cactus, *Echinocereus polyacanthus*, famous for the beauty of its flowers.

All five of these species --the first two are *Opuntias* and the last three are *Echinocerei* -- are "southwestern highland specialties." If we'd visited Big Bend's highlands, probably we'd have seen the Red-goblet Cactus, but Big Bend lies too far eastward for the other four species.

SIX MEXICAN JAYS

March 2, 1988

NEW MEXICO: Hidalgo County

Coronado National Forest three miles east of the Arizona border and fifteen miles north of the Mexican border, in the Peloncillo Mountains. Elevation between 6000 and 7000 feet.

Weeh, weeh, weeh!

Henry is fixed so that I can sleep in him. His entire back seat and the passenger-side front seat have been removed, so when it's too cold to sleep outside I use my inside bed. I have a board placed from near the top of the engine compartment in the rear to the top of a metal milk-crate situated where a passenger's feet would be if ever I carried passengers. I sleep in Henry quite comfortably.

Weeh, weeh, weeh!

It's those six Mexican Jays again, begging for food even before morning's sunlight hits mid-slope. It's 23° out there, but those birds think I'm going to leave my warm sleeping bag just to feed them!

Weeh, weeh, weeh!

I lie with my feet beneath the glove compartment and my face staring straight up through the back window, watching the birds through curlicues of my breath frozen on the glass.

Weeh, weeh, weeh!

So now those jays start messing on Henry's cab! Funny thing: Instead of hitting with a wet or soft sound, each dropping kind of clinks when it lands on the cab. OK, you birds win. I have to see what's going on.

In the droppings I find tiny, white, flat flakes of something hard. Ah, so now I know who stole the egg shells left yesterday morning next to the campfire! Having solved the klink-mystery, I start a fire and begin fixing scrambled eggs with jalapeño peppers, cornbread and a pot of tea. Sitting on a rock, I make sure that those six jays stay away from over Henry's cab. While eating, I notice some subtle personality differences among the jays. I wonder whether these differences might become more apparent if I should toss cornbread crumbs to them?

Within five minutes it's clear that each bird has its own very distinct personality. Moreover, I can divide these birds into three groups according to how they're handling their crumb-getting opportunities.

First, there are two "crumb-getters," who manage to snap up all crumbs to the exclusion of the other four.

Second there are two "robbers" who lack the confidence to fly down near me and nab a crumb themselves, but when a crumb-getter gets one, the robbers chase after it and by hopping near it when it lands, sometimes cause the crumb-getters to relinquish their prize.

Third, there are "hungry whiners." Instead of calling *weeh, weeh, weeh*, these make a complaining, whining *ahh, ahh, ahh*. It reminds me of the buzzy, begging sound that some fledglings make when begging their parents for food. In fact, these hungry whiners also flutter their wings when begging, just like begging fledglings. Maybe they are fledglings, despite their size and mature appearance!



A crumb-getter makes off with a big prize and flies away low and fast, making a curious wet-drumhead sound with its wings. About thirty yards away it lands in the grass beneath an Alligator Juniper. The robbers now seem to be sated so they ignore our bird, but one of the hungry whiners flies to a lower bough on the juniper and looks down at our bird. Surprisingly, crumb-getter doesn't eat the crumb --just drops it into the grass, gazes proprietarily at it for a while, and then hops away, nonchalantly flipping small stones and grassblades with its beak, and looking totally unconcerned about the left-behind crumb.

Once crumb-getter is about six feet from the crumb, the hungry whiner drops down beside the prize. However, before the crumb is stolen, crumb-getter is back. Now for a good five seconds both birds simply stand in the grass alternately looking at one another and the crumb.

Finally, almost with an air of exasperation, crumb-getter picks up the crumb and gulps it down.

It's hard not to become anthropomorphic when dealing with birds as spirited as these!

HIKING TO SKELETON CANYON

March 4, 1988

NEW MEXICO: Hidalgo County

Coronado National Forest three miles east of the Arizona border and fifteen miles north of the Mexican border, in the Peloncillo Mountains. Elevation between 6000 and 7000 feet.

An official National Forest trail has been established down the road. Today I go see where it leads.

7:20 AM. 28°, sunlight barely hitting the ridge tops, white frost on dark-green Emory Oak leaves, streambed pools of water thinly incrusting with transparent abstractions of elongated, randomly juxtaposed ice crystals.

7:40. Find upper section of a Raccoon's skull.

7:45. Our sixth new species of cactus, but I pass it by, not wanting to get over-cactused

8:10. The trail climbs onto a sunny, southeast-facing slope where the temperature already is 52°. While I rest beside a dead Palmer Agave bearing a seventeen-foot flower stalk, a pair of Bridled Titmice come fussing among the agave's old fruit-pods. Northerners accustomed to mouse-colored Tufted Titmice and Plain Titmice can be surprised seeing this species' harlequin-mask face design.

8:40. The trail is so seldom used that in most places it simply doesn't exist. I find the way by following stacks of rocks, or cairns. After about two miles the cairns lead into an extremely rough canyon overgrown with thorny bushes, and then the cairns simply disappear. For half an hour I circle, looking for the trail, often being fooled by wildlife paths that start off plain as day, then melt into trackless scrub. Eventually it becomes clear that someone has switched the cairns around, leaving false ones leading into this miserable little canyon. For half an hour I sit fuming about the disintegration of society and the universal law of nature causing the creative process to be so difficult, and acts of destruction to be so easy. Now I'll simply navigate cross-country, using the true and trusted sun to keep my bearings.

10:00. In a rock-bedded stream of the type that in Kentucky would supply several salamanders representing two or three species, for half an hour I turn over rocks but find no salamanders. I'm so astonished by this failure that in my Audubon Society's Field Guide to North American Reptiles and Amphibians I consult the distribution maps of each of the 112 salamander species occurring north of Mexico. I find that only the Tiger Salamander possibly can be found here, and it's to be expected especially at night after heavy rain.

11:30. Neither are ferns very conspicuous in the southwestern desert. However, fairly common in rock cracks along this particular deeply entrenched stream is the Fendler's Lipfern, *Cheilanthes fendleri*. It's a strange fern with spores originating beneath turned-under leaflet margins, not from standard sori or fruit-dots scattered across a frond's lower surface.

11:45. Wanting to see some reptiles, with the temperature at 62° in the shade, I find an exposed rocky cliff in full sunlight, sit on the slope opposite it, and begin watching for lizards and snakes. In Kentucky, in such a place and on such a warm, early-spring morning, I'd surely see Fence lizards and maybe a Copperhead snake or two.

NOON. Waiting for reptiles I hear an unfamiliar birdcall. With the tone quality of a mourning dove's call, it consists of three to six *hoo* sounds, with the last *hoos* trailing off softly and descending in pitch. The call is easy to imitate so I begin alternating *hoo-hoos* with my invisible companion. A certain urgency creeps into his calls, and I try to mimic this urgency, mostly by calling louder and faster. After five minutes of this he stops calling altogether, but a minute later he begins again, this time from a much closer position. Moreover, I think I see him about thirty feet away, atop a rock, almost hidden by bushes. With my binoculars I discover one of the very symbols of the Southwest, the Greater Roadrunner, a member of the Cuckoo Family. While calling, this bird rests his long beak on his chest, and with each *hoo* his chest heaves and his head nods downward. The appearance is of an invisible hand using his head like a pump handle, pumping *hoos* from his chest. After each series of *hoos* he cocks his head to one side, apparently listening for my response. We exchange *hoo-hoos* for about twenty more minutes. Then he seems to lose interest, and so do I.

1:00 PM. Still no reptiles.

1:20. During the walk back to Henry a Gray fox's skull is found

AT THE UNIVERSITY OF ARIZONA

March 4, 1988

ARIZONA: Pima County

University of Arizona campus in Tucson

Sunday at dawn, even before the Mexican Jays arrive, Henry starting hard in the cold, away we go again. Out of the mountains, and then thirty miles of straight gravel road across a rolling plain of grass and scrub, past ranches with broken-down windmills and yards filled with rusting pickup trucks, then through Douglas, Bisbee, Tombstone and Benson, and finally northwest, back on I-10 again. Just across the border of Arizona's Pima County, in a rocky canyon to my right, unmistakably, a twenty-foot-tall Saguaro Cactus appears, welcoming us to the Sonoran Desert.

On I-10 inside Tucson a sign announces the University of Arizona, so I take the next exit. Parking near the Newman Center I disembark for parts unknown. The kids, wearing shorts, smell of morning showers and hamburgers with dill pickles and onions. I still smell of woodsmoke. Like massive, kilt-wearing sentinels wearing green ceremonial plumes, thirty-foot high Washington Palms stand at attention along the avenue south of the Student Union. At the Union's southeastern corner the Joseph Wood Krutch Garden bristles with fantastic, impossible cacti and agaves. Its Ocotillo, unlike the ones we've seen so far, are green with leaves. And here's the unlikely Boojum from Baja California, looking like a gray-green, swollen-based, thin-haired rat tail stuck fifteen feet straight into the sky.

At the plaza's edge not far from the Boojum I sit being washed with boom-box rock-and-roll and the odor of suntan lotion, trying to relate the present with four hours earlier in the cold dawn forest in New Mexico. My hiking boots, old jeans and thorn-scratched, sunburned arms are too out-of- place here. And the Krutch Garden disorients me. Too many specialties in one place. Too much show, no room for soul. These generous cacti like perfect tigers in tiny cages. But House Sparrows mating in the sand between the giant Saguaros' trunks please me greatly.

Now walking northward I pass a fountain-side garden with seven distinct colors of Snapdragon all planted in perfect ranks and files. Though Snapdragon's look like delicate herbs, actually they are woody perennials. It's just that when you see them planted in gardens like this they're just herbaceous sprouts being planted for one season. In the fall they'll be dug up and destroyed. Then next year another crop of trash-bin destined sprouts will be planted again, and neither will they be given the chance to grow woody. Sitting

beside the fountain on this sunny, spring afternoon at the University of Arizona I feel profoundly sorry for Snapdragons.

On down the street the eucalyptus tree called Ribbon-gum is flowering. When crushed, its slender, scythe-shaped leaves smell of menthol. Not far away lies a bed of bright, dog-faced pansies, and across the street the roses are beginning to bloom. For a moment I stand beside a Forsythia bright with yellow blossoms.

Continuing the walk, it becomes apparent that this campus is absolutely swarming with different species of eucalyptus, not just Ribbon-gum. Here are round-leaved species and species with stringy leaves, and some species I wouldn't even guess could be eucalyptuses were I unable to see the flowers and fruits. And twenty species of palm, must be here, too. Suddenly I lose my interest in meeting more ornamentals and just sit in the grass, glad that in almost one out of three palms House Finches perch singing their hearts out.

From this campus one always can look down the long streets (streets with palms) to see the mountains -- the Tortolita, Roskruge, Sierrita and others -- with their gray, dry, deserty slopes. In the moist, green grass, surrounded by laughter, bright frisbees and rock-and-roll, after only a couple of hours of being with people I'm needing to return to the desert's grayness.

SAGUARO COUNTRY

March 8, 1988

ARIZONA: Pima County

Papago Indian Reservation five miles southwest of Sells. Elevation about 2300 feet.



Saguaros standing thirty feet tall and higher are abundant and easy to see. Just west of Tucson so many thousands rise above the scrub, looking plump and fuzzy like good-natured neighbors, that sometimes I just have to laugh. If the land levels out and the soil becomes deep, they disappear; but on gravelly slopes and rocky hills they're always there, holding out their arms as if to wave.



If Saguaros welcome us to the Sonoran desert, then more modest plants bear the message that we've made a quantum-leap into spring. In contrast to the Saguaros, which look the same as they must in mid-winter, these smaller plants bear leaves expanding from buds, green shoots sprouting from rootstocks, and many even possess flowers. Wildflowers are blossoming everywhere! On March 8th, this is a springtime desert.

The wind here feels hotter and moister than the Chihuahuan has at similar temperatures. Maybe this is because of higher humidity here, or because now we're lower in elevation. K-Bar was at about 3000 feet and in the Chisos foothills we climbed to about 4600 feet. In Coronado National Forest we ranged between 6000 and 7000 feet. Now we've descended to about 2300. As we travel farther west and continue to drop in elevation and approach the Pacific, will the diversity of species and our advancement into spring become even more conspicuous?

Later in the day, after I've found a spot in which to camp in the desert, as I sit in Henry's side-door typing the above, a Zebra-tailed Lizard orbits around us, becoming this trip's first reptile. It's about six inches long, grayish with pale speckles, and with wide, dark, vertical bands ringing its tail. Zebra-tailed lizards are distributed from central Nevada and extreme southwestern Utah, south through Arizona and southeastern California, into Mexico.

RANDOM SONORAN OBSERVATIONS AT DAWN

March 8, 1988

ARIZONA: Pima County**Papago Indian Reservation five miles southwest of Sells. Elevation about 2300 feet.**

At daybreak it's 40°, clear, and the medicinal odor of Creosote-bush, *Larrea tridentata*, hangs heavily in the air.

Even before the sun completely rises, four Cactus Wrens call from widely separated perches in the desert. Their hoarse, rolling songs sound like old-time cars trying to start up.

The Creosote-bush, green year-round with butterfly-shaped leaves half an inch across, are beginning to blossom. Each one-inch flower bears five roundish sepals, five yellow petals, ten stamens, and the ovary is covered with gray, stiff, sharp hairs that later will cover the fruit.

Half an hour after dawn, for about fifteen seconds, a small pack of Coyotes call from half a mile to the west.

To help get a picture of the vegetation in this randomly selected spot in the desert (on a rough, one-lane gravel road with no traffic during the last fifteen hours, and headed toward an unknown destination), now I walk 200 steps in a straight line toward the sun and list each plant along my path close enough to touch. Note that plants here are so widely spaced that about 80% of the ground's surface area is bare soil.

* For Creosote-bush (averaging about five feet tall and seven feet wide) I use the abbreviation C

* For the bushy, gray-green *Franseria* (*Franseria* sp., a low shrub in the Composite Family about one foot tall and one foot wide) I'll use F.

* A number with a letter is used in the sense that 5c means "five creosote-bushes growing together."

F, 2C, 13F, C, 2F, 2C, 3F, C, 15F, twenty unidentified clumpgrasses, 4F, C, 5F, C, Chain Cholla three feet high, 5F, 2C, 9F, 3C, 2F, C, 4F, C, 2F, 3C, 47F, C, 5F, C, F, 2C, 4F, C, 14F, C, 13F, Chain Cholla three feet high, 3F, C, 3F, C, 10F, C, 5F, Staghorn Cholla seven feet high, 6F, C.

A single Comb Butterweed, *Senecio monoensis*, a yellow-flowered member of the Composite Family, flowers beneath a Mesquite tree. It bears three conspicuous, yellow blossoms, stands fifteen inches high, and its leaves are pinnately compound, suggesting the appearance of a few-toothed, double-sided comb. No other blossoming wildflower is found within fifty feet of Henry.

At 9:00 AM a green and white van of the U. S. Border Patrol comes down the road, the agent leaning from his window watching Henry's tire marks lead here. We're about seventeen miles north of the Mexican border. About a week ago at 2:00 AM in New Mexico I awoke with two green-and-white vans pulled up close, shining their brights onto us. Those agents were nervous and provokingly aggressive but today's fellow is friendly. I

explain my project and we exchange pleasantries. The officer leaves saying, "Well, gotta go. There's a group of ten heading north near Oidak."

By 9:00 AM it's 68° in the shade and the sun already stings my skin. Birds are mostly quiet and the wind is rising. Now things will be quiet until just before dusk.

SAGUARO BY STARLIGHT

March 8, 1988

ARIZONA: Pima County

Papago Indian Reservation five miles southwest of Sells. Elevation about 2300 feet.

