

Kangaroo Rats

Sunday, October 07, 2018
1:28 PM

Dipo, the Little Desert "Kangaroo"

By WALTER E. KETCHAM

With Illustrations from Photographs by the Author

"RANCHO Dipodomys! What in the world does that mean?" exclaim city visitors when they notice the sign swinging from the porch of my California desert home.

"Wait till sunset," I tell them, "and you'll find out."

Later, when the Bullion Mountains, off to the north, turn pink and purple in the setting sun, I scatter handfuls of wheat on the porch and in the sand. Soon there come bouncing toward us, from all directions, small furry animals with long, tufted tails, hopping along on their hind legs like miniature kangaroos.

These are my kangaroo rats. They have been coming to me for food ever since I pitched my tent here thirteen years ago. Their scientific name is *Dipodomys deserti deserti*. Because they have been my constant—and often my only—companions all this time, I named the ranch in their honor.

Neither rat nor kangaroo is "Dipo," but a relative of the pocket gophers, and the most beautiful, interesting, and lovable of all my desert neighbors.

Wanderers of the Night

The genus inhabits the desert and semi-arid regions of North America, particularly southwestern United States and northern Mexico. However, one may take many long trips to the desert without coming in contact with it, for Dipo is abroad only at night.

A few evenings after establishing residence on my homestead entry near the oasis of Twentynine Palms, about 130 miles (150 by motor) east of Los Angeles, I noticed several strange little animals searching for food in front of my tent. Their fur was light tan or sand-colored above, pure white beneath. I threw out some bread, which they immediately accepted, and within half an hour they were taking it from my hand.

This was my introduction to these little leaping balls of fur, and association with them has turned out to be profitable as well as pleasant. The tent has evolved into a guest ranch, since I have become known as "the man who has the kangaroo rats," and numerous visitors come here from cities along the Pacific coast.

Every evening now there may be a dozen or more Dipo busily moving about my porch like diminutive vacuum cleaners. Once I counted 25.

"How are they picking up the grain?" invariably ask my guests.

"With their forefeet."

"But I don't see any forefeet. They look like two-legged animals."

The answer is, they hold their tiny forefeet—one could almost say "hands"—so close to the body at all times, and the body so close to the ground when gathering food, that the forelegs are seldom seen.

A Cache and Carry Device

Dipo does not eat when collecting grain, but stows it in his cheek pouches to take to his burrow. These fur-lined pouches are outside the mouth. What he carries home each trip would make me a generous portion of puffed wheat.

I soon learned that he prefers wheat to anything else. He also prefers, once he has lost his timidity, to gather it from my hand, where he can scoop it into the pouches instead of picking it up grain by grain from the porch.

If I slowly raise my hand, he will hop onto it and I can feel his forefeet tickling my palm as he gets the last few grains from between my fingers. The pouches gradually expand until the head appears twice its normal size. When Dipo has a full cargo aboard he looks as if he had a bad case of mumps (page 539).

The broad head is joined directly to the body, without visible neck. Dipo must move his whole body when he wants to look in a different direction.

"They scoot around like mechanical toys," my guests tell me, watching them erratically moving about gathering grain.

One evening I offered a whole slice of bread to one of my pets which I had enticed into the cabin. How to carry this home was a problem. Finally, getting it balanced up in the air, holding it with teeth and forefeet, he made for the door, hopping along erect on his toes. But he forgot the threshold. Tripping, he sprawled head over heels out onto the porch, dropping the bread. He persisted, however, and finally got the unwieldy load to his home.

To obtain their share of the supply of food on the porch, those living farthest from the cabin dash away five to ten yards, dig a small hole, empty the pouches into it, cover the grain, and hop back for more. There remains the rest of the night to collect this cached food and take it to the burrow.



"Rancho Dipodomys" the Author Calls His Mojave Desert Home

Since Mr. Ketcham pitched his tent in this lonely region near Twentynine Palms, California, thirteen years ago, the little kangaroo rat (*Dipodomys deserti deserti*) has been his constant companion.

An individual gathering grain alone, without competition, takes his load straight home. This activity would be kept up all night if the grain lasted, for instinct impels these creatures to store against the next "depression," which they know will come.

Dipos' Homestead Sites

Hospitality to Dipo has resulted in my cabin's being surrounded by more than a dozen burrows. Individuals have moved in and established homes close to the abundant wheat supply. Distinct trails, about three inches wide, always lead from burrows to favorite foraging grounds, where seeds and dry grasses are collected. Converging on my cabin are numbers of these paths worn in the sand by my little neighbors. One led to a burrow nearly a quarter-mile away. No wonder the owner finally moved closer!

