

MEDICINE

# Radio-Active "Cocktails" May Cure Dread Leukemia

## Salt in Drink of Water Reaches Finger-Tips in Twenty Minutes, Tracing of "Tagged" Atoms Demonstrates

"COCKTAILS" of radio-active sodium phosphate may be medicine's life-saving weapon of the future against leukemia. Eight patients suffering from this always fatal, cancer-like disease of the white cells of the blood are being given this treatment now at the University of California School of Medicine, Prof. Ernest O. Lawrence told members of the American College of Physicians meeting in New Orleans.

It is much too soon, Prof. Lawrence emphasized, to be sure whether the results of this new treatment will be lasting and the patients permanently cured. So far, however, the patients are doing well. They may have to take their daily drinks of radio-active sodium phosphate in water for the rest of their lives, as diabetics take insulin. At present the new treatment keeps them well, as X-ray treatments do. Leukemic patients become immune to X-ray treatments after a time, however, and are no longer helped by them. Prof. Lawrence and his brother, Dr. John Lawrence, who is in charge of the medical work, hope that the radio-active material will continue to prove effective.

The sodium phosphate is made radio-active in the giant atom-smashing cyclotron which Prof. Lawrence developed as a tool for physical studies of atoms.

The cyclotron is also being tried as a weapon against cancer. Patients with advanced cancers have been getting weekly treatments since September with powerful neutron rays from the cyclotron. These rays are more powerful than X-rays and have a different effect on tissues. As with the leukemia patients, it is much too soon to know how lasting the results of the treatments will be in the cancer cases. The tumors have regressed and the physicians are very encouraged but it will be years before they will know whether the patients have been cured.

White mice that had been given the radio-active sodium phosphate "cocktails" showed their radio-active personalities to the physicians here by making a Geiger counter click when Prof. Law-

rence brought this instrument near their bodies. The Geiger counter is used to detect radio-activity of either natural radium or artificial radio-active substances. Cut flowers in a vase containing radio-active sodium phosphate in the water produced the same clicking on the Geiger counter.

This instrument, Prof. Lawrence predicted, will be installed in every medical laboratory in the future. Doctors will use it to detect tagged atoms of phosphorus, common salt, iron and iodine in patients' bodies. The tagged atoms of radio-active materials will have previously been injected or given in a glass of water. The Geiger counter will show whether the substance spread through the body normally or not and thus will aid in diagnosis of diseases due to faulty assimilation or utilization of necessary chemicals such as iron, iodine, salt and the like.

A drink of radio-active salt water shows in the finger tips in about twenty minutes, Prof. Lawrence explained. This is the time it takes the radio-active salt to reach the finger tips via the blood. The method is already being used to test the rate of blood circulation in patients with heart ailments.

The tagged atom procedure made possible by the cyclotron constitutes as important an advance for biology and medicine, Prof. Lawrence said, as the microscope.

## New Test for Pellagra

A FURTHER step toward eradication of pellagra, Dixie's hard-times disease, appears possible in the light of a report by Dr. Tom Douglas Spies, of the University of Cincinnati and the Hillman Hospital, Birmingham.

New knowledge of how nicotinic acid cures pellagra by its effect on the body's chemistry was also reported by Dr. Spies. The chemical achieves its curative effect, at least in part, Dr. Spies has discovered, through its effect on one of the body's enzymes or ferments, codehydrogenase.

As an advance toward conquest of pellagra, it is now possible to detect the disease long before the rash and sore tongue appear and to prevent these and other more serious symptoms of the ailment, such as the mental delusions. Physicians should suspect pellagra, Dr. Spies advises, in patients who for a long time have had "vague, grumbling complaints" without apparent cause, loss of weight, strength and appetite, and indigestion. Cross, fretful children who for years have been below normal in weight and height and whose school progress has been slow should also be suspected of being in the early stages of pellagra. Investigation of the patient's diet and certain chemical tests of blood and other body fluids will clinch the diagnosis. Treatment with nicotinic acid in this early stage of the disease will quickly bring such patients back to good health.

Studying the diets of 50 pellagra patients, Dr. Spies and associates found that in almost every case the patient had not been getting enough calories, proteins, lime salts, iron and vitamins. In other words, they had not been getting enough meat, milk, eggs and fresh fruits and vegetables.

People living on such diets get not only pellagra but other ailments, such as the nerve disorder, beriberi. Nicotinic acid will cure the pellagra but to cure the other conditions certain other chemicals, the new synthetic vitamin B and flavin, are needed. Since both these and nicotinic acid can be obtained from food, Dr. Spies and other nutrition authorities urge the importance of a good diet for pellagra prevention. While the ailment is most common in poverty-stricken people, it also occurs in persons who follow an inadequate diet because of illness, chronic alcoholism or addiction to diet fads.

For his application of nicotinic acid to the cure of pellagra, Dr. Spies was presented with the John Phillips Memorial award of the American College of Physicians.