During this morning's 200-step walk toward the sun, not a single Saguaro was met. With reference solely to numbers, Saguaros here are rare. Nonetheless, their presence is the most striking feature of this desert.

At dusk, with the blue sleeping bag pulled around me against the sharp desert chill, I lie in Henry listening to the "All Things Considered" news program on Phoenix's Public Radio station KJZZ. Therefore, I know what's going on in the world beyond the desert's horizon. Here in the desert, though, all is calm.

Since the moon hasn't risen yet and the sky is clear, right now even tiny stars shine with extraordinary intensity. Across the gravel road a thirty-foot Saguaro stands silhouetted against the starry background. Just to the silhouette's left appear stars of the constellation Leo. Arrayed behind the cactus are Hydra's much fainter members.

Now I've walked in circles around these Saguaros' trunks, looking up. I've touched them, even leaned so close that their spines pricked my shoulder and cheek while I listened to the wind in their spines tearing itself into wet-sounding streamlets. Now these Saguaros and I know one another well.

In this no-nonsense, flat, horizon-to-horizon desert a thirty-foot Saguaro standing next to me with its silhouette emphasizing its pudgy, upraised arms and blunt head at first seems comically out of place. With time, however -- with minutes and minutes of my gazing calmly in the Saguaro's direction -- I begin recognizing the dignity that has been in the Saguaro all along.

A tree also bends upward and does all the things a Saguaro does, but trees are reticulated, simple trunks yielding to complex patterns of stems and leaves, and often the leaves flutter nervously, distractingly. The thing about these Saguaros is that they are simply upraised arms and rounded head. Maybe it's the difference between tree-like religion, and Saguaro-like spirituality. The Saguaro simply doesn't believe in superfluous

dogma. With its rounded head it raises its thick arms toward Heaven, and that's that, and the end product is a majestic presence. Henceforward, if I lose my way with regard to my relationship with the Creator, I shall remember this night among the Saguaros.

I don't see how anyone may for a whole night sleep next to a Saguaro without the next morning being anything less than even-spirited, and a friend to the whole world.

A SONORAN BIRD LIST

March 10, 1988

ARIZONA: Pima County

In desert off AZ Hwy. 85 about ten miles SE of Ajo, just north of the entrance to Organ Pipe Cactus National Monument



If this morning at 7 o'clock you had begun walking with me through the Creosote-bush dominated desert, down several dry, shallow, sandy creek-beds, while the temperature rose from 42° to 50°, and the sky remained calm and clear, these are the birds you'd have seen:

1. Turkey Vulture
2. Gambel's Quail
3. Great Horned Owl
4. Ash-throated Flycatcher
5. Raven
6. Cactus Wren
7. Mockingbird
8. Curve-billed Thrasher
9. Black-tailed Gnatcatcher
10. Phainopepla
11. Yellow-rumped Warbler
12. House Sparrow
13. House Finch
14. Brown Towhee
15. Black-throated Sparrow
16. Rufous-crowned Sparrow
17. White-crowned Sparrow

The bird most fun watching was the Gambel's Quail. Also it was the most handsome. With a black teardrop-topknot debonairly pendant over the front of its head, a black face-mask

set off by neat, white lines, and a rich, chestnut-colored crown similarly delineated with a white border, the male bird is extremely pretty. The duller female is better suited for sitting camouflaged on her nest. Here this species seems to relish being close to people. Near the highway where several families of Northerners have parked their trailers at an informal roadside pull-off, each morning a covey of about ten quail run about on the sand beneath the Creosote-bushes. Farther into the desert, where I'm parked, no quails are to be seen. At dawn they make remarkable sounds -- squeaks and twangs suggestive of tiny moon-men. Occasionally an individual mounts into a Creosote-bush's upper branches and calls with a sound somewhat like a cat's meow.

Ravens also are fun to see. This morning one perched croaking in the very top of an arroyo-side tree called Tetosa, *Olneya tesota*. When another Raven of the same size landed beside it, the newcomer immediately spread its fluttering wings and leaned toward the first, opening wide its beak. It was a fledgling begging food from its parent. A sizable hunk of red flesh forthwith appeared in the adult's beak. Since the fledgling had been blocking my view, I'm not sure whether the parent had held the flesh in its claws, or whether the flesh had been disgorged. After the feeding, both birds perched nonchalantly for a minute or so, then the first Raven flew off down the arroyo. The newcomer remained, simply gawking around, wiping its beak on the tree's branch, and making a remarkable sound -- like bongo drums, maybe, except without the wooden quality -- *bu-bu-bu-bu-bah!*

Phainopeplas are red-eyed members of the same family as waxwings. The crested male looks like a black, tanager-sized cardinal while the female is brownish. Very common here, they fly gracefully and call softly, and are altogether nice little birds.

The Ash-throated Flycatcher observed was perched about two feet high in a large Creosote-bush. As I watched, suddenly it streaked to the sandy ground, captured something, and returned to the bush with a slender tail disappearing down its gullet. Since I've seen small lizards in this area, I'm assuming that this flycatcher ate a lizard. I've never seen any flycatcher eat anything but insects and insect-like critters, but then I haven't been around many ash-throated ones.

SIX SPRING WILDFLOWERS

March 10, 1988

ARIZONA: Pima County

In desert off AZ Hwy. 85 about ten miles SE of Ajo, just north of the entrance to Organ Pipe Cactus National Monument

More wildflowers are blossoming here than at any of our previous stops. Now I walk among the Creosote-bushes with no special destination in mind, and sit down beside the first six wildflowers I find. Here they are:

WHITE WOOLLY-DAISY, *Eriophyllum lanosum*

Though this tiny member of the Composite Family rises only half an inch above the sand, its white-rayed blossoms spread almost half an inch wide. It's rare to see a plant with a blossom as large as the entire vegetative body. The book says it's a perennial, and it's hard to see how such a small body can make such a large flower.

COULTER'S GLOBEMALLOW, *Sphaeralcea coulteri*

Looking like a foot-tall Hollyhock with bright, orange blossoms an inch wide, this eye-catching member of the Mallow or Hibiscus Family was the most conspicuous wildflower along the highway as I drove here yesterday. Its leaves are rough-hairy, crinkly margined and summer-green. A special feature of all blossoms of Mallow Family members is that the stems, or filaments, of the numerous pollen-producing stamens unite into a cylinder or column surrounding the flower's style, that part of the female pistil holding up the stigma, which is the part onto which pollen is deposited.

ROUGH FIDDLENECK, *Amsinckia intermedia*

Mostly about eight inches high, these plants bear their tiny, yellow flowers in a one-sided coil, or "shepherd's crook," technically referred to as a helicoid cyme. In order to picture a helicoid cyme, imagine that the plant's top is nothing but an upward-jutting, leafless, slender stem. Now line up match-head-size, trumpet-shaped, yellow flowers just on one side of the tapering, vertical stem. Let the top flowers be immature and not yet open, but let the lower and outside ones be expanded. Now roll the upper part of this structure into a tight coil so that the immature flowers lie inside the curled-up part, while the open flowers are on the stem below. As the middle and upper flowers mature, the coil unwinds. Helicoid cymes are a typical feature of the Forget-Me-Not Family, of which the Rough Fiddleneck is a member.

WHITEBRISTLE STICKSEED, *Lappula redowskii*

Less than a foot tall, this slender, second member of the Forget-Me-Not Family bears tiny white flowers that open, fall off, and leave behind a fruit composed of four slightly connected nutlets. Each nutlet is adorned with hooked spines. I can't look at this plant without visualizing a jackrabbit one night beneath a full moon innocently hopping along, brushing against the sneaky stickseed, and then carrying nutlets in its fur until somehow they are scraped off.

SCALLOPED PHACELIA, *Phacelia crenulata*

About six inches high, this delicate-looking member of the Waterleaf Family also bears its dime-size flowers in a helicoid cyme. Its blossoms, a special hue of blue-purple seldom seen, are born on shiny red stems.

DESERT MARIGOLD, *Baileya multiradiata*

We've already met this member of the Composite Family on the sandy banks of Tornillo Creek at Big Bend. Though its crushed leaves emit a wonderfully pungent odor, when I see this plant the main thing I think of is seeing it for the first time at Big Bend. I can't see the plant without recalling the surprise and pleasure experienced that day I broke out of the dry arroyo into the valley of the Tornillo and saw cold, pure water streaming between white, alkali-encrusted banks and, out on the dry, sandy river-bed, Big Bend Lupines and some smaller wildflowers were blossoming, but the brightest of all was the Desert Marigold.

LOOKING FOR LIZARDS & MAMMALS

March 11, 1988

ARIZONA: Pima County

In desert off AZ Hwy. 85 about ten miles SE of Ajo, just north of the entrance to Organ Pipe Cactus National Monument

During recent wildflower and bird walks, often I've caught glimpses of lizards and small mammals streaking away, but I've not identified a single one. Therefore, this morning I tune my radar for lizards and mammals, and head for the low, dark basaltic hills to the east.

At 9:00 AM, in a small outwash area strewn with large boulders and inhabited by widely spaced Creosote-bush, Ocotillo, Teddy Bear Cholla and Saguaro, I spook a cottontail. Though very similar to the Eastern Cottontails seen since Amistad, in subtle ways this individual is different. I'd never swear to it, but this cottontail seems to be smaller than what's average for Eastern Cottontails, its white tail may be more narrow and proportionally longer than I'm used to, and its ears seem larger.

In the Peterson field guide for mammals, reviewing the continent's various cottontail species, I find seven cottontail-like rabbits mentioned -- and that isn't counting jackrabbits, who possess very long hind legs and ears. According to the book's distribution maps, the only species found here is the Desert Cottontail, *Sylvilagus auduboni*. Now we're a little west of the Eastern cottontail's distribution. However, the Eastern cottontail's boundary is near enough to be worrisome if I want a definite identification. The field guide states that the Eastern cottontail is larger and has shorter ears than the Desert Cottontail, which supports my observation, but nothing is said about tail shape. Certainly this is Desert Cottontail habitat. Therefore, with 90% certainty, I'm saying that a desert cottontail just has been sighted.

Not five minutes later I spot a chipmunk-like critter holding perfectly still atop a basalt boulders. It's the old "if-I-don't-move-I'm-invisible trick." He looks a lot like the Whitetail Antelope Squirrel seen in Big Bend's Fresno Creek. However, the field guide's distribution

maps show that though here we're almost surrounded by the Whitetail Antelope Squirrel's distribution area, we're not in it. However, we are within the distribution of the look-alike Yuma Antelope Squirrel, *Ammospermophilus harrisi*. One of my books calls the Yuma Antelope Squirrel the Harris Ground Squirrel.

By 10:00 it's become warm enough for lizards to start moving about. Right on cue I spot a five-incher still so cold that I'm able to draw very near. Disconcertingly, this individual doesn't resemble any of the pictures in my Audubon Society reptile-and-amphibian field guide. Consequently I sit down and list all of the species whose form and shape even vaguely suggests this one's. Of course I realize that many animals are differentiated into two or more subspecies, and the book can't illustrate them all. I list fifteen candidates. Then, referring to distribution maps and the book's descriptions of the various species' habitat preferences and behavior, I systematically eliminate... all fifteen possible candidates.

Starting over, I read each and every subspecies description. Eventually I find a written description of one of nine subspecies of Desert Spiny Lizard, *Sceloporus magister*, that fairly fits the individual still patiently sunbathing before me. Though my lizard is strongly striped and has no black splotch before its front shoulders, and the book's picture of this species shows an unstriped, heavily blotched lizard, the written description reveals that on young and females the spot is absent, and that the subspecies occurring in southwestern Arizona is striped. I'll say with 90% certainty, then, that here we have a Desert Spiny Lizard. Yeah, now that I'm noticing the blue dorsal flecks, the rough scales and the stubby tail, maybe I'm 95% sure...

By the time I've settled on "Desert Spiny Lizard," the sun is so high and it's so hot that lizards and mammals seem to have disappeared. Not until 3:00 PM, on the sandy bank of an arroyo, does a Western Whiptail, *Cnemidophorus tigris*, a lizard, come along. Gray-brown and with many dark spots more or less forming longitudinal bands along its sides and above, it matches very well the Audubon field guide's picture. As I watch, it digs in leaf-litter beneath a Creosote-bush, then walks across the disturbed area flicking the ground with its tongue. I see no insects there. What's it doing? This species is divided into about fifteen subspecies, six of which are found in the U. S.

At 3:30, in the sand of a broad, dry arroyo, I meet up with our old friend, the Zebra-tailed Lizard, *Callisaurus draconoides*. This was our first lizard, met on the Papago Indian Reservation near Sells. This species is divided into twelve subspecies, of which three are found in the U. S.

If I've given the impression that mammal- and lizard- watching are a little more tricky than bird- and wildflower- watching, maybe that's right!

A MOUSE'S TALE

March 11, 1988

ARIZONA: Pima County

In desert off AZ Hwy. 85 about ten miles SE of Ajo, just north of the entrance to Organ Pipe Cactus National Monument

Scanning through the mammal field-guide's distribution maps for species that possibly can be found here, I find an embarrassment of potential mammal discoveries. Just among mice we have the Western Harvest Mouse, Cactus Mouse, Canyon Mouse, Deer Mouse, Southern Grasshopper Mouse... Also there are several rats, as well as a host of other critters. It's embarrassing because I'm not seeing these species. Of course they are mostly nocturnal. Still, a good naturalist should be familiar with them.

Therefore, today I resolve to build a nonviolent mousetrap -- a trap to capture small mammals in the night and keep them unharmed until daybreak, when I'll identify and release them. In the side of a plastic bucket recently bought holding five pounds of super-crunchy peanut butter I carve a mouse-sized hole. Then a door is hung across it, hinged in six places with dental floss. A match stick glued across the door's backside keeps any animal inside the trap from opening the door outwards. At dusk a carrot smeared with peanut butter is dropped into the bucket, a lid is popped on, and the creation is placed beneath a nearby Creosote-bush.

Daybreak's first item of business is to check the trap: The whole contraption lies upside down a couple of feet from its original position. Inside the bucket nothing remains of the peanut-butter-smeared carrot. However, a story is written all over the bucket.

Gnaw-marks around the door show where last night tiny incisors frantically chipped at the plastic. Five of the six dental-floss hinges have been gnawed apart, leaving the door hanging useless and lopsided. Beneath the Creosote-bush, markings in the dust reveal that during the night the bucket bounced all over the place. In my mind's eye I see a hysterical little mouse jumping about, gnawing here and there, jumping some more, more gnawing and pushing and pulling, more jumping... all night. Seeing that I've caused a creature such anguish makes me feel sad.

Of course, immediately I set about thinking up ways of improving the trap. However, during the day the vision of that upset little animal bouncing around inside last-night's trap gnaws at me, and then gnaws some more. In short, I'm not going to set any more traps.

SLUMGULLION #2

March 11, 1988

ARIZONA: Pima County

In desert off AZ Hwy. 85 about ten miles SE of Ajo, just north of the entrance to Organ Pipe Cactus National Monument

ITEM: A DARKLING BEETLE, *ELEODES* sp.

At dusk a couple of nights back while I lay in Henry, something began moving across the sand below the window. In the darkness it could have been anything from a mouse to a tarantula. The flashlight revealed a very sturdily built, completely black beetle over an inch long. Walking stiffly on long legs armored with jagged serrations, it kept its ample rear-end elevated high above its head. Having never seen this species before and not knowing whether it might bite, I nudged it with a stick. It reacted by bowing its head to the sand and poking its rear-end even higher. This was done with such purposefulness that I half expected the business end of a switchblade to flip out. However, nothing visible happened. Only when I picked up the fascist-looking beetle did I finally understand its defense. Issuing from the rear end was the intense odor of super-bitter Creosote-bush. If I'd been a raccoon exploring this bug with my nose, I'd have been stymied. The field guides refer to this insect as a kind of darkling beetle, sometimes called stink beetle, or Pinacate beetle. It's in the genus *Eleodes*. About 100 *Eleodes* species occur in the Western States. I'm betting that this one eats creosote-bush sometime during its life cycle.

