

PUBLIC HEALTH

Outbreak of Trichinosis Traced to Pork Sausage

➤ TWENTY-NINE known cases of trichinosis have been traced to summer sausage in a rural community in Dodge County, Wis., near Fond du Lac. There have been no deaths so far.

The same community recently suffered a widespread staphylococcal infection, which confused the problem, Dr. Milton Feig of the Wisconsin State Board of Health told SCIENCE SERVICE.

State health officials have now been joined by two scientists from the U.S. Public Health Service's Communicable Disease Center, Atlanta, Ga., Dr. Stanley Lamb, epidemiologist, and Dr. Robert Scholtens, veterinarian, in seeking out the infection's source.

"We believe that more people are infected than are outwardly ill," Dr. Feig said. "The main source of human infection is from swine infested with *Trichinella spiralis*."

Medical authorities say that pork should be cooked at a minimum temperature of 140 degrees Fahrenheit for at least 30 minutes per pound. Smoking, pickling and other methods of processing or preserving meat do not kill the parasite. Freezing meat at zero degrees Fahrenheit for at least 24 hours, or at five degrees Fahrenheit for 20 days, will usually kill all trichinae.

Only about 70% of the pork raised in this country is processed in plants under close supervision, Dr. George T. Harrell of the University of Florida has estimated. Dr. Harrell believes that as much as ten percent of the sausage in large city markets has been infected.

The average American pork-eater consumes three servings of trichinosis pork each year, it has been estimated. But the epidemics that occur are usually small. Autopsy studies indicate that 16% of the human population is infected, mostly without any outward indications.

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MEDICINE

Complete Bed Rest Out for TB Patients

➤ COMPLETE bed rest for tuberculosis patients is no longer required—drug treatment is adequate.

Some soldier patients at Fitzsimons General Hospital in Denver, Colo., are even gradually returning to sports, including basketball. Only four of 387 military personnel returned to active duty after early physical activity had a return of TB infection.

The soldiers were permitted to walk around the wards after drug treatment and, in some cases, surgery, Lt. Col. William E. Wilson, chief of the TB section of Fitzsimons, told the annual meeting of the National Tuberculosis Association and its medical section.

However, immunity in tuberculosis is neither absolute nor permanent, Dr. William R. Barclay of the University of Chicago, incoming president of the American Thoracic Society, told the meeting.

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TECHNOLOGY

Lowering Noise Level Of Drills Possible

➤ PNEUMATIC ROCK drills can work more quietly.

That is the conclusion of engineers of the U.S. Bureau of Mines who conducted research in a model-study laboratory, an electronics laboratory, and at field sites in a quarry and in a mine.

Mufflers and exhaust hoses are often effective in reducing the noise level below 85 decibels, the generally regarded danger point. An average conversation ranks at about 40 decibels.

Most of the noise was found to come from exhaust ports and the resonance, or vibration, of steel parts of the drills. The frequency ranges that should be concentrated on are between 500 and 600 cycles per second, and 1,500 to 7,000 cycles per second.

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GEOLOGY

South Pole Glacier Speed to Be Measured

➤ THE GREAT ICE mass of windswept Antarctica flows slowly from the interior toward the coast at a rate of about 30 feet a year.

U.S. scientists know it flows about 300 feet in 10 years, but plan to measure the rate more accurately in the interior, Dr. Albert P. Cray of the National Science Foundation told the Geological Society of Washington, D.C.

The lonely continent of snow and ice, one and a half times as large as the United States, is encircled by the 60th south parallel. Almost in the center lies the South Pole, on a plateau about 10,000 feet high. The ice slowly moves downhill from this elevation toward the edges of the sea, Dr. Cray said. There it melts and breaks off in the form of icebergs. There is not much change in the total amount of ice mass in Antarctica. However, a precise measurement of the ice lost into the sea and the ice gained from the snow that falls is difficult to obtain.

Ice has been found to lie about 14,000 feet deep in western Antarctica, he stated. In eastern Antarctica it may lie as deep as a mile and a half. Under all this ice and snow lies rock.

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IN SCIEN

PSYCHOLOGY

Men More Aggressive Than Women in Dreams

➤ MEN are more aggressive than women in dreams as in real life.

