

MEDICINE

**'Flu Virus Particles
Double Number in Hour**

► THE NUMBER of infective influenza virus particles in an infected host cell, such as a cell of your lungs, is doubled in about 60 minutes.

Infective particles, however, swiftly become non-infective, as if they were decaying spontaneously. The half-life of the infective particles is about 150 minutes. Non-infective particles block susceptible cells, preventing the reproduction of infective cells.

These and other facts about the reproduction of influenza virus particles were discovered through a photometric technique for precise enumeration of animal virus particles that was developed at the Rockefeller Institute for Medical Research, New York. Findings with the technique were reported by Dr. Frank L. Horsfall Jr. at the meeting of the National Academy of Sciences in Cambridge, Mass.

Influenza viruses, he found, are reproduced in separate cycles of about six to eight hours' duration. Successive cycles result from infection in sequence of separate host cells. The yield is approximately 100 viruse particles per cell.

Only complete, fully infective particles emerge from infected cells. Dr. Horsfall could not find any evidence for the emergence of immature, non-infective particles.

Science News Letter, November 21, 1953

METEOROLOGY

**Destroy Tornadoes
By Guided Missile**

► DESTROYING TORNADOES by guided missiles is being investigated at the Air Force Missile Test Center, Patrick, Fla., two scientists revealed at a conference on radio meteorology in Austin, Tex.

Col. Rollin H. Mayer, U. S. Air Force, and Dr. Fritz O. Rossmann, an upper air physicist, believe that a practical tornado destroyer "might be realized in the near future." The missile, possibly loaded with an A-bomb warhead, would be guided to a tornado in its early stages of development by radar sets similar to those now used to spot and track the storms.

Other meteorologists point out, however, that the causes of tornadoes are not well enough understood at the present time to permit spotting the tornadoes when they are still in the "unborn" stage, and that the energies involved in tornado formation and movement are also not very well known. But if the energies of tornadoes are at all equal to those of hurricanes, then even the tremendous power of an A-bomb is puny in comparison.

Since tornadoes usually last only a few minutes, or at the most an hour, there could also be difficulties in getting a guided missile to the proper spot during the short lifetime of a tornado.

Dr. Mayer also proposed a nation-wide

net of stations to prevent tornado damage. Within the past 20 years, he said, "approximately one billion dollars in property damage, more than 8,000 deaths, and over 100,000 persons injured" have resulted from tornadoes.

Even a five percent reduction in this damage would be a "great advancement," Dr. Mayer stated.

Dr. Rossmann proposed a new theory of tornado formation which holds that there is no updraft in the funnel, but rather, a "strong downdraft."

Science News Letter, November 21, 1953

GENERAL SCIENCE

**Federal Spending to Drop
On Science Programs**

► GOVERNMENT EXPENDITURES for scientific research and development during the fiscal year ending June 30, 1954, will drop from previous record totals, the National Science Foundation forecasts.

Federal obligations, that is money set aside but not actually spent, will also drop during this same period, according to the Foundation's latest estimates. They foresee that the government will spend about \$2,187,000,000 for scientific research and development in 1954, compared with an estimated \$2,205,000,000 in 1953.

"Since the lag between obligations and expenditures has averaged about nine months over the past several years," the report states, "the decline in obligations for 1954 will presumably be reflected in a further decrease in expenditures in 1955."

Largest part of the totals for both obligations and expenditures are due to the Department of Defense, with the Atomic Energy Commission and the National Advisory Committee for Aeronautics following in that order.

Science News Letter, November 21, 1953

TECHNOLOGY

**Electronic "Stethoscope"
Speeds Metal Finishing**

► AN "ELECTRONIC stethoscope" has been created to speed the close-tolerance finishing of metal.

The machine operator holds a small microphone on the metal being worked and listens through earphones to the amplified sounds of the metal being scraped away. The loudness of the sound is proportional to the amount of metal being removed.

In addition to helping the machinist keep within his extremely close tolerances, the Minneapolis-Honeywell device also speeds metal finishing operations, reduces the number of pieces that must be scrapped and cuts operator fatigue.