ITEM: NO AGAVES, NO YUCCAS

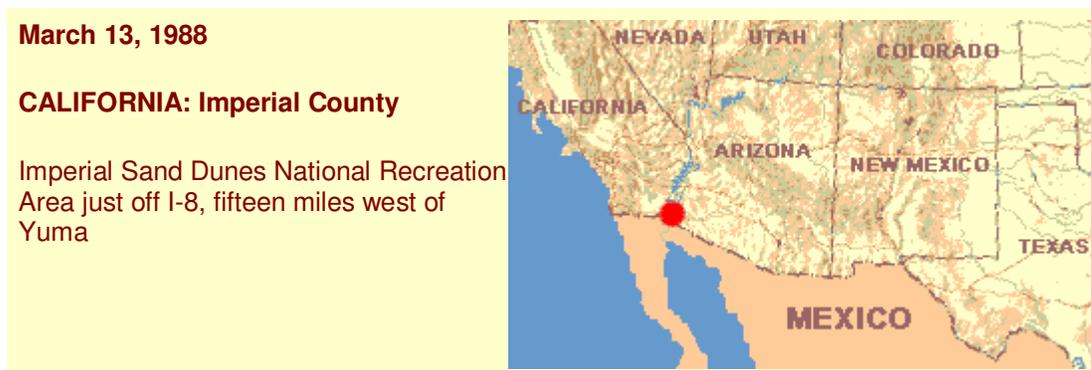
Since arriving in the Sonoran Desert, agaves and yuccas -- so characteristic of the Chihuahuan Desert -- have practically disappeared. Leg-stabbing lechuguillas haven't been seen since western Texas. As agaves and yuccas gave the Chihuahuan its special flavor, here two species of giant cactus do the same. About one species, the Saguaro, we've already rhapsodized enough. The second species is the Organpipe Cactus, *Cereus thurberi*, which here grows to around 15 feet tall. These two species of giant cactus are easy to differentiate. Saguaros form a single, massive stem that branches sparingly about midway up, while organpipes branch profusely from their bases. Each Organpipe stem is much smaller in diameter than the Saguaro's single stem.

ITEM: COYOTE CALLS

Any coyote-expert would recognize many diverse coyote call-types. I've been able to identify two. One is the familiar, drawn-out call heard in cowboy movies, and which school kids make when they see a full moon: *Auooooooooooooo*.... The second is harder to describe. If about eight half-drunk, teen-aged boys decided to "let it all hang out" by dancing in circles around a campfire while yelping, and if as they yelped they couldn't quite decide what kind of sound would be proper, and if they possessed absolutely no

sense of rhythm, harmony or civility, then they'd be approximating this second kind of coyote call.

SAND DUNES



For a long time the desert's face has expressed itself mostly in terms of widely spaced creosote-bushes mingling in apparent anarchy with other plants at home in a fractured, sun-scorched, unpredictable landscape.

But now outside Gila Bend agriculture appears. Straight canals, fields all laid out in rectangles, squares and a few triangles... each patch comprised of crystallized ranks and files of plants with their own textures and hues of green. Cabbage in some fields and alfalfa in others, and things I can't identify in others. One field of waist-high shrubs -- scrubby shrubs looking like they'd be happier growing in the desert -- has a sign beside it reading JOJOBA. So maybe this is where some of our shampoos begin.

Farther west, more canals, more fields, then Yuma all spread out, and finally we enter California. The inspection-station man doesn't seem at all certain he can let us in, but after walking around us twice while other less dusty, less interesting-looking cars slide by, finally he waves us on.

Just west of Yuma something looking like a long, gray-brown wall appears on the horizon. Up closer the wall looks more like a series of interconnecting fifty-foot high mounds of sand that a God-hand has just dumped in the middle of the desert's flat plain. And truly I am seeing sand dunes. I-8 passes right through these Imperial Sand Dunes.

Inside the dune area nearly all plants disappear. Taking their place are kids and grown-ups on off-road vehicles. Even from the interstate I hear the engines. Simply going wild, the people are -- chasing, being chased, throwing up sand fantails, even very small kids, one with a wagon behind it carrying a teddy bear. Vans, pickup trucks, motor homes all parked randomly among the dunes, everywhere, everywhere...

The All American Canal carrying green water and smelling of chemicals runs right through the dunes, straight as an arrow. Alongside the water's edge grows a giant reed, a crazy grass gone fifteen feet high. I stand there peeing into the giant reed, somehow dazed by the blue sky above, the impenetrable green wall, the wet, fertilizer-and-pesticide odor of canal-water flowing just beyond the reed, and the dazzling sand, the hard-to-get-a-foothold-in sand.

Back inside the cool darkness of Henry's cab I sit with the sunlight bouncing all around us, dust and wind coming through the windows, listening to waltzes on the radio and watching people with every color of helmet pop and growl their off-roaders, and the kid with the teddy bear runs into a creosote-bush and just laughs.

THE SAND AT DAWN

March 14, 1988

CALIFORNIA: Imperial County

Imperial Sand Dunes National Recreation Area just off I-8, fifteen miles west of Yuma

Happily, the off-road folks are late sleepers. At dawn the dunes are relatively quiet, with only four sounds:

- * distant semis traveling I-8 between Tucson and San Diego
- * jets in the sky
- * the wet, sweeping sound of wind-carried sand moving across the dunes
- * personal wind-sounds flapping about my own ears

No birds, no coyotes, no flies...

In low-slanting sunlight one side of every crescent-shaped dune glows intensely while the other side lies inside a cold, black shadow. Looking across several interconnecting dunes, shadows and sunlight combine to form bold arabesques. I wonder: Did such interplays of shadow and sunlight inspire the writing and architectural styles of the desert-living Arabs? As the sun continues to rise, the theater of light and shadow changes so quickly that I can't keep up with it. An hour passes like ten minutes.

In the wind-protected troughs between dunes, the sand's surface is an open book. Trails of lizards, beetles, rodents... but I don't know which lizards, beetles and rodents, or what they were doing here. This open book is in a language to be interpreted only by someone staying longer than I.

The widely spaced plants growing in these troughs are highly specialized to be surviving here, but for the most part I can identify them. The Birdcage Evening-primrose, *Oenothera*

deltoides, has spectacular, three-inch wide, white blossoms shaking in the wind and they show up from a quarter a mile away. The name comes from the fact that at first its stems lie flat on the sand, radiating outward from the taproot, but eventually bend upward, creating a structure that's at least a little like a roofless birdcage.

The Desert Sand-verbena, *Abronia villosa*, with inch-wide umbels of small, trumpet-shaped, rose-colored blossoms, has its vegetative parts thickly covered with sticky, gland-tipped hairs to which sand-grains adhere in abundance. The plant looks as if it's been dipped in oil, then rolled across the sand. I'm guessing that these stuck-on sand grains serve a purpose. Certainly they cut down on the amount of sunlight reaching the plant's leaves and stems. Maybe that helps the species to survive here. Though this plant with purple-smelling blossoms is very similar to several verbena species, it's not a verbena itself -- not even in the Verbena Family. It belongs to the Four o'Clock Family, the *Nyctaginaceae*.

Not far away another yellow-flowered member of the Evening-Primrose Family bears flowers with stigmas and styles poking beyond the corollas and stamens, looking like long, round-tipped noses sticking from the blossoms. It's the MUSTARD EVENING-PRIMROSE, *Camissonia californica*.

In the more level sand away from the dunes our friend the Creosote-bush reappears. However, here the bushes look completely different from the ones we've been seeing all along. These are larger, more widely spaced (averaging about thirty feet apart) and, most conspicuously, they're absolutely loaded with yellow flowers and fuzzy, silvery fruits. Each blossom, about 7/8 of an inch in diameter, bears five petals and ten stamens. Each stamen filament (the part holding up the pollen-producing anther) bears a conspicuous, flat shield between it and the ovary's fuzz -- to prevent self-pollination?

Returning to Henry, right at the trashy base of I-8's levee, I come upon the day's most spectacular, most unexpected botanical discovery. With white, trumpet-shaped blossoms over two inches long, flowering stems seventeen inches high, and grass-like, eight-inch long leaves with curiously crinkled margins, here is the Desert Lily, *Hesperocallis undulata*, a member of the Lily Family. Usually I think of such exquisite lilies as growing almost exclusively in moist valleys well protected from extremes of temperature and humidity. Finding this luscious species in such a hostile environment just makes my day.

TWO ROUNDTAIL GROUND SQUIRRELS

March 14 1988

CALIFORNIA: Imperial County

Imperial Sand Dunes National Recreation Area just off I-8, fifteen miles west of Yuma

Zleep!

High-pitched like the alarm signal of a small digital watch, the *zleeping* sound seems to be coming from my own shirt pocket.

Zleep!

I look all around inside Henry but of course I carry nothing that *zleeps*. The sound must be ventriloquial and it must be coming from outside. Just as I figure this out and look outside, my mystery-*zleeper* zips from beneath one Creosote-bush to another. It's the most nondescript, grayish ground squirrel imaginable, one called the Roundtail Ground Squirrel, *Citellus tereticaudus*. The field guide says that its species occurs from southern Nevada through southeastern California and southwestern Arizona into northwestern Mexico.

It's a scrawny-looking little animal with a body only six inches long and a tail only half that length. Its tail isn't bushy and it's not carried curled over the back. It's like a pencil very meagerly invested with short fur. The funny thing is that every time the roundtail *zleeps*, the tail flies straight up.

This little mammal's drabness cannot be overstated. Gray with a pinkish cast, it bears no spots, no chipmunk-like stripes, or any other distinguishing feature, other than its unmistakable ground-squirrel form. Apparently *Zleeper* makes its home inside the two-foot high mound of sand beneath the Creosote-bush beside Henry. Creosote-bushes usually are profusely branched from their bases so they make natural sand-grain catchers and sand-dune starters. Animals digging dens in these mounds benefit not only from the bush's shade, but also from its subterranean network of stems and roots, which keep the tunnels from collapsing.

On the ground beneath the Creosote bush, *Zleeper* lies flat on his belly, with his front paws extended out front and his back legs similarly disposed behind, his straight tail continuing to pump upward with every *zleep*. Eventually a second roundtail emerges from inside the Creosote-bush's shadows and takes up a stretched-out position not far from *Zleeper*. This seems to irk *Zleeper*, so he shoots to the Creosote-bush's other side and sprawls out as before. The second roundtail now goes to where *Zleeper* had lain, seems to take great pleasure in sniffing the sand where *Zleeper's* rear end had touched, and then returns to the shadows where he rubs the corner of his mouth on a Creosote-bush stem.

From this behavior I infer that the two animals probably are sexually active. With binoculars I look more closely at *Zleeper* and sure enough he possesses testicles swelled all out of proportion to what a little mammal such as he would seem to need. When I look at the second roundtail I see... the same thing! I hadn't expected them both to be males.

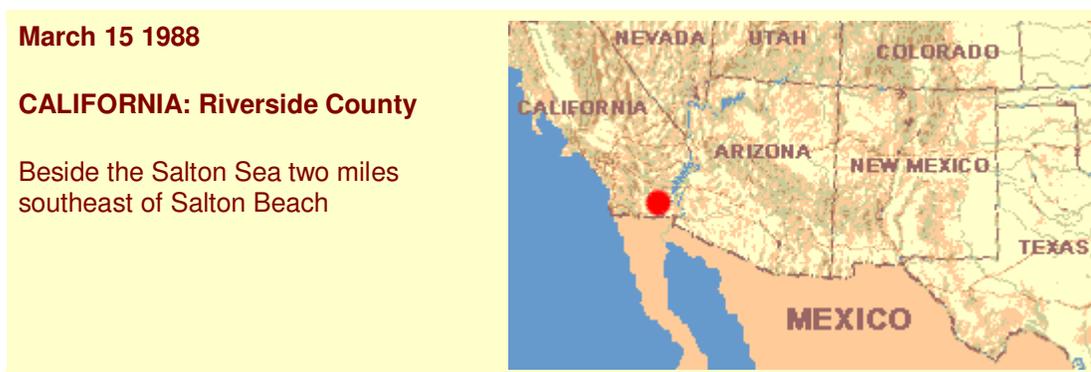
From time to time one darts across the sand to quickly visit another Creosote bush, but soon he returns. Eventually *Zleeper* quits *zleeping*. I wish I could figure out what is going

on here. The Peterson field guide states that this species' young are born in April, so it makes a good story for pregnant females right now to be at home in chambers below the bush while the males stand watch above. However, that's only conjecture.

During the afternoon one moment stands out as being exceptionally fine aesthetically. *Zzeeper* climbs onto a Creosote-bush's lower branch, reaches out with his paws, brings a flowering branch close, and eats the yellow blossoms. What a picture it made, seeing this small creature suspended among yellow blossoms and green-leaved limbs, with tiny paws earnestly manipulating the flowers being eaten.

Eyes of the roundtail are dark and large, as are any ground-squirrel's, so this gives the anthropomorphic person the impression that the animal is more wise and sensitive than perhaps it is.

232 FEET BELOW SEA LEVEL



Comprising a finger of heaped-up sand about forty miles long and five or six miles wide, the Imperial Dunes run northwest from the Mexican border to about twelve miles east of Calipatria. On I-8 heading west from the dunes, first we pass from sand and scattered Creosote-bush into Mesquite, then twenty more miles bring us into the region called Imperial Valley. Compared to everything seen since leaving Amistad, this region is lush and glossed over with a mellow, suburban atmosphere. Today farmers are clipping alfalfa, filling the air pouring through Henry's open windows with sleepy, pastoral and herbaceous odors. Stacks of brown, curing hay line the roads and field edges -- stacks maybe ten bales high and 200 bales long. Sugarbeets, cabbage, lettuce, wheat... all imparting their special hues of green to the landscape.

Then broad streets, shopping malls, busy intersections, and suddenly I'm in mainstream America again, wondering how it all happened with no warning at all. Until now to hear the news on the radio, each place we've stopped I've had to wait until night fell, then tune in the long-distance AM stations; but approaching the Palm Springs/ Indio area, the FM radio band fills with stations from one side of the dial to the other. During this trip I've been

starving for classical music but now suddenly on the FM band's lower side the world's greatest orchestras lie packed unceremoniously side by side. Somehow I resent my desert isolation having been so quickly and with no warning taken away.

El Centro represents an important milestone for us. Until now the headset has been to move west -- "stay near the Mexican border and go west," I told Henry. At El Centro we abandon I-8, turn right and head north on CA Hwy. 86. Henry's instruction now becomes, "Go north until it's time to head back east, toward home."

El Centro lies forty-five feet below sea level. About ten miles farther north, Brawley says it's sunk to -119 feet. Finally the shimmering, blue Salton Sea appears on our left, its water level at 232 feet below sea level. Pulling up to a camping spot right at the water's edge, when Henry's engine rolls to a stop, I hear the sound of waves splashing against the yard-high, vertical, dirt bank beside us.

All streams and rivers in this area drain into the Salton Sea. The Sea has no outlet. This thirty-mile long, fifteen-mile wide body of water lies in the bottom of a great trough extending from Indio in the north to just inside Mexico, west of Mexicali. The San Andreas Fault runs through here. My maps indicate that at this very moment I could not be more atop the fault. So here I sit visualizing the vast tectonic plate to the southwest grinding beneath the plate to the northeast, causing the land to subside. However, the depression doesn't fill with water to sea level because water draining here evaporates faster than rain can replenish it. My National Geographic map states that the Salton Sea formed between 1904 and 1907 when the Colorado River, which runs between southeastern California and southwestern Arizona, overflowed its banks.