Dipo digs his own burrow, and never occupies one made by some other kind of animal. On the surface it is a lumpy, uneven area, 10 to 30 feet across, into which numerous sloping entrances lead down to a labyrinth of passages winding above and below each other to a depth of one to four feet. This underground network includes a number of storerooms and the nest, a roughly spherical

chamber filled with dry grasses, chaff, and vegetable down (page 540).

For security and evenness of temperature the nest is usually located at the end of a passage on a lower level. Here it can be easily plugged off with sand against a prowler, such as a snake or small carnivore. Some of the passages are so near the surface that anyone walking across sinks below his shoetops.

The burrow entrances are larger than an animal of this size would seem to need, being four to five inches in diameter. This is because Dipo hops rather than crawls into his home. I have never seen one of these entrances dug up by a fox or coyote. They apparently realize the futility of trying to catch a Dipo in this manner when the prey may be leaving by another opening some distance away.

They "Live Alone and Like It"

Dipo never seems content with his home, but constantly makes alterations—plugs one entrance, opens up another, digs new tunnels. I can hear Lucy, the one living under my cabin, moving sand about at any hour of day or night, since the floor is right down on the ground.

I am prepared to lose my "tenant" any day,



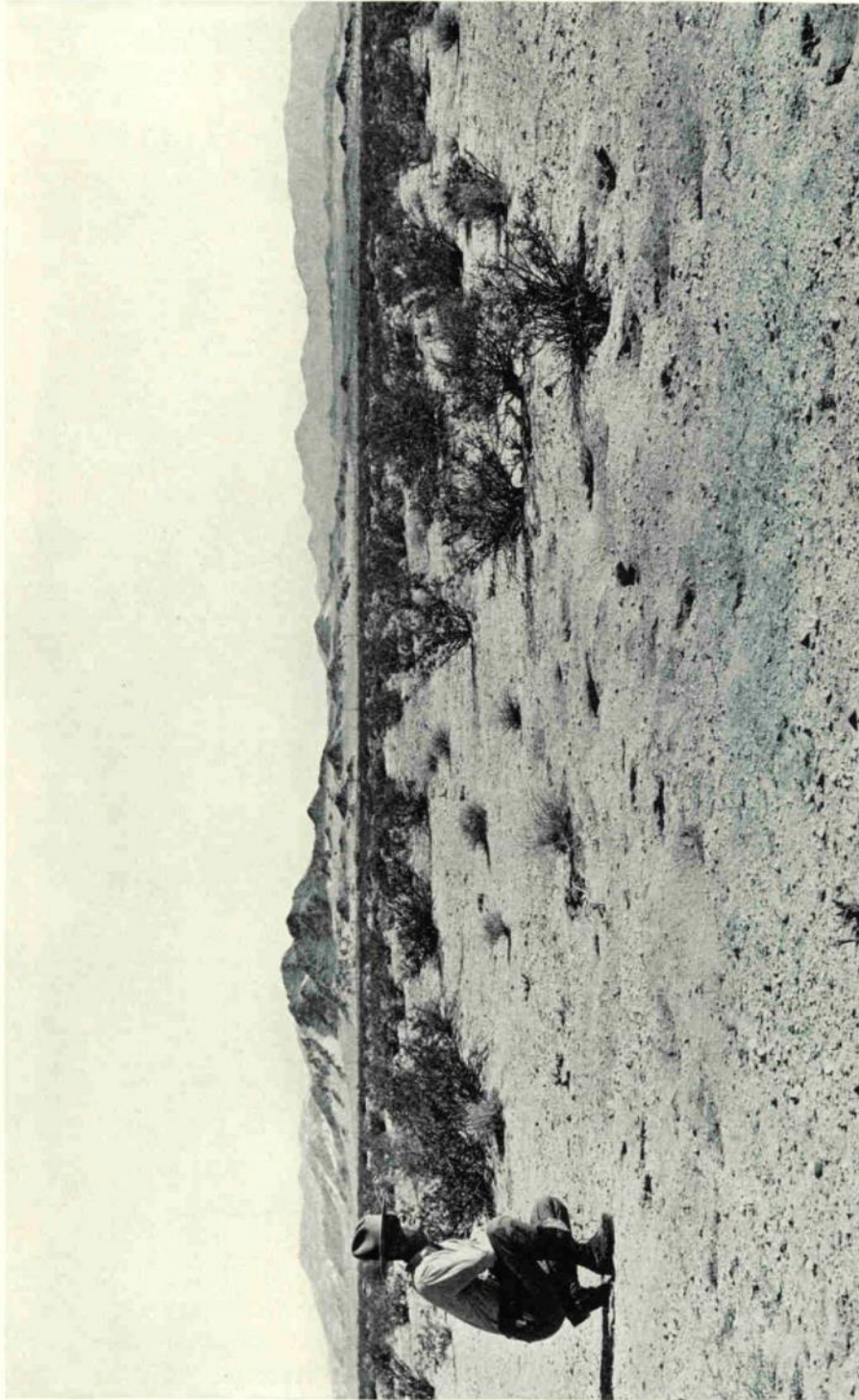
Caught—in the Feed Box with Cheek Pouches Full!

