

MEDICINE

Female Fertility Induced By Experimental Drug

► NEW HOPE for barren women is seen in a new experimental drug.

The drug, known as MRL/41, has induced egg-producing menstruation in 28 (75%) of the women treated for abnormal absence of the monthly cycle. Four became pregnant.

The important feature of MRL/41 is its apparent ability to modify the hormonal balance between the pituitary gland and the ovaries. The pituitary in the brain produces hormones that stimulate the ovaries, a function essential to conception.

One puzzling point revealed in the study was that experiments on rats, which preceded the clinical tests, showed exactly opposite results. In both male and female rats, previous reports had suppressed both ovulation (egg production) and fertility (ability to reproduce).

No serious toxic reactions involving the blood, kidneys or liver occurred, researchers said. However, there were some adverse effects among patients during treatment with the drug, such as rashes and hot flashes.

MRL/41 is structurally related to chlorotrianisene, a synthetic female sex hormone, but it does not exhibit the expected activity in humans.

Results of the research were a surprise to the investigators. The drug holds much promise, but will not be available for prescription until further research is done, it is reported in the *Journal of the American Medical Association*, 178:101, 1961.

Drs. Robert B. Greenblatt, William E. Barfield, Edwin C. Jungck and Albert W. Ray of the Medical College of Georgia, Augusta, are reporting the study.

• *Science News Letter*, 80:288 October 28, 1961

PUBLIC HEALTH

Fight for Purer Air Shows Nation-Wide Gain

► THE WAR against air pollution is gaining momentum on a nation-wide scale.

Recent developments in the growing campaign for fresher, cleaner air include approval by California's Motor Vehicle Pollution Control Board of a "blow-by" anti-smog attachment for automobiles. This is the first step toward putting teeth in a state law requiring pollutant trapping devices on all new cars sold in California.

Although the Automobile Manufacturers Association reports the new unit is being installed on autos due for California sale, the law cannot be enforced until the board has approved at least one other system. Two more are expected to be approved, however, by the end of 1961.

The first board-accepted unit was developed by the AC Sparkplug division of General Motors.

Meanwhile, in Pittsburgh, Pa., blow-by control devices have been installed on county-owned vehicles for testing and evaluation. Legislation making the units mandatory for all vehicles in Allegheny County

could follow. Motor vehicles pour an estimated 660 tons of pollution into the Pittsburgh atmosphere each day.

City and county officials in the New York metropolitan area are urging the start of a tri-state (New Jersey, Connecticut, New York) smog alert system similar to smog-ridden Los Angeles and based on continuous measurements of pollutants in the air at key locations. High pollution levels, a definite health menace, would set off voluntary anti-pollution action by industry, business, government and the public.

At its annual meeting, held this year in Chicago, the National Association of County Officials recommended several pollution-reducing policies. They called for Federal aid to research programs, a rapid tax write-off on control equipment, installation of blow-by units on all autos manufactured for U. S. sales, and a White House air pollution conference in 1962.

In Washington, Abraham Ribicoff, Secretary of Health, Education and Welfare, has asked the automobile industry to install blow-by devices without waiting for compulsory legislation.

Pollution costs about \$7.5 billion in economic damage annually, but money spent for control measures totals only about \$8,000,000. More than half of this is spent in California.

• *Science News Letter*, 80:288 October 28, 1961

MEDICINE

Blood Types Related To Ulcer Incidence

► PERSONS with O type blood and a certain combination of Rh factors are more likely to develop ulcers.

This points to a genetic, or hereditary, aspect of the disease, Dr. Joseph A. Buckwalter of the State University of Iowa said at the two-day conference on management of peptic ulcer at the New York Academy of Sciences, New York.

Dr. Buckwalter found that persons with O type blood were more prone to gastric and duodenal ulcers than those with types A, B, or AB. The study was made on more than 3,200 ulcer patients.

Dr. Joseph B. Kirsner of the University of Chicago also pointed out the possibility of a genetic predisposition to ulcers.

Both speakers noted that ulcers occur more frequently among persons who do not secrete a certain group of water-soluble chemicals in their saliva. The chemicals, known as ABH substances, are genetically controlled.

Hydrochloric acid is no longer in question as a cause of peptic ulcer, Dr. Kirsner said, although the "precise biochemical events in the secretion of hydrochloric acid remain incompletely understood."

There have been no striking advances in ulcer treatment. The value of the many substances claimed to help the condition still must be proved.

