

ZOOLOGY

Baby Bees Get Food According to Sex

► NURSE BEES in a honey-bee colony "know" just what food to give larvae according to whether the immature forms are destined to become drone, worker or queen.

Fertilized eggs produce either workers or queens; unfertilized eggs, laid in larger cells, produce drones.

Nurses apparently can tell which is which, reports Dr. Mykola H. Haydak of the department of entomology and economic zoology at the University of Minnesota's Institute of Agriculture. The nurse bees recognize the sex no matter what size cell the larva may be in, and this determines what food it receives.

This, Dr. Haydak explains in *Science* (May 9), indicates that, contrary to some earlier theories, sex is the stimulus determining the type of food deposited in the comb cells. Queen larvae receive almost no pollen; a little pollen is found in the food of older worker larvae, and "considerable" amounts of pollen are given to older drone larvae.

In his experiments Dr. Haydak noted, however, that when the queen bee is removed from a colony, the nurse bees cannot seem to differentiate between drones and workers according to sex.

"The cause of this phenomenon is difficult to explain at present," he reported.

Science News Letter, May 24, 1958

GENERAL SCIENCE

Urge Scientific Agencies To Study Arms Plans

► SCIENTIFIC AGENCIES should be appointed both by the United States and the United Nations to study modern techniques of weapons control.

In a report on the implications of today's weapons, a special committee of the National Planning Association called for the formation of these scientific advisory agencies as soon as possible. (See p. 332.) The NPA is a nonprofit organization devoted to planning by Americans in agriculture, business, labor and the professions.

Its special committee concluded that agreements on arms control become more difficult to achieve as modern weapons become more complex. The analysis, result of a nine-months' study, assumes that no weapons control will be achieved before 1970 and that the U. S. and Russia will continue their present arms race.

The NPA committee was formed to study the techniques and methods that would be effective in providing arms control, and also to determine the extent to which international agreements to control weapons would lead to greater national security.

The scientific staff recommended by the committee would be attached to the branch of the U. S. Government concerned with disarmament efforts.

The United Nations scientific advisory committee, also recommended by the committee, would provide technical advice on armaments control.

Other findings of the Committee include:

1. The inspection problem will be intensified by development of subversive and unconventional methods of warfare, such as "suitcase" atomic weapons or bombs, which can be carried by saboteurs into enemy countries without detection, and devices for toxicological warfare. Unconventional types of warfare with potentialities for great human destruction are now available even to smaller nations.

2. Nuclear weapons capability will spread to additional powers during the next dozen years. Many nations have the ability to develop nuclear weapons without outside assistance of any sort, but rapid increases of nuclear capability will undoubtedly be accelerated by sharing of information on both military and peaceful uses of atomic power.

3. By 1970, there will be at most a 15-minute warning of attack, resulting in delegation of thermonuclear retaliation decision to lower echelon officers remote from centers of government.

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PUBLIC HEALTH

Study Shows Heavy Smokers Live Longer

► AMERICAN Tobacco Company employees smoke almost twice as many cigarettes as the general population but live longer and show no more than the average amount of cancer or heart disease.

This was reported by Dr. H. B. Haag of the Medical College of Virginia and H. R. Hanmer, The American Tobacco Company, Richmond, Va., to the Southern Medical Association meeting in Miami Beach, Fla.

The results of the survey directly contradict the theory that smoking causes lung cancer or heart disease.

The tobacco workers were all permanent employees in nine tobacco processing plants. Among white males of The American Tobacco Company group, 77.2% were regular cigarette smokers compared with 49.9% for the general population. For white women, the comparative figures are 44.4% and 23.6%; for non-white men, 84.1% and 48.4%; for non-white women 61.7% and 22.9%.

Previous studies have recorded a statistical association between cigarette smoking and a higher death rate from lung cancer, from heart disease and from all causes combined.

By contrast, this study shows that although the workers smoked more, they had a lower over-all death rate, a lower death rate from cancer and heart disease generally and no higher a death rate from respiratory cancer than is found in the general population.

This makes it evident that cigarette smoking *per se* is not necessarily or always associated with shortened life and a higher cancer risk, the researchers said.

They pointed out that their study was free from estimates or sampling errors since the smoking habits and deaths were tabulated on a virtually complete "head count" basis.