This flashlight tells its own story of Prowling Percy, who found the cabin door open and helped himself. His forefeet, used to stuff grain into his cheek pouches, are seen just below the nose.



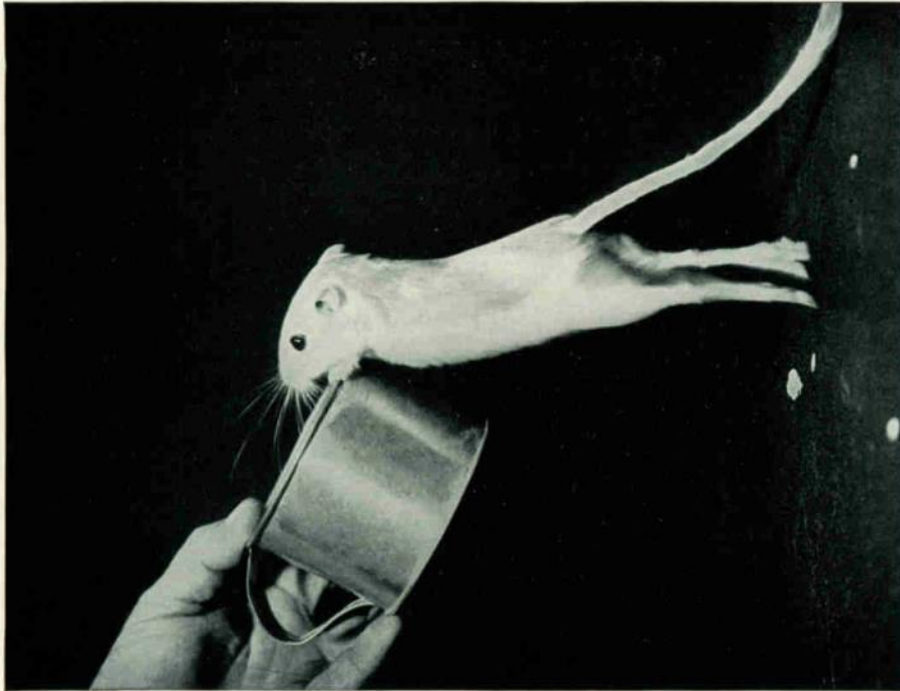
"Dipo" Seems to Have a Bad Case of Mumps

This kangaroo rat is not eating from the handout. He is stuffing wheat into the pouches at the side of his mouth. Soon he will rush off to his burrow to store it. He will repeat as long as the supply lasts.



On the Surface of the Desert Dipos' Home Show Only Lumps and Many Exits and Entrances

Underground he digs a labyrinth of passages winding above and below each other to a depth of one to four feet. This subway network includes a number of storerooms and the grass-lined nest. The author has never seen foxes and coyotes try to dig into these burrows; in fact, foxes are never seen in the daytime, and coyotes but seldom (page 538). In the distance are the Bullion Mountains (see map supplement "Southwestern United States" in the NATIONAL GEOGRAPHIC MAGAZINE for June, 1940).



