

## Chemical Lure May Doom Cotton Moth

► SCIENTISTS have discovered just what a certain young virgin has that makes her so desirable, and they may use their knowledge to kill off her boyfriends.

The female in question is a pink bollworm moth, a notorious good-for-nothing to cotton farmers. Her secret attraction is a chemical with a barely-pronounceable name for which three U. S. Department of Agriculture scientists coined the term "propylure."

The chemical was isolated in pure form by William A. Jones, Martin Jacobson and Dial F. Martin of the USDA's entomology research division in Beltsville, Md., who then succeeded in synthesizing it in the laboratory. Baiting traps with artificial propylure could be a means of ridding cotton growers of the pest.

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## PHYSIOLOGY

### Miltown's Effect On Brain a Mystery

► ABOUT HALF the nation has, at one time or another in the past 10 years, swallowed a Miltown, Equinil or one of the other tranquilizers classified as meprobamates.

Generally these drugs have been considered as safe or safer than barbiturates. But the fact is that scientists do not know how the meprobamates work any more than they know how the barbiturates work.

Obviously the drug has a depressant effect—it calms people down, puts them to sleep in some cases. But how it acts on brain cells and how broad its effect is have never been determined.

Several theories have been advanced. One says the drug acts as a "sludge" in the cell, blocking metabolism so the cell cannot operate efficiently. Another says it affects cell membranes.

From all evidence, Miltown and its relatives have a non-specific, diffuse impact on the central nervous system, said Dr. Roy Hudson, a pharmacologist at the University of Michigan in Ann Arbor. In other words, they attack several functions of the brain and motor system. In contrast, the major tranquilizer used in hospitals to treat mental patients—chlorpromazine—has a known specific effect on particular chemicals in the brain and therefore a specific effect on behavior.

Brain wave charts of people who have taken a meprobamate bear out the diffuse effect. With normal doses, the waves will slow down and become synchronous, representing a state of relaxation. With higher doses, the waves will begin to resemble sleep patterns.

With very high doses, however, 10 times the normal ones, brain waves become rapid and nonsynchronous—a pattern resembling alertness. The reversal is a mystery.

What parts of the brain do the meprobamates affect? Again there is no conclusive answer. However, it has been found that they depress activity of the limbic lobe or emotional center of the brain. At the same time, they have a slightly weaker effect on the brain's arousal center. Both barbiturates and alcohol also attack these sections, said Dr. Hudson. In fact meprobamates have been called "weak barbiturates" or "weak alcohol."

Dr. Hudson cited evidence that meprobamates are addictive. In large doses they can result in hypotension, loss of consciousness and even, presumably, death, a situation that has led the Food and Drug Administration to press for tighter controls.

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## GENERAL SCIENCE

### Science Fair Winners Exhibit at AMA Meeting

► TWO HIGH school students exhibited their award-winning research studies during the AMA's 115th annual convention in the Scientific Exhibit in McCormick Place, Chicago.

As winners of the American Medical Association's top awards at the 17th International Science Fair held in Dallas, Texas, the young scientists were invited by Dr. James Z. Appel, AMA president, to be honored guests and exhibitors at the convention.

They are Mary Lallier Schilling, 17, RR #1, Northfield, Minn., whose exhibit on "Uptake of Radioactive I-131—Using Techniques of Histology and Autoradiography" explores the role of iodine and the functions of the thyroid, and Robert Carter Dillingham, 15, 2109 Trescott Drive, Tallahassee, Fla., who compared the effects of water moccasin and black widow spider venoms on animals and animal tissue in his exhibit on "Analysis of Hematoxins and Neurotoxins."

They were chosen at the Fair by a team of judges from the AMA Council on Postgraduate Programs, chaired by Dr. Gilson C. Engel, Philadelphia. They competed in a field of 419 finalists representing 225 regional and state science fairs in 46 states, the District of Columbia, Canada, Costa Rica, Japan, Puerto Rico, Sweden and West Germany.

