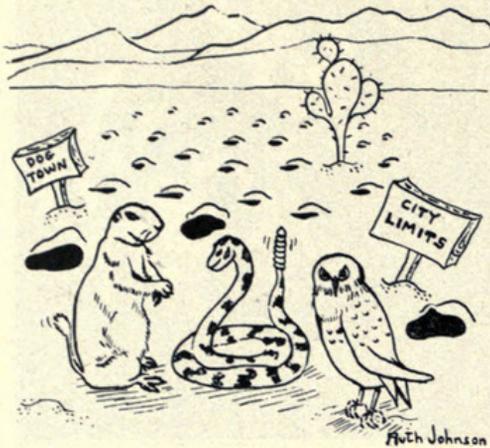


SYMBIOSIS—ANIMALS LIVING IN MIXED HOUSEHOLDS

BY AUSTIN L. RAND
CURATOR OF BIRDS

SYMBIOSIS, 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 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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to a sharp boundary with the forests. As the road brought us into higher land the forest came more and more to predominate, though even when there is no longer plowland, narrow strips of meadow are carried along the bottom lands of every mountain streamlet into the forest. These little troutbrook meadows, with the dark forest on each side, provide landscapes of extraordinary charm.

RECALLS MIDDLE AGES

The Spessart Forest itself is in part an oak forest. The predominance of oak is interpreted as resulting from the favoring of the oaks by man during the Middle Ages for production of acorns, valued as food for the droves of swine that were in those days herded in the forest much as are sheep on more open land.

Led by the Chief Forester, we had a view of the well-kept 300-year-old stands of oak, with sometimes 40 or 50 feet of clear trunk, that are the pride of this forest. These oaks produce long, straight, and clear timbers and are of great value. A single one may bring hundreds and even thousands of dollars if it is suitable for furniture. Adjoining stands of timber have been set aside as nature reserves, and in these the largest oaks have been shown to be more than 600 years old. In these stands the oak is disappearing and being replaced by beech.

Here one may see and hear a variety of small forest birds whose numbers compare favorably with those of a hardwood forest in the Chicago region. Most memorable of all their voices are perhaps the unmistakable resounding call of the cuckoo and the deep notes of the wood pigeon, which are almost owl-like in quality. At the Chief Forester's establishment we saw a few captive wild pigs and learned that these have become a plague in the forest region, raiding the neighboring fields to such an extent that strong communal pig-tight fences have had to be put up around the villages.

The manager of a small iron works at the village of Laubach had invited the entire party to afternoon coffee in the workmen's community hall at the works. Mr. Dueker, our host, and his wife expressed themselves as endlessly indebted to the Senckenberg Museum for a large share of their education and regarded the entertainment of the museum personnel as a token of their gratitude. The bountiful coffee table with "Torten" and "Streuselkuchen" and endless cups of coffee was made still more "gemuetlich" by the workmen's small orchestra, for which Mr. Dueker himself played an organ accompaniment. Chairs were cleared away and the younger couples, with not a few of the older ones, joined in dancing.

REPTILES COLLECTED

Meanwhile, in the manager's auto, Director Mertens and I, with Mrs. Mertens and

Miss Schirner, of the museum's reptile division, were whisked out to the head of one of the little mountain brooks, where a spring and dammed-up pool provided an unusually favorable station for amphibians and reptiles. Here we found (and collected for the museum in Chicago) seven species. The common European toad and the grass frog were both of interest for their relations with the Chinese frogs and toads recently studied in Chicago by our Research Associate Ch'eng-chao Liu.

There were larvae of the fire-salamander at the spring; and the pond yielded not only the abundant mountain newt but two specimens of the extremely interesting thread-tailed newt, which is more properly an Alpine creature. A blind worm (the common limbless lizard of Europe) and a water snake rounded out our unexpected museum booty.

Much of the interest of the trip lay in the frequent pauses at eating places, at a country "Wirtshaus" for second breakfast, with cold sausages and fresh rolls, a midday meal at the "Wirtshaus im Spessart," a name familiar in German literature from a book of stories with that title by Wilhelm Hauff, our surprise afternoon coffee at Laubach, and lastly a supper at Wasserloh, where huge pitchers of the local "national drink," apple cider, washed down the "Bratwurst." The final stretch of road in the dark was enlivened by group singing, and Frankfurt was reached by 11 o'clock, where we dispersed by train and streetcar to our homes. In such a communal picnic, not unlike our similar informal Department gatherings at home, we may see the roots of a genuine and native democratic spirit in Germany.

SUMMER LECTURE TOURS GIVEN TWICE A DAY

During July and August, conducted tours of the exhibits, under the guidance of staff lecturers, will be given on a special schedule, as follows:

Mondays: 11 A.M.—The Earth's Story (general survey of the geology exhibits); 2 P.M.—General Tour.

Tuesdays: 11 A.M.—The World of Plants (general survey of the plant exhibits); 2 P.M.—General Tour.

Wednesdays: 11 A.M.—The Animal Kingdom (general survey of the animal exhibits); 2 P.M.—General Tour.

Thursdays: 11 A.M. and 2 P.M.—General Tours.

Fridays: 11 A.M.—The Story of Man (general survey of the anthropology exhibits); 2 P.M.—General Tour.

There are no tours on Saturdays and Sundays, or on Monday and Tuesday, July 3 and July 4.

FIFTY YEARS AGO AT THE MUSEUM

Compiled by MARGARET J. BAUER

"Through the generosity of Mr. W. J. Chalmers, funds were provided which enabled the department [Geology] to prepare a collection of crystals of the United States minerals for exhibition at the Paris Exposition. At the close of the exposition the collection will be returned to the Museum. It was awarded a silver medal."—*Annual Report of the Director, 1900.*

[This collection may now be seen in Hall 34. The crystals have been reinstalled in a new type of case with fluorescent lighting, each mineral being mounted on an individual plastic base. The collection includes a comprehensive exhibit of the six main crystal systems.]

* * *

"The increase in the attendance must be considered gratifying; the figures showing an increase of 43,595 over 1899 in the total attendance [266,899] for the year [1900]. The visit of the members of the Grand Army of the Republic [5,813] helped this to an extent. The Museum prepared a framed directory of the museums, galleries and libraries of the city, which has been hung in the different hotels and other public places for the guidance of visitors to Chicago. It has been noted especially during the summer just passed that a large number of people visiting the Museum were evidently strangers in the city, which leads one to the conclusion that the fame of the institution is spreading, and that it is now regarded as one of the points of attraction to those who are transient in the city."—*Annual Report of the Director, 1900.*

RARE FRENCH VOLUMES ON SCIENCE ACQUIRED

In announcing the completion of the Museum's Library holdings of the *Comptes Rendus* of the Academie des Sciences, Paris, grateful acknowledgement is made to the Permanent Secretaries of the Academie, through whose courtesy and generosity the 100 volumes were made available. The Library of the Museum has endeavored over a long period to secure the volumes lacking in its set, and their acquisition as a gift is indeed fortunate.

This important publication, covering the entire field of science in France, has become increasingly scarce and difficult to obtain. The numbers of the *Comptes Rendus* contributed by the Academie des Sciences, Paris, include Volumes 1 through 36, 45 through 105, and 121 through 123.

The history of science is science itself.

—Goethe



Schmidt, Karl Patterson. 1950. "A Naturalist's Excursion in Spessart Forest." *Bulletin* 21(7), 4-5.

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