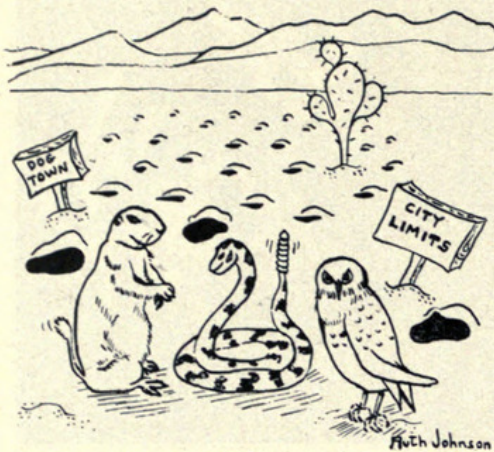


## SYMBIOSIS—ANIMALS LIVING IN MIXED HOUSEHOLDS

By AUSTIN L. RAND  
CURATOR OF BIRDS

**S**YMBIOSIS, a term from the Greek, is what the biologist uses to describe the living together of two dissimilar organisms. In a broad sense it includes such diverse relations as lice living on man and rats in his house, the union of an alga and a fungus to form a lichen, and the cross pollination of flowers by hummingbirds.

The story of the burrowing owls of our western plains living in amity with prairie dogs and rattlesnakes as one happy family



comes to mind as an example. But "foolish nonsense" is how the noted biographer of North American birds, A. C. Bent, characterizes such stories. He then goes on to quote evidence as to what actually happens, and one can see how the story originated.

The prairie dogs, which are really plump, dumpy ground squirrels and not dogs at all, dig their burrows close to each other on the prairie in colonies that have come to be called prairie-dog towns, or "dog-towns" or simply "towns." Burrowing owls also take up their residence in these towns, probably because they find burrows ready made and do not have to dig their own (as they are quite able to do).

### MODERATELY PREDATORY

The owls may make an occasional meal of a young prairie dog and a prairie dog may perhaps dine occasionally on owl eggs, but, on the whole, owls and dogs get along on terms of easy familiarity. Sometimes, when alarmed, both may scuttle into the same burrow for safety, but each has its own burrow. With the rattlesnake it is different. The rattlesnake may live in burrows in the dog-town, but when it is hungry it eats owl or dog as occasion offers. While the picture of a happy family of owl, dog, and snake is a myth, the symbiosis of owl and dog, at least, in the same colony is striking.

In Africa there is a tiny falcon only about eight inches long, which is called the pygmy falcon. When Dr. Herbert Friedmann, of

the United States National Museum, was studying the social weavers in South Africa, birds that nest in large colonies under a common roof made by themselves in a savanna tree, he found these falcons occupying nest chambers in thriving weaver colonies. There was no friction between the weaver birds and the falcons, and they were sometimes seen to sit side by side. When Friedmann collected three of these falcons he found bird remains in their stomachs, but the remains were not those of the social weavers. Apparently the falcons were feeding largely on small birds, but they did not molest the weaver birds, which had made the nests the falcons were using.

### PARROT-DUCK-POSSUM MENAGE

We occasionally find a mallard nesting in a tree on an old crow or hawk nest, and there are ducks like the wood duck and the golden-eye that usually nest in holes in trees. It is more remarkable that a South American duck known as the tree teal habitually nests in a parrot's nest. The parrots, called monk parakeets, make their nests in compact colonies in the branches of trees, so close together that they form a single mass. The tree teal's usual manner of nesting is to lay its eggs in one of the chambers in this apartment-house colony. At first the eggs are laid on the rough twig floor of the nest, but as the eggs increase in number a lining of down, plucked from the breast of the bird, is added until it may even extend out through the entrance of the nest. Apparently parrot and duck both get along amicably in their pendant tree-top cradles. An opossum sometimes finds these parrot nests to its liking, though one wonders if it may not have a meal of young parrot or duck in mind. But be that as it may, in different chambers of a single communal nest of these parrots, a duck and an opossum as well as parrots have been found.

On islets off the New Zealand coast lives a rather large-sized lizard-like reptile, the tuatara (*Sphenodon*). It is rather well known by name at least, for it is one of those relics that are called living fossils because they are survivors of a formerly more widespread group. In the present connection we are interested in the fact that petrels swarm to these same islands to dig their burrows and lay their eggs in them, and it is in these same burrows that *Sphenodon* spends its daylight hours. Apparently the insect-eating *Sphenodon* and the ocean-feeding petrels share the burrows amicably.

### Malacologists' Meeting

The American Malacological Union held its annual meeting in the Lecture Hall of the Museum on June 14, 15, and 16. Specialists in this field from all over the country attended. Dr. Fritz Haas, Curator of Lower Invertebrates at the Museum, was president of the organization.

## A NATURALIST'S EXCURSION IN SPESSART FOREST

By KARL P. SCHMIDT\*  
CHIEF CURATOR, DEPARTMENT OF ZOOLOGY

The Natur-Museum of the Senckenbergische Naturforschende Gesellschaft in Frankfurt am Main corresponds in scope to the Departments of Geology and Zoology in Chicago Natural History Museum. Though the building was badly damaged by bombing in World War II, the collections and library had been stored during the war. With repaired roof and an active program of rebuilding, the museum has again opened most of its exhibition halls to the public, and the scientific collections are being unpacked and brought into order.

The prewar custom of an annual museum picnic, which had been of necessity suspended during the war and postwar economic stringencies, was resumed on May 20 this year in the form of an all-day "Ausflug," by omnibus, to the famous Spessart Forest, about 50 miles east of Frankfurt. The museum personnel, ranging from Director to night-watchman and janitress, with wives and older children, made up a party of fifty, including representation from the Board of Trustees. As newly appointed "Honorary Corresponding Member" I had the privilege of accompanying the group.

### STRIP FARMING

Our route led through the farm land and farm villages along the Main river to the east and north, with repeated glimpses of the strip-agriculture characteristic of this part of Germany. Here the farm land has become subdivided and still more subdivided by inheritance, until the fields have become a patchwork of narrow rectangular strips, rarely with any two patches alike, planted to wheat, clover, oats, rape, and garden crops, and often with a row of fruit trees down the center. The owners of these strips of land live in villages usually much more than 500 years old, often with a thousand years of existence as communities behind them.

Most striking to an American is the stall-feeding of cattle, with the careful hoarding of manure, though the barns and stalls and manure piles are here more usually in the courtyard behind the houses than toward the street itself, as is so often the custom elsewhere in Europe. Novel to us also is the use of cows as draft animals, both for cultivation of the fields and for drawing wagons and carts.

As we left the flat and rich agricultural area along the Main, the low hills above us were crowned with forest, usually of beach or spruce in uniform stands but sometimes in mixture. The cultivated fields are carried

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Rand, Austin Loomer. 1950. "Symbiosis--Animals Living in Mixed Households." *Bulletin* 21(7), 4-4.

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