In addition to exhibiting their work to the 50,000 physicians and guests attending the AMA convention, Miss Schilling and Mr. Dillingham were introduced as honored guests to the AMA House of Delegates, the Women's Auxiliary to the AMA.

The International Science Fair is administered by SCIENCE SERVICE.

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# IN SCIENCE

## SURGERY

### 'Blow-Out' Patch Helps Corneal Transplant

► OPHTHALMOLOGISTS at the American Medical Association Convention heard a report on a "blow-out" patch that can be used on patients with a perforated ulcer of the eye, thus improving the chance for a successful corneal graft later on.

Serious complications such as glaucoma can develop and the eye may be lost if the ulcer perforates into the front chamber of the eye directly beneath the cornea, or "window." If infection and inflammation are still active, a transplanted cornea may be destroyed.

Dr. C. H. Dohlman of the Retina Foundation, Institute of Biological and Medical Sciences, Boston, said the blow-out patch is superior to other methods more commonly used for ulcer repair. The patch consists of a thin slice of fresh or preserved cornea, shaped to fit the defect, and a transparent membrane of silicone rubber. In four to 16 cases reported, a corneal slice without silicone rubber was used.

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## PLANETOLOGY

### Low Magnetic Field Calculated for Mercury

► THE PLANET Mercury has a magnetic field but one that is only about one-sixtieth as strong as that of earth.

Statistical evidence for the existence of a magnetic field on the tiny planet closest to the sun was reported to the American Physical Society meeting in Minneapolis.

Dr. Robert C. Good Jr. of General Electric Company's Space Sciences Laboratory in Valley Forge, Pa., has calculated that Mercury has a magnetic field of eight-thousandths of a gauss. The earth's magnetic field is about a half a gauss, which is a unit for measuring magnetism.

Dr. Good's calculations were based on the changes in the number of solar protons hitting earth when the planet Mercury was in certain positions. He found that solar proton events were more numerous when the planet's position in its orbit was within 40 degrees of the location on the sun from which the solar flares causing the protons erupted.

Dr. Good believes this indicates that Mercury may influence the paths taken by protons thrown out by solar flares, causing an increased number of particles to reach the earth.

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# E FIELDS

## MEDICINE

### Puzzling Heart Disease Kills 20 Beer Drinkers

► THE DEATH of 20 persons in Quebec from a mysterious heart disease apparently caused by beer drinking during the past year was not due to impurities in the beer but from drinking too much, investigators believe. Some of the victims had been drinking seven quarts a day.

Canadian breweries have cooperated in an investigation by the Canadian Food and Drug Directorate, assisted by Quebec physicians and research centers in Montreal, Ottawa and the United States.

One Quebec brewery recalled and dumped a million gallons of beer before it was discovered that the brew batch apparently was not to blame. Exhaustive analysis failed to show any impurities in beer distributed in the lower city of Quebec, or any chemical difference between the beer served at the 14 taverns patronized by the patients and that dispensed anywhere else in Canada. But the investigation continues.

Virtually all that can be said so far about the heart lesions, which affected a total of 48 persons including the 20 who died, is that they represent metabolic, nutritional or toxic disorders, Dr. Jean L. Bonenfant of Laval University School of Medicine, Quebec, said in the *Journal of the American Medical Association*, 196:25, 1966.

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## MEDICINE

### Hormone Antibody May Make People Fat

► THE OBESE person is a totally different "breed of cat" from the normal weight individual, the author of the book "Diet is Not Enough" told the American Medical Association meeting in Chicago.

Dr. Irving B. Perlstien of the University of Louisville School of Medicine reported an entirely new mechanism in the cause of obesity after treating 350 grossly fat persons from the ages of six to 65 with dramatic success in 85%.

He believes the problem is a metabolic one. Fat people appear to produce relatively normal amounts of thyroid hormone, but may have blocking antibodies that prevent them from utilizing the hormone. Stress such as the birth of a child, a broken bone or an operation could have triggered the condition.