This is not true of other studies relating to smoking and health, they said.

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IN SCIEN

DENTISTRY

Army Tests Jet Injection For Dental Anesthesia

► A JET INJECTOR has been used on 60 dental patients who would normally have been anesthetized with a hypodermic needle.

Three Army Medical Service officers found that routine dental operations and surgery could be accomplished painlessly with the injector, which shoots liquid into the tissues at a rate of about 700 feet per second. The power source is a spring-activated plunger.

Besides providing a painless method of anesthetic injection, the method eliminates the possibility of needle fracture and reduces the danger of transmitting infection.

The most serious disadvantage was some bleeding caused by the injector, the Army team reports in the *Armed Forces Medical Journal* (May).

The injector, single-shot and hand-operated, is manufactured by the R. P. Scherer Corporation of Detroit, Mich. The three officers, all lieutenant colonels, are Peter M. Margetis, Dental Corps, in the Army Surgeon General's Office, Washington, Edward P. Quarantillo, Dental Corps, Post Dental Surgeon, Fort Lesley J. McNair, and Robert Lindberg, Medical Service Corps, Walter Reed Army Medical Center, Washington.

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BIOLOGY

Listless Turtle Victim of Disease

► A PET turtle that pokes along listlessly may not be just turtle-slow. It probably is a very sick reptile.

Students at Southern Illinois University, Carbondale, Ill., working under the direction of Dr. Harold Kaplan, have found the cause of a previously unsuspected disease of turtles. It is a bacterium, *Escherichia intermedium*, commonly found in soil and water.

The bacterium enters the turtles' bloodstream through skin abrasions. Skin ulcers then develop, the turtle grows listless and eventually dies.

Because turtle meat is consumed by humans, the bacterium may be a source of some human sickness. Inoculations from diseased turtles were fatal to guinea pigs, rabbits and mice.

The high antibody production characteristic of humans, however, gives infected persons excellent recovery chances, Dr. Kaplan reported. The bacterium is described as "very infectious to all species in all seasons."

The organism is killed at about 170 degrees, so thorough cooking of turtle meat is suggested as one way of avoiding infection.

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CE FIELDS

FORESTRY

Hemlock Well-Suited To Future Woodlands

► THE HEMLOCK grove may soon become a familiar sight to Americans in almost every part of the country as a result of research conducted at the Connecticut Agricultural Experiment Station, New Haven.

Dr. Jerry S. Olson and other scientists at the Station have been studying Eastern hemlock with a view toward increasing woodland productivity, recreation areas and watershed protection. It is "a tree of promise for the future."

Because of its shade tolerance, hemlock is one of the few trees that can be planted in established woodlands. It is important in wildlife conservation, in addition to being an evergreen with "high esthetic value."

As part of the study, Eastern hemlock seed was collected from more than 60 sources ranging from Nova Scotia to Minnesota and along the Appalachians as far south as Alabama. This is the area where the tree commonly grows.

Major experimental plantings of 500 to 800 trees grown from this seed were made in Connecticut, Tennessee, North Carolina, Wisconsin, Massachusetts and Illinois. Smaller plantings were made in Florida, Alabama, Virginia, and in the provinces of Quebec, New Brunswick and Nova Scotia.

These plantings will give important information on hemlock's ability to withstand extreme climatic conditions and on the relationship between genetic differences and a tree's survival and growth. Nurserymen should benefit from the scientists' experiments on effects of temperature and light.

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CARDIOLOGY

Heart Stimulant Harmful For Hypothermia Patients

► A POTENTIAL but avoidable hazard for patients undergoing cardiac surgery at lowered temperature has been found.

Adrenalin is ordinarily used to stimulate the heart, but it has been found that adrenalin depresses the heart when used in combination with the heart tonic, digitalis, coupled with hypothermia, lowered body temperature.

Patients about to undergo heart surgery have been treated with digitalis before lowering their body temperature. This has been shown to prevent the heart failure that is a major threat in heart operations performed at lowered body temperatures.

Adrenalin-like drugs are also commonly used in low blood pressure emergencies such as shock that sometimes develop during surgery.

Experiments showed that as the body temperatures of digitalis-treated dogs were

lowered, the effects of the adrenalin-like drugs were blocked. At 86 degrees, the drugs caused a measurable decrease in the force of heart muscle contractions.