## Shock Changes Brain Waves

BRAIN WAVES and the blood of mentally sick persons show definite changes during insulin shock treatment for their mental disorder, Dr. S. Katzenbogen of St. Elizabeth's Hospital, government institution for mental patients, reported.

Out of a group of 140 patients given the treatment for usually hopeless schizophrenia, the mental disorder in which

the patient lives in a dream world more or less oblivious to reality, 35 were free of all symptoms after treatment.

Doctors do not like to use the word "cure" but the layman would call these patients cured. Another 25 patients were improved. The other 79 showed no change after the treatment.

Used with considerable success in treating mentally sick people all over the world, the treatment has possibilities also, Dr. Katzenelbogen said, of adding to scientific knowledge of energy interchanges in the body and specifically of the body's utilization of sugar and of the role of insulin. For this reason, Dr. Katzenelbogen and associates, Drs. Alexander Simon, Anna R. Coyne, Charles E. Vigue and Robert Cohn, investigated the blood and brain wave patterns of the patients undergoing treatment.

## 'Flu Vaccine May Come

**A** VACCINE for protection against influenza and solution of the problems of virus-caused diseases such as infantile paralysis may be achieved by a new scientific approach described by Prof. Ernest W. Goodpasture, of Vanderbilt University School of Medicine, Nashville, Tenn.

This approach or technic, using chick membranes to grow viruses, may prove as valuable for the conquest of virus-caused diseases, though in a different way, as the new chemical, sulfanilamide, has proved for conquest of bacteria-caused diseases like streptococcus infections.

The anti-influenza vaccine particularly seems very close at hand. The virus of epidemic influenza, when cultivated on successive chick membranes, lost its disease-producing power to such an extent that it did not cause sickness when dropped into the nose. At the same time, it increased the level of the body's own flu-fighting forces in about one-half of those tested. Development of this weakened virus with good immunizing ability, which Prof. Goodpasture called "very promising for an eventual successful vaccine for human epidemic influenza," was achieved by Dr. F. M. Burnet and collaborators at the Hall Institute, Melbourne, Australia.

This and possible solution of other virus disease problems all hinge on the original discovery by Prof. Goodpasture and his associate, Dr. A. M. Woodruff, that the chorio-allantois of developing chicken eggs is an ideal substance on which to grow the virus that causes

fowl-pox. It has since been found that this same membrane of the developing chicken egg can be used for cultivating viruses of other diseases, including yellow fever and influenza, and for studying these viruses. Bits of human skin can also be successfully grafted onto the egg membrane and the grafts can be used to study virus infections.

Yellow fever vaccine, which has been used on over a million persons in South America, is now being produced from chick embryos.

Vaccine used to protect animals against the so-called horse sleeping sickness, which has spread to humans and killed several children last fall, is also being produced from virus grown on chick embryo membranes. If a vaccine is needed to protect humans from this animal plague, it may be produced in the same way.

Viruses such as cause these ailments and the more familiar infantile paralysis, unlike other disease germs, cannot be grown on chemicals outside the body. For this reason progress in the control of such diseases has lagged behind that in other diseases whose germs can be more easily cultivated and studied. Heretofore scientists have had to use laboratory animals and expensive monkeys in attempts to conquer the virus diseases. The chick membrane technic is far superior, Prof. Goodpasture believes, and should be more extensively used.

## Barrier Against Germs

**T**HE BODY'S Maginot Line against invading pneumonia germs, which bars their passage from lungs to blood, may have been located as a result of research reported by Dr. O. H. Robertson of the University of Chicago.

In the depression of the lung known as the hilum are lymph nodes which Dr. Robertson believes "may constitute the principal barrier to the passage of pneumococci from the infected lung into the blood."

The blood has certain natural pneumonia-germ-killing powers. Studying this during the course of pneumonia in dogs, Dr. Robertson found that usually so long as the blood could kill the germs, none could be found in the blood and the animal recovered. In numerous cases, however, the germs were found in the blood even when the blood had marked germ-killing ability. Given sufficient time, however, such blood, in test-tube experiments, was capable of destroying large numbers of pneumonia germs. Apparently the blood's (*Turn to page 221*)



### BOMBS FOR LIGHTING

*In each of these tiny glass capsules is a bit of metallic sodium, ready to be converted into gas that will give that easy-on-the-eyes golden glow to new lamps.*

ENGINEERING

## Explode Tiny Sodium Bombs To Produce Highway Lamps

**T**HE golden-hued sodium vapor lamps which are coming into use for highway lighting are produced by miniature "bomb" explosions, it is reported from the research laboratories of the General Electric Company.

The explosions are necessary to transfer the hazardous sodium metal, which burns when exposed to air, to the long glass tubes that become the source of the golden-colored light.