Treatment by the oral drug T-3, or tri-iodothyronine, plus a high-protein, low-carbohydrate, low-fat diet restored the normal thyroid function in the majority of patients without calorie restriction.

Before humans were tested and treated, experiments with guinea pigs and rabbits were carried out at Washington University, St. Louis, Mo. The animals were injected with thyroglobulin suspended in Freund adjuvant once a week for three weeks. The animals developed a gradually increasing rise in thyroid antibodies that reached its peak after about 12 weeks. They got fat and developed a specific vascular lesion that has never been described previously.

Humans also showed a characteristic vascular lesion that Dr. Perlstien said may well be "pre-coronary."

These investigations were supported in part by the National Institutes of Health, Bethesda, Md., and by Smith, Kline and French Laboratories.

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## CRIMINOLOGY

### Crime Problem Needs 'Soft Sciences' Approach

► CRIME in the cities is a problem that requires answers far deeper than technology and a plethora of safety devices can offer. Yet the application of science to crime has been heavily technical. This was a theme struck by several participants at the two-day National Symposium on Science and Criminal Justice.

Home alarm systems, safety measures in apartment houses and computer analysis, among other technological advances, are necessary stopgaps in crime control, Dr. Leonard J. Duhl of the Department of Housing and Urban Development told the symposium. But "none of these will be effective in the long run," he said, "unless we use them along with the newest advances in the 'soft (or behavioral) sciences.'"

Public housing is a case in point, said Dr. Duhl. In spite of everything that has been done in urban renewal and slum rehabilitation, crime, vandalism and neglect of property have continued to occur.

But a slum reconstruction project on 114th Street in New York City is virtually free of vandalism because the people who live there were involved in the rehabilitation. They were consulted on decisions that affected them, and their desires were given high priority, he said.

Normally, in New York, the average loss rate on such new construction is 30%.

The lesson "has not been lost on us," said Dr. Duhl. "We know that never again will it be possible to effect significant changes in the fabric of our society without great involvement of all the people concerned."

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## TECHNOLOGY

### Super Washing Machine Cleans in 45 Seconds

► A SUPER WASHING machine that can launder a bath towel, pillow-case, or bed sheet in 45 seconds soon will go into public service at Watford, England.

Soiled and crumpled linen put in at one end comes out washed, dried and ironed in hardly more time than it takes the operator to walk to the other end to receive it.

Yet so carefully does the machine treat the things put into it that they survive many more washes than usual.

Unfortunately, it is not for household use. To start with, it is almost as big as a railroad locomotive and costs about \$85,000. It has been developed for commercial laundry work and represents the biggest break from traditional laundering methods used for nearly 100 years.

Instead of being swirled round in a tub or washing machine, soiled linen is laid flat on a conveyor belt and carried in a continuous stream under high-pressure jets of hot water and "wash liquor." The linen is then run under rinsing jets, through a mangle, into a dryer and finally under a rotary iron.

Scientists and engineers at the British Launderers' Research Association spent more than five years devising this method of mechanizing laundry work.

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## MEDICINE

### Cigarette-Smoking Dogs Get Emphysema in Tests

► BEAGLE DOGS wagged their tails and jumped eagerly into an experimental smoking box after they learned to smoke in an experimental study reported at the 115th annual American Medical Association convention in Chicago. And they contracted emphysema, a disease of the lungs.

The dogs averaged 12 cigarettes a day, some of them smoking up to 4,116 cigarettes in more than a year. The five dogs that lived longest had multiple white patches on the surface of their lungs, with dilation of air spaces characteristic of emphysema.

Beagles were chosen because they are large animals with lung and bronchial tissue closely resembling that of humans, Dr. Oscar Auerbach of the Veterans Administration Hospital, East Orange, N.J., told the meeting.

Although cigarette smoking has been suspected to be a contributing cause of emphysema, this experiment was a first step in developing a test method. The experiment will continue, using the method to determine whether the smoke from "modified" types of cigarettes is significantly less harmful than that from ordinary cigarettes.

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