GENERAL SCIENCE

Even Science Cannot Make Wishes Come True

➤ IF SCIENTISTS had the power to make their wishes for 1966 come true, these are the things that might happen although they are not predictions.

Long overdue is a breakthrough on harnessing atomic fusion, such as occurs in the thermonuclear bombs, so that useful controlled power can be obtained. Money and men are being expanded but so far without success. Unfortunately the search may take many more years.

Scientists are also trying to extract energy from the atom by other methods, which, it is hoped, will come from high energy physics experiments with billions of volts.

Antimatter is as mysterious as ever, which may be just as well since ordinary matter and antimatter would combine causing a gigantic explosion, and eliminate each other.

Neither drugs nor vaccines have been achieved for curing cancers, colds and other diseases, some of which are virus caused. The causes of most cancers are now believed to be multiple, but still remain to be discovered.

Weather is not controlled. Indeed, as reported at the American Association for the Advancement of Science meeting in Berkeley, Calif., some of the methods such as seeding might very well backfire and cause more drought.

While much has been learned about the nature of heredity, beneficial effects from controlled changes in DNA, RNA, etc., have not been achieved.

While the fuel cell has been further developed, it certainly has not come of age on a major scale.

Synthetic food from coal, though sought by teams of scientists, still eludes its pursuers.

There is a chance that better drugs for control of emotions and improvement of intelligence and learning ability are on the way to reality.

• Science News Letter, 89:40 January 15, 1966

AGRICULTURE

China Must Import Wheat To Support Food Needs

➤ CHINA MAY HAVE TO IMPORT five to six million tons of wheat annually to help make up its food deficiency, a U.S. agricultural expert estimated.

In spite of increased food production on the Chinese mainland, grain production is unlikely to increase, since farmers are already growing as much as they can on soil fertile enough for the crops. Any increase will have to come from using more fertilizers, according to John R. Wenmohs, U.S. Department of Agriculture at Hong Kong. Production of fertilizers has increased in China over the last five years, but not enough to affect the crops.

Droughts in North China in 1965 brought a low harvest of wheat and miscellaneous grains, Mr. Wenmohs reported in Foreign Agriculture, 111:3, 1965. Production of soybeans, a big export crop for China, has not done so well, perhaps because the peasant farmers prefer to grow grain rather than the soybeans recommended by the Government.

Chinese agriculture is slowly making a comeback from the disastrously low farm production in the three years after the Great Leap Forward began in 1958.

As China prepares to enter its Third Plan, which was supposed to be in effect in 1963 but which was delayed until 1966, the enormous problems of land, fertilizers and increasing population continue to prevent the country from making much headway in expanding farm output.

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GENERAL SCIENCE

Puerto Rico, Hawaii Get First 'Canned' Hospital

➤ THE FIRST "CANNED" hospitals for emergency treatment during time of national disaster have been shipped to Puerto Rico and Hawaii, the U.S. Department of Health, Education and Welfare announced.

Each hospital is valued at $45,000 and contains 200 cots, plus sufficient drugs, supplies and equipment to last for 30 days without resupply.

In times of emergency the entire facility can be set up in less than 12 hours. More than 2,600 canned hospitals have been placed in locations around the United States ready for distribution in emergencies.

• Science News Letter, 89:40 January 15, 1966

TECHNOLOGY

Artificial Voice Helps Speechless to Speak

➤ FOR THOSE unable to speak, an artificial voice offers for the first time something resembling human tones.

The new device, about the size of an oblong electric shaver, is held against the throat. As the speaker mimes his words, vibrations are picked up by the instrument and converted into words.

Faraday Electronic Instruments Ltd., manufacturer of the artificial voice, claims this is the first device to provide human pitch and tone. Others have produced a monotone or a metallic sound.

It is even possible to reproduce the speaker's original accent although only as a loud husky whisper, the company reported. One or two hours practice are required for perfect operation.

The Faraday Artificial Voice consists of a noise generator and a transducer powered by a rechargeable battery. The transducer picks up vibrations from the throat and sends them to the generator, which is carried in a shoulder holster.

Medical physicist Lionel Fothergill designed the voice. Mr. Fothergill is well known as the inventor of the acoustic stethoscope, used in detecting the heartbeat of a child during birth.

Autocoustics Ltd. of London is marketing the voice.

• Science News Letter, 89:40 January 15, 1966

IN SCIENC

SPACE

More Ground Stations Planned by ComSat

➤ TWO WEEKS after the Federal Government asked for ideas on how to do away with ground stations in future satellite broadcasting systems, the Communications Satellite Corporation (ComSat) announced a $1,780,000 grant to help equip two more.

The National Aeronautics and Space Administration is seeking ways to transmit FM and/or short wave radio broadcasts via satellites directly to ordinary home receivers, without using ground stations in between. Proposals from industry on ways to do this are expected soon.

In the meantime, ComSat is building ground stations in Hawaii and Washington State. Another will be built in Puerto Rico.

In Arkansas, at least two million dollars will be spent on a station capable of sending and receiving signals from any part of the earth except India.

Other stations are also planned. However, NASA's direct transmission idea does not indicate short-sightedness on the part of the station-builders. Only a few of the many uses of communications satellites show potential for direct transmission in the near future. Others, such as transoceanic telephone calls, are almost certain to expand the need for stations many times.

Besides various portable and fixed "junior" stations, ComSat maintains its main ground link at Andover, Maine. The Hawaii and Washington stations will be similar to the one at Andover.

Direct transmission of commercial broadcasts could in the future lead to simpler, less expensive ground stations to handle the remaining satellite functions.

• Science News Letter, 89:40 January 15, 1966

SPACE

Models Save Dollars Studying Spacecraft

➤ MODELS AND MATHEMATICS are being used to study temperature problems of spacecraft at great savings over present studies made with full-size prototypes in big test chambers.

Research conducted by Prof. B. T. Chao of the University of Illinois, Urbana, is financed by the National Aeronautics and Space Administration and the university.

Temperature control involves heat stored and generated within the craft, heat received from the blazing sun, and heat lost by radiation to the frigid blackness of space. The problem is increased with orbiting craft which sweep from sunlight into shadow and back. The information is essential to spacecraft design because electronic devices will not operate if too cold or too hot.

• Science News Letter, 89:40 January 15, 1966

E FIELDS

GEOPHYSICS

World's Third Largest Meteorite Crater Found

➤ THE WORLD'S third largest known meteorite crater, 1,476 feet in diameter and having an average depth of 100 feet, has been discovered in northern Chile.

The largest on record is the Barringer crater, near Winslow, Ariz., which is more than 4,000 feet in diameter and 600 feet deep. The second largest is the Wolf Creek crater in western Australia. It is 3,000 feet in diameter and 170 feet deep.

The Chilean impact crater was found during an investigation of a depression shown in a photograph taken from an airplane. The discovery was made by Dr. William A. Cassidy of Columbia