

MEDICINE

Lurking Cancer Virus

New light has been shed on a possible link between viruses and human cancer from studies made on cancer-causing viruses in poultry.

► **THE WAY** a cancer virus spreads stealthily and lurks almost harmlessly in a living population has been revealed from long-term studies at the University of California, Berkeley.

Although the virus in this case is located only in chickens, the findings may help clear away some of the mystery that still surrounds the unproved links between viruses and human cancers.

The virus is known as RIF for "Resistance Inducing Factor."

It is one of a widespread family of viral agents that cause leukemia and other malignancies in commercial poultry flocks.

Its unique behavior marks it as radically different from the viruses of most infectious diseases.

Highly important is the fact that the virus can be "accepted" as though it were part of the body's own tissues—a process known as tolerant infection.

Other major points of evidence seen clearly for the first time in the California studies:

1. The cancer virus can be transmitted

congenitally from mother to offspring—but not from father to offspring.

2. Chickens that are congenitally infected (that is, infected through the egg) produce viruses in nearly every cell of their bodies. They continue to produce viruses in tremendous quantity throughout their lives. And they "accept" the viruses through the tolerant infection process.

3. Chickens that are not born with the virus soon pick it up by contact. They do not "accept" the virus. Instead, they develop antibodies in their blood to drive the virus out in the same way that immunized humans are protected against many contagious diseases.

4. Only a small portion of the infected chickens actually develop the internal tumors characteristic of chicken leukemia, or "visceral lymphomatosis" as this form of the disease is known. But the congenitally infected chickens lead in tumor development by a ratio of five to one over their contact-infected roost mates.

Responsible for the discoveries are Dr. Harry Rubin, professor of virology, and lab-

oratory assistants Lois Fanshier and Ardra Cornelius—all of the U.C. Virus Laboratory in Berkeley—and Walter F. Hughes of Kimber Farms in Niles, Calif.

A flock of white Leghorn chickens especially bred by Kimber for high incidence of tumors provided the subjects and experimental environment for recent phases of the study, which is supported by grants from the National Institutes of Health and the American Cancer Society.

Key to the later discoveries was a simple test developed two years ago by Dr. Rubin to show the presence of the RIF virus in laboratory cell cultures.

The possibility that an inherited virus can produce a tolerant infection was demonstrated conclusively in the recent experiments with the Kimber flock, the California scientists reported.

The tolerant infection process is a form of "immunological tolerance," which is based on the fact that an unborn fetus or embryo can learn to "accept" or "recognize" certain chemical and cellular materials that would be foreign to it in later life.

In the case of the RIF virus, the researchers believe the infected hens produce viruses in their ovaries and pass them directly into the developing embryos, where they become virtually a normal part of the cellular tissues.

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PUBLIC HEALTH

Vaccine Development Contracts Awarded

► **THE FEDERAL** Government's campaign against the "common cold" gained momentum with the announcement that four new vaccine development contracts have been awarded.

Making a total of five, two of the new contracts were for development of new vaccines while the other two went to medical centers for clinical evaluation of prototype vaccines. The first contract of the Vaccine Development Program of the Public Health Service was announced last April.

Scientists have warned that it may be a number of years before effective vaccines can be available to physicians. Respiratory diseases, all lumped under the term "common cold," are caused by at least 20 viruses, most of which would have to be knocked by any cold vaccine.

Respiratory illness causes more time lost in the United States than any other disease, with an economic loss of about \$5 billion each year.

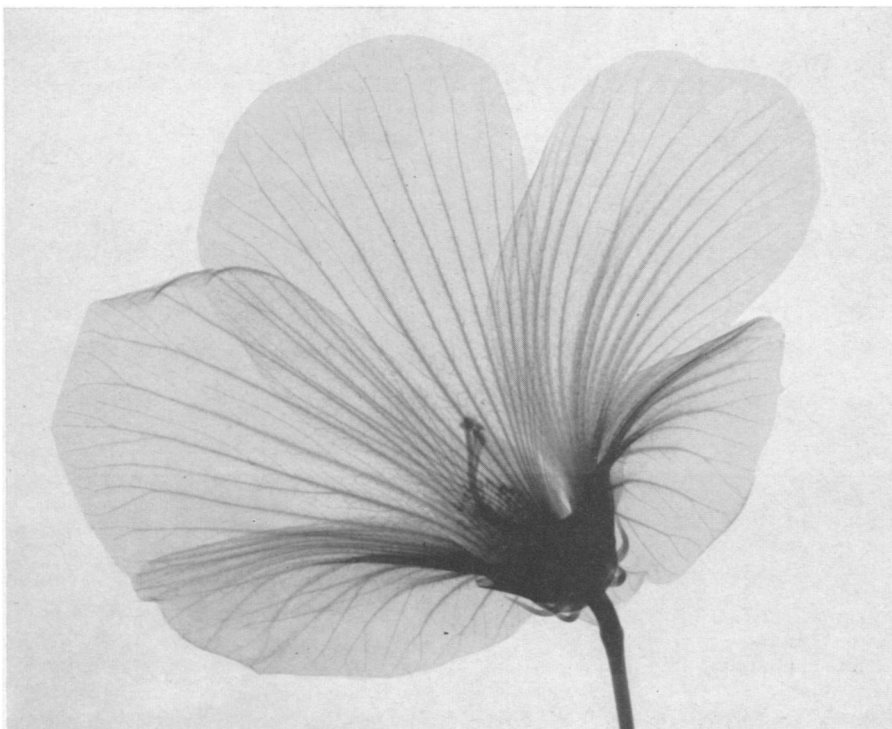
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ENTOMOLOGY

Mix Poison in Concrete To Banish Termites

► **TERMITES** may be banished from new homes by adding a dash of insecticide to the batch of concrete used in the home's foundation. Tests made in Madison by University of Wisconsin entomologists show that the insecticide dieldrin poisons insects that crawl over the concrete. The termites absorb the poison through their feet.

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FLOWER SECRETS—The intricate detail of the Rose of Sharon is shown in this X-ray photograph by Prof. Albert G. Richards, X-ray specialist at University of Michigan School of Dentistry. Prof. Richards has developed a method of probing the most delicate internal structures of flowers with low-energy X-rays. His technique reveals depth and detail in flowers, showing them as they might appear if made of clear plastic.