

MEDICINE

"Sophisticated" Pill Spots Stomach Troubles

► A MORE sophisticated "radio pill" that can be swallowed by a patient and tuned in by a doctor to see if anything is wrong was reported at the Institute of Radio Engineers International Convention in New York.

The tiny pill, which beams out information about the patient's stomach, is periodically pepped up by an outside energy source. Previous battery-powered radio pills extremely limited the doctor's studies because the battery wore out so quickly.

The pill measures the activity of the stomach and intestine as it passes through them, transmitting the information to an FM receiver outside the body. The sensitive instrument records the pressure changes within the stomach and intestinal tract. An antenna wrapped around the patient picks up the sensitive radio pulses.

Clinical tests are promising, Dr. V. K. Zworykin of the Rockefeller Institute for Medical Research said. Other possible applications include the study of the bladder.

Research is now under way to reduce the capsule to the size of an aspirin, and to measure the temperature and acidity of the stomach and intestinal tract.

Dr. Zworykin and his associates, Dr. J. T. Farrar of the Veterans Administration Hospital, New York, R. C. Bostrom and G. J. DeBoo of Airborne Instruments Laboratory, and F. L. Hatke of Radio Corporation of America developed the radio pill. Dr. Zworykin, a pioneer in the invention of television, was also the co-designer of the first radio pill.

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MEDICINE

Flies, Mice and Humans United in Cancer Study

► A TUMOR-INDUCING substance can be extracted from persons in normal health as well as from those with cancer.

Called TIC, for tumor-inducing-complex, the substance is taken from blood or tumors of human beings. It causes melanotic tumor in strain 51-52 of *Drosophila*, or fruit fly, and cancer in a certain strain of mice.

Dr. Antonio Rottino, St. Vincent's Hospital, New York, reported a study still continuing at the hospital which may lead to better understanding of tumor growth, both normal and abnormal.

"To date we have only scratched the surface of a complex problem," he told the American Cancer Society's science writers' seminar at St. Petersburg, Fla.

Dr. Rottino's group extracted two other factors from the same source material for TIC, one of which enhanced the activity of TIC and the other reduced it. Further extraction finally produced a substance that was completely inactive, called TF for short.

"Most interesting," he said, "was an experiment which showed that if activator was

added to the inactive TF, TIC was reconstituted and would once more cause not only 'melanotic tumor' (in the form of a black spot in the fruit fly) but carcinoma in our strain of mice."

Previously, his group obtained extracts capable of inducing tumors in mice from mouse leukemic tissues, *Drosophila* larvae with melanotic tumors, human cancer, mouse leukemia, Rous chicken sarcoma, human lymphoma and from cultures of the bacillus responsible for crown gall in plants.

"As far as we know," Dr. Rottino said, "this was the first time that anyone had succeeded in extracting cell-free material from tumors of human beings that would consistently induce malignant tumors in mice."

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METEOROLOGY

Oceans Influence Snow For Hundreds of Miles

► A BLINDING snowstorm hitting a remote town in North Dakota is strongly influenced by the oceans many hundreds of miles away.

Heat radiating from the ocean surface during winter plays a very important role in storms breeding over parts of the United States, Dr. Sverre Pettersen of the University of Chicago told the American Meteorological Society meeting in Chicago. The heat dampens or absorbs some of the potential energy present in the atmosphere that could probably burst into kinetic or active energy during formation of storms.

In previous years, meteorologists theorized storm centers or cyclones crystallized when huge storehouses of atmospheric potential energy were triggered into kinetic energy. Recent scientific studies, however, underline the ocean's importance in storm development.

The warm air masses formed over the oceans strongly influence the location and formation of the turbulent regions, Dr. Pettersen said. The warm air forms over the oceans when the sun's rays strike the ocean surface.

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RADIO

Electronic Instrument Helps Blind "See"

► A HANDY electronic instrument carried by a blind person to warn him of obstacles in his way has been developed. The compact, two-pound instrument "sees" for a blind person by sending out nearly invisible light waves up to nine feet away.

