

## MEDICINE

# Smog Kills Flu Virus

SOMEBODY has something good to say about smog, for a change.

The good word comes from two scientists who live in Los Angeles, considered by many to be the most smog-smitten city in the U.S.

They found that smog affects influenza viruses in such a way that they are unable to infect. Here is what Drs. Robert D. Boche and James J. Quilligan of the College of Medical Evangelists did:

They exposed black mice to high concentrations of synthetic smog for two months. These mice were then more resistant to influenza virus infection than their corresponding controls if, after virus inoculation, they were again allowed to reside in smog.

This led the researchers to the conclusion that smog destroys the virus in the infected animals. To test this explanation, they bubbled various quantities of smog-like gases through suspensions of viruses. Repeated studies showed that the synthetic smog destroyed the ability of the virus to infect, the scientists reported to the meeting of the Federation of American Societies for Experimental Biology in Chicago.

Another group of mice, located in a spot in the U.S. that is diagonally opposite Los Angeles, have produced evidence that humans may someday be able to supply each other with blood-building tissue as easily as a blood transfusion.

Dr. Elizabeth S. Russell of the Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Maine, showed this could be done with anemic mice. She transplanted bone marrow from normal mice to their anemic "cousins." She found that the blood picture of the anemic mice improved immediately and soon became normal.

In addition, skin grafts later transplanted from the normal mice to their formerly anemic cousins were permanently accepted.

Normally, when no bone marrow had been transferred to the anemic mice, the skin grafts would, within 30 to 60 days, be rejected by the mice.

Such skin grafts have remained on the formerly anemic mice for more than 250 days, she reported. However, this success only occurs after blood-forming tissue has been transplanted to these mice.

This suggests that these mice are very much alike except for a slight incompatibility of tissue. She further believes that this might be true in humans. By matching gene-types, it might be possible to induce this type of tolerance in humans. Then someday people would walk around with special patches on their arms to identify their blood-gene types.

Identical types could then donate blood-building tissue for victims of radiation, leukemia and burns. There are probably many more such types than the blood types we know today, she speculated.

Science News Letter, April 23, 1960

## Breathes Automatically

SLAPPING baby's bottom at birth causes him to cry and begin breathing. But for the next few days of life, the child's breathing is automatically controlled and has nothing to do with the drive to supply oxygen and exhale carbon dioxide as in the adult.

This conclusion is based on a study by Drs. E. Adolph and P. A. Hoy of the University of Rochester, Rochester, N. Y. They studied the breathing habits of newborn rats, including response to various degrees of oxygen shortages.

It has long been known that infant animals can live without air for much longer periods than adults. They can also survive in atmospheres containing very small amounts of oxygen. Thus, in a gas

mixture that contained only 20% to 30% of the usual amount of oxygen, newborn rats survived more than one hour.

The researchers said that the infant rats were capable of carrying on bodily processes with very little use of oxygen.

Ordinary breathing at birth is not driven by the shortage of oxygen, and probably not by the excess of carbon dioxide, as is most likely true in adults, the scientists reported at the meeting.

Rather, they suggest that a pattern of breathing is set up within the body that is modified only by extremes of oxygen and carbon dioxide. Therefore, breathing is probably controlled from inside the nervous system during the early days after birth.

Gradually the familiar control by body carbon dioxide and oxygen content becomes more exact and reliable. The controlled system gradually becomes refined into a system more responsive to environmental changes. At about the same time, the infant's ability to live with low amounts of oxygen has been lost, and the adult stage emerges. At this point, the child has come to depend upon a full supply of oxygen.

Science News Letter, April 23, 1960

## Alcohol Damage Curbed

SUBSTANCES that appear to be capable of preventing some of the damage caused by alcoholism were reported.

The substances are ribonucleosides, nucleic acids that occur in all living cells. These acids have been found to be helpful in checking the amount of damage that alcohol produces in a certain strain of bacteria, *Lactobacillus arabinosus*, Drs. E. M. Lansford, Jr., W. Shive and I. D. Hill, of the University of Texas, Austin, reported at the meeting.