The metal finishing operation is checked by an electronic comparator that is accurate to five millionths of an inch. The comparator works hand-in-glove with the stethoscope to prevent "over shooting" the tolerance limit.

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IN SCIEN

SURGERY

**Voice to Speechless
With Plastic Operation**

► A 17-YEAR-OLD girl who had never uttered a word in her entire life can now speak normally, thanks to a plastic surgery operation reported by Drs. Milton T. Edgerton Jr. and Anthony Zovickian of Johns Hopkins Medical School, Baltimore, at the meeting of the American Society of Plastic and Reconstructive Surgery in San Diego, Calif.

A serious infection in her infancy obstructed her vocal cords so that she could not talk. With flaps of her skin, tantalum mesh and stainless steel rods, the surgeons reconstructed the windpipe without air leaks so that she could use her voice and learn to speak normally.

Similar operations reconstructing parts of the trachea and larynx have been done on 12 patients, the surgeons reported. One was a six-month-old boy, another an 18-year-old youth who had suffered a bullet wound and others were cancer patients who had to have parts of their tracheas removed.

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MARINE BIOLOGY

**Rare Beaked Whales
Found in Jamaica**

► TWO RARE beaked whales, of a kind scientists have only seen four times before, have been beached by fishermen at St. Andrew, Jamaica.

The two may have been mother and daughter, says Dr. J. J. Rankin of the University College of the West Indies, reporting the rare whales in *Nature* (Nov. 7).

The mammary glands of the larger female exuded milk when cut and the uterus, or womb, seemed to be in a semi-stretched condition, suggesting this whale had been nursing a calf born not many weeks previously. The calf might have been the smaller whale beached by the same fishermen.

The fact that this whale calf was not very old makes it "tempting," Dr. Rankin says, to speculate that the breeding ground of these rare whales may not be far away from the Caribbean.

Beaked whales, *Mesoplodon europaeus*, have one or two teeth on the lower jaw and were previously thought to be restricted to the North Atlantic. The first recorded specimen was in 1840 in the English Channel. Three whales were later seen off the U. S. Atlantic coast in 1889, 1933 and 1935. Both Jamaica whales will be mounted at the university.

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CE FIELDS

HEMATOLOGY

Universal Blood Donor May Be Dangerous

► A WARNING of occasional danger from using the blood of a universal donor is given by Drs. D. I. Buchanan and S. Hanson and M. Schwarz of Edmonton, Alta., in a report to the *Canadian Medical Association Journal* (Oct.).

A universal donor is one who has group O blood. This usually may be safely given to a patient of the same or another blood group. However, if the universal donor has had "shots" against typhoid, tetanus or some of the other diseases for which preventive vaccines are given, his blood may be altered slightly so that it will not be compatible with all other blood groups.

The Edmonton doctors discovered this when one of their patients died after a transfusion reaction and subsequent kidney failure. The patient had group A blood. During an operation for cancer she was given one pint of group A blood. Because no more A blood was immediately available and she was bleeding severely, she was then given two pints of O blood, or universal donor blood, from the blood bank.

When she failed to rally, further tests were made matching the bank blood with some of hers taken before the operation. One of the O bloods was compatible. The other was not. This last, it was found, came from a donor who four months previously had had inoculations against typhoid and paratyphoid fevers.

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MEDICINE

Drug to Stop World's Biggest Disease Problem

► A NEW drug that shows promise of being a cure for a disease rapidly becoming the world's Number One health problem was announced at the meeting of the American Society of Tropical Medicine and Hygiene in Louisville, Ky.

The disease is the blood-fluke-caused sickness, schistosomiasis, which attacked many of our servicemen on Leyte and other Pacific islands. Surveys after World War II show that there are 114,000,000 cases of this disease throughout the world. As malaria is coming under control through DDT and other insecticides and modern medicines, schistosomiasis is seen taking its place as the world's biggest disease.

The drug that may stop it is a thioxanthone derivative known so far only by its laboratory name, WIN 4304. It was synthesized by Drs. Sidney Archer and C. M. Suter of Sterling-Winthrop Research Lab-

oratories, Rensselaer, N. Y. This drug and three other related compounds were tested in the laboratory by Drs. D. A. Berberian, E. W. Dennis and H. W. Freele of Sterling-Winthrop.