Patients are still advised to avoid irritants in diet, drugs and drink, to take drugs that will control gastric acidity, to eat often and avoid emotional difficulties. Less radical surgery is now being done than formerly.

• *Science News Letter*, 80:288 October 28, 1961

IN SCIENCE

SURGERY

Infections Still Follow Surgery Despite Drugs

► INFECTIONS still follow abdominal operations in spite of modern drugs.

Increasing resistance of bacteria to the new antibiotics is the important factor causing persistent postoperative infections.

Dr. Edward J. Krol of Holy Cross Hospital, Chicago, reports in the *American Journal of Proctology*, 12:297, 1961, that 53 of about 10,000 major abdominal surgical cases in that hospital resulted in infections.

"These figures," he states, "in comparison with the over-all figures of the country, seem to be very low."

Staphylococcus aureus was the most frequent offender among the bacteria, Dr. Krol states.

The oxytetracycline antibiotics were reported most effective in studies of treatment of such infections in hundreds of cases throughout the United States.

Injected penicillin caused 83 deaths among 1,070 cases of adverse reaction to antibiotics, but no deaths occurred when patients took oral penicillin.

These cases were reported in an extensive survey covering 800 hospitals over a three-year period. A diseased state of the blood resulted in aplastic anemia causing 23 deaths. Chloramphenicol, another antibiotic, was associated frequently with these fatalities.

Dr. Krol advises surgeons to work more closely with bacteriologists to combat the postoperative infection problem.

Surgical bacteriology, he adds, still maintains its position of relative importance in clinical surgery.

• *Science News Letter*, 80:288 October 28, 1961

MEDICINE

Kidney Stone Drug Saves Lives of Paraplegics

► A DRUG THAT DISSOLVES kidney and bladder stones without irritation can save the lives of many paraplegics, Dr. William P. Mulvaney, University of Cincinnati College of Medicine, reported to a sectional meeting of the American Urological Association in Cincinnati.

Paraplegics are patients with paralysis of the legs and lower part of the body. Kidney or bladder stones form in almost every paraplegic, Dr. Mulvaney said. They account for 30% of the deaths of these patients.

Daily irrigation with the drug, Renacidin, can prevent the formation of such stones in paraplegics, in weakened patients and in those with only a single kidney.

When a stone already exists in kidney or bladder, Renacidin either dissolves the stones or softens them so that they can be crushed with an instrument.

• *Science News Letter*, 80:288 October 28, 1961

E FIELDS

MEDICINE

Severe Retardation In Children Avoided

► AN EARLY diagnosis of a brain-damaging condition is now possible in time to prevent severe mental retardation in hundreds of children each year.

Dr. Robert Guthrie of the University of Buffalo reported at the annual convention of the National Association for Retarded Children in San Francisco that a simple blood test can be given to all newborn babies to find out if they have phenylketonuria (PKU), a cause of mental retardation.

At least one percent of the 200,000 mentally retarded patients now in institutions are victims of PKU, a metabolic disease treated with a milk-free diet.

Phenylketonuria occurs, Dr. Guthrie explained, when an excessive amount of phenylalanine (an amino acid) in the blood produces a strong acid in the urine. Too much of the acid in the body eventually damages the brain.

With methods available up to now, testing of babies does not take place until the acid becomes evident six weeks after birth, at which time brain damage has already taken place.

A hunt for PKU babies is in progress in many parts of the country where attempts are being made to locate such children in time to prevent mental retardation. The diet should start before the child is a month old to prevent any brain damage taking place.

• Science News Letter, 80:289 October 28, 1961

PHARMACOLOGY

Nerve Hormone Restores Lost Effect of Drugs

► INJECTION of a certain nerve hormone will restore the strength of drugs that lose their effectiveness after being given repeatedly.

Drs. F. F. Cowan, Theodore Koppányi and Carolyn Cannon and G. D. Maengwyn-Davies of Georgetown University's department of pharmacology report in *Science*, 134:1069 and 1075, 1961, their findings of a study on animals. They expect to start another study on humans in the near future.

The investigators found that the nerve hormone, norepinephrine, restored lost response, at least partially, to amphetamine (Benzedrine), ephedrine and tyramine. These are drugs used to stimulate circulation in cases of low blood pressure.

Norepinephrine, a powerful constrictor of blood vessels that come from nerve ends, is manufactured by the adrenal gland and by some nerves. It has been synthesized for sale commercially.