The temperature at 1:00 PM is 80° in the shade. Though it's very hazy -- smoggy -- across the lake, to the west I see the Santa Rosa Mountains, with Rabbit Peak rising to 6650 feet above sea level. On the water, Ring-billed Gulls float complacently near shore while farther out six White Pelicans are a welcome sight. Barely identifiable because of their distance from shore, fourteen Eared Grebes make themselves at home on open water. As if rushing to an important meeting, low above the water right offshore come three Double-crested Cormorants.

On this flat-surfaced plain gently sloping toward the water, at least one blossoming plant qualifies as a wildflower. It's one of those ubiquitous, yellow-blossomed members of the Composite Family, the Desert Sunflower, *Geraea canescens*. Two feet high and with soft, fuzzy leaves like burro's ears, it holds 1-inch wide flowers atop reddish, gangling stems.

Maybe the most interesting plant here is Pickleweed, *Salicornia* sp. Its leafless, segmented stems look like pea-sized, green, semi-cylindrical beads stacked atop one another. Succulent and brittle like canned sweet pickles and tasting salty, it's a halophyte, one of those plants adapted to especially salty soil.

Maybe another dozen species of small plants and bushes can be found flowering here, but the sudden pleasure of being next to this wonderful body of water just takes away a lot of my botanizing urge. I just want to walk along this shore.

TILAPIA ISLAND

March 15 1988

CALIFORNIA: Riverside County

Beside the Salton Sea two miles southeast of Salton Beach

At 4:00 o'clock in the afternoon, arriving in a single hard gust, the wind starts blowing directly off the water. The radio had forecast wind to 40 mph, so this must be it. It's constant and unrelenting. In half an hour Henry's lakeside windows are white with salt spray from exploding waves.

At dusk the wind does not let up and the sky tingles with pinkness. Though the wind feels cold and raw, the air tingles with something fresh and alive so I'm drawn from the Henry-cocoon for a long walk along shore, listening to music through my pocket radio's earplug. Many elderly Northerners overwinter in this area and along shore permanent retirement communities create entire towns. The radio is full of 40's-style sentimental music with violins and harps. Somehow schmaltzy music is perfect for this precise moment in this strange storm.

Heaped in the mud along shore lie thousands of dead fish called tilapia. Tilapia are warmwater fish that often die during winter cold-snaps. I'm betting that here they have been introduced by California wildlife officials to serve as forage-fish for predatory game-fish such as bass. The violent surges, streamings-back-and-forth and general poundings by muddy waves move the dead fish around like cups in a shell-game, filling their gaping mouths with mud and sand, leaving them in absurd momentary juxtapositions with mudballs, brown wood-debris, coagulations of spume, and one another. The dreamy music coming through my earplug is like anesthesia, causing a sense of detachment from the morbid theater along shore. Like a white seagull I glide along the water's edge looking down on an endless monotony of dead fish, marveling at my own aloofness and the pleasure I feel in being nothing but an untouchable observer.

But then I begin thinking about the fatal smallness and shallowness of the Salton Sea. These tilapia died because their "sea," their entire universe as they knew it, was isolated from larger lakes or seas that could have introduced life-saving currents of warm water on those recent nights when the temperature dropped. This sea is an ecological island and as an island it is vulnerable to myriad unpredictable outside influences.

At 6:00 PM National Public Radio's "All Things Considered" comes on so now I rein in my seagull spirit and walk as a man along shore. Tonight they describe how new evidence

proves that man's industrial chemicals are depleting the ozone layer, and I walk back to Henry thinking of how the whole Earth is a tiny ecological island.

JUAN CALDERÓN OREGEL

March 16 1988

CALIFORNIA: San Bernardino County

Off CA Hwy. 247 about 15 miles north of Yucca Valley

In Henry's rear, left wheel a bearing has gone out so at dawn I wipe the white salt from his windows and we grind northward looking for an auto-parts store. In Cathedral City, just south of Palm Springs, a NAPA with the bearing we need comes along. After pulling into a lot behind the store in order to replace the crunched part, I'm jacking up Henry when a young Mexican-looking man approaches and stands awkwardly not far away. I invite him to come over. He tries to fake some English but it's no good, so I speak in Spanish. Yes, he's illegal. Yes, everything here is so different, so pretty, but there's not much work. His name is Juan Calderón Oregel.

"I came over the mountain," he says, without telling which mountain. "It was very cold. For three days and nights I had nothing to eat. I'm from the state of Michoacán. It's very beautiful there, with pines in the hills."

Still feeling the aftereffects of having last night been a rotting tilapia with empty eye-sockets, I can't keep from seeing Juan as a good young man, very friendly, smart and helpful, but also just one more fish in a pool already overpopulated. He's managed to jump from one critically overstocked pool to another pool that is less overstocked, but one that nonetheless already has too many fish in it. Juan is painfully lonely and he yearns to return to Michoacán, and it pains me to simply let Henry down, shake Juan's hand, and drive away, but what else is there to do?

Between Thermal and Palm Springs it's hard to tell where one town begins and the other ends. Highways are wide and the lawns are perfectly manicured and greener than they need to be. Just north of Palm Springs, CA Hwy. 162 climbs so fast that I have to shift into third gear. Greenness ends abruptly exactly where the housing developments end. Now we're back into Creosote-bush and it feels good.

Higher and higher, and then along come Joshua-trees, *Yucca brevifolia*. They're twenty- to thirty-foot tall, much branched, tree-like yuccas. Here they dominate the vegetation almost as majestically as the Saguaros did in the Sonoran and the agaves did in the Chihuahuan. Some of these Joshua-trees take the branching theme almost to absurd ends. They remind me of someone who comes up with a good idea and becomes obsessed with it.

Seeing one branching itself into a real confusion, I think of Leon Trotsky handing out pamphlets in Mexico City. Yes: With such thoughts, we enter our third desert, the Mojave.

Eventually we pull into an isolated cove about a mile off the road, on Bureau of Land Management land. Though this location is only about 3000 feet in elevation, for some reason it feels alpine. Dry, windy, sunny... In the sun and out of the wind, it feels hot; but in the shade or in the wind, it's cold. At 3:30 PM the thermometer on Henry's antenna reads 63°.

Elephantine sandstone boulders lie strewn all around us. Still feeling the effects of having just driven through such glossy, superficial excess, I can't escape the feeling that these boulders are just part of a theme park, that they must be plastic. The only manmade thing here is a gutted TV someone has placed atop a boulder.

Dear reader, if ever you go to Michoacán, look up Juan at Avenida Circuito Presidente #57, Colonia Adolfo López, in the town of Mateas Morelia, and tell him that on the Internet it's written that one day he befriended a gringo who managed to escape Cathedral City, too.

WILDFLOWERS OF THE HIGH MOJAVE



Not until last night's darkness came and the valley below filled with glimmerings of security lamps and car headlights did I realize that we had settled on a perch. On Henry's three high sides lie large boulders but I have a good view toward the north. Even knowing how densely the valley below is populated, during the day gazing down there you don't see much of people, and the view calms the spirit.

Upon this peaceful perch many wildflowers are blossoming. I'm a little surprised at this. At 3000 feet we're higher than we've usually been during this trip, and thus we should be "going backwards toward winter." But the wildflowers say that this is the most springy place we've been.

Now, if we could see the landscape from fifty feet in the air, maybe three-fourths of the ground between boulders would be naked soil. No Joshua-trees are here but a smaller yucca relative is common. Appropriately, it's called the Mojave Yucca, *Yucca schidigera*. Though not-yet-blossoming, Creosote-bushes are present. The main woody shrubs, however, are two species of two-foot-tall bushes that look very similar until studied from just inches away -- they're Bur-sage, *Ambrosia dumosa*, and Blackbush, *Coleogyne ramosissima*. The latter is just beginning to flower with curious yellow blossoms about half an inch wide, bearing many stamens but no petals.

One of the two inconspicuous species of cactus here is our seventh species of the cholla group, the Diamond Cholla, *Opuntia ramosissima*. It's a rather low, slender cactus with diamond-shaped designs on its skin. The other cactus, similar to our earlier Blind Pricklypear in Big Bend, is the spineless Common-beavertail, *Opuntia basilaris*.

Here various wildflower species frequently grow together in lush, green communities two to six feet across and surrounded by naked sand. Also they grow among shrubs' outstretching branches. Probably this latter location protects them from browsing deer. One-fourth of the Mojave's plant species are endemic -- in the whole world found only in the Mojave Desert.

Here is a list of the wildflowers found within fifty feet of Henry, in the order in which I find them.

* WESTERN TANSY-MUSTARD, *Descurainia pinnata*: Mustard Family. This species's yellow flowers are tiny and insignificant-looking, but its fruits are long and slender, and jut away from the plant's main axis causing the plant to suggest a green bottle-brush.

* MUSTARD EVENING-PRIMROSE, *Camissonia californica*: Evening-Primrose Family. This was earlier found in the Imperial Dunes and apparently has no common name.

* WALLACE'S WOOLLY-DAISY, *Eriophyllum wallacei*: Composite Family. Outside Organ Pipe we saw the closely related (same genus) White-rayed woolly-daisy. This yellow-flowered species is 3/4-inch high.

* PHACELIA, cf. *Phacelia crenulata*: Waterleaf Family. The field guides mention many species of phacelia but my violet-flowered specimen's leaves are unlike all those illustrated. If I had to bet, I'd say that it's a form of the common, red-stemmed "Scalloped Phacelia."

* NAMA, *Nama demissum*: Waterleaf Family. Another "belly plant" only about 1-inch high but with a largish, rose-colored flower. Sticky glands cover its leaves.

* CHIA, *Salvia columbariae*: Mint Family. With parsley-like leaves (strange for the Mint Family), this curious plant's tiny, purple, dog-faced flowers possess only two stamens each.

* REDSTEM STORKSBILL, *Erodium cicutarium*: Geranium Family. Flowers pink. An alien, weedy species with long, needle-like fruits sticking straight up.

* PINCUSHION, genus *Chaenactis*: Composite Family. This Composite's white flowers are interesting because its blossoms' inner flowers are tube-like, which is typical for Composites, but the outer ones are irregular (not flat rays), looking a little like mint flowers.

* DOUGLAS' COREOPSIS, *Coreopsis douglasii*: Composite Family. With typical, yellow coreopsis blossoms, its leaves are mostly basal, with three threadlike lobes.

* ROUGH FIDDLENECK, *Amsinckia intermedia*: Forget-Me-Not Family. Flowers yellow. We found this one just outside Organ Pipe Cactus National Monument. It's special for its "helicoid cyme."

THE BIG JOKE

March 17 1988

CALIFORNIA: San Bernardino County

Off CA Hwy. 247 about 15 miles north of Yucca Valley

In the San Bernardino Mountains' rain-shadow at an elevation slightly too low for Joshua-trees, but just right for their near kin the Mojave yucca, where one-quarter of the species are endemic and the presence of a boulder can determine whether a green splotch of wildflowers appears, I become transfixed by a certain mental image: That of living things evolving forward, perpetually crystallizing their needs into ever more elegant adaptations.

Not ten miles to the northeast lies Twentynine Palms Marine Corps Base. During my tenure upon this perch, day and night, I've heard explosions. Last night they awakened me with their artillery practice. In a way, these explosions are similar to birdsong, white fuzz on a desert sunflower's leaf, and the rapid evolution of the AIDS virus. Let me tell you about one of my theories.

Every night here in the desert as I look into the stars this question comes to mind: Since we are just one planet in a solar system in a run-of-the-mill galaxy among billions of galaxies in the Universe where opportunities for life to arise must exist in billions of places, why aren't we seeing evidence of that life? I have a theory that supplies an answer.

Surely no matter what kind of life might arise anywhere in the Universe, it will have to evolve, like Earth's, from a simple form to a more complex one. Moreover, during any life-form's evolution, surely it will have to compete with other life forms. So these suppositions form the background for the Big Joke, which is this:

Any species fighting its way to the top of any evolutionary pyramid will be programmed by its genes to be so aggressively competitive, to be so arrogantly obsessed with its own comfort and hungers, to be so insensitive to other life-forms' needs, and to dominate all other life forms at all costs, that that life-form's behavior inevitably will be self destructive. It will kill itself and possibly all other life on its planet by destroying the biosphere which sustains all life. The Universe is programmed both to spawn life, and maintain itself as a gorgeous desert.

On my perch, with explosions from Twentynine Palms Marine Corps Base rolling across the valley and around me surrounded by boulders I feel as if I am getting the joke, and beholding the joke fulfill itself.

As I type the above, a Side-blotched Lizard, *Uta stansburiana* waltzes across the sand before me. It's a new species for us, famous for... the dark blue to black blotch on its side.

Ha ha ha!

DEATH VALLEY



Between two and four o'clock in the morning I'm awakened as Henry rocks in the wind and sand grains blast onto his metal side. For the rest of the night the wind blows without ever letting up. Sometimes roarings pass above us and in the darkness those sounds are so profound that they cause in me real apprehension.

With dawn's light I sit watching fast-moving clouds of brown sand sweep low across the dunes and the gravel road on which I'm parked. As the light grows I'm dumbfounded to see how much sand has insinuated into the car. Having come through the crack between the driver's-side door and the body, beneath the clutch and brake pedals lies at least a gallon of very fine sand. From around the windows and above the windward door, at least a cup of dust has entered and spread itself over food, books and clothing.

Immediately we leave. Within two miles the highway climbs up the valley's slope toward Ibex Pass, at 2090 feet; within ten minutes the air around us is clear and roadside Creosote-bushes no longer shake in the wind, though the rear-view mirror shows the valley behind us still engulfed in gray-brown dust. At the gas station in Shoshone, not even a hint of breeze is stirring. I clean several handfuls of sand from Henry's engine compartment.

From Shoshone we head west on CA Hwy.178 toward Death Valley National Park, hoping to backpack and camp there for maybe a week, as we did at Big Bend. First the highway climbs so steeply to Salsberry Pass at 3288 feet that we must use third gear; then down we coast until we're inside Death Valley, at or below sea level.

Death Valley really is a valley between mountains, more or less running north and south. To the east lie the Grapevine and Funeral Mountains while to the west lies the Panamint Range. Snow mantles the Panamint's higher peaks. Without thinking much about it, I'd say that the Panamint Range looks to be no higher than 3000 feet. Since in one long descent we've just come down from 3288 feet to sea level, I figure that I should have a good feeling for elevations. However, realizing that snow shouldn't appear until around the 9000 foot level, and there's clearly snow in the Panamints, I'm confused. While driving north I pull out my map and see the Panamint's highest peak, Telescope Peak, is in fact 11,049 feet high! Moreover, I've been judging Telescope Peak to lie between seven and ten miles away but the map says it's twenty. As I pass by the lowest point in the U. S., at 282 feet below sea level, I feel completely disoriented.

Many day-use pull-offs appear along the highway, but I'm looking for a road of the kind usually found, where I can drive into the desert and stay for a while. Several nice-looking gravel roads do come along, but each is posted NO CAMPING. Things here look so strange that I decide to go against all custom and check into a formal campground. But all campgrounds either are full or so packed that I simply refuse to enter. Leaving the developed area behind I begin desperately looking for a place where I can at least take a long walk by myself, but now everywhere I find is overrun with tour buses idling their diesel engines while multinational groups of shorts-and-sunglass-wearing, camera-swinging tourists stand about smelling of hotel-room soap. Gradually Death Valley's steep walls begin pressing in and I'm feeling claustrophobic. All the way into, through, and out of Death Valley National Monument I do not stop Henry's engine a single time.

