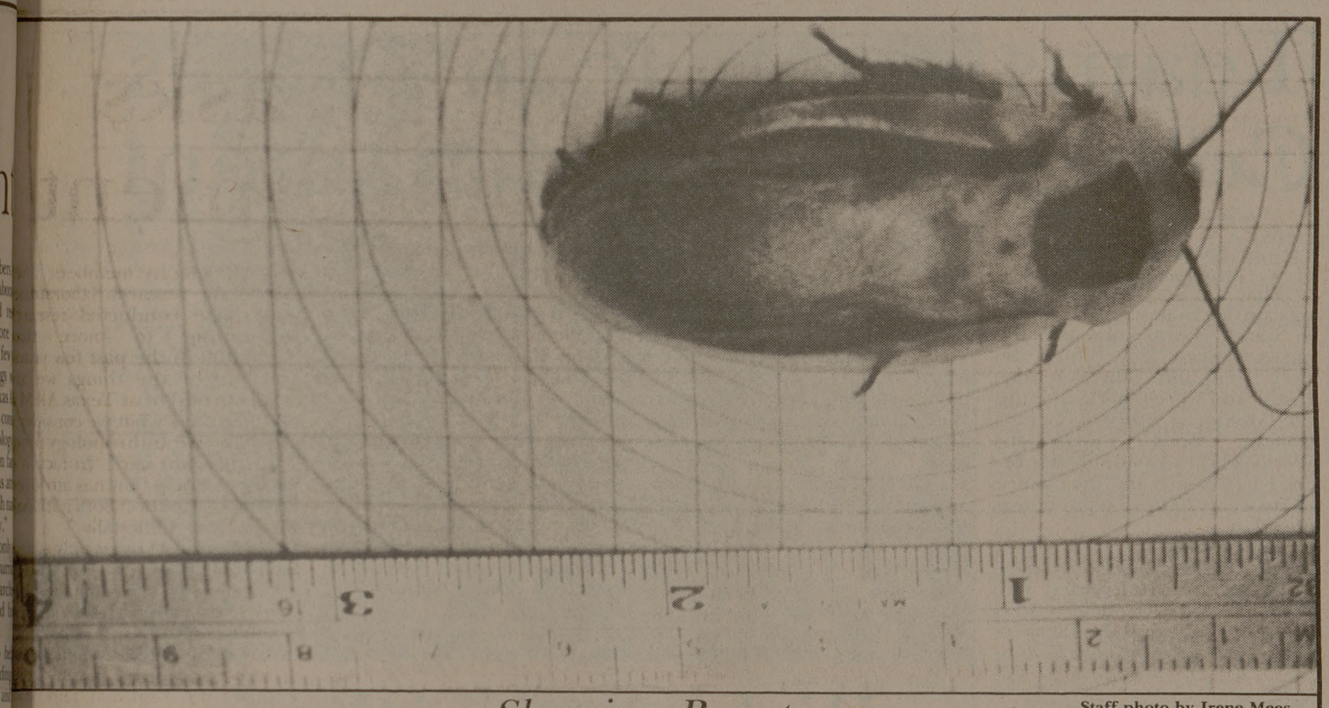

Sleeping Beauty Staff photo by Irene Mees

This 2 inch cockroach, from South America, is being studied in the Department of Etomology under the direction of Dr. Keeley. By documenting the effects of different chemicals on the roaches' brain, creating new pesticides is no longer a hit or miss job.

Insect control researched

by Jane North
Battalion Reporter

Texas A&M University scientists are hoping that the neurohormones that control the growth, reproduction and physiological balance of insects may also provide a way to control insect pests without insecticides.

The scientists are trying to learn enough about neurohormones, which are manufactured in the brains of insects, to make them artificially. They hope they then could block neurosecretions in the insects and disturb their physiological balance.

"Since neurohormones are so important to the insect's physiological process, you should be able to disturb the process and control the insect population," Dr. Larry L. Keeley, professor of entomology, said.

The research in this area is still theoretical since little is known about insect neurohormones, he said. Scientists do know neurohormones affect blood sugar balance, water balance, blood fat levels and protein synthesis. About a dozen neurohormones are known, but only two have been chemically characterized by finding their amino acid sequences, Keeley said.

"Our primary interest is to find out what processes are regulated by them and then what their structure is," Keeley said. Once the structure is known, inhibitors or mimics of the neurohormones can be made.

Keeley is conducting the research on a variety of large tropical cockroaches from Central America. They are better to use at this stage in research because they are large, easily handled, abundant in body tissue and have a large brain, he said. But many of the insects must be used because each insect produces only several hundred billionths of a gram of neurohormones, he said.

In order to study the effect of neurohormones, they first must be extracted. This is done either by isolating the gland in the brain producing them, or by cutting off the insect's head and extracting them with solvents.

Once extracted, the neurohormones are purified and injected into a live insect. Such physiological effects as the blood sugar level then are monitored to see if they have changed since the injection.

Neurohormones are proteins and cannot be absorbed through the insect's cuticle (the horny outer covering) as are insecticides. For that reason, Keeley said he hopes to develop a man-made non-protein analog (different from the structure of neurohormones, but similar in action) that mimics or inhibits the neurohormone's actions.

The inhibitor compound would block the neurohormone at the tissue where a certain physiological process takes place. For example, if the inhibitor was made to block blood sugar uptake into the cells, it would retard the tissues which would then become energy-deficient, and the insect would die.

The neurohormone mimic would cause an opposite reaction. It would cause a hyper-response — an overload of the insect's system. If the mimic was made to affect water secretion, the insect would excrete large amounts of water and would die from dehydration.

These chemicals would be developed to affect only a particular type of insect, so the general animal population would remain unharmed.

"I am optimistic that in the future, some practical application of these chemicals for specific insects will result," Keeley said. "But I think we have to be cautious until we understand the neurohormone systems better."

Murder conviction overturned

United Press International

AUSTIN — The Texas Court of Criminal Appeals Wednesday overturned the capital murder conviction of Linda May Burnett, who was sentenced to death in the 1978 slaying of a 2-year-old Winnie boy.

Burnett earlier this month wrote a hand-scrawled letter to a district court judge asking that she be allowed to die without appealing her conviction, but prosecutors objected and her defense attorneys continued with the appeal over her objection.