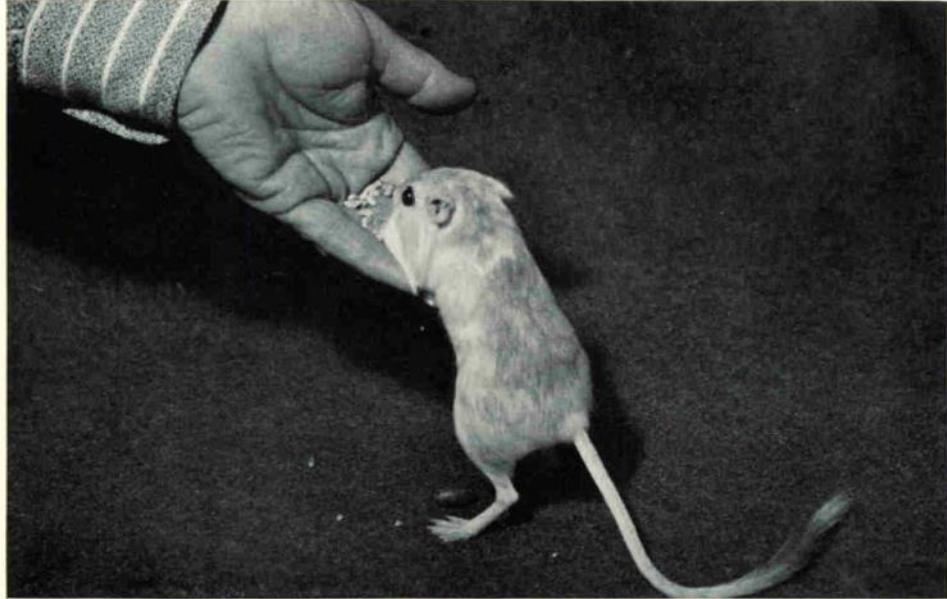
The Cup That Cheers Dipodomys Is Filled with Wheat

This little night prowler is hanging onto the cup with its tiny forefeet. With its long hind legs and beady eyes the kangaroo rat seems well named. Despite its name, however, it is neither rat nor kangaroo, but a relative of the pocket gophers.



Mimi and Dipodomys Quickly Became Pals

The kangaroo rat is one of the friendliest of animals and will not bite unless forcibly held in the hand. If two are allowed to gather food from the hand at the same time, a fight is bound to ensue and often a finger may be nipped by mistake.



Photograph by Laidlaw Williams

Both Balance and Rudder Is Dipo's Tufted Tail

The slender appendage enables the kangaroo rat to make "two-point" landings as it hops along on its hind legs or leaps away from an enemy. The tiny forepaws are never used for walking.

as these animals move frequently, digging a new home or taking over one which is unoccupied by another of their kind. A family consultation is not necessary. No burrow has more than one occupant at a time except in the case of a female with young.

Occasionally I see one of my neighbors working at an entrance in the daytime. He pops out, looks about, then turns around, and, with head in the opening, sends the sand in spurts between his hind legs, like a dog. He then disappears for a time, working more material to the entrance, and ejects it. But if he spies me, work stops immediately and he vanishes.

Flashlights Fail to Frighten Dipo

Dipo is entirely unapproachable in daylight, no matter how friendly he may appear at night. Yet artificial lights, even flash bulbs, bother him not at all when he is gathering food at my cabin, and he takes little notice of noise or talking.

Like most animals, he is alarmed by quick movements. When suddenly frightened he leaps a foot or more straight up into the air. Once, stooping over, I grasped the tail of a trusting individual gathering grain at my feet. He jumped so high he bumped my nose!

This little trick has doubtless saved many lives. Imagine the disgust of a fox which

rushes a Dipo, only to see the delicious meal spring skyward! By the time the hunter gets in reverse, Mr. Dipo is far away.

"What long tails they have—half again as long as the bodies!" is one of the first remarks my visitors make.

"They need them," I reply. "Kangaroo rats travel exclusively by hopping on the hind legs, and so require a balance and rudder, especially when leaping away from an enemy. Without that slender tail with the tuft at the end, there would be few 'two-point' landings. Dipo would probably tumble head over heels."

Quickness of movement and intricate burrows are *D. d. deserti's* only defense against natural enemies: the fox, coyote, bobcat, hawk, snake, and small spotted skunk. But this protection must be adequate, since he seems to hold his own even though there are not more than three young in a litter.

