

## VIROLOGY

**New Method Permits Faster Flu Diagnosis**

► A FASTER WAY of identifying the influenza virus that will figure in the current Asian flu situation is reported by John Vogel and Dr. Alexis Shelokov, National Institutes of Health, Bethesda, Md., in *Science* (Aug. 23).

Present laboratory methods usually take approximately six days for positive identification, but the new technique can reduce the time to only two days. Because of this, suspected cases of the new flu sweeping the country can now be confirmed more rapidly than before.

Material from throat washings of these suspected cases is added to a thin sheet of monkey kidney cells and the virus is allowed to parasitize the cells. Then, red blood cells taken from guinea pigs are added to the culture and if they clump together it indicates that an agglutinating virus is present.

The final step is to find out exactly what strain of virus is involved and this is done with the use of an antiserum.

An antiserum will cause the culture material to agglutinate or clump when the culture contains the same virus as that used to make the antiserum.

The test has been proved as reliable and much quicker than the older one which required the use of embryonated chicken eggs.

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## PHYSIOLOGY

**Frozen Animals Brought To Life by New Method**

► A "REWARMING" technique that may speed the day when a living human can be safely frozen for weeks at a time has now been found successful in animals.

The rewarming method was used on laboratory rats that had been kept at near freezing temperatures for as long as one hour after their heart beats and breathing had stopped.

It is reported by Dr. John Hunter, Defence Research Medical Laboratories, Toronto, Canada, in the *Canadian Journal of Biochemistry and Physiology* (Aug.).

The essential parts of the method are to have the animals breathe a high concentration of carbon dioxide gas while they are being cooled and then to revive them with artificial respiration or ventilation, using a high concentration of oxygen.

Unless forced breathing is maintained during the initial stages of warming, normal respiration will not return, Dr. Hunter reports.

Until recently, it was thought that cooling mammals this much would be fatal. Since 1951, other scientists have been able to reanimate rats cooled to near freezing, but they believed it was imperative to re-warm the chest wall first.

In this way, it was thought that the metabolism of the rest of the body would be kept low until a functioning heart could re-establish blood flow.

With artificial ventilation, however, the chest rewarming is unnecessary.

As the body temperature approaches freezing, breathing slows down and stops. Then the regular beating of the heart is lost, although there are still occasional beats every minute or so. Finally, the heart stops completely.

With rewarming and artificial ventilation, heart rhythm returns in six to ten minutes followed by regular breathing in another 20 minutes or so.

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## PSYCHIATRY

**Untreated Mentally Ill Far Outnumber Patients**

► THE MENTALLY ill in New York City who are not receiving any treatment far outnumber those being treated, Drs. Leo Srole and Thomas S. Langner of Cornell University Medical Center reported to the meeting of the American Sociological Society in Washington, D. C.

This was found in a survey of one residential section of Manhattan which the doctors call "Midtown." Midtown has a population of 175,000. The investigators first made a census of patients, counting all those receiving treatment privately or in psychiatric clinics or mental hospitals. This rate of patients under treatment has been assumed by physicians and the public to indicate the number of persons who are mentally ill.

But then they went on to interview a probability sample of 1,660 persons between 20 and 59 years of age. Two psychiatrists made an evaluation of the mental health of these persons.

The number of untreated mentally disturbed, they found, far outnumber those getting psychiatric care.

The number of patients, the Cornell doctors conclude, bears no regular, nor even approximate relationship to the prevalence of mental disturbance.

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## RADIO ASTRONOMY

**Jupiter's Broadcasts Show Planet's Ionosphere**

► THE RADIO NOISE broadcast by the planet Jupiter shows the planet has an earth-like ionosphere, three scientists have reported.

By tuning in on the radio waves from Jupiter at 18 megacycles, compared to the kilocycle range of standard broadcast bands, they found the sources on Jupiter are localized and not planet-wide. This discovery tends to support the theory the broadcasts result from electrical storms in Jupiter's atmosphere resembling lightning on earth.

From studies of the radio signals, they conclude that the electron density in Jupiter's atmosphere was about one million every cubic centimeter, which is about the same as for earth.

The studies are reported in *Nature* (Aug. 24) by Drs. C. H. Barrow, T. D. Carr and A. G. Smith of the University of Florida.