At normal body temperatures, the heart stimulant effects of the adrenalin-like drugs were not affected by the digitalis, Dr. Theodore Cooper and Marion Cotton, pharmacologist, of the National Heart Institute, Bethesda, Md., reported.

The heart stimulants studied included adrenalin and four of its close chemical relatives: nor-adrenalin, isoproterenol, ephedrine and phenylephrine.

Hope for the low blood pressure patients may come from preliminary studies with methoxamine, a blood pressure-raising drug that does not appear to be blocked by digitalis.

Dr. Cooper said more research is needed to determine the performance of various drug combinations under conditions of hypothermia.

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NUTRITION

Expectant Mothers Eat Coal at Night

► SNEAKING a few nibbles of coal in the middle of the night is just one of the strange appetites of pregnant women, recorded by nutrition experts J. M. Harries and T. F. Hughes, British Ministry of Food and Agriculture, London.

They noted the cravings of 1,000 mothers-to-be and found 187 of them had a great longing to eat some coal. Many admitted it was quite a job to keep their bizarre appetites secret from their husbands. Sometimes the desire became so strong they sneaked out at night to satisfy it.

One expectant mother wanted to eat the plaster off the wall, and 17 out of the thousand felt they had to eat mustard, pepper, salt and spices.

Most popular among the stork set was the more reasonable desire for fruit. Oranges, apples, tomatoes and lemons were highest on this list.

A somewhat similar craving was for vegetables and, of the 105 who had this urge, 72 insisted that they had to be eaten raw. Another 48 longed for cereals, such as rice and oats, and they also insisted on eating the food uncooked.

Huge helpings of pickles were wanted by nearly 70 of the expectant mothers.

The strange cravings are believed due to some deficiency of a mineral or vitamin brought about by the extra demands of childbearing, although a few of the thousand experienced the reverse. They reported developing a strong dislike for some foods they normally liked. Coffee and tea were the commonest among these.

No set pattern was found for the cravings. Some mothers with several children said they had craved the same substance with each baby. Others said they experienced a different longing each time.

Several mothers reported that smoking became distasteful to them when they were expecting a baby.

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PSYCHIATRY

Drop in Sensory Signals Causes Hallucinations

► HALLUCINATIONS start when sensory signals to the brain fall below a certain minimum.

This happens to the sleeper, and the visions he "sees" are called dreams. It can happen to the driver on a monotonous super-highway, and it then is called "highway hypnosis." It happens to the mental patient who withdraws himself from reality. It can happen to the mystic who deliberately withdraws his attention from his surroundings.

This theory was presented to the American Psychiatric Association meeting in San Francisco by Dr. Louis Jolyon West of the University of Oklahoma School of Medicine, Oklahoma City.

Human brains, he said, are normally constantly bombarded by many signals from the senses. Concentration requires excluding most of these from awareness.

A certain minimum level of sensory signals coming in is necessary to prevent the emergence of signals coming from within the brain itself. The brain-born signals are based upon previous experience and normally serve to set in motion the exercise of memory.

When the sensory input from the surroundings is cut off or lowered, previously recorded perceptions are released. These are hallucinations.

The individual mind of each person weaves them into patterns, scenes or stories.

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AGRICULTURE

Rice Disease Attacks Florida Crops

► RICE FIELDS in the United States are threatened by a new plant disease.

"Hoja blanca," the Spanish name for the disease meaning "white leaf," had been reported earlier in Cuba and Venezuela where it cut rice yields as much as 75%. It was first observed in Florida in August, 1957.

The problem in combating the disease in this country will be finding commercially desirable varieties of rice that are also resistant to it.

All the more widely grown United States rice varieties are susceptible to "hoja blanca," U. S. Department of Agriculture scientists have reported. Most of the resistant varieties came from Japan, China or Korea or had been cross-bred with these varieties. When the USDA's rice collection was tested for resistance, strains that had the resistant variety Lacrosse as one "parent" were also resistant, indicating that it should be possible to obtain hoja blanca resistant rice.

While the cause of the disease is not known, its symptoms—white stripes on the leaf blade, reduced plant height, missing or sterile flower parts—are similar to those of the stripe disease in Japan. Because of this, scientists have assumed "hoja blanca" is also caused by an insect-transmitted virus. Leafhoppers may spread the disease.

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