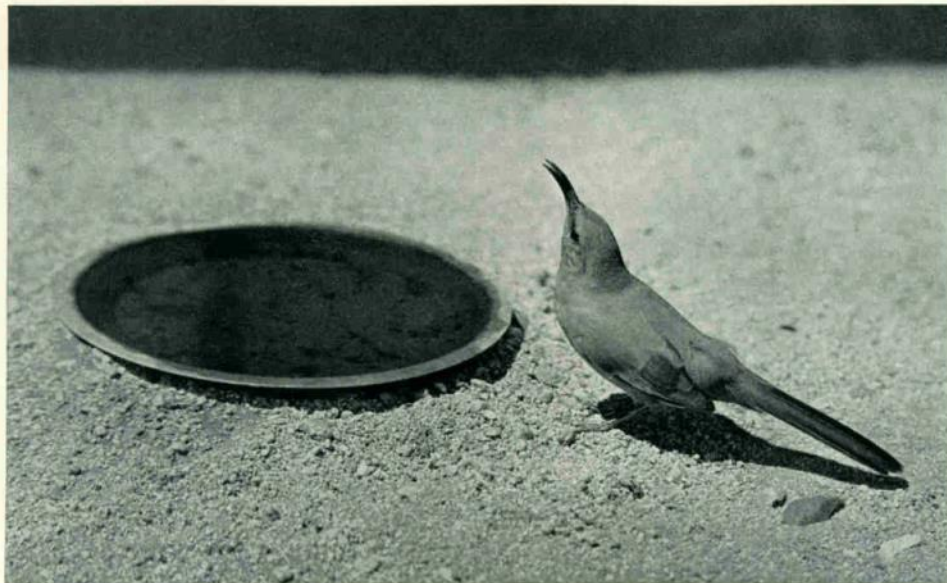
My pets are pugnacious among themselves, particularly when several are gathering food at the same place. Those living nearest the rich feeding ground consider it their special domain and try to drive others away.

Lucy will repeatedly rush at an intruder, leap into the air, and strike out with her strong hind feet, sending the kickees rolling. Returning to the grain, she will find that others have come behind her back and must be driven



Poised for Instant Flight, "Swift" Accepts a Fly

One of Dipo's most interesting neighbors is the zebra-tailed lizard (*Callisaurus draconoides*) which speeds over the desert sands so swiftly that it can catch insects in flight. When running, it curls its tail upward, revealing the bold black bars which give it its name. If badly frightened, it sometimes raises its forebody and races along on its hind legs for short distances. This reptile is entirely harmless.



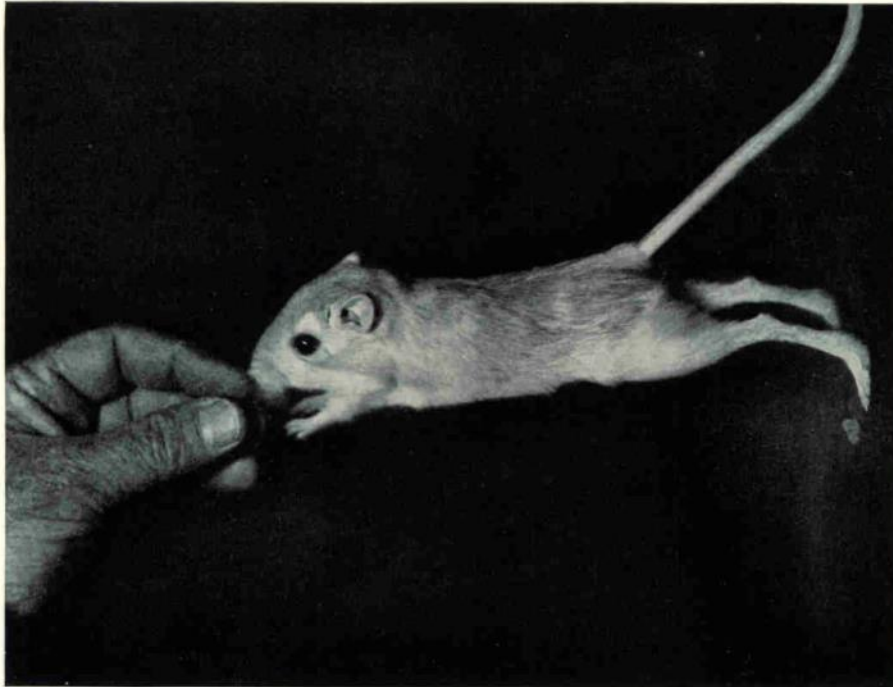
Leconte's Thrasher Fills the Desert Air with Ecstatic Song

This bird can run almost as fast as a horse. One year a pair came to the ranch every day throughout the summer and autumn, favoring the author with their sweet song. On a memorable day in December, with five inches of snow, they appeared with feathers much puffed out. Though ordinarily shy, they came into the cabin through an open door, to escape that strange white blanket.