Science News Letter, September 7, 1957



## BIOLOGY

**Amino Acid Increases Tumors in Fruit Flies**

► THE PROPORTION of the amino acid tryptophane in the diet of fruit flies has a direct bearing on the number of inherited tumors they develop.

This has been demonstrated in research by Herbert Stein and Dr. Taylor Hinton, University of California at Los Angeles zoologists.

Fruit flies were raised on a chemically-defined medium so that their diet could be rigidly controlled. It was found that practically no tumors developed with the smallest amount of tryptophane in the diet that would support life.

As the amount of tryptophane was increased, the number of individual flies showing tumors increased in a linear manner until nearly 100% showed tumors.

The UCLA investigators had previously established that the fruit fly could not synthesize tryptophane but must obtain it from food. They said that the tumor-inducing agent is probably an immediate by-product of the amino acid.

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## WILDLIFE

**U. S. Rules Out Electronic Bird Calls for Hunting**

► ELECTRONICS has been banned from the duck hunter's paraphernalia beginning with the 1957-58 season, the U. S. Department of the Interior has announced.

The "deadly effectiveness" of electronic bird calls or sounds, which pose the potential threat of excessive kills, thus seriously depleting the numbers of migratory game birds, is given as the reason for the ban. Recordings and amplifications of goose or duck calls produced by conventional calling devices may not be used.

Canadian hunting laws also prohibit using these devices.

The penalty for their use in the United States is set, as a maximum, at six months in jail or a \$500 fine, or both.

At the same time, the Department cautioned hunters that new limits have been set on the number of ducks and geese that can be taken by American hunters and shipped from the Canadian provinces of Alberta, British Columbia, Manitoba and Saskatchewan. Twenty-five ducks and ten geese is the season's limit for importing to this country. From the rest of Canada the hunter's bag will be limited to 16 ducks and ten geese per calendar week when he wants to bring the birds into this country.

Americans planning to hunt migratory game birds in Canada or in the United States are urged to familiarize themselves with the new regulations.

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# CE FIELDS

## MEDICINE

### College Students Show No Diphtheria Immunity

► A ROUTINE diphtheria "shot" is needed by many students entering college, Dr. Ruth E. Boynton, Dr. Donald W. Cowan and Paul Rupprecht, University of Minnesota Health Service, Minneapolis, report in the *Journal of the American Medical Association* (Aug. 24).

A survey of new students entering the University in one year disclosed that nearly half of them had no immunity against the dangerous disease. This was in spite of the fact that the state of Minnesota has had a long-time program of diphtheria immunization.

These findings substantiate other studies that have shown adults to have a high degree of susceptibility to diphtheria.

Susceptibility was tested with the standard Schick test and over 47% of the students gave a positive reaction to it. A positive reaction means that the body has too little or no immunity.

Those more than 20 years old were more susceptible than younger persons, and of those between 20 and 24 years of age, the men were more susceptible than the women.

All of the students who were Schick positive were immunized against the disease. In the past, the possibility of severe reactions has always been a deterrent to inoculating adults but the student group responded well.

Many of them got mild reactions to the shot but they were not severe enough to rule out the routine use of the inoculations, the authors conclude.

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## MEDICINE

### Amnesia Victims Usually Get Memory Back Easily

► SUDDEN LOSS of memory, or amnesia, is a temporary condition that usually disappears without treatment in a few days, Drs. Alexander Kennedy, University of Edinburgh, and Joseph Neville, King's College, Newcastle upon Tyne, report in the *British Medical Journal* (Aug. 24).

A study of 74 cases of amnesia that turned up at either hospitals or police stations showed that simple psychotherapy, such as suggestion, directed discussion, or quick hypnosis could bring the patient's memory back rapidly.

Amnesia victims are surprisingly easy to hypnotize and can then be made to relive incidents in their past, while supplying a running commentary about them. The subjects are brought out of the hypnosis while talking about themselves and realize that their memory has returned.

Amnesia patients seem to be flying a distress signal and throwing themselves on

the mercy of the community or of the hospital to which they came, the doctors believe.

The patients unconsciously hope that someone will apply the patience and imagination to their problems that they themselves do not possess.

But their cooperation is often difficult to obtain, the physicians explained. They were relieved of their problems by the "magic" of memory loss and prefer to remain dependent on the "magician" rather than resume the responsibility for their own lives.