Violent acts of aggression—murder, shooting, fist fighting—come up in men's dreams more often than in women's dreams, Dr. Albert F. Paolino of the Cleveland Psychiatric Institute has found.

In men's dreams the victims tend to be strangers, while in women's dreams the victims are often familiar to the dreamer, Dr. Paolino told the meeting of the Midwestern Psychological Association at Chicago.

Men started the aggressive actions more often than women, who tended to be on the receiving end, he said. These sex differences showed up in the dreams of 42 college men and 42 college women.

Dr. Paolino was investigating the amount and kind of aggression that characterizes the dreams of normal men and women.

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BIOCHEMISTRY

New Method Produces Variants of Vitamin B-12

➤ NEW METHODS for converting vitamin B-12, one of the most potent drugs known, into the "natural" form with different and selectively even more powerful physiologic effects have been developed by research teams headed by Drs. E. Lester Smith of Glaxo Research Ltd., Greenford, England; H. P. C. Hogenkamp, Vancouver, Canada; W. Friedrich, Hamburg, Germany, and F. Wagner, Stuttgart, Germany.

Dr. Smith described the chemical techniques by which the vitamin may be converted to a coenzyme at the Conference on Vitamin B-12 Coenzymes, sponsored by the New York Academy of Sciences at New York.

Coenzymes act as regulators of specific reactions in the body. Although some vitamins are coenzymes, vitamin B-12 is not and must be converted by the body. Dr. Smith and other investigators also reported the production and clinical testing of a number of analogues of vitamin B-12, substances with different chemical structures, but with similar effects in the body.

The structure of vitamin B-12 is the most complicated of any known vitamin, and it is also unique in that it contains cobalt. The vitamin is synthesized by microorganisms and stored in the liver in the coenzyme form. It also occurs naturally outside the body in several closely related forms. It is essential in the diets of all higher animals, but is not present in the higher forms of plant life.

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CE FIELDS

CONSERVATION

Overcrowding Animals Keeps Population Down

► CROWDING more and more animals into one area keeps the population down.

When one type of animal "overloads" an area, there is not enough food, shelter or protective covering to go around. The animals who cannot find these "resources" must either die off or migrate to other areas.

Adding sterile animals to the population would make this "crash" method of control successful, Dr. J. Monro, biologist at the University of Sydney, New South Wales, Australia, reported. The main purpose of the increase would be to drive the fertile animals out of the area, eventually leaving only a sterile population.

In the earlier stages of this method, however, the sterile animals would cut back the population by checking reproduction. This technique has been used to control screw-worms in Texas.

Nature has used the proposed "crash" method of population control successfully. When the animals that prey on deer were killed, the deer in the area increased rapidly. They destroyed their own food supply, it was found. The population "crashed," and never returned to its previous level. Muskrat and bob-white quail populations were also cut back when their numbers increased and adequate protective covering could not be found.

The population crash method might not be practical to use on insects or other animals that would destroy human resources while ruining their own, Dr. Monro reported in *Science*, 140:496, 1963. However, the proposal is an alternative to killing as a method of population control.

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OPHTHALMOLOGY

California Doctor Spreads Eye Infection

► AN EYE DOCTOR who spread the disease by his hands was the cause of an epidemic of eye infection in Southern California.

Six weeks after the beginning of the epidemic, which affected 26, including the ophthalmologist, six of the patients and the doctor were examined at the University of California Medical Center in San Francisco. All had keratoconjunctivitis, an inflammation of the mucous membrane, or conjunctiva, at the border of the cornea.

In what is believed the first report of a community-wide outbreak of its kind studied in the Western world, a group of scientists reported in Boston that virus Type 8 was involved.

The epidemic occurred in conjunction with a seasonal epidemic of "pink eye,"

which affects young children in the irrigated California desert area during the five hottest months, May to October.

The researchers, reporting in the *New England Journal of Medicine*, 268:1031, 1034, 1963, said the outbreak would have gone unnoticed if there had not been a significant spread from children with mild illness to adults in the community. Blood samples taken from teachers and children showed a relationship to adenovirus Type 8, although originally the cases were all thought to be part of the usual seasonal "pink eye" epidemic.