The sodium bombs are little capillary tubes filled with the proper amount of sodium. One sodium bomb is placed in the lamp tube and after the tube has been evacuated a high frequency coil is placed about the tube. The extremely short radio waves from this coil induce electrical currents in any metal in their path. The only metal is the sodium sealed in the thin-walled bombs. The induced current heats the sodium metal. Soon a sufficiently high temperature is obtained to make the metal burst its thin-walled container.

Thus the sodium is released into the outer tube and is ready to become part of the sodium vapor lamp. The tiny fragments of glass, at the most only six thousandths of an inch thick, are simply left inside as an undistinguishable dust.

*Science News Letter, April 8, 1939*

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ability to destroy the germs is not the only factor in keeping them out of the blood during the disease.

Searching further, Dr. Robertson found that in dogs with pneumonia but with no pneumonia germs in their blood, large numbers of these germs were often found in the lymph nodes. This and other findings suggested that the lymph nodes in the hilum of the lung act as chief barrier between lungs and blood.

## Remedy For Chronic Colitis

**P**ATIENTS suffering from a serious and chronic disease which in some ways resembles the fashionable ailment, colitis, have been helped by treatment with one of the new chemical remedies related to sulfanilamide, it was announced at a meeting of the American College of Surgeons.

This latest addition to the long list of diseases which are being conquered by sulfanilamide or its derivatives is chronic ulcerative colitis, an unpleasant ailment which, while not directly fatal, weakens the patient and makes him anemic due to loss of blood so that he is likely to die of some infection that a healthy person could throw off.

Neoprontosil, given by mouth, brought "favorable results" in 49 cases of this condition, Dr. A. E. Brown of the Mayo Clinic reported. Some of the patients were given serum or vaccines in addition to the chemical remedy, but 29 of them were helped by the chemical treatment alone.

"We do not feel that neoprontosil (oral) is a specific or a cure for chronic ulcerative colitis," Dr. Brown said in reporting the results obtained by himself and his colleagues, Drs. Wallace E. Herrell and J. Arnold Bargen.

They feel, however, that the results with this chemical and the fact that it does not produce symptoms of poisoning "amply justify its continued use in the treatment of chronic ulcerative colitis." They had previously tried both sulfanilamide itself and another of its derivatives as a remedy for this chronic sickness, but were obliged to abandon these because they produced toxic symptoms before the patient was well.

The sulfanilamide chemicals were first considered for use in treating this condition because of their effect in streptococcus infections and because a germ related to the streptococci might be the cause of chronic ulcerative colitis.

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### MEDICINE

# This Year's Epidemic Wasn't Real Influenza

## No Such Thing as "Intestinal 'Flu'", Doctor Declares; Similar Upsets Occur in Other Infectious Diseases

**T**ENS of thousands of people who were sick, presumably of influenza, in the epidemic which is only now tapering off, did not have true influenza at all, in the opinion of Dr. Thomas Francis, Jr., of New York University College of Medicine. Neither Dr. Francis nor other scientists with whom he has talked were able to detect the virus of true influenza from patients this season.

Not every patient in this year's epidemic, of course, was given the two tests which Dr. Francis described for detecting influenza, but the evidence from those who were tested shows that the epidemic was not influenza but some other infection of the nose and throat which caused coughs, laryngitis and other symptoms.

The tests Dr. Francis described depend on the fact that in true influenza on the fourth day the patient is sick his blood develops a large amount of flu-germ-fighting substances called antibodies. This increase in antibodies can be detected even when the influenza virus cannot be obtained from the throats of the patients, but the increase does not occur unless the patient has been attacked by influenza virus.

There is no such thing as "intestinal flu," Dr. Francis declared. Patients with influenza may have an intestinal upset, he explained, but so do patients with scarlet fever and other infectious diseases.

True influenza starts suddenly, often with chills, and constitutional symptoms and headache predominate, and

the course of the disease is usually short. These symptoms should help doctors distinguish it from other infections. Laryngitis with hoarse voice and exudate are not present in influenza.

Epidemic influenza, Dr. Francis declared, is not related to the common cold in any stage of the illness.

## Influenza on Wane

**I**NFLUENZA (that is, what is being called influenza this season) is on the wane, and favorable conditions prevail throughout the United States so far as communicable diseases are concerned. This is the verdict of the U. S. Public Health Service, based on recently compiled health figures.

That the influenza season has passed its peak is inferred from a continued drop. For the week ending March 25, new cases numbered 14,809, with a few states not heard from. The largest number were reported by Alabama, Texas, Virginia, South Carolina and Arkansas.

New cases of infantile paralysis are near a low ebb. The week of March 18, with only nine new cases, made a low record not equalled since April, 1935. Thirteen cases were reported the week of March 25.

Smallpox has been running a score of 300 or more new cases weekly since the first of the year, but dropped to 248 cases the past week. Although the form is non-virulent, health officials warn that it might take a more serious turn.

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