WIN 4304, Dr. Dennis said, was so effective against the blood flukes that cause the disease, so low in toxicity and so well tolerated by humans on whom it was tested that he now recommends it be given a trial in human patients.

The drug is effective against all three types of blood flukes, or schistosomes, so that it might be used in Egypt, Africa, South America and the Pacific islands. It is related in part to Miracil D, a drug developed by the Germans during World War II. This drug was effective only against the Egyptian schistosome, however, and was relatively toxic. WIN 4304, tests showed, is 16 times better than Miracil D both in effectiveness as a remedy and in safety.

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TECHNOLOGY

New Armored Boot Shown for First Time

► A NEW boot to protect servicemen from small anti-personnel land mines as well as from very cold weather was shown publicly for the first time at the meeting of the Association of Military Surgeons of the United States in Washington.

What was shown was actually a vertical cross section of an experimental model of the boot. Good as this boot now seems, the Bureau of Medicine and Surgery of the U. S. Navy is still working to develop a better one.

The boot provides a vapor layer around the foot to give some protection against extreme cold. The bottom part of the vapor layer, just under the outer sole, is made of a plastic armor that absorbs a lot of energy and is fragment-resistant. This layer is a new plastic, neither fiber glass nor nylon, made for the Navy by the U. S. Rubber Company and christened dynasorb by the Navy.

Above this white plastic layer is a layer of green pressure, or blast, resistant material of another plastic that is full of nitrogen-filled bubbles. It looks like foam rubber, but unlike foam rubber, the bubbles or cells of this material are not continuous. Under blast pressure, each of these separate cells may expand like a balloon, break and collapse. But since each cell is separate from others in its layer, the cells do not all balloon and collapse together.

This experimental boot that protects against small mines and cold weather weighs three and three-fourths pounds. The Navy is working now to produce a lighter as well as better one.

Meanwhile, the special armored sole can be strapped, like a skate, to the regular summer field boot, for use in warm weather when the temperature insulating feature is not needed.

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AERONAUTICS

Spurious TV Radiation May Menace Navigation

► THE RADIO Technical Commission for Aeronautics is launching a full-scale investigation aimed at determining how ultra high frequency television broadcasts interfere with radio devices used in air navigation.

A. R. Applegarth, chief engineer at the National Aeronautical Corp., Ambler, Pa., said a special committee already has been formed and its first meeting scheduled for before the end of November.

Under Mr. Applegarth's chairmanship, the committee will seek to find out how the new UHF television waves affect distance-measuring equipment and radar. Both are used as air navigational aids.

"We know it's theoretically possible for UHF television to interfere with aircraft navigation," Mr. Applegarth said, "but we do not know of any case to date in which this has happened."

In effect, the committee hopes to prevent future airline tragedies by working out an answer to the problem in advance. The solution will have to permit satisfactory operation of air navigational aids without imposing impossible operational restrictions on the UHF television broadcasters.

The need for the investigation has been stimulated by the installation of the first of 400 special ground-based radio-navigation stations. These stations operate in the 960 to 1,215 megacycle band and are subject to interference by spurious UHF video waves. When completed, the new network will mark strategic navigational points along federal airways as well as the locations of major airports.

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SURGERY

Skin Flap Graft to Help Heart Patients

► MORE BLOOD can be given anemic hearts if experiments with an operation live up to present expectations.

The operation connects a flap of skin and sub-skin tissue from the chest wall to the heart, thus bringing more blood to hearts not getting enough because their arteries have narrowed and hardened.

Good results with the operation on dogs were reported by Dr. Robert E. Moran of Washington, D. C., and Drs. Charles G. Neumann, Jerrold von Wedel, Jere W. Lord Jr. and J. William Hinton of New York City at the meeting of the American Society of Plastic and Reconstructive Surgery in San Diego, Calif. The research was done at New York University-Post Graduate Medical School, New York.

Patients suffering from slowly progressive coronary insufficiency, such as results from angina pectoris, are those who might be helped by the operation if further experiments confirm its value.

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