

SURGERY

Danger from Plastics

Study on rats shows that use of plastic sheeting in their bodies produces cancer two years later in 45% of cases. Delay would be 15 years in humans.

► **FRESH WARNING** that imbedding plastics in the body may lead to cancer years later appears in studies by Dr. B. S. Oppenheimer, Mrs. Enid T. Oppenheimer and Drs. Arthur Purdy Stout and I. Danishefsky of the Institute of Cancer Research at Columbia University College of Physicians and Surgeons in New York.

So far, they state, no proven instance has been reported of cancer developing in humans after the use of plastics in surgery. But they have had as high as 45.4% of rats develop cancer after plastics were imbedded in their bodies.

In the rats and mice it took from one to two years for the cancers to appear. But if it takes this long for a cancer to appear in a rodent, it may take 10 to 15 years for a similar result in a human being.

The Columbia scientists first warned of this possible cancer danger several years ago, as reported by *SCIENCE SERVICE* in 1949. They had been wrapping one kidney of rats with cellophane to produce high blood pressure for studies of that condition. When they examined the bodies of these rats about two years later, they found cancers around the wrapped kidneys of seven of them.

At that time, surgeons were beginning to use cellophane and polyethylene plastic films experimentally to replace the membrane covering the brain, for tendon trans-

plantations, to connect cut nerves and in operations on arteries and plastic operations on joints. Since then these and newer plastic materials have been used increasingly on humans.

The Columbia scientists report in the journal *Science* (Sept. 11) that in their experiments with plastics imbedded in the bodies of rats and mice, cancers have been produced adjacent to or actually surrounding films of the following plastics: commercial cellophane film (regenerated cellulose), the same cellophane after intensive extraction by methyl alcohol, the same cellophane treated first with alcohol and then with benzene, two polyethylene films, including a pure one prepared especially for their experiments, polyvinyl chloride film, silastic, a silicone product, Teflon film, Dacron film, polystyrene film, and nylon film.

Science News Letter, September 26, 1953

BIOLOGY

Virus Broken in Pieces Loses Infectivity

► **TOBACCO MOSAIC** virus broken into sub-units no longer infects, Paul Kaesberg, M. A. Stahmann and R. V. Rice of the University of Wisconsin reported to the American Institute of Biological Sciences at Madison, Wis.

They sprayed water solutions of the virus onto collodion-covered electron microscope mounts which were held at the temperature of liquid air or 313 degrees below zero Fahrenheit. Then removing the water while the mounts were cold and under a high vacuum, they found that some of the particles were broken into an average of eight sub-units.

Almost all viruses are so small that they are not visible under ordinary microscopes, but by using the electron microscope viruses can be studied and photographed. Tobacco mosaic virus has been found to be about 12 one-hundred-thousandths of an inch long.

Solutions of the broken virus showed no increase in infectivity when tested on tobacco plants as compared to solutions of the unbroken virus. This indicates that only the intact particle causes the disease.

The three Wisconsin scientists also reported that the nucleic acid part of the virus seems to be released from the virus particle by the treatment. They postulated that the nucleic acid may have been in the center of the rod-shaped particle with the protein part forming a protective sheath. When the particles are broken with this new method, the nucleic acid may escape.

It is important to learn where the nucleic acids are located in the virus particle for they seem to constitute the part that enters the cell and causes the wild destructive growth characteristic of virus diseases. Nucleic acids are a fundamental part of all cells. All viruses have nucleic acids, but only recently have scientists been able to discover something about their position in the virus particle.

Science News Letter, September 26, 1953

PSYCHOLOGY

Seniority Rules in Dairy Herd Society

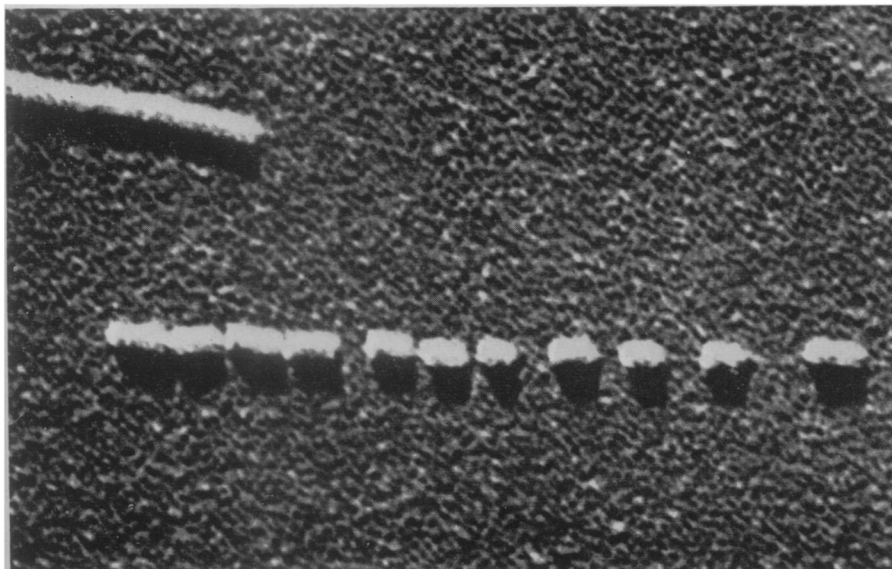
► **SENIORITY RULES** the dairy herd. The social order among cows is that the animal that has been there longest is most feared and respected.

From watching a herd of 163 cows and heifers, M. W. Schein of the Louisiana Agriculture Experiment Station reported to the American Institute of Biological Sciences meeting in Madison, Wis., that in the bovine caste system the top cow is the senior animal in the herd.

Even when two older and heavier cows were put in pasture with 14 of the test herd, the strange cows did not take over the top rank, indicating that seniority, not age and weight, determines top cow.

Chickens have rank in their society based on what bird dares to peck what birds. A. M. Guhl of the Kansas City College experiment station reported these social rules are set when the chicks are nine weeks old. One hen in a flock pecks all others and at the bottom of poultry society is a hen pecked by all others.

Science News Letter, September 26, 1953



NOT DANGEROUS—A virus which has been broken up like this one has lost its power to infect. This is a broken tobacco virus, not visible under an ordinary microscope, as photographed under the electron microscope.