In an interview, Dr. Koppányi told SCIENCE SERVICE that the above-mentioned

drugs as well as many others owe their action to release of a nerve hormone to the muscles or glands.

"Such drugs, therefore, may be said to act indirectly," Dr. Koppányi explained. "If nerve hormones are completely depleted by such drugs, these drugs can no longer be effective."

The investigators decided it was reasonable to assume that the replacement by injection of the nerve hormones will restore the effectiveness of these drugs.

The problem was also attacked by giving bretylium, an agent that blocks the release of norepinephrine from the nerve ends. Bretylium was once used to treat high blood pressure. It may be useful, however, in preventing the gradually diminishing effects of ephedrine and similar drugs on the heart and blood pressure.

This is the first time that gradual diminishing drug effects have been prevented in the living body, Dr. Koppányi said.

• Science News Letter, 80:289 October 28, 1961

TECHNOLOGY

Mobile Vans May Help Fight Heart Disease

► MOBILE VANS similar to those in which X-rays have been taken to help in the war against TB may soon carry the fight to heart disease, the number one killer in this country.

Tape recordings of heart sounds, made by equipment carried aboard the vans, could then be fed to a computer and analyzed for further checkup by doctors.

Charles E. Bading, staff engineer of International Business Machines Corporation, Kingston, N.Y., told SCIENCE SERVICE that he and his co-workers hoped to get public health officials' approval of the vans.

The powerful IBM computer 704 is now being used in analysis of phonocardiograms, it was reported at the Third Annual Medical Symposium sponsored in Endicott, N.Y., by the International Business Machines Corporation.

Mr. Bading said that physicians could be helped in speeding up analysis of heart abnormalities through use of the computer.

Agreeing with the engineer was Dr. David S. Gerbarg, attending physician at Kingston Hospital, who for the past two years has aided with medical advice on recordings desired for computer analysis.

"Already tape recordings of heart sounds of 30,000 school children in Chicago have shown in a five-year study that four out of every 1,000 children have heart abnormalities," Mr. Bading said. "Many were unsuspected."

The IBM studies so far have been on normal hearts, using tape recordings of the "lub and dub" of the heart beat. The physician advises on murmurs that might occur in the systole contraction and the diastole relaxing of the beat.

"We are not trying to do anything the physician himself cannot do," Mr. Bading explained. "However, we can save much labor in listening to individual heart beats that may be perfectly normal."

• Science News Letter, 80:289 October 28, 1961

DENTISTRY

Automatic Toothbrush For Flabby Generation

► THE FLABBY generation apparently has come to the point where an automatic toothbrush driven by electricity has become the subject of serious dental research.

Dr. John W. Hein, dean of Tufts University Dental School, Boston, where some of the research was conducted, told the American Dental Association convention in Philadelphia that an ordinary toothbrush properly used will be effective.

However, the public does not "ordinarily expend the time and effort necessary to extract a high degree of efficiency from hand brushes," he said.

Children with poorly aligned teeth showed a 41% improvement in plaque removal and 32% in debris removal over the hand brush, Dr. William Lefkowitz of the University of Kansas City (Mo.) Dental School reported.

Plaque is the gelatinous substance that forms on teeth and which can harbor bacteria.

In the Kansas City test school children from seven to 12 were tested after a colored solution adhering to the plaque was placed on their teeth.

On one day the children used ordinary toothbrushes, and on the next they used electric brushes. The automatic toothbrush did a better job of both plaque and debris removal.

• Science News Letter, 80:289 October 28, 1961

SPACE

Spaceman Can Reduce Error in Reckoning

► MAN IN SPACE will be able to tell whether he is coming or going relative to any object he may be passing. It will, however, take special training to accurately estimate the rate at which he will approach an object in order to determine when he will make contact, an Air Force scientist told the Air Force's 8th annual Symposium on Science and Engineering in San Francisco.

There seems to be a built-in error in man relative to making such estimates, Charles A. Baker, Air Force Systems Command psychologist from the Aerospace Medical Laboratories, Wright-Patterson Field, Ohio, said. It was evident in 50 subjects tested.

Unless man is trained to overcome this error, it will be difficult to rendezvous in space to exchange crews, assemble satellites or make satellite repairs. Such activities will be essential when space flight is developed to a point where it is fully operational, the scientist said.

Experiments have shown that this error can be overcome. As little as ten hours of training under simulated space conditions dramatically reduced errors by as much as 70%. Indications are that more extended training may reduce error even more. The training is done without any optical aids.

• Science News Letter, 80:289 October 28, 1961