Any obstacle in the way causes the light to trip a vibrator, warning the blind man, J. Malvern Benjamin Jr. of Biophysical Electronics, Inc., New Hope, Pa., told the Institute of Radio Engineers International Convention in New York.

A portable model of a curb detector has been built experimentally. It is still being developed for practical use.

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IN SCIEN

GENERAL SCIENCE

States Search for Science Talented in High Schools

► HUNDREDS of high school seniors who are outstandingly talented in science have been selected to receive honors and thousands of dollars in college scholarships by state Science Talent Searches in 38 states and the District of Columbia.

Sponsored by state academies of science, universities and colleges, museums and scholarship foundations, the state Searches are conducted by special arrangement with Science Clubs of America and SCIENCE SERVICE and are held in conjunction with the national Science Talent Search for the Westinghouse Science Scholarships and Awards.

A Science Clubs of America summary of Science Talent Search activities for last year, showing a total of 435 students selected for state honors and nearly \$80,000 in scholarships awarded, is now available.

Winning students were given awards of books, subscriptions to scientific journals, scholarships and opportunities to attend scientific meetings, tour laboratories and confer with professional scientists. The awards were made at banquets, special meetings of state academies of science, programs on university campuses and at state science fairs.

Many state directors reported plans for expanded programs and awards for the 1961 state Searches.

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BIOLOGY

Hall of Biology of Man Uses New Approach**See Front Cover**

► THE HALL of the Biology of Man, featuring sculptures of the delivery of a baby and a "transparent woman," opened at the American Museum of Natural History in New York.

Models for the hall were made from new materials using new techniques. Clear plastic, superimposed in layers showing successive stages of a body process, when lighted at the edge, produces the illusion of depth, movement and steps in a cycle.

This process has been used to show the circulatory system with a pulsating heart and flowing blood and also how the ovum is fertilized in the uterus.

The mechanics of human locomotion, seen on the cover of this week's SCIENCE NEWS LETTER, are demonstrated by pelvic, leg and foot bones and aluminum cutouts.

The Hall of Biology has been fifteen years in the planning, six years in construction and cost \$450,000 to build.

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CE FIELDS

PUBLIC HEALTH

Wrong Breathing Blamed for Drownings

► PRIZES FOR competition in underwater swimming should not emphasize the length of time the swimmer can hold his breath.

One of the ways in which a person may drown is to hold his breath too long and lose consciousness while swimming underwater.

"Passing out" underwater, Dr. Albert B. Craig Jr., of the University of Rochester School of Medicine and Dentistry, told the American College of Sports Medicine meeting in Atlantic City, N. J., may lead to death when the unconscious swimmer automatically breathes.

Dr. Craig has designed and performed experiments involving hyperventilation, or over-breathing, breath-holding and exercise, substituting riding a stationary bicycle for swimming.

Dr. Craig noted that when the subjects over-breathed and then exercised, holding their breath as long as they could, the concentration of oxygen in their lungs became extremely low. One danger of low oxygen concentration, or hypoxia, is that the person has little or no warning that he is about to pass out.

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SOCIOLOGY

Camp Experiment May Point Way to Peace

► AN EXPERIMENT conducted in a boys' camp to build up and then wipe out mutual antagonism may point the way to reduction of international tensions and eventual world peace.

The experiment and suggestions for application to international relations were reported by Dr. Jerome D. Frank of Johns Hopkins University to a joint meeting in New York of the American Orthopsychiatric Association and the World Federation for Mental Health.

In the camp experiment, boys who did not even know each other were made into two enemy groups through use of team competition. The camp leaders then tried to wipe out the mutual antagonism. Merely bringing the two groups together in social activities such as movies or meals had no effect.

What was effective in reducing the antagonism was the creation of situations which presented threats to the entire camp that could only be resolved by the cooperation of everyone.

When the camp water supply failed, the whole camp had to work together to restore the water. The camp truck ran into a ditch and the whole camp had to work together to pull it out.

After a few such incidents, Dr. Frank

reported, the enmity between the two groups was markedly reduced.