They found that alcohol, in sufficient concentrations, can kill some strains of bacteria. A previous study of a different strain of bacteria revealed that growth prevention caused by the alcohol was counteracted by another substance, glutamine, a component of many proteins.

It was later shown that when rats received the glutamine, they chose to drink less of a diluted alcohol than when they did not receive the protein substance. Tests on humans revealed that some alcoholic patients benefited from supplemental amounts of glutamine to the extent that their compulsion for alcohol was reduced.

Now, the Texas scientists are hopeful that the ribonucleosides will produce this same effect in alcoholics.

Science News Letter, April 23, 1960

## Blood Loss From Aspirin

ASPIRIN can cause bleeding in the stomach when taken in relatively heavy doses for a week or more.

It has often been reported that aspirin causes significant internal blood loss through the stomach but reports on the effect of various amounts of the common pain killer have not been in agreement. Drs. Richard M. Watson and Richard N. Pierson Jr. of St. Luke's Hospital, New York, offer additional evidence that Amer-



**SPACE "PIGGY-BACK"**—A rocket-powered hypersonic transport plane that separates from its supersonic booster at 120,000 feet is predicted for the year 1980. The transport, which would carry passengers 6,000 miles in an hour, was proposed by Leston Faneuf of the Bell Aircraft Corp., Buffalo, N.Y.

ica's most popular pill can cause trouble.

They reported at the meeting a study of 90 normal volunteers. Sixty women and 30 men received 600 milligrams of aspirin daily for seven days. This is equivalent to 10 aspirin pills of five-grain strength daily. These subjects got portions of the daily dosage four times each 24-hour period.

The average amount of blood loss per day for this group before they began

taking aspirin was less than one milliliter. However, 70% of these same persons showed a significant increase over this tiny amount while taking the aspirin, Dr. Watson reported. The average blood loss among the group after they began taking the aspirin rose from one to 4.8 milliliters. Ten percent of these persons lost more than 10 milliliters daily.

Science News Letter, April 23, 1960

## CHEMISTRY

# Sugar May Aid Medicine

A SUGAR has been discovered that may add to man's understanding of cancer and diabetes.

Known as a heptose, it was isolated from a rat liver extract and was described to the American Chemical Society meeting in Cleveland, Ohio, by three scientists of Tufts University School of Medicine, Medford, Mass.

Clarification of its function in living tissue could be very useful in combating diseases in which sugar metabolism is abnormal, it was explained.

A lack of vitamin B-1 (thiamine) in test rats' diets interfered with the capacity of rat tissue (brain, heart and lung) to form the sugar, Dr. Hsien-Gieh Sie said. When thiamine was added to the tissue in a test tube, heptose formation did not resume, indicating that the vitamin deficiency had inflicted grave damage.

The heptose may also be found in other mammals, fish, birds, reptiles, plants and bacteria, Dr. Vijai N. Nigam said. He cited this widespread natural occurrence of the heptose as a measure of its biological significance. A heptose is a sugar containing seven carbon atoms arranged in a bead-like sequence.

The heptose was first isolated by heating rat liver enzymes with a phosphate compound of the common sugar glucose. The project was headed by Dr. William H. Fishman, research professor of oncology at Tufts and director of cancer research at the New England Center Hospital, Boston.

Science News Letter, April 23, 1960

## Cheap De-Salted Water

A SIMPLE evaporation system is the basis of a new million-gallon-a-day plant to make drinking water from the sea, soon to be built at Freeport, Texas.

F. C. Standiford Jr. of the W. L. Badger Associates, Inc., Ann Arbor, Mich., told the chemists that fresh water will be produced from the Gulf of Mexico at about one dollar a thousand gallons. He also said that a similar plant of ten times the size could produce fresh water at about 35¢ a thousand gallons, considered to be an economical price.

The Freeport plant will be the first of five large plants to be built for the Office of Saline Water of the Department of the Interior in an attempt to ease the growing

water shortage in parts of the United States.

