

melissaefolia from the principal herbaria in the United States. Actually, all the largest herbaria of this country had only 10 properly identified different collections of *Lindera melissaefolia*, and most of these had been made about 100 years ago. Only two collections have been obtained during the present century. In Alabama this rare shrub has not been collected for more than 100 years. Although Thomas Walter described the original collection of the plant from South Carolina in 1788, it has to this day remained a very rare shrub.

All these years the plant has certainly been growing in Missouri in the bottom lands of the Mississippi Embayment of the Gulf Coastal Plain part of the state, but it was not discovered until 1948. Several hundred miles now separate this station from the known nearest locality in Alabama. And without an actual collection of it preserved in a herbarium, no one would be able to state factually that it occurs in Missouri. Such a discovery reveals how much remains to be done, even in Missouri, where active botanical collecting has been carried on for more than a hundred years. This is not an isolated example. Numerous discoveries of similar nature continue to come to light with new explorations of any given region. Missouri is but a small sector of the world and will continue to yield valuable discoveries through continued exploration. By comparison, how much may be found in the rest of the world, especially in many parts of the tropics! Filling in important gaps in plant distribution is as significant and exciting as mapping an uncharted bit of wilderness in some unexplored sector of the earth.

Such experiences impress the scientist and all lovers of nature with the need for conservation of as much wild land as possible. Only by retention of and exploration of natural areas will new and startling data be yielded concerning plant and animal distribution.

Entomological Field Trip

Mr. Henry S. Dybas, Assistant Curator of Insects, will leave early in August with two companions on an insect-collecting trip in the southeastern states, from Alabama and Florida to the Appalachian Range. The purpose of the project is to obtain a large collection of insects of species that live on fungi and to recover, if possible, one that has not been reported since 1860. This "lost species" is one of the smallest of known beetles. The field trip will be made with the motor carryall of the Department of Zoology.

Visitors interested in minerals will find valuable information in two companion cases, "Classification of Minerals" and "Physical Properties of Minerals," in Hall 34.

HOW HERMIT CRABS SOLVE A HOUSING SHORTAGE AND UTILIZE PROPERTY INHERITANCE PRINCIPLE

BY FRITZ HAAS
CURATOR OF LOWER INVERTEBRATES

An example, in the animal world, of a housing shortage and its solution, as well as an example of lower animals utilizing the principle of inheritance of property in the form of dwellings, is provided by the hermit crabs, especially by a large terrestrial hermit crab of the West Indies and a large part of Latin America.

An extreme case of hermit-crab housing shortage results from the extinction of a large snail whose shells are inhabited by the crabs, which are not provided by nature with their own habitation. The inheritance is due to the housing shortage—when a crab that has obtained a fossil snail shell dies, another crab installs itself in the same shell, and thus they pass the shell down from generation to generation.

A very conspicuous inhabitant of all the West Indies, from the Bahamas in the North to Dominica in the South, and of the coast line of North, Central, and South America from Key West, Florida, to Brazil is the large terrestrial hermit crab that indeed has become so independent of the ocean that it is often seen far away from the beaches and even high up on hills. The name of this rather aberrant crustacean is *Cenobita diogenes* Latreille. Like all hermit crabs, this species shelters its soft abdomen in



CRAB INHERITS SNAIL'S ESTATE

Lacking a home of its own, the hermit crab, *Cenobita diogenes*, installs itself in the shell of a snail of the species *Livona pica*.

snail shells. In accordance with its stately size, only large snail shells can serve this purpose. In all the localities of its wide distribution, the crab is mostly seen carrying around the heavy, trochoid shell *Livona pica* Linnaeus, which is very abundant throughout that area.

In Bermuda, the aptly named *Cenobita diogenes* is still abundant though at the northern limit of its range. There are no fresh *Livona* shells in Bermuda to serve as hermit-crab houses; but fortunately for our hermit, the Pleistocene and even more recently extinct *Livona* left abundant fossil and subfossil shells in the aeolian sandstone deposits that compose the higher ground of the Bermudas. These are excavated by the hermit crab and used quite in the same way as are the more recent shells elsewhere. Without this supply of large shells, there would not be nearly enough large snail shells for the *Cenobitas* of Bermuda.

The marine shell *Livona* flourished in Bermuda waters and apparently became extinct there in glacial times. *Cenobita diogenes* also lived on the Bermuda beaches in pre-glacial times and used the *Livona* shells to house its soft abdomen then as now. In fact, the abundance of fossil *Livona* shells in the Bermuda sandstone can only be accounted for by the fact that the hermit crabs carried the shells up to all levels while the sands were being blown up and deposited by the winds of the glacial era. Thus the *Cenobitas* survived the extinction of their house-producer because the activities of their own ancestors had laid up a store of solid shells.

Everywhere in Bermuda one sees the hermit crabs with their *Livona* shells, small and large according to age, in gardens and on the heath-covered hillsides. There are abundant empty *Livona* shells scattered about, and there can be no doubt that one and the same shell has often served as house for long successions of hermit inhabitants.

Fossil Collecting Expedition

Dr. Sharat K. Roy, Chief Curator of the Department of Geology, will leave shortly for the field to collect invertebrate fossils, chiefly in New York State. He will be assisted for part of the time by Mr. Orville L. Gilpin, Chief Preparator. The objective is to collect specimens required to illustrate the marine-group dioramas that at present are being installed in Frederick J. V. Skiff Hall (Hall 37).

Audubon Society in Museum

The Illinois Audubon Society now has its headquarters in the Museum offices of its president, Dr. R. M. Strong, Research Associate in Anatomy. Two other members of the Museum staff, Dr. Austin L. Rand, Curator of Birds, and Mr. Emmet R. Blake, Associate Curator of Birds, are members of the society's board of directors. Meetings of the group are usually held in lecture rooms of the Museum.



Haas, Fritz. 1949. "How Hermit Crabs Solve a Housing Shortage and Utilize Property Inheritance Principle." *Bulletin* 20(8), 7-7.

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