museum memo

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Food for Thought

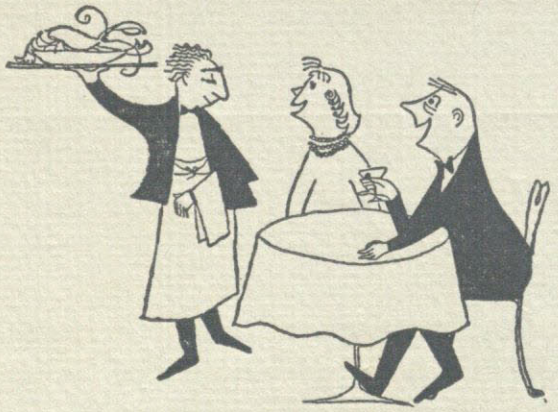
IT was pointed out to us the other day that many persons who dote on seafood have never seen the entire animals whose meat brings them gastronomic ecstacies. Thousands who get all smacky over Alaskan king crab have never looked upon a king crab in all its massive oddness. Others who feast on the tails of South African rock lobsters have never seen the other end of the animal. In like manner there are those who have never gazed upon but one end of a shrimp. American lobsters are usually cooked whole so the most familiar sight of them is the bright red color they assume when thrown into a pot of boiling water. And a fried soft-shell crab has but little resemblance to the adult blue crab.

This curious aspect of American life came up during a discussion of the new exhibit at the balcony entrance to the Hall of Ocean Life which is called "Shrimps, Lobsters and Crabs: Much Ado About Decapod Crustaceans." Our informant was Dr. Dorothy E. Bliss, Assistant Curator of Invertebrates in the Department of Fishes and Aquatic Biology, and scientific mentor for the new display. Dr. Bliss, deeply versed in crab lore, explained to us how they had used the widespread hunger for seafood as bait with which to lure the multitudes into a more profound contemplation of decapod crustaceans, i.e., shrimps, American lobsters, South African rock lobsters, blue crabs and king crabs.

In pursuing this line of thought the exhibit starts out with a seafood platter and winds up with a delineation of basic research. Upon approaching the display visitors have their interest aroused by vivid

(Spots by Joseph M. Sedacca)

color transparencies showing decapod crustaceans in their more familiar forms. There is broiled lobster, fried soft-shell crabs, and some broiled king crab legs. There is even a shrimp cocktail.



Alongside these toothsome tintypes are mounted specimens of the crustaceans which show how they appeared before they ran afoul of the chef. Many visitors are going to get a surprise when they look upon that big king crab in the exhibit. The thing has a legspread of four and a half feet and in the frozen state it weighed eighteen pounds. The world's record king crab has a spread of six feet, two inches. Blue crabs, two kinds of shrimp, rock lobsters and American lobsters are all there.

Having introduced these decapods, the exhibit goes on to tell where they are found. A large map of the world gives their distribution and also outlines the bands of temperature which constitute the main factor in controlling that distribution. Next, the exhibit shows how these animals are caught commercially. There are three-dimensional models of a shrimp trawl, a lobster pot, the hoop net used in catching rock lobsters, a blue crab pot and a king crab trawl. On the wall above these models are photo murals showing fishermen at their work in the Gulf of Mexico (shrimps), on the Maine coast (American lobster), South Africa (rock lobster), Chesapeake Bay (blue crab) and Alaska (king crab).

After explaining how these animals are caught, the exhibit traces their life cycles from the mating, through the larval stages and back to the adult. As they go through the larval stages these decapods take on the craziest forms, odd shapes that hardly seem to be related to the full grown specimens. At some stages in their varied lives they are tiny, free swimming critters skittering through the briny with reckless abandon. It is difficult to realize that these carefree nymphs eventually wind up as part of a seafood platter.

Finally the exhibit takes up the growth, molting and survival of a crab. This section derives from basic research conducted by Dr. Bliss on *Gecarcinus lateralis,* a land crab which makes its home in Bermuda and the West Indies. In order to grow, this crab, like all decapod crustaceans, must shed its shell periodically. Before doing so, it forms within the old shell a new one which is soft and can later stretch and then harden at a larger size than the old one. But the crab with its new soft shell must come out of the old one. Just how the crab manages this trick is shown in a series of six color photographs.

But there is a lot more to it than that. In discarding its old shell for the new one, the crab goes through an extremely vulnerable period. While it waits for its new shell to harden it is soft and helpless. If it went through this process of shedding its shell out in the open, disaster would result. In the

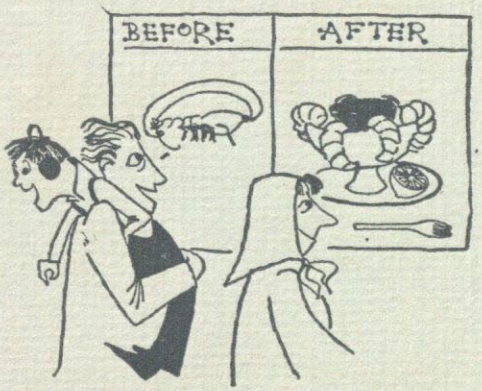
hot sun the soft crab would dry up, or it would be a ready prey to its enemies. If the crabs tried to shed their shells in the open, the race could not last very long.

Instead of taking such chances the crab retreats into a burrow it has dug in the dry, sandy soil. At the bottom of this burrow conditions are just right for a crab to change its clothes. Down there it is dark, safe, secluded, humid and warm. The crab goes through the molt in comparative safety and comes out a bigger, brighter crab. This is all very well but what impels a lowly, dim-witted creature like a crab to do this?

Through her research Dr. Bliss has found a possible answer. In the stalked eyes of the crab there are nerve cells which can release into the bloodstream a neurohormone that prevents molting. When the crab is out in the sunshine this neurohormone is apparently released, so the crab does not molt. But when the crab is in the darkness of its burrow, the neurohormone seems to be withheld from the bloodstream, and molting takes place. It was found that when the eyestalks of the crab were removed under anesthesia the neurohormone could not be released and molting was induced even under unfavorable conditions.

The exhibit explains that the implications of such knowledge may extend beyond the crab to the study of abnormal human behavior and mental disease. Scientists are learning that mental disturbances may be related to abnormal concentrations of certain chemicals within the brain and that some of these substances are secreted by nerve cells. So research into the operation of the nervous system of even so lowly an animal as a land crab may by analogy throw more light into the functioning of the nervous system in higher forms.

We were fascinated by this exposure of the facts about how a land crab changes its shell but we must confess that we were also deeply moved by the first part of the



exhibit, those realistic pictures of luscious seafood. Not long after talking to Dr. Bliss and studying the exhibit we found ourselves in a restaurant ordering a seafood platter. We had some decapod crustaceans but we also had some fish and bivalves. We were a little ashamed of this reaction to the exhibit until we remembered that seafood is supposed to be good brain food. We reasoned that this tasty spread of brain food would help us to understand more about basic research.

JOHN O'REILLY