I have not been disappointed with the valley itself, for it could not have been more strange and worth visiting. Between the valley floor's alkali flats and the very steep, often vertical canyon walls rise steeply sloping talus slopes deeply mantled not with the usual sands and silts but with fist- to breadloaf-sized, sharp-edged rocks. These slopes remind me of abandoned lots in the Bronx where brick buildings have collapsed into impassible fields of rubble.

Sometimes the valley walls' contrastingly colored strata are neatly layered but sometimes the colors are so jumbled that the walls have a piebald appearance. Along some stretches of road diffuse populations of Desert Sunflower appear but even here sometimes the off-

roaders have left their tire marks, despite the many signs pleading for people to stay on the pavement. In marshy areas where white mineral incrustations rim plant stems, the dominant shrub is Pickleweed. On rocky talus the Desert Holly we met at Silver Lake is abundant, as are the Creosote-bush and Bur-sage.

Other wildflowers and shrubs are seen but I pass them by, just needing to escape from this resort-ized wonderland.

ROCKS & MINERALS



Exiting Death Valley, just a few miles east in Nevada, I found a dirt road wandering into the desert, ending inside a random scattering of boulders, at an elevation of about 3300 feet. For a while I just sat empathizing with Creosote-bushes and trash, letting the buzz of all the tourist stuff in Death Valley dissipate.

On this first morning in Nevada I resolve to prepare "Bird List #4" but I can't spot enough species to constitute a real list. After an hour of looking, my list mentions only Ravens, Rock Wrens, House Finches and Black-throated Sparrows. The bird that could have been our first migrant gets away. It's a hummingbird, but all I see of it is a fast-moving silhouette. In the East, except in southern Florida, hummingbird identification is easy because we have only one species but in this area, maybe four are possible.

Breaking off the bird-walk, I climb a nearby peak. The climb turns out to be much more difficult and risky than I'd anticipated, but the view teaches a great deal. I can see that this is mining country. In the past, silver and gold have been mined here. Across the valley an old mine-shaft entrance big enough to walk into upright is visible. On several slopes around me test pits have been dug. The rock debris below one Henry-sized test-pit is greenish while not twenty feet away the debris below a similar hole is dark rusty-gray, indicating that the two pits were dug into different strata. About a mile to the west, up our valley, a back-hoe, several pickup trucks and a house trailer parked next to a large pile of tailings indicate an operating mine.

Right above Henry a five-foot tall, six-inch wide, white pipe sticks from the ground. I've been imagining that maybe an amateur rocket-maker has been here, using the pipe in test-firings. But from this height I see that the pipe is just one of several being used to establish boundary lines -- claims -- for mineral rights. And now for the first time I realize that Henry himself is parked in an old stripmine. The ridge behind him is a mound of tailings and the rock wall to his left is the highwall.

The ghost town of Rhyolite lies right over the next ridge. Remembering back to my undergraduate days at Western Kentucky University, I visualize Minerology Lab's rock tray holding the thirty or so rocks we were expected to learn to identify. Rhyolite was a fine-grained rock of volcanic origin -- one with the same minerals as granite but in different proportion. It's made of quartz (SiO_2), orthoclase feldspar (KAlSi_3O_8) and a few grains of dark minerals, such as mica, amphibole and pyroxene.

In the desert where vegetation doesn't mask the surface geology it's easy to get interested in rocks and minerals. Just among the small group of old fishermen at Amistad, four considered themselves to be rock hounds. Often these men's talk would slip from the subject of fish to lavish descriptions of certain geodes they'd found, or to good examples they'd seen of "Texas plume agate" or sky-blue topaz. One morning as I walked along Amistad Reservoir I met a paleontologist and his wife fishing. The woman was a Mescalero Apache Indian and when she decided that she liked me she gave me an "Apache tear," a naturally tear-shaped form of a black, shiny stone called obsidian. "It'll bring you luck," she said. "But only if it's given to you, and not sold." She was very serious in presenting the gift. Later her husband told me that I had been honored and that the gift was not to be taken lightly.

As I sit typing this, I try to interpret the immediate landscape seen through Henry's door. The jagged peak right in front appears to be an ancient volcano's pipe up through which lava escaped during an eruption. Rock surrounding the ancient volcano has eroded away leaving these fingers of basaltic rock jutting maybe fifty feet above the surrounding talus. Below this "volcanic neck" rises a ridge composed of horizontal strata. The strata's dominant colors are creamy white, pale pink, slate gray and sometimes pale greenish. I'm interpreting each of these layers as composed of ash ejected during various eruptions. The different colors result from the chemical composition of ash from one volcano differing considerably from that of another -- different chemicals create different-colored rocks and ash. Greenish strata may have some copper in them and maybe the pink ones have manganese.

In one place a vertical wall of dark basaltic rock cuts through horizontal strata of ash. This is a volcanic "dike."

During the eruption, or near-eruption, of an ancient nearby volcano, such upward-pushing force was developed below us that the overlying strata, these ancient layers of ash, fractured, as might horizontal layers of glass if something pushed on them from below. Then upward-surging magma intruded into the ash-strata's vertical cracks. Later the magma hardened into rock that was not as easily eroded by wind and rain as the

surrounding layers of ash. What once was molten lava extruded into a crack now is a dark wall twenty feet high ranging across the valley floor.

SLUMGULLION #3

March 24, 1988

NEVADA: Nye County

Just north of NV Hwy 58, about six miles southwest of Beatty

ITEM: A DRY WINTER

On my way here I met some beekeepers who complained of this being a dry spring. Las Vegas' Radio KDWN has been reporting the same thing. In fact, one big piece of local news is that Lake Tahoe, about 225 miles northwest of here on the Nevada/California line, has dropped to such low levels that at the usual launching places boats can't be floated without first scraping bottom. If more rain had come this winter, maybe now we'd be seeing more spectacular displays of wildflowers. Though the occasional broad, diffuse splotch of yellow Desert Sunflower has been good to see, I really can't say that anywhere we've seen "the desert in bloom."

ITEM: YUCCAS AND CACTI ARE GONE

During my walks around here I've not seen a single yucca, and the only cactus encountered has been the occasional Silver Cholla, *Opuntia echinocarpa*. For the first time since entering the desert no single plant lends its unique character to the landscape in an especially interesting or aesthetically pleasing manner. At Big Bend always we had those tall, slender flower stalks of lechuguilla and sotol rising above the Creosote-bushes, In the Sonoran we had Saguaros and more recently in the Mojave we had Joshua-trees and Mojave Yuccas. Later I think we'll have sagebrush. But here the mingled Creosote-bushes and white Bur-sage create a gray-green cover that just doesn't have the pizzazz of our earlier deserts covers.

ITEM: WARMING UP

I haven't felt really cold since leaving Coronado National Forest. Night temperatures dip no lower than 40°. One night in the dunes south of Death Valley the low temperature was 63°. Below 1000 feet for the last couple of weeks, the average daytime temperature has ranged between 80° and 94°, the highest coming in the mudflats and sheltered valleys. Judging from talk on the radio, these days may be a little warmer than usual. On the day we cruised through Death Valley an atypical high cloud cover kept temperatures in the mid-sixties. Here at about 3300 feet the dawn temperature was 42°, and the expected high today is 80°. Since crossing the Mississippi River heading west, I've not seen any real rain.

ITEM: LIZARDS

The two common lizard species here are the Side-blotched Lizard, *Uta stansburiana*, and the Zebra-tailed Lizard, *Callisaurus draconoides*, which we've seen elsewhere. Usually in any given location one species is more common than the other, but so far I haven't figured out the ecological factors that give one species ascendancy over another. The Zebra-tailed holds its tail arched over its back as it runs. In North America north of Mexico we have 115 lizard species, while about 3000 species are known worldwide.

ITEM: WILDFLOWERS

On the slopes just west of Beatty one wildflower new to us deserves mention because it's one of the most brightly colored species we've met. It's the Southwestern Paintbrush, *Castilleja integra*, with flowers and upper bracts as red or orange-red as the most garish lipstick. Standing about a foot tall and bearing narrow, unlobed leaves, its flower spikes are visible from 200 feet away. The most common wildflowers here are the already-encountered Rough Fiddleneck, Scalloped Phacelia and Whitebristle Stickseed. Also found here are the yellow-flowered, lacy-leaved Western Tansy Mustard, *Descurainia pinnata*, of the Mustard Family, and Layne's Locoweed, *Astragalus layneae*, of the Bean Family. This latter species produces interestingly purple-mottled, sickle-shaped seedpods that are grooved on their undersides. Not a single Layne's Locoweed plant has been found not nibbled on by deer. I'm really astonished at the number of locoweed species we're finding everywhere we go.

PEACE CAMP



Along US 95 south of Beatty it's impossible to find a good place where we can pull into the desert and camp. Nearly all land is fenced in with barbed wire and at regular intervals along the highway orange and black signs appear saying WARNING; but the many lines of fine print below the WARNING can't be read from the road. For an hour we head southeast, toward Las Vegas, meeting heavy traffic mostly of RVs and big trucks.

Suddenly the desert on the left becomes low and expansive. I'm looking down on it as if I had a seat in a huge amphitheater. In the middle is a small airport. At the mountain's edge to the north there's a fair-sized town with a white-domed building and a very tall, very slender, quadrangular structure, and now I know I've seen this place before. On the TV News... police, chanting, people being arrested... This is where they test atomic bombs. A quick glance at my road atlas confirms it. In thin, red lines it delineates a vast area as the "A. E. Nuclear Testing Site" and adds in red letters in a black box "Travel restricted on all roads in this area."

To the right of the highway I see maybe twenty tents dispersed among the Creosote-bushes, and all kinds of flags flying. Waving frantically in the wind, signs on limber sticks read FOOD NOT BOMBS, TEST PEACE, and WAR IS NOT HEALTHY FOR CHILDREN AND OTHER LIVING THINGS. Henry takes the next exit before I know what's happening.

"I think I'd like to stay a while with you all," I say to a lady at the fence, "but I'm too poor to get arrested..." She hugs me and smiles and says, "Come on in. They'll give you plenty of warning before they start arresting."

Behind a fence bearing a twenty-foot blue sign with white letters proclaiming PEACE CAMP I ease Henry onto a spot next to someone's lettuce bed. Somewhere in a tent out in the desert someone is playing Grateful Dead tapes and somehow with all this wind and sunlight and the bright flags and outraged placards the Grateful Dead sounds good. The people are sunburned and dusty-looking like me, and also they drink water from plastic jugs, and eat a very great deal of cheap oatmeal. Before I get to know a single person here, I feel at home.

WE ARE ALL CRYSTALS

March 26, 1988

NEVADA: Nye County

Peace Camp on Bureau of Land Management Land along US 95 four miles south of Mercury, just north of the Atomic Energy Testing Site

At dawn the desert is cold and the sun-lighted tops of distant mountains are pink. Standing at the entrance to the road to Mercury, my placard is the one saying WAR IS NOT HEALTHY FOR CHILDREN AND OTHER LIVING THINGS, picked because the rose painted on it is red and cheerful. Employees driving in for work, used to this by now, mostly nod to us or wave. Standing next to the cattle-guard, beyond which any trespasser automatically is arrested, Toby from Kansas tells about last weekend's ceremony conducted just before several hundred church people went across the cattle-guard to be read their rights and arrested.

"We had a big bowl full of water and crystals," he says. "We all prayed for peace and then everyone went around and picked out a crystal to take home with them. The crystal will always remind us of what we've seen here, and felt."

"Crystals are wonderful," someone says. "Crystals are pure. Their geometrical form actually reflects the configuration of the molecules of which they are composed. Looking at a perfect crystal is one of the most beautiful experiences in the whole world."

Two ravens flying over the desert seem to be dancing. But who knows what's on their minds, or of what kinds of thoughts, feelings or spirituality those birds are capable?

"In a way, people are like crystals," someone says, and maybe the same thought has been dawning in each of us. "If you think of the DNA sequence in mankind's genes as being analogous to a crystal's basic molecular structure, then a human's inherited looks and predispositions... they're like the crystal's configuration. Yeah, we are all crystals..."

Average people are saying wondrous things and the pink mountains look like huge piles of sherbet.

"Radiation from those bombs, what does it do when it meets life?" someone rhetorically asks. "It disrupts the DNA sequence. It might kick the cell into replicating itself wildly, making cancer, or if the radiation attacks a sex germ about to form new life, it may cause mutations."

The wind begins to stir, causing us to pull our collars around our necks.

"Radiation meeting life is like a hammer shattering a crystal," someone says.

The workers keep arriving and we keep standing there, and the pink mountains grow noble in their grayness.

SKY ISLAND

March 27, 1988

NEVADA: Clark County

Toiyabe National Forest about 20 miles northwest of Las Vegas, on eastern slope of Charleston Peak, elevation ± 8000 feet



The three young men from Park City, Utah at 7:30 AM on Sunday morning step across the cattle-guard and walk past the sign saying CRITICAL INFORMATION MUST BE PROTECTED. They're carrying placards explaining that their action is being conducted in memory of their grandmother, who lived downwind from this facility, but who now is dead from cancer.

At this moment my job for the Peace Camp community is to be in Cactus Springs nineteen miles to the east (the nearest public phone) calling the Atomic Energy Commission's Wackenhut Security Office in Mercury, to report the penetration of their security zone. We report the action ourselves to cut down on the possibility that the young men will be shot.

"No, of course they're not carrying guns," I say. "They're just three young men carrying placards, walking on the road toward Mercury, and you're supposed to arrest them."

Not long afterwards I'm twenty miles farther southeast in second gear Henry again struggles upward, heading toward Charleston Peak's snow-covered slopes inside Toiyabe National Forest. The peak rises to 11,919 feet above sea level, but I stop at around 8000 when the first patches of snow appear. Parking beneath a species of pine I've never seen, I get out of Henry and find that the cold, moist air smells of sage.

We've met several species of sage in the various deserts, but this is our first encounter with this one, and this is the one I've been waiting for. It's the cowboy-movie-famous woody member of the Composite Family called Sagebrush, *Artemisia tridentata*. Because I've always associated sagebrush with wide-open, hot deserts, I'm surprised to find it growing so close to snow, beneath pines. However, with its narrow, silver-green leaves tipped with three lobes, it's unmistakable. Nearly all the plants around Henry are new for us. Here's even a new cactus, seeming more out of place than the Sagebrush, growing right beside a snowdrift.

Everything seen and felt here seems out of joint with the places and experiences of the last three months. I'm not quite sure that this sky-island-habitat belongs with my string of desert experiences but I needed to climb up here, to nurse my sunburned and cracked skin and, especially, to take the time to honor with reflection the people and spirituality at Peace Camp.

A TWO-TREED FOREST

March 28, 1988

NEVADA: Clark County

Toiyabe National Forest about 20 miles northwest of Las Vegas, on eastern slope of Charleston Peak, elevation \pm 8000 feet

The twenty-foot pine above Henry dumbfounds me. Instead of bearing two or more needles per cluster the way any decent pine does, this tree has only a single needle, as if it were a kind of spruce or fir. However, the cones on the ground beneath the tree are unmistakably pinecones.

Finally I remember: I've read about a species of pinyon pine called the Singleleaf Pinyon, *Pinus monophylla*. Soon a glance in the field guide confirms it: Henry is parked beneath a pine unlike any I've ever seen, and unlike any pine we have in the East!

The next-most prominent tree on this slope is a good-smelling juniper with scale-like leaves and pea-sized, reddish-brown, fleshy, round fruits. In Kentucky we have only one juniper-tree, the Eastern Redcedar, but according to my field guide's distribution maps in this region we have three, or maybe four, or even five. For most of the morning I try to figure out whether this juniper is the One-seed or the Utah juniper, *Juniperus monosperma* or *Juniperus osteosperma*, respectively. However, each of our trees' features appear intermediate the two choices. I simply can't figure out which one it is.