On the international scale, a similar tension-reducing step is the Antarctic Treaty which permanently demilitarizes Antarctica. Dr. Frank calls this action "the one important international tension-reducing step." It was, he says, a direct outgrowth of the International Geophysical Year in which Russia and the United States cooperated to gain knowledge that neither could have obtained alone.

Perhaps the greatest obstacle to any step to reduce tensions between the U. S. and Russia is the fear that it will be interpreted as a sign of weakness, Dr. Frank pointed out.

This fear could be reduced, he said, if the U. S. would give plenty of advance notice of such a step. It should be made clear that the U. S. expected Russia to make a similar tension-reducing step. But a tension-reducing step should not be made dependent upon Russia's reciprocal action or definite promise of such action.

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TECHNOLOGY

Moon Dust Could Drown Space Vehicle

► THE FIRST space vehicle landing on the moon could be swallowed up by dust on the moon, Keeve M. Siegel of the University of Michigan warned at the Institute of Radio Engineers International Convention in New York.

Scientific studies of rocks and minerals probably similar to those on the moon indicate scientists should not take this warning lightly, he said. Meteorites and tektites were tested under near vacuum conditions, imitating the conditions on the moon's surface.

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MEDICINE

What Doctors Read In Journal of AMA

► ARTICLE; that doctors read in the Journal of the American Medical Association, 175, 1961:

Key personnel in sensitive Government agencies should be given psychiatric screening.—Dr. Zigmond M. Lebensohn of Washington, D. C.

A major cause of illness among United States servicemen in the Tokyo-Yokohama area of Japan is smog-associated asthma.—Maj. Harvey W. Phelps, Capt. Gerald W. Sobel and Capt. Neal E. Fisher, U. S. Army medical officers.

Mongoloid children in institutions develop more slowly than those kept at home.—Dr. Robert B. Kugel and David Reque of State University of Iowa College of Medicine.

More medical schools within the next decade will establish full-scale courses on hypnosis for practicing physicians like the one at the University of Pennsylvania.—Drs. Harold Rosen and Leo H. Bartemeier, Baltimore, Md.

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GENETICS

Benign Kidney Tumors Hereditary in Rats

► BENIGN, or non-cancerous, kidney tumors in rats are inherited through the action of a single dominant gene, research indicates.

Scientists have suspected for seven years that this was true. The idea is being tested by Drs. Reidar Eker and Jeanne Mossige of the Norwegian Radium Hospital in Oslo, Norway, and their first results show that the theory probably is correct.

A tumor-bearing male rat, the offspring of a normal father and a tumor-bearing mother, was mated to six white, normal female rats. Of the 89 young that survived long enough to be examined, 41% had tumors. This is close enough to the expected 50% to be significant, the investigators report in *Nature*, 189:858, 1961.

Further breeding experiments are now in process to see whether subsequent generations produce tumor-bearing young in the expected proportions.

So far there is no indication that tumor tendency or severity is related to sex. Nor is there any evidence that the number of pregnancies enhances tumor development in female rats.

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RADIO

U. S. Sends Radio Signals to Venus

► THE UNITED STATES has bounced radio signals from Venus back to earth in a 70,000,000-mile round trip taking about six and a half minutes.

The success of a two-month experiment aimed at unveiling some of the mysteries of the planet Venus was announced by Dr. Hugh Dryden, deputy administrator of the National Aeronautics and Space Administration, and Dr. William H. Pickering, director of the Jet Propulsion Laboratory.

As a result of the experiments, scientists expect to be able shortly to determine whether Venus spins on its axis and the rotation speed; the orientation of the planet's spin axis; to investigate the surface of Venus; and to further define the measuring stick of the universe, the approximately 93,000,000-mile astronomical unit. This is the mean distance from the earth to the sun and may be plus or minus 10,000 miles.

Two 85-foot radio antennas were used for the Venus experiment at the Jet Propulsion Laboratory Goldstone Tracking Station in the Mohave Desert in California. JPL is operated under contract for NASA by the California Institute of Technology.

Several months went into the preparations involved in setting up the antenna. The transmitting antenna, located seven miles from the receiving antenna, sent a 2,388 megacycle signal to Venus, using about ten kilowatts of power. The signal was a conical beam only four-tenths of a degree in width.

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