The process, which has been tested over the last two years in a pilot plant in North Carolina, uses the cheapest evaporators and materials, made possible by special techniques that combat corrosion and the build-up of scale.

Twelve evaporator units are connected in series, so that condensing steam from each will heat the water in the next. Temperatures up to 250 degrees Fahrenheit are used. It has been found that corrosion is largely due to oxygen in the sea water, and this is therefore removed on the way in. To prevent scale formation, more scale is introduced, suspended in the sea water. It is then found that fresh scale deposits on this rather than on the walls of the boilers, where it would gum up the works.

Science News Letter, April 23, 1960

## Strep-Fighter Found

A ONE-STEP chemical synthesis of powerful germ-fighting agents was reported to the meeting by Dr. Edward J. Modest, head of the laboratories for organic chemistry at the Children's Cancer Research Foundation, Inc., Boston.

He said a wide variety of 2,4-diaminopyrimidine compounds have been synthesized in a one-step chemical process. The substances actively inhibit folic acid metabolism in some biological systems, especially in the *streptococcus faecalis*, the germ that often causes human urinary infections.

The meeting also heard Dr. M. Gershenzon of Bell Telephone Laboratories, Murray Hill, N. J., report that a rare, transparent gallium phosphide was achieved in experiments aimed at growing extremely pure crystals of this material. The crystals were "rather small" and strain-free, but they transmit light of wavelengths longer than green (toward the red end of the spectrum).

Science News Letter, April 23, 1960

## Completing IGY Data

BETWEEN 90% and 95% of the information collected during the International Geophysical Year is expected to be in by the end of this year, Drs. Hugh Odishaw and Pembroke J. Hart of the U.S. National Committee for the IGY reported at the meeting.

More than 30,000 scientists of 67 nations have been getting information on subjects ranging from space probes to ocean depths since the beginning of the IGY in July, 1957.

This information is now being collected at three centers—one in Washington, D. C., one in Moscow, and one that is a cooperative effort on the part of various scientific societies in Europe and Japan. According to Dr. Hart, the nations seem to have lived up to their international agreements on the exchange of information.

The final results of the IGY research will, he expects, comprise 30 volumes of about 400 pages each, of which the first nine volumes have already been published.

Science News Letter, April 23, 1960

## Rubber Resists Cold

A SYNTHETIC rubber, completely non-flammable, highly resistant to attack by gasoline and corrosives, and still soft and resilient at 60 degrees below zero was reported to the chemists.

Now being tested for use in rubber-coated military uniforms to protect servicemen against the heat of nuclear blasts, the new rubber is also expected to be useful in gaskets, hoses, sealing compounds, and other jobs in which a rubber must perform at low temperatures and in the presence of petroleum products, or chemical corrosives.

The new rubber, a member of a family of plastics and rubbers called "nitroso-fluorocarbon" rubbers, was reported by Drs. George H. Crawford and D. E. Rice of the Minnesota Mining and Manufacturing Company, St. Paul, Minn., and Dr. Juan C. Monterroso of the U.S. Army Quartermaster Corps.

With the increasingly rigorous conditions under which modern weapons are required to operate, the need is constantly arising for tougher and more versatile materials. Other rubbers of the same general type have proved to be most satisfactory at high temperatures, but tend to become stiff at low temperatures.

Science News Letter, April 23, 1960

## Support U.S. Policy

SCIENTISTS representing the U.S. abroad have a duty to support Government policy, Dr. Wallace R. Brode, science adviser to the Secretary of State, told chemists attending the meeting.

After accepting the Priestley Medal, the ACS's highest award, Dr. Brode said:

"Any individual listed as officially representing the United States, whether he is a scientist or not, has a responsibility to support his Government's policies on all issues which may arise at the forum where he has official status.

"If on peripheral issues, the scientist has personal views in conflict with his Government's policy, it should be incumbent upon him, so long as he accepts official responsibility, to present his Government's position on these peripheral matters and to refrain from any action which would negate that position."

Science News Letter, April 23, 1960