In the forest around Henry, the Singleleaf pinyon pine and the juniper are the only two species tall enough to be considered real trees. However, three species of shrub found here are listed in my Golden Guide as sometimes reaching tree size.

The largest, called the Curlleaf Cercocarpus, *Cercocarpus ledifolius*, is about seven feet tall and much-branched. Its leaves, about an inch long, look like peachtree leaves with curiously curled-under margins. This plant's fruits consist of brown, woody items 2/5 of an inch long and shaped like large grains of rice. Atop these arise curly "wings" looking like slender, thin-haired mouse-tails about 1 inch long. Apparently this appendage enables the seed's dispersal in the wind.

The second bush that sometimes becomes a tree -- only growing to about three feet here -- is the Cliffrose, *Cowania mexicana*. Its leaves look like half-inch long, evergreen, stiff, white-oak leaves. Each leaf bears so many large, clear or white resinous specks that at first I thought that the bush was infested with aphids. Anatomically the Cliffrose's fruits are very similar to the Curlleaf Cercocarpus's, except that each Curlleaf Cercocarpus blossom produces a single winged fruit, while each Cliffrose blossom produces more than one.

Both species are members of the Rose Family.

The last shrub/tree is the Sagebrush, *Artemisia tridentata*. Here it's only knee-high and it's hard to imagine it as a tree.

The cold-tolerant cactus that surprised me with its presence next to a snowbank turns out to be a pricklypear called Starvation Cactus, *Opuntia polyacantha*. Weniger suggests that it may be the most northern of all cacti, with a distribution reaching almost to the Arctic Circle. Since it's found as far south as south-western Texas, it's also one of the most

widespread. This pricklypear's skin is wrinkled and its areolae are packed very closely together, and its spines are exceptionally long and slender.

In the area right around Henry, no blooming plants are found. Looking across the valley to higher elevations I see different species of trees -- much taller ones. But that forest seems to have even less to do with the desert than this one, so I'll not go there.

BIRD LISTS #4, #5 & #6



If for three hours two mornings ago, in our "two-treed forest," while a stiff breeze blew and the temperature rose from 21° to 35°, you'd have walked with me looking for birds, here are the ones you'd have seen:

1. Northern Flicker
2. Western Scrub Jay
3. Western Bluebird
4. Spotted Towhee

That day bluebirds were very conspicuous among the junipers and towhees sang from their perches as if during a territory-defending day in mid spring. The towhees' "*drink-your-teeeeee*" song was a little different from the Eastern Towhees I'm familiar with.

If for three hours yesterday morning you'd have walked with me on the windy southern slope of Charleston Peak, at an elevation of about 6000 feet, where the temperature hovered around 37°, and the vegetation consisted mostly of Creosote-bushes and Joshua-trees... here are the birds you'd have seen:

1. Raven
2. Rock Wren
3. Loggerhead Shrike
4. House Finch
5. Black-throated Sparrow

Also a hummingbird zipped by so fast that nothing but an unidentifiable, blurred silhouette was seen.

If this morning, with the temperature rising from 35° to 40° you'd have walked with me among down steep-walled gullies in the Creosote-bush desert about a mile west of Lake Mead's north-jutting arm, here's what you'd have seen (unless the wind, even stronger than on previous mornings, had blown you away):

1. White-throated Swift
2. Raven
3. Rock Wren
4. House Finch

I've never seen a land as highly dissected with gullies as this we've driven into today. These gullies' walls are vertical or near-vertical and rise between twenty and forty feet high. Though most gullies are only fifty to a hundred feet wide, just about as much gully-floor exists as does flat uplands above the gullies. It feels like being in a maze.

As I was walking down one gully today a Raven flew from its stick nest about thirty feet up a forty-foot wall. As I passed by its nest the bird hovered above me, and then when I was about a hundred feet beyond its nest it flew up the canyon until it located its mate, who flew into the air with it. Then from high in the sky both birds kept an eye on me as I continued walking. Once I was about three bends from the nest, one bird broke off and flew back toward the nest, while the second bird landed on a high perch and watched me until I was far beyond their territory.

If I could be a bird, I think I might be a raven. How wonderful it would be to have a black mate with whom to fly into the air, and exchange deep, guttural croaks...

Into the Great Basin Desert

March 31, 1988

UTAH: mostly Washington County

Along the Virgin River To Zion National Park

Having planned to stay at least a couple of days along Lake Mead this morning I awaken with the urge to move on. It's the wind. For more days than I can think back through the wind has rocked Henry wherever we parked. It's made sandgrains sweep ever eastward, and its personal beating sounds about my ears have filled me with restlessness. The moon, growing full now, fills the nights with dreams that in the morning find me curled inside my sleeping bag terrified and humbled.

Northeastward, then, on I-15, out of Nevada and for an hour or so across the extreme northwestern corner of Arizona, through the steep-walled canyon of the Virgin River where

the uncommon dimensions and wild forms of red-rock canyon walls do the river-water's rumbling and cursing and praying for it, since you cannot hear the water speaking from inside the car. Climbing, climbing, climbing, then finally we break over the side of the plateau and there's St. George, Utah, elevation 2880, with Guardian Angel Peak behind it rising to 7160 feet.

For over an hour as we move toward, pass through and then roll out of St. George, I cannot take my eyes from Guardian Angel Peak. Rising steeply to a zone in the sky where gray and brooding clouds hang all about, this mountain out-Olympuses Olympus. From those anxious, pregnant, dark clouds clustered around the peak, gray curtains of cold rain continuously sweep downward like opaque veils hung all around, extending no farther into reality than the mountain's outer flanks. All the time I watch these curtains do not part or withdraw, though they do slowly and majestically sway, as if moved by Zeus's breaths.

We leave I-15 and head eastward, back toward Kentucky, perhaps, on UT Hwy. 9. Virgin, Grafton, Rockville and Springdale are towns along the Virgin River, which we follow as it climbs. Unlike all the previous desert towns we've been through these remind me of Western Kentucky towns. Here lawns and pastures are not brown or irrigated, but rained on enough to be gloriously Easter-morning green, all punctuated with exuberant yellow Dandelions. Along paths leading to homes' front doors and at the edges of garages grow yellow Daffodils and, at house corners, yellow Forsythias, all heaving mightily in the wet-feeling, blustery and cold wind. Here men wear heavy, plaid coats and seed-company caps as they do in Kentucky at this season. Until their pickup-truck engines warm up, gray fog-smoke curls from exhaust pipes into the raw air. No: I've seen nothing like this in any of those three previous deserts.

My books indicate that now we are in the southeastern corner of our fourth and last desert, the Great Basin Desert. But here on the Virgin River's canyon floor, there's not a hint of desert. Not a hint, unless you look behind the houses. There, where back lots end, mostly bare, rusty-red sandstone rises vertically, surrealistically, to the mesa's edge above. Desert must be up there.

Suddenly a booth appears in the middle of Utah Hwy. 9 and a young woman in a ranger uniform asks for five dollars; I'm entering Zion National Park whether I want to or not, and that costs five bucks, even if you consider yourself as only using Highway 9, heading to Kentucky.

Knowing absolutely nothing about Zion, but having paid my fee, I stop at the Visitor Center, situated at exactly 4000 feet above sea level. At noon on a Thursday the place is swarming. I hear Italian, German, Spanish and a host of U.S. accents; Greyhound buses with AMERICA displayed in their destination windows fill one corner of the parking lot, their engines idling contentedly. Zion has some good backpacking trails, I find, but most still are snowed under. I ask for a three-day permit for the southeastern corner, which is lower in elevation than the rest.

The drive to the East Entrance Trailhead passes through the most thrillingly colorful, rugged and heart-stopping terrain Henry and I ever have seen. Always rising in elevation, we sail through the view finders of at least twenty home-video cameras. In five miles we pass five different tourists standing on their cars photographing peaks above them. Of course, with such distances and elevations, it makes no difference at all whether a picture-taker stands on a car or on the ground beside it. However, something in this landscape makes you feel the need to be atop something as you're relating to these peaks. I'm gratified to see so many people unconsciously expressing soaring head-sets.

The trailhead parking lot lies at 5700 feet. Wind here is keen and mean-spirited and small drifts of snow lie here and there. Tall pines fill the valley before me. Though it does not look deserty here, my books say that we're well within the boundaries of the Great Basin Desert. In contrast to the first hours in our other three deserts, I have a hard time getting a fix on where I am and what this land is doing.

Backpacking Zion National Park



At 2:00 PM I begin walking north from the East Entrance Trailhead. It's very windy, partly cloudy and the temperature is 64°.

APRIL 1

6:30 AM. Camped at Stave Spring, at an elevation of about 7000 feet. With very little wind the sky is clear and the temperature is 22°. Between 7:00 and 10:00 AM I walk from Stave Spring to Deertrap Mountain Overlook. Here are the birds I see, in the order in which they appear:

1. Spotted Towhee (abundant; they sing during the whole walk)
2. American Robin (first one seen this trip)
3. Mountain Chickadee
4. Dark-eyed Junco
5. White-breasted Nuthatch
6. Western Scrub Jay

7. Northern Flicker (red-shafted race)
8. Steller's Jay
9. Williamson's Sapsucker (usually an uncommon bird; I flush a female from a tree apparently holding her nest)
10. Ruby-crowned Kinglet

At 10:00 AM as I descend a steep slope a Least Chipmunk, *Eutamias minimus*, postures atop a large sandstone boulder. The Least is similar to the Eastern chipmunk, but smaller, without so much rusty coloration, and the two white lines on its face are more conspicuous. This individual lets me come so close that I suspect it of a history of panhandling nuts and trail mix from backpackers.

At 11:35 four Western Bluebirds fly by.

At 3:00 PM, passing from one mesa top to another, a thousand feet above the canyon floor a male Northern Harrier, or Marsh Hawk, has a hard time with the wind. I'm used to seeing this bird sailing calmly and low over marshes and grasslands. Its presence here is hard for my Eastern headset to adjust to.

APRIL 2

Having camped overnight at Cable Mountain Overlook (elevation 6496 feet), with my tent pegged right at the edge of the cliff overlooking the stomach-churning abyss known as Zion Canyon, now let me tell you about the trees found within twenty feet of my tent.

GAMBEL OAK, *Quercus gambelii*: Forming dense thickets about ten feet high, this tree bears leaves similar to our three-inch long eastern White-oak leaves.

JUNIPER: Still I can't decide whether these are One-seed or Utah Junipers. They and the Gambel oaks are the most common trees atop this mesa.

PINYON PINE, *Pinus edulis*: So far we've seen Mexican Pinyons and Single-leaf Pinyons, but this species is just called "Pinyon Pine." While the Mexican Pinyon bears two or three needles per bunch and the Single-leaf possesses one, this species has two. It's about ten feet tall.

PONDEROSA PINE, *Pinus ponderosa*: Most common on rocky cliffs and the valley floor, this is another of those pine species that on a single tree may bear needles in groups of both twos and threes. Atop the mesa Ponderosas grow only to about thirty feet tall but in the valley they rise to at least 130 feet. The Ponderosa's bark looks as if it's covered with interlocking jigsaw-puzzle pieces.

DOUGLAS-FIR, *Pseudotsuga menziesii*: Douglas-firs are not firs, but rather their own thing, with a hyphen between "douglas" and "fir." Their cones are pendant like pine cones, while true fir cones stand erect. Douglas-fir cones are unique in that below each cone's woody scale a curious, three-pointed, rat-tail-like bract hangs down.

HAWTHORN: Sargent's Manual of the Trees of North America describes 153 hawthorn species. Hawthorns are notoriously hard to separate into species. This species is common in moist places atop the mesa, forming impenetrable thickets about ten feet high. I'm only about half certain that it's the species known as River Hawthorn, *Crataegus rivularis*.

APRIL 3

Today I walk from Cable Mountain back to Henry; let me better describe the topography I've been walking through. A few million years ago the topography here was fairly level but at the end of the late Tertiary Period, about ten million years ago, the entire Zion region was uplifted from near sea level to about 10,000 feet above sea level. This uplifting imparted to the region's streams immense potential energy for erosion. The Virgin River and its tributaries became moving ribbons of sandpaper that scoured out deep canyons for themselves. This erosional process has proceeded so fast that the land between the water courses simply hasn't had time to erode into a typical rolling landscape. Thus the flatish mesa-tops I've been walking over are perched remnants of a flatish, ancient landscape.

Sometimes the mesa-tops' junipers and pines yield to broad fields dominated by Sagebrush. Sagebrush seen in Nevada seldom grew over knee high but here sometimes it's ten feet tall, with gnarled, gray trunks, reminding me of gigantic Japanese bonsai. These features are especially surprising when it's remembered that Sagebrush is a member of the Composite or Daisy Family. In the East, at least, this family is almost entirely represented by non-woody, herbaceous species such as asters, goldenrods and dandelions.

Sagebrush is very closely related (same genus) to wormwood, the super-odoriferous, yarrow-leaved weed that grows in rich soil around barns.

It seems that in the Great Basin Desert Sagebrush takes the place of Creosote-bush as the most ubiquitous species of desert habitats. During our entire trip Creosote-bush has been such a constant companion that leaving it behind now seems almost unthinkable. However, if Creosote-bush must be replaced by something, Sagebrush is a worthy candidate.

Walking Through SAGEBRUSH

April 4, 1988

UTAH: Kane County

In desert about five miles north of US Hwy 89, about twenty miles east of Kanab



Even before emerging from the sleeping bag I realize that this fourth desert, this Sagebrush-dominated great Basin Desert, is something completely new for us. At 6:30 AM the temperature is 32°. For the first time since leaving Amistad the morning sun does not rise into a cloudless, blue expanse, but rather it drifts up behind a gray, indecisive cloud cover breaking here and there into a few milky-blue patches. In the eastern sky hang some convex-shaped clouds of the type sometimes forming near high mountain ridges, or over flat land as portents of stormy weather.

Sagebrush here forms an almost pure, three-foot high ocean. Sometimes low mounds and ridges of rusty-red dirt and sand rise a little above the Sagebrush plane. These risings are populated by widely spaced, yellow-green junipers. Especially in the narrow transition zone between flatland Sagebrush and low-mound juniper, other smaller species of the Sagebrush genus *Artemisia* are found. One of my desert books claims that in the Great Basin Desert nineteen species of *Artemisia* grow in close association with the common Sagebrush. I make no effort to sort them all out. All the ones found so far smell good. Not a single Creosote-bush is seen here. The only wildflower found blossoming among the Sagebrush is a small, stunted-looking phlox.

Two species of cactus live here. First, there's the Starvation Cactus, *Opuntia polyacantha*, seen in Toiyabe National Forest and also at Zion. The other cactus, amazingly, is our ninth species of cholla -- one called Whipple's Cholla, *Opuntia whipplei*. It's the smallest cholla seen so far, rising only one foot above the ground, but profusely branched and conspicuously adorned with spherical, yellow, spineless fruits.

Especially because the Great Basin Desert often adjoins grasslands, I'd expected to find a large assortment of grasses here. In fact, they are more common than elsewhere but, at least in this spot, they're still inconspicuous. Atop sandy rises, among the junipers, colonies of Blue Grama, *Bouteloua gracilis*, sometimes appear. Elegant, curly-leaved little grasses with inflorescences shaped like false eyelashes, this is a native species of the open plains, and a good one for grazing animals. This and other less interesting grasses often are limited to the protected zone inside and beneath Sagebrush plants. All grasses here are brown, dried-out, and completely in the winter condition. Between the widely spaced Sagebrushes, mostly it's unvegetated, red, sandy dirt.

On my first walk in these Great Basin Desert lowlands my feelings are colored by the landscape's quiet somberness and, of all things, Christmas associations. Christmas, because of the moist coldness hanging in the morning air, and because as a child on our Kentucky farm we used redcedars, which are junipers, as our "Christmas tree." Each time I walk past a juniper here, its Christmas-tree odor in the wintry air causes the child in me to react with surprising nostalgia.