Timid Cousins Will Not Feed from the Hand

Meet *Dipodomys merriami merriami*, the smaller Dipos to the left and right, who look like the more familiar *deserti*, but are only five-sevenths as large. They are found wherever *deserti* occurs, but lack many interesting and audacious traits of the larger species.



With an Embargo on Grain, Dipos Becomes a Shameless Beggar

When the author failed to place food on the porch of his ranchhouse, some of the tamer individuals followed him around like bobbing puppy dogs. The small forelegs and forefeet are stretched to the utmost. The faint white hip stripe is found on all members of the genus.



This Scene Might be Titled: "The Little Men Who Came to Dinner"

Like born actors, Dipos seem to like an audience, or at any rate the spectators don't prevent them from scooping up all the grain in sight. When the camera was set up, there were more than a dozen feeding, but before the photograph could be taken some of them were already on hurried round trips to their burrows.



Beneath the Spreading Creosote Bush Dipo Finds Refuge

When foraging in the desert, the little animals hop and scurry from one bush to another, knowing that a swooping hawk or prowling fox or coyote cannot easily penetrate the stiff, harsh branches (page 548). Here grain was thrown on the ground under the bush for a flashlight picture.

away. She often spends more time in trying to corner the food supply than in gathering it.

If the one she attacks refuses to leave, they both stand erect, sparring like boxing kangaroos, watching for an opening to get in a good thumping kick. Or she may get hold of the other with her teeth. Then the fur flies. There is a wild mêlée of scratching and squealing, and one usually emerges with nicked ears. But no matter how often or how far a Dipo is driven away, he always returns. The abundant food supply is too tempting to be relinquished.

Will kangaroo rats bite when handled? Scientific articles say not, and they may be correct regarding 69 of the species listed under the genus *Dipodomys*. But the seventieth, *Dipodomys deserti deserti*, with which this article is chiefly concerned, *will* bite.

My first experience was one evening in the

cabin with a crowd of guests. I had a captive in a glass-front trap, where he fearlessly and industriously gathered up some grain, then hunted for the way out. After a time he went to a corner and with a few rapid pushes of the forefeet against the pouches he ejected the contents in a small pile. Immediately he picked up the grain and again ejected it. After this had been repeated several times, I reached into the box to take Dipo out.

"Don't pick him up! He might bite you!" warned my guests.

"Oh no, he won't," I assured them, relying on the written word. But he did. And a *deserti* has never failed to draw blood whenever I have forcibly held one in my hand.

Dipo does not make a good pet in captivity. He shows no affection, and will not come to a person except to get food, leaving as soon as his pouches are filled. The only handling he



Drop the Cup, and the Air Is Filled with Bouncing Balls of Fur

Dipos react instantly to anything that frightens them, leaping with equal facility upward, backward, forward, or sideways (page 542). Quickness of movement and intricate burrows are their chief safeguards against such natural enemies as foxes, coyotes, snakes, and birds of prey.

permits is a stroking of his thick silky fur and a gentle teasing when he is intent on scooping grain from one's hand. Normally having the whole desert to range in, he does not thrive in close quarters. I never try to keep any in restraint nor allow them to be taken away.

Dipo will not enter my cabin to stay and mess things up as other rodents have done. He much prefers his own home to live in, thank you. After gleaning all the grain from the porch, he may pop in through an open door, looking for more, but always leaves if permitted. When I inadvertently close the door on one of my pets, he soon lets me know by the sounds he makes in hunting a way out.

I taught Percy, one of the tamest, to come into the house and help himself from my supply of grain. Now that he knows of this, he is a light brown streak from the door to the box. Hopping in, he stuffs his pouches in a

few seconds and is away on a three-minute round trip to the burrow (page 539).

Sometimes Dipo rhythmically beats the ground with one hind foot, if vexed or startled. The sound may be heard at some distance, even when made inside a burrow.

Another little trick is suddenly to face about and contemptuously kick a blast of sand toward me with the hind feet. This is done, apparently, to determine whether an object is dangerous or not.

One evening Percy found a slice of bread which I had thrown out. When still some distance away, he kicked sand at it, then hopped away and watched. Coming nearer, he repeated the act. Getting no reaction from the thing after a third test, he decided there was no danger. He came up to the mysterious object, found it was food, and carried it away.

