

Stray voltage education goes mobile

BY DONNA TOMMELLEO

UNIVERSITY PARK — On July 1, funds for Penn State's research and educational program on stray voltage will run out.

"With some additional funding we feel we can put on a very much needed educational program," explained Extension agriculture engineer Joe McCurdy. The program will be geared to not only farmers but to all that service the industry, including electricians, equipment dealers, etc.

Since last August, McCurdy, Paul Anderson, Penn State teaching researcher and graduate student Jim Fairchild have been concentrating their efforts on learning more about stray voltage, the nationwide problem affecting an increasing number of farms each year.

McCurdy explained that the program is two-fold. The researchers are trying to establish the extent of the problem and look for bonified solutions. In addition, they are currently working on a portable set-up which simulates a dairy farm at the end of five miles of electrical line, complete with neighbors.

The table-top simulation, which is six feet in length, is still under construction, McCurdy noted. When completed the model can be transported via an automobile to extension meetings and seminars. Through the use of an overhead projector, meter readings can be seen readily on a screen, allowing the audience to notice drops and rises in voltage.

Operated by hidden controls and transformers, the model will run

on 120 volts which will simulate 7,200 volts on the primary or high line. The secondary line, which feeds the farm, will operate at 65 and 325 volts simulating 240 and 120 volts.

A thin strand of nichrome wire serves as the neutral wire. This high resistance material allows the researchers to simulate five miles of electrical line into such a short length, said McCurdy.

The educational model is expected to make its debut on June 17 at the Farm and Home Center in Lancaster in front of a seminar of dairy service people and electricians.

McCurdy explained that an all-out educational effort will help clear up a lot of misunderstandings and "finger-pointing."

"We've got some answers, but we need to make a concentrated effort in education," he remarked.

When McCurdy isn't wearing his teaching cap, the ag engineer frequently can be found troubleshooting for stray voltage in the field.

"I'll get six calls a day," he noted. McCurdy pointed out that not all the phone calls are from farmers. Service people and electricians also seek his advice.

After arriving on a stray voltage-suspected farm, McCurdy will take a preliminary reading with a portable volt meter. He explained a reading taken between the milk tank and the drain usually provides a representative sample of the farm system.

If the reading jumps higher than one volt, McCurdy then drives a separate ground 25 to 50 feet away

from the milking center. From the ground, he runs an insulated wire to anyplace he wants to take a reading.

"We go in and touch everything the cow touches," he explained. The Extension engineer also experiments with different load levels on the system. If voltage readings continue at a high level

after the hot wire is pulled with the neutral still intact, then McCurdy said he is fairly sure the problem is coming in off the system.

With the help of a small crew from the electric company, McCurdy has the wire between the primary and secondary neutral disconnected.