The morning winds were almost calm but at noon suddenly they begin blowing with their usual vehemence, sending generous sprays of sand into the pot of rice and lentils cooking on my Sagebrush fire. The temperature has risen to 68° but the sky still is sullen and gray.

Confessions from beside A Sagebrush Fire

April 5, 1988

UTAH: Kane County

In desert about five miles north of US Hwy 89, about twenty miles east of Kanab

Like a bug in the bottom of a big bathtub, we're parked in the middle of this gray-green sagebrush desert. All around rise rather majestic, horizontally stratified, red-rock mesas and ridges. We're about sixty miles north of the Grand Canyon and I want to explain why we'll not be visiting there.

Many times in my life I've fantasized about descending through the various life-zones and geological outcroppings of the Grand Canyon. But during recent weeks gradually this pleasing anticipation has been usurped by a feeling not unlike dread. In short, I don't want to be around the hoards of tourists, overwintering Northerners and college kids on spring break I know to be there.

During this trip maybe my greatest surprise has been seeing the large number of this kind of American ranging all through the desert region. I'd expected them in the Rio Grande Valley at Amistad and the trailer parks clustered around Tucson and El Paso, and all through southern California. But one day at noon on Arizona Highway 86 passing through the Papago Indian Reservation's Quijotoa Mountains, in a place that earlier I'd visualized as being "all my own," two out of three vehicles on the very busy road were big RV's. Sometimes crawling up a hill there'd be five or more in a line, all with northern license plates. Ajo, Arizona, which I'd expected to be a gloriously red-necked mining town was full of gray-haired folks wearing shorts and pointing home-video cameras at one another. In Beatty, Nevada, at 9:00 AM one weekday morning, I pulled into town to have a tire-hole plugged and got caught in a traffic jam of lumbering RV's all growling at one another at the town's main crossroad. And remember Death Valley...

Of course, I'm glad that these folks have enough chutzpah to go out and see the world. And almost every time I meet them individually they turn out to be pleasant, intelligent and

interesting people. But the main impact of their presence in all the most interesting places is that they inflate prices, cause traffic jams, and spread across the region a certain glossiness and a deadening sameness.

Moreover, maybe the desert has molded me into a creature whom the tourists and snowbirds find a little too dusty-looking, sun-burned and windy-haired. On Easter Morning I visited the laundrymat in Kanab. It was the first time I'd sat inside a building since Christmas. I didn't sit long before realizing that those odors which so appeal to me at dusk in the desert, in the context of swept floors, shiny, plastic laundrymat chairs, and detergent-smelling air... aren't too fashionable.

It was very early and I had the laundry to myself, so I washed my hair in the clothes-rinsing basin. My shirt was one of those that shows wet spots. Then I walked a lady as I was pulling off my socks, which I'd forgotten to add to the laundry. Realizing what I must look like, I stood and greeted her, hoping that politeness would neutralize my wet-haired, splotchy look and the appearance of my bare, rusty feet. When I smiled my chapped lower lip cracked, instantly releasing a dribble of blood onto my chin. Automatically with the back of my hand I wiped the blood away, only to notice that my sunburned arm and hand were so dry that in places they'd turned white with flaking-off skin, giving me a piebald appearance. In my embarrassment I managed to smear blood over my glasses and to pull on a sock somehow mixed in with the laundry that was so holey that for the last year I've been wiping Henry's dipstick with it. The woman was not pleased to see me.

Somewhat wounded from my Easter Morning in Kanab, I have driven, as I said, into the middle of this gray-green sagebrush desert. In national parks I'm unable to build open fires so I haven't enjoyed my cornbread, scrambled eggs and tea for many days. The first thing upon arriving, then, was to build a fire. The smoke from sagebrush wood is wonderfully sweet, smelling like fine incense. Fresh from the laundrymat, I hung my wet bluejeans across sagebrush and my socks and underwear among juniper branches. An hour later, the sun and wind have dried them completely and the bluejeans smell of sagebrush and everything else smells cedary and pure.

The monotony here comes from wind and sun mingling quietly above the sagebrush, not look-alike RV's plodding down national park highways. Instead of being embarrassed by the land-stroked appearance of Henry and me, here this sunlight and wind empowers me with a general magnanimity toward all things.

I shall not visit the glorious Grand Canyon.

MULE DEER

April 6, 1988
UTAH: Kane County

In desert about five miles north of US Hwy 89, about twenty miles east of Kanab

At dawn I peep from Henry's rear side-window, needing to focus on something outside, to anchor myself after a night of full-moon dreams. However, in this dim light the outstretching sagebrush is unapproachable, somehow teeming, somehow flowing, just like my dreams.

Not fifty feet to the north, moving above the vibrating sagebrush plane, three pale globes of light serenely float down a shallow gully. It takes long minutes, my having to wipe my breath's steam from the windows several times, before I grasp what I'm seeing: It's white rump patches on three Mule Deer. Yes, even the deer's gray flanks, necks and black-snouted heads are visible now.

Eventually the deer stop walking and stand still, looking complacently toward us. Henry has been parked here for two days and nights and I've been monk-quiet so to these deer we are just a new boulder in the landscape, and nothing to fear.

A little later, sunlight hits the red mesa walls to the west. In the calm morning air, smoke from my sagebrush fire rises to a level just above the sagebrush, then spreads horizontally into a thin blanket drawing itself across the desert. The smoke mingles with sunlight and makes an abstract lens of smiling energy which the mule deer, still standing in the sagebrush, simply look at. As my cornbread and hot tea minister to me the campfire's heat and goodwill, I wonder what the deer are thinking.

With the sun a little higher the mule deer become works of art. One stands warming itself in the sunlight, with a juniper's broad, black shadow spreading behind it. The glowing deer looks like a translucent image etched on crystal held before black velvet. Every curve, every fold of skin, every muscle and the black wetness of its eyes and nose are violently clear.

Another deer stands inside a juniper-shadow's blackness, silhouetted by inflamed mesa-walls behind it. With binoculars I look more closely. Though the temperature is only 30°, rambunctious sunlight causes air between this deer and me to shimmer, making the shadow-figure ethereal, other-worldly. When the creature sets forth its front paw, then arches its neck to lick beneath its knee, the graceful curve formed seems too perfect to be real.

When the herd moves behind a rise, to where the deer cannot see me, I begin approaching. During past nights many mule deer have left their hoofprints here. I see that they have walked only upon these little streamlets that during storms carry water but, most of the time, are just shallow, foot-wide troughs of sand.

As the streamlets ascend the slope they branch and rebranch like slender trees. Moving through the sagebrush, crossing one shallow streamlet after another pocked by the hooves of mule deer, in my mind's eye I visualize the deer at night with their pale globes of

light moving upslope and downslope, and I see not just small herds widely spaced in time, but all the deer at once, as these hoofprints seem to say, continually flowing, their numbers always branching off or joining again the main stream, and I imagine those dewy-night mule-deer confluences and dissolutions as being accompanied by chiming sounds, the chiming generated at night when my sagebrush yearnings yield to half-sleep and full-moon dreams.

Inside a juniper's shadow I pause and look into the shallow valley below me. It's full of red boulders, broad, unsymmetrical, dark-green junipers, and acres of gray-green sagebrush. I know that the mule deer are there, but I can't see them. I know that they are depending on their stillness to make them invisible.

I lift my binoculars and the magic of my lenses undoes the magic of the deer's stillness. Now I see them holding still beside junipers and rocks, looking squarely at me, tense, with erect ears and black eyes so intense, so intense.

But, now I feel as if I have betrayed the conditions under which a man is allowed on a morning like this to witness the secret rituals of mule deer. I am not supposed to neutralize a wild animal's magic with the store-bought wizardry of a different world. Stepping from the shadow into brilliant sunlight I wave my arms and bellow an "*Ufgh!*"

I see nothing but I do hear hooves stamping the ground, and then there is silence. I walk away. At least the deer have performed the morning's final magic.

BACKPACKING PARIA

April 7, 1988

UTAH: Kane County

White House trailhead in Paria Canyon
Primitive Area 30 miles northwest of
Page, Arizona



After half an hour on the road headed east toward Glen Canyon we pass a sign saying PARIA CANYON PRIMITIVE AREA VISITORS WELCOME. Having never heard of this place we keep going. But the ranger station atop a sand hill is nothing but a house trailer with a sign, with high canyon walls all around. The place seems to have soul. Pulling a Uy, we go back, for a buck buy a yard-high map of Paria Canyon, and register as a backpacker -- all without the slightest idea of what Paria is about.

At White House Trailhead I learn from a fellow hiker that Paria is famous among backpackers. The usual idea is to begin here and hike along the Paria River as it flows through a very deep canyon to the ranger station at Lee's Ferry, below the Glen Canyon Dam on the Colorado River, in Arizona, thirty-four miles to the southeast. My hiker-friend offers to transport me back here if I want to accompany him to Lee's Ferry, and I accept the invitation. But then he explains that much of the hike entails wading in the Paria's chilly water, so I decide to design my own dryer trip. I'll hike across the high tableland called West Clark Bench, enter Buckskin Gulch, then follow it until I can find a way out, and walk back across the bench. I'm told that Buckskin is dry. Maybe this is a five-day walk so I need to take plenty of water. Here's what happens:

APRIL 7

12:30 PM. Begin hike. Skies cloudless, temperature 80°.

12:35. An eleven-inch Western Whiptail, *Cnemidophorus tigris*, a light gray lizard with abundant dark spots, lets me take a good look as he lies in the shade of one of the smaller Sagebrush species. Smaller Side-blotched Lizard, *Uta stansburiana*, dart everywhere among the dark, hot rocks. We've met both of these species several times before.

2:30. A Whitetail Antelope Squirrel, *Ammospermophilus leucurus*, first seen at Big bend, lets me get to within ten feet. It's much smaller than I'd thought. As I sit looking at him, five White-throated Swifts circle above, twittering all the time.

4:00. The gently rolling landscape atop West Clark Bench is covered with deep, red sand that's very tiring to hike through. So, rather early for me, now I spread my poncho beneath a juniper; I'll sleep here tonight. We're at 5000 feet in elevation. Very common around this camp is a low-growing, spreading pricklypear cactus, the Plains Pricklypear, *Opuntia polycantha*. No blossoming wildflowers are found.

Thirty minutes before sunset, eight steel-blue Pinyon Jays glide by with their broad wings stiffly outstretched. All except one land in the scrub and remain silent; the other mounts to the very top of a juniper where it can see me and during ten minutes continuously calls a nasal, laugh-like *auw-auw-auw*.

APRIL 8

7:00 AM. Temperature 37° as I begin walking.

8:30. Having found a way down the vertical and usually unbroken cliff walls at the tableland's edge I drop to 4300 feet, to inside Buckskin Gulch. But the instant I see the Gulch's very bottom, I abandon my plan. Though Buckskin Gulch is a large canyon itself, here its streambed cuts through red sandstone rock a narrow, vertical-walled channel forty feet deep. As I lie on my stomach peering into the stream's trench, the wall opposite me

stands not ten feet away. The streambed itself, where I'd planned to hike, lies in deep, perpetual shadows. Air wafting from this chasm-within-a-chasm smells dank, as if it were issuing from a dungeon. And, exactly where my eyes fall in this "dry" gulch, there's a deep-looking pool of stagnant, black water through which I'd have to wade if I happened to be down there...

Returning to the map to re-plan my walk, I find attached to it a previously unnoticed information sheet. It warns that Buckskin Gulch is very dangerous during rainy season. After rains, it says, flood debris has been spotted lodged between the canyon walls fifty feet above the stream bottom. The information sheet continues by saying that the deep, narrow valleys here result from the same Late Tertiary regional uplift that caused Zion to be so rugged. The sandstone walls around me right now, which manifest a curious, swirling design, is the Navajo Sandstone, deposited between 130 and 200 million years ago when this part of the world was covered with desert. The sand in these cliff walls once was sand in sand dunes, and the swirl-patterns reflect those ancient dunes' growth and movement.

10:30. Having retraced my steps to the tablelands at 5000 feet, I find myself drenched with sweat. Though the temperature in the shade is 60°, the wind causes my wet clothing to feel icy cold. I hang them to dry on a juniper snag. Wherever the sun hits my body it stings with incredible intensity but on the shadowed part of my body I'm desperately cold. With the view below me stretching across rugged land far into Arizona to the south, and the wind and sun hitting me almost harder than I can bear, I feel as if I am at the end of the world.

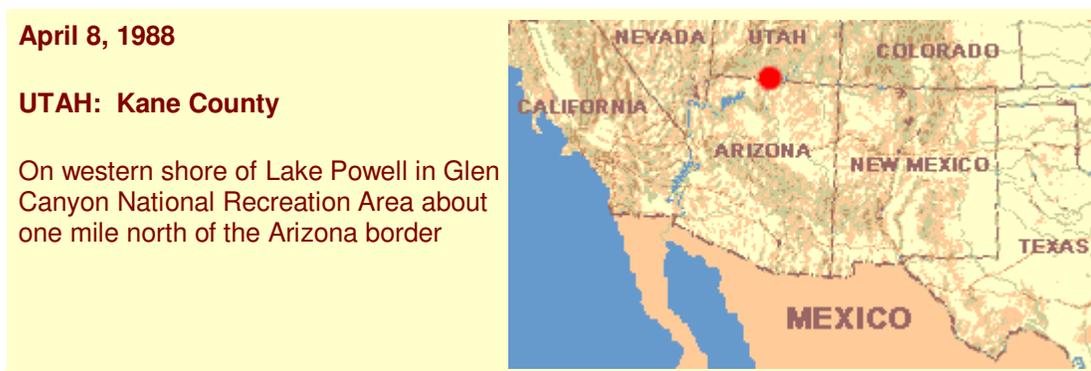
Noon. The plateau rises gradually to a little over 5200 feet. Suddenly our old friend from the Sagebrush desert near Kanab, the Whipple's Cholla, *Opuntia whipplei*, appears in abundance. Also common here is the Fineleaf Yucca, *Yucca angustissima*, an almost trunkless species with stiff fibers curling away from the margins of dagger-like leafblades.

2:00. At 4600 feet, as I descend through Long Canyon, a southerly slope provides an unexpected garden of intermingling, foot-tall, blue-flowered lupines and intensely red-blossomed Utah Penstemon, *Penstemon utahensis*. An inconspicuous little mustard with tiny yellow blossoms, called Longbeak, *Streptanthus cordatus*, grows at the garden's edge. Rain must have fallen here a week or so ago, for slender, pale-green grassblades push up through the sand, and various other wildflowers are just germinating. On this steep-walled canyon's rocky slopes lives a strange-looking ash tree called the Singleleaf Ash, *Fraxinus anomala*. It bears no leaves now but some of last year's fruits, called samaras, still hang on it. Anyone familiar with ashes knows that ashes are supposed to produce compound leaves composed of several leaflets, and not be "single-leafed," as this one is.

APRIL 7

Having exhausted my water last night, at 11:00 AM after walking all morning without a drink, I return to Henry at White House Trailhead and for twenty minutes just sit in the door drinking pure, cold water from a white Chlorox jug.

SLUMGULLION #4



ITEM: BIRDS ON LAKE POWELL

On Radio KPGE out of Page, Arizona, a tourist-oriented blurb describing Lake Powell says that this reservoir, formed by the damming of the Colorado River by Glen Canyon Dam, has more shore-line than the U. S.'s entire Pacific Coast; Henry and I now claim for ourselves part of that shore.