My little friends make a number of dif-

ferent vocal sounds, all difficult to describe. They squeal angrily when fighting on the ground. When one rushes another he gives forth a sort of purring growl, and if he chases another, he emits a grunt on landing after each hop, as if the sound were jolted out.

Timid individuals make a low clucking sound when picking up grain, as much as to say, "Now you leave me alone, and I won't bother you." Very young Dipos cry like newborn puppies. While I am writing this, a plaintive voice coming from under the floor indicates that Lucy's "nursery" is occupied.

A Camel Would Be Envious

D. d. deserti is a purely desert species, and has developed traits and characteristics possessed by few other members of the genus. His ability to go without water would make a camel shudder—for Dipo doesn't drink at all. He doesn't even seem to know what water is when I offer it to him.

During a two-year drought at Twentynine Palms, the usual spring plants and flowers did not appear. Desert growth became parched. The creosote bush, normally green, turned brown. Antelope chipmunks, gophers, jack rabbits, foxes, and coyotes disappeared almost entirely from my neighborhood. But Dipo was always here to spend the evening with me.

His menu, whether obtained from me or by foraging over the desert, consisted of dry material. There was not even a drop of dew.

Kangaroo rats are seldom found at the Twentynine Palms oasis, where water comes naturally to the surface and where there is considerable deciduous growth besides the palms. How do they exist without moisture? Water for bodily needs is obtained through their digestive processes, being created internally by oxidation of air-dry starchy foods.

Some species of the tiny pocket mice, belonging to the same family as *Dipodomys*, can also live without water. I occasionally find, here at my cabin, the silky pocket mouse, one of the smallest mammals in the world.

The antelope chipmunk, *Ammospermophilus leucurus*, really a small ground squirrel, is my daytime friend and Dipo's closest neighbor. He lives under the same conditions, but thoroughly enjoys moist food and drinks freely in the summer if water is available. He uses Dipo's burrow to hide from me, and is not welcome, I'm sure. Once I saw one shoot out and dash for home as if scared to death.

Later I learned that *D. d. deserti* has the chipmunk thoroughly bluffed. I discovered this while feeding a Dipo on one of the rare occasions when I have seen one away from his burrow by day. A chipmunk tried to

"muscle in" on the bread and was sent flying.

One thing that Dipo and the chipmunk share in common is the creosote bush, which grows profusely in this valley. When foraging over the desert, they hop and scurry from one bush to another, stopping each time to reconnoiter. A swooping hawk cannot penetrate the thick growth of stiff, harsh stalks, and the little animals at the base of the bush are safe from the rush of a fox or a coyote (page 546).

Once I took a Dipo to Pasadena, and kept him in my living room, but in these unnatural surroundings he soon became bedraggled, as if his fur were oily.

I was mystified when I first saw him shoving himself back and forth on my perfectly good rug. Then I recalled that Dipo bathes in the sand. Every evening, particularly in hot weather, my pets emerge from the burrow, play about, and enjoy a sand bath. This ablution removes any excess of an oil which is secreted apparently to dress the fur against its dry, dusty surroundings.

On my next week-end trip, I brought back for Dipo a carton of the good old desert sand. When I placed him in it, he immediately stretched out and rubbed himself back and forth with all the enthusiasm of a small boy plunging into a cool swimming hole after a week of hot weather. Within a day or two his fur was again clean and sleek.

It would be fascinating to play with the young kangaroo rats, but unfortunately they do not appear above ground until they are mature. They can be identified by darker, sleeker fur, particularly as they are most numerous when the adults are molting.

Only once have I been favored with the sight of half-grown youngsters. Investigating a queer sound one summer day, I discovered two on the surface of a burrow. They were too clumsy and weak to move rapidly, so I easily picked them up—at a creosote bush, of course. They wouldn't eat or gather food, and continually kept up their puppylike cry. When placed at an entrance of the burrow, they immediately entered, still complaining.

Shortly afterward I found a snake near the burrow, and I concluded that the mother, aware of this menace, had been moving her young and they had gotten out of control.

As far as size, form, color, and markings are concerned, I cannot distinguish between the sexes of *Dipodomys*. I generally call them "he," so it was natural for me always to refer to the one I had in Pasadena as "he."

Upon returning home one day after an absence of several hours, I found three perfectly hairless little babies in "his" sleeping box. "An' I learned about Dipos from 'er!"