Amnesia is caused by both organic brain disturbances and emotional upsets. Sometimes both conditions were found in one patient and it was difficult to tell which actually caused the memory loss.

Psychological causes of memory loss are frequently situations relating to marriage, bigamy, debt, or other financial troubles where there is an element of fear or conflict. Rather than face the situation, the patient just blots it out of his mind by forgetting it completely.

This type of amnesia rarely lasts longer than a few hours or days and may or may not include the loss of identity.

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## AGRICULTURE

### British Experiment With Farming After an H-Bomb

► A FARM near Newbury, England, not far from the Harwell Atomic Research Station, is looking as though it is being cultivated by creatures from outer space. The whole farm has been sealed off by a chain-link fence and the farm hands go about their jobs dressed in spacemen suits of plastic and carrying respirators.

The farm land itself has been made radioactive to simulate contamination from an H-bomb explosion. Experiments are being carried out to determine how soon it would be safe to eat produce from a contaminated field, whether special methods of cultivation would bring the affected fields into use more quickly and how much radioactive dust finds its way out of the soil into crops.

Even the tractors and agricultural implements have been fitted with plastic jackets, so that every trace of radioactivity can be removed from them.

Because strontium-90, the most dangerous part of H-bomb fallout, would contaminate the land for years, the researchers, headed by Dr. R. Scott-Russell, are using strontium-89, which is almost equally as radioactive but has a half-life of only 54 days.

With the strontium-89 it is possible to make the necessary experiments and measurements directly, but the amount of simulated fallout so far revealed has been so small that extremely sensitive and elaborate equipment has been needed for the experiments.

The first results of the tests show that there is little hope of bringing contaminated land back into use more quickly by changing the pattern or method of cultivation. On the other hand, some considerable speed-up could be achieved by selecting crops which do not pick up so much radioactivity and sowing them in contaminated areas.

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## ASTRONOMY

### Hydrogen Halo Surrounds Galaxy

► A TWIN GALAXY of the Milky Way in which the earth and sun are located, a heavenly object known as M-33, is surrounded by a huge halo of hydrogen gas.

This discovery, made with the 60-foot radio telescope of Harvard College Observatory, is reported in the *Publications of the Astronomical Society of the Pacific* (Aug.) by Dr. Nannielou H. Dieter. She says the hydrogen extends "far beyond" the spiral structure visible on available photographs.

The hydrogen halo was detected by tuning in on the radio waves broadcast at a wavelength of 21 centimeters, or 8.4 inches. The radio signals come from neutral hydrogen atoms in the far-away galaxy.

M-33 is one of the galaxies near the Milky Way and is often used to illustrate how the Milky Way might look to a very distant observer. Just as the Milky Way does, it has thousands of millions of stars. The mass of the entire system, including the hydrogen halo, is ten billion times that of the sun, Dr. Dieter has calculated.

The 21-centimeter radio waves broadcast by hydrogen atoms in interstellar space were first discovered almost simultaneously in the United States, Australia and the Netherlands in 1951. Their existence was predicted by astronomer Dr. H. C. van de Hulst of Leyden Observatory, The Netherlands, in 1944.

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## VIROLOGY

### Healthy Chicken Tissue Has Cancer-Causing Virus

► THE VIRUS-LIKE particles thought to cause a specific type of cancer in chickens, Rous sarcoma, have been found to exist even in normal young chickens.

This is reported by Drs. Ch. Oberling, W. Bernhard and Ph. Vigier, Gustave Roussy Institute for Cancer Research, Villejuif, Seine, France, in *Nature* (Aug. 24).

The particles were closely examined under an electron microscope and found to have two distinct outer membranes surrounding a dense central core, a fact the scientists believe to be quite important. Although this might appear to be a minor detail at first, it shows a similarity with certain evolutionary stages of other known viruses, they report.

One such virus, named the Bittner virus, has its outer viral membrane formed by a very small portion of the membrane of the cell from which it originates.

A similar occurrence may explain the data showing Rous sarcoma virus to have two antigens, one against its host cell. This host antigen may be contained in the outside viral membrane.

Why the double-membraned virus exists in normal tissue is not understood.

The authors believe all chicken tissue may have a substance within it that can become cancer-producing under the right conditions and the virus supplies these conditions.

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