As I type this the lake's dark, ultramarine waters are too glossy and urbane to be pooled below the ancient, gray, vertical-walled and distinctly horizontally layered, flat-topped mesas across the lake. Aesthetically I should prefer to see sagebrush flats where the water is. However, I can't deny that being near water is a relief. Also it's good being where a variety of birds can be spotted.

Fifty feet downshore three Ring-billed Gulls and a Raven stand along the water's edge, eyeing us as if expecting breadcrumbs to be forthcoming. On a sand spit across the little inlet to our left, a Long-billed Curlew perches on one leg, its beak tucked into the feathers over its shoulder. It's migrating northward, having just spent winter farther south, perhaps in Mexico or along the U. S. coast, and will breed in the North. During these mid-day hours he never moves, except for once when the wind blows him off-balance. Before he returns his outrageously long and slender beak to its resting place, like any good ol' boy, he uses it to scratch his belly.

In the inlet's sheltered waters swim three Buffleheads, who overwinter here and right now must be feeling the urge to migrate to their breeding grounds in Canada or the higher elevations of the Pacific Northwest in the U. S. Just offshore dozens of Coots float among the lake's high waves. About a hundred yards down the beach, forty-three Marbled

Godwits with their beaks almost as long as the Long-billed Curlew's pose stiff-legged in a tight, nervous-looking knot, looking every bit the away-from-home migrants they are. Probably they've overwintered on the southern California or Mexican coasts and now are on their way to breed in south-central Canada or the U. S. states adjoining that region.

ITEM: A BEE DRAMA

While walking in the sandy, scrubby desert along Lake Powell I come upon a bee looking somewhat like a small bumblebee, tugging at something in a hole. Often in desert country I've seen these holes -- perfectly round, about one-third of an inch wide, dug straight down and surrounded by darker-looking dirt that clearly has been removed and scattered as the tunnel was being dug. This bee is buzzing and whirring its wings furiously. After about a minute the bee seems to give up, for it begins buzzing about the ground in circles. After a few seconds of this, as if with a new spurt of determination, it rushes into the hole and completely disappears for about five seconds. Then its rear-end shows at the surface and with a mighty heave out the whole bee pops, now grasping another bee! Somehow this second bee escapes. The wind blows it tumbling across the sand until it grabs a blade of grass, composes itself, and flies away. The first bee now takes off after it, its fervor apparently undiminished. I've been wondering about this episode. Social insects strike me as being so programmed for doing their duties mechanically and without interference to other members of the colony that I'm surprised to see this apparent conflict of wills.

ITEM: MORE WILDFLOWERS

Up the beach in an offroad-vehicle-ravaged gully several interesting wildflowers are blossoming. Longbeak, *Streptanthus cordatus*, seen earlier at the edge of Paria's "gulch garden" is here. It's interesting because its unopened flower buds are held erect, its open blossoms are held horizontally, and its maturing fruits hang downward, drooped close to the inflorescence's peduncle. The Cryptantha, genus *Cryptantha*, of the Forget-Me-Not Family, is about a foot tall. Some of its flowers are pale yellow while others in the same inflorescence are a darker, richer yellow. Each petal bears at its base a tiny bump, giving the blossom the appearance of possessing low crown, like a yellow Daffodil. A phacelia I'm unable to identify to species level bears attractive purple flowers, but what I appreciate most about it is its leaves. When crushed, they emit a moist, pastoral odor with purple overtones. The handlens shows that its vegetative parts are covered with tiny hairs mounted with amber-colored glands. A purple-flowered, velvety-leafed member of the Bean Family, another species of locoweed, is fairly common here.

One point to make by mentioning these wildflowers is that so far in the Great Basin Desert we've seen very few wildflowers. However, now that we've dropped to about 3700 feet, not only have we dipped below the Sagebrush realm, but also we've jumped forward into spring, to a time when wildflowers are abounding.

ITEM: A SCIENTIFIC ANNOUNCEMENT

Most desert-ecology texts carry in their pages a picture of a profusely branching bush stabilizing its little corner of the desert. The scenario goes like this: 1) open sand; 2) bush gets established; 3) windblown sand grains collect around the bush, forming a stabilized mound, and; 4) other plants and animals begin inhabiting the mound, eventually forming a complex community of interacting organisms. Well, after studying the phenomenon in four North American deserts, I feel qualified to announce to the world that the above outline really ought to include more steps than those four. The texts should begin appending these two final steps: 5) the dome of sand catches the eye of an off-roader and is used as a jump-ramp; 6) the shattered bush, in this area often a large Mormon Tea, genus *Ephedra*, dies back and the community disintegrates...

The Harrises' Front Yard

April 10, 1988

UTAH: San Juan County

Between Oljato Trading Post and Gouldings Trading Post about seven miles west of junction of US Hwy. 163 and the Utah/Arizona state line; near Monument Valley and inside Navajo Indian Reservation



Three years ago I met the Harrises in Mexico and promised that someday I'd come for a visit. Diane Harris and her thirteen-year old son David live on southeastern Utah's Navajo Reservation. As soon as I see their home, designed and built by themselves and cluttered with fruit trees, a hand pump beside the well, an ancient land Rover and other items, and them smiling and welcoming me, I know that here I shall end this book. This place's warmth and spiritual ambience is perfect to serve as a trail's end. The end comes suddenly, but unmistakably.

But, first, let me tell you about the Harrises' front yard. This morning Diane Harris gives me the cook's tour, beginning with an ankle-high, dark-leaved member of the Composite Family.

"This is Matchweed [*Gutierrezia sarothrae*]," she says. "I've heard some people call it Kerosineweed because it's so full of oil that sometimes you can set fire to its green leaves. Livestock won't eat it, which is why it's so common around here. And over here, this is our common yucca (It's the Fineleaf Yucca, *Yucca angustissima*, we met in Paria's highlands) and of course this is Rabbitbrush, [*Chrysothamnus nauseosus*]. In the summer Rabbitbrush gets just full of yellow flowers (It's a knee-high member of the Composite Family still bearing abundant clusters of last season's dried-up fruiting heads). This bush

here is Saltbush [*Atriplex canescens*], which has interesting little four-winged fruits. It's a very fine plant for grazing animals, but lately it's been dying off around here and nobody knows why."

"Of course you've seen a lot of this Mormon Tea [genus *Ephedra*] and the Tumbleweed [*Salsola kali*]," she continues. " We used to make Tumbleweed soup out of the young sprouts, but it was hard to remove all the sand from the green shoots, so we stopped making it. And over here we have what the Navajos call Squawberry [*Rhus trilobata*]. Look: Scrape your thumbnail across the bark of its twig. Smell? Sometimes you walk into a Navajo family's hogan and if you smell this, you know that the women have been weaving baskets from Squawberry stems. In the summer the Squawberry bush produces bunches of dark red, sticky berries, which the Navajos often use in making 'lemonade.' I've made a very tart preserve from them and those fruits must be just full of Vitamin C. Finally, over here is Blackbush [*Coleogyne ramosissima*], which later will bear many yellow flowers. All of these plants grow here naturally; but we did put up the fence to keep our neighbors' sheep and cattle out, and that's why our yard is more lush-looking than the surrounding desert."

Besides these herbs and bushes, two main grasses are evident in the Harrises' front yard. Especially around the fruit trees, which regularly are watered, broad green splotches of densely clumped Downy Chess [*Bromus tectorum*] are growing. Though an "alien introduced from Europe," it's one of the most common and widespread of U. S. grasses. Usually it's considered a weed, especially because its florets bear needle-like awns that can puncture a grazing animal's soft mouthparts. A little less conspicuous than the Downy Chess is Indian Ricegrass [*Oryzopsis hymenoides*], which my books praise as a superior livestock forage grass. Bearing large and nutritious grains (about one quarter the size of a grain of store-bought brown rice), the Zuni Indians once used this plant as a food source for themselves.

Right now the Harrises' peach tree is absolutely filled with pink blossoms swarming with honeybees. Their big apricot tree already has passed its flowering peak and is littered below with brown, shriveled-up flowers, while on the branches immature apricots, about half an inch long and fuzzy, abound. Both the peach's and apricot's leaves are just beginning to expand from buds, and are no more than an inch long. A pear tree, too young to bear flowers, has leaves up to 1 inch long. Among the ornamental trees, the Black Locusts, *Robinia pseudoacacia*, look as if they're still back in the middle of winter, but the tree that Diane calls Siberian-pea, *Caragana arborescens* a member of the Bean Family I've never seen, is decked out in inch-long, compound leaves and 3/4-inch yellow blossoms. A Russian-olive, *Eleagnus angustifolia*, bears leaves expanded to about half an inch.

All the way across Utah the junipers have been confusing me. Today I try to figure them out again, but to no avail. It's curious -- somehow I'm glad that I shall leave here with this problem unresolved.

SKIN WALKER

April 10, 1988

UTAH: San Juan County

Between Oljato Trading Post and Gouldings Trading Post about seven miles west of junction of US Hwy. 163 and the Utah/Arizona state line; near Monument Valley and inside Navajo Indian Reservation

The dogs are barking in the darkness outside.

"Probably it's just an animal passing by," suggests Diane Harris as the three of us sit talking after supper. "Recently I've seen Kit Fox tracks, and we've had Badgers just below us. But, you know, for a long time something very strange has been going on here. It began thirteen or fourteen years ago. We heard a sound, a loud, shrill sound, moving along the cliff behind us, but it was so dark we couldn't see anything. It was a little like the call of a Red-tailed Hawk, but much too loud, and not really the same. It moved too fast across the cliff to be any animal with legs, yet it was too slow to be a flying bird. If it'd been an animal with legs, especially moving at that speed, it'd have knocked rocks loose and we'd have heard them. But not a single dislodged rock was heard."

"Over the years we've experienced this sound on several occasions. Each time the sound is a little different from other times, and always it moves much too fast and calls too loudly to be an animal. Time-before-last, I made a special effort to fix the sound's point of origin, and visualize the route along the cliff it took. Next morning, I went out and systematically covered all of the sandy area around us over which the sound-maker would have had to pass, but there wasn't a single footprint, neither in the sand or on the cliff... "

"Last time it happened, we had sense enough to go get the tape recorder as soon as it began. But we had to go down to the hogan to get it, and exactly when we turned the recorder on, the sound ended. As we were walking back to the house we stumbled over Jason. Well, finally it occurred to us that, since Jason was a very good watchdog and always barked hysterically at the least hint of anything out of the ordinary, he should have been barking his head off. But he just sat there wagging his tail and looking at us in a smiling way, as if nothing had happened."

"Two or three days later, a couple of our young Navajo friends came over for a visit and we told them, laughingly, about this mysterious sound. The man said, 'On the night you heard this sound, that's the night when Hite Chee came back to his hogan and found that somebody had witched him. Somebody had taken a hatchet or knife and gone around and chopped notches on each of the big logs coming out of the ground, holding up his hogan's walls. And there were hoofprints outside, where somebody had ridden a horse around and around.' This couple suggested rather matter-of-factly that we'd been hearing a skin walker. The woman told us that skin walkers can tell dogs to be quiet."

"Well, skin walkers are evil spirits. They're people who have killed a relative, and when they're around regular people they bring very bad luck. If you have an enemy, you can hire a witch who will send a skin walker against your enemy. You've noticed that the hogans have an open hole in their roofs. The Navajos believe that skin walkers climb up the outside walls of their hogans and watch them through those holes. We've noticed that when the sun goes down the older Navajos are inside their hogans or houses and that's where they stay until the sun rises."

By the time the skin walker story is over the dogs have stopped barking. After exchanging a few more stories I go outside and lie in Henry. Before going to sleep I tune the radio to station KOA in Denver. The Stock Market is up a little today.

VIEW FROM THE MESA

April 10, 1988

UTAH: San Juan County

Between Oljato Trading Post and Gouldings Trading Post about seven miles west of junction of US Hwy. 163 and the Utah/Arizona state line; near Monument Valley and inside Navajo Indian Reservation

David Harris and I climb the mesa behind the Harrises' house. We're looking for lizards and snakes. As we climb the mesa wall Monzi the dog (half dingo and half mut) and a slate-blue cat called Ganda come with us. We spot a Western Whiptail, *Cnemidophorus tigris*, and several of what I believe to be Side-blotched Lizard, *Uta stansburiana*. But they escape and David and I are talking. The kind of lizard they are, on a day of ceremonial ending such as this, really isn't so important, I suppose.

By the time we're on the mesa's top it's clear that what we really want to do is just to sit in the sunlight and wind and watch the character of the valley below change as the sun crosses the sky. A herd of about twenty Navajo goats go wandering along the slope just below us. A little while later David jumps up and starts running.

"Monzi's chasing goats again," he hollers back. "If the Navajos see her doing that, they'll shoot her."

David saves the goat and throws rocks at Monzi to drive her home; the slate-gray cat seems to be stranded on a rock midway up a very steep cliff below us. But the very moment we start to rescue it, somehow it runs up the sheer sandstone face and curls about our feet, looking at us as if wondering what all the fuss is about. Then, finally, just sun and wind.

I'm trying to come to terms with my feelings about the desert -- to understand what I've been through these months. Here at the edge of the mesa the wind almost is cold and I recall all the cold winds of this trip. But the sunlight now is generously warm, at least where it strikes the skin, so also I remember those cold mornings when the sun was so good -- especially that recent morning with the Sagebrush fire. But these memories are just memories, already becoming like postcards inside me, and I can't make much more out of them. So, I try this:

All things and events are part of one or more stories. Therefore, in that desert below us, what is the story?

Most striking is the geological story. On the mesa wall across the valley I see plainly the thick lower layer of sandstone showing those curious swirls, indicating that the sandstone there is made of ancient sand dunes. Above this unit are darker, horizontal layers of sandstone and shale deposited by water. David and his mother have found a fossilized shark's tooth in those strata. In one place at the mesa's base a chimney of basalt juts upward, showing itself to be the solidified core of an ancient volcano's eruption pipe.

If I remember right, the sand in that sand-dune stratum was deposited 150,000,000 years ago. But, I can't visualize even a million of anything. At my foot lies a flat rock bearing the imprint of a ripple laid down on a streambed or in the bottom of a shallow sea or lake... 100,000,000 years ago, we'll say, just to be safe. It has to be at least that old... But, no, at least while a fresh wind blows my hair and a boy sits beside me, I cannot see you penetratingly 100,000,000-year-old-ripple-marked stone. My mind just catches itself on all those zeros in the number 100,000,000, trivializing the whole effort I'm making...

Maybe seven Navajo homes are scattered in the Rabbitbrush scrub on the valley floor below us. Most of the Navajos live in regular houses and their yards are filled with old junk cars and pickup trucks, just as we'd find back in the mountains of Eastern Kentucky. One or two families live in traditional earth-covered, mound-shaped hogans, and next to a few regular houses stand hogans.

I ask David: "Are those hogans built by the Navajos because that's the way they've always lived, or are they new ones built by young Navajos who want to perpetuate their Indian identities?"

"I think they're mostly or all built by the older Navajos," David replies. "The young ones just want to make money and have regular homes. Hogans are kind of looked upon as being low-class, maybe. It's just the old people. And us. We really like our hogan. We had a Navajo build it for us the way it's supposed to be built."

While we're on the mesa I count six orange-yellow school buses, mostly with SAN JUAN SCHOOL DISTRICT printed on their sides, pass below us, all filled with black-haired Navajo children. One kid throws out a handful of sheet paper and valley winds scatter those sheets in the waist-tall, yellow-green Rabbitbrush and Mormon Tea.

These cliffs, the valley, the Indians' homes with old pickup trucks around them, the yellow school buses and the papers blowing in the wind all do tell a story but they speak for themselves. They don't need me to interpret them.

Maybe, after all these hundreds of miles and all the wind and sunlight I've been through, that's what I've learned. I'm not to be the interpreter of anything, just someone who went into the desert and saw things for himself.

*** THE END ***