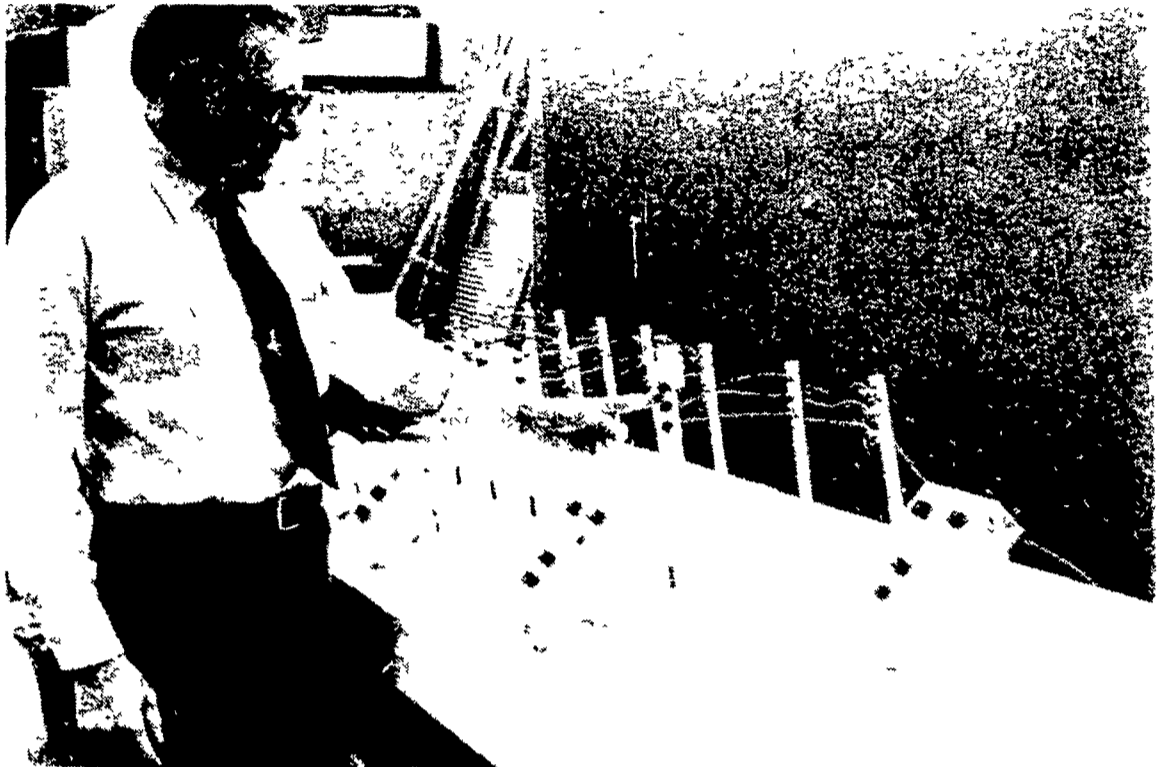
This isolates the whole farm

from the system," he said.

At that point, McCurdy said the farmer has three options on how to solve the problem. The first, and the easy way, said McCurdy, is to ask the power company to leave the wire disconnected.

However, the easy way is also the most controversial and lethal.

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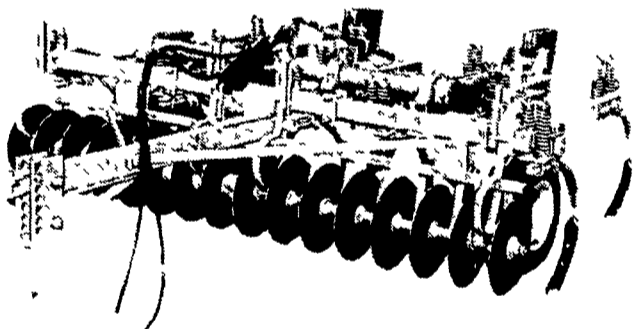


Penn State Extension agriculture engineer Joe McCurdy points out a small metal cylinder which will serve as a dummy transformer. A real transformer is hidden from view. The stray voltage model, an educational tool, can

be disassembled and transported by car to meetings and seminars. McCurdy will unveil the model at a meeting in Lancaster, next month.

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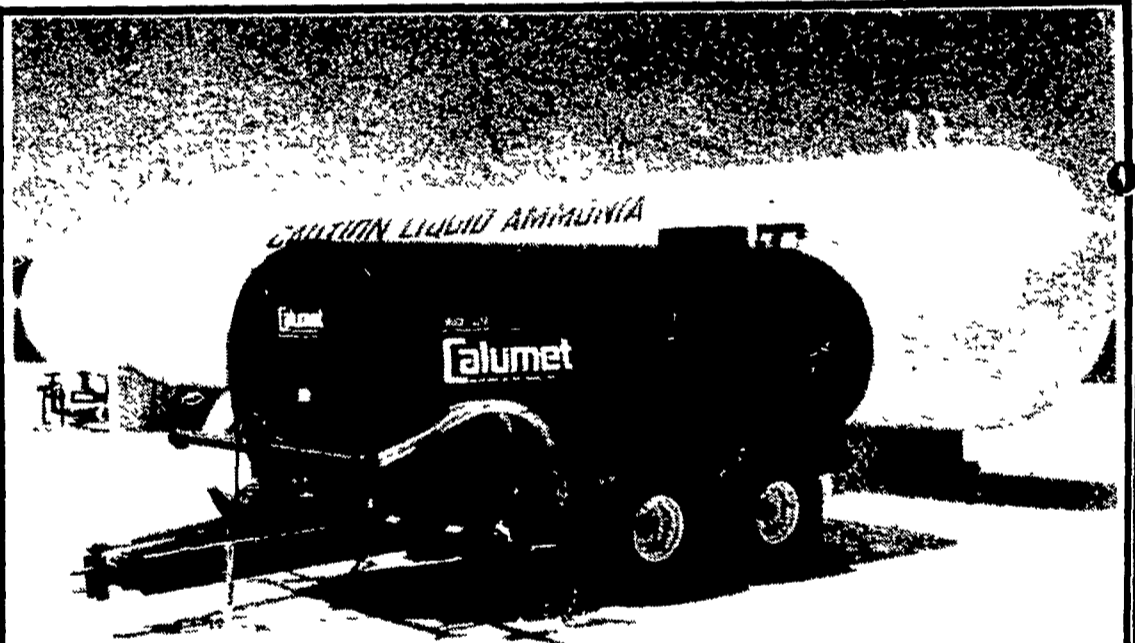
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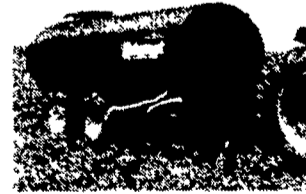


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