Relatively little infectious adenovirus Type 8 is produced in the eye, but this virus has been found in the nose and throat, so that droplet infection sometimes can play a part in transmitting it.

Dr. Richard Darrell, now of Columbia-Presbyterian Medical Center, New York, was epidemic intelligence service officer of the Communicable Disease Center at the time of this study, and assisted with it. Others participating were Drs. Chandler Dawson and Ernest Jawetz, with Lavelle Hanna, all of the University of California Medical Center, San Francisco.

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PUBLIC SAFETY

New Industrial Hazard In Cathode-Ray Machines

► A NEW INDUSTRIAL hazard is foreseen as atomic accelerator machines are used more widely.

Dr. James Barrett Brown of Washington University, St. Louis, Mo., who is a consultant in reconstructive surgery for the Government installation at Los Alamos, N. Mex., said in Brooklyn, N. Y., that injuries from cathode-ray accelerators so far have been in research workers. They are expected to spread into industry as the machines are used for food preservation and in other ways.

The injuries are insidious, he said, because they may not be recognized for four weeks or more. There is a possibility, as in all radiation injury, of late breakdown of tissue. Careful follow-up is needed.

Treatment is possible by surgery and plastic reconstruction. The injuries are from a particular beam of electrons but the mechanism of their action is not fully understood.

Dr. Brown said 40 damaged fingers of researchers had been saved after purely atomic burns. Surgery and grafting were successful enough that the researchers could resume normal activity.

"If an atomic burn is small enough that early death does not result," Dr. Brown said, "then recovery is possible."

The popular idea of widespread radiation burns in Japan, he explained, is misleading because the fire of the explosion caused thermal, or heat, burns. Such widespread pure atomic burns would have been fatal.

Cancer formation can be demonstrated microscopically as tissue changes progress in some patients with radiation injury, Dr. Brown said. He spoke at the State University of New York, Downstate Medical Center, Brooklyn.

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BIOCHEMISTRY

Low-Calorie Diet Reduces Only Fat, Not Lean

► YOUR LEAN WEIGHT stays the same on a low-calorie diet. It is the excess body fat that is lost, a study of 51 obese persons showed.

The 35 males and 16 females, ranging in age from 14 to 61, were given a nutritionally complete diet of 900 calories a day for eight weeks.

In addition, calorie-free liquids and low-calorie, bulk-containing foods were given as required on an individual basis. Loss of weight ranged from 12 to 36 pounds during the two-month period, three Purdue University scientists reported in *Science*, 140:490, 1963.

The researchers determined the body weight, total body potassium, lean body weight and body fat of each person before starting the low-calorie diet. Checking was repeated at weekly intervals and at the end of the experiment.

The potassium-40 content was determined with a large liquid radioactivity counter, and total body potassium, lean body weight and body fat were then calculated.

Drs. John E. Christian, Loyal W. Combs and Wayne V. Kessler of Purdue University, Lafayette, Ind., reported the findings, pointing out errors in previous studies by others, in which lean weight was reported lost.

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PSYCHIATRY

Electric Stimulation Of Brain Pleasant

► ELECTRICAL STIMULATION of the brain may be as pleasant for human beings as it is for rats.

Of their own accord, rats will press a lever to stimulate various brain regions with electrical charges. Humans will do the same, a team of Tulane University School of Medicine physicians has found.

Several areas of the human brain respond favorably to brief electrical stimulation, tests on a 35-year-old male have shown.

The man—a chronic schizophrenic, hospitalized without improvement for the past nine years—pressed levers and buttons to maintain a pleasant level of electrical brain stimulation.

The patient continually pressed the switch that would give him a low, "rewarding" level of stimulation rather than a higher, unpleasant or "aversive" level, the investigators reported. He also had a tendency to keep pushing a lever that would give him no stimulation whatsoever, they said, and often he had to be told to stop.

Intracranial self-stimulation, as the self-shock system is called, is expected to aid study and treatment of human behavior disorders. Some therapeutic benefits have already been shown, Drs. M. P. Bishop, S. Thomas Elder and Robert G. Heath reported in *Science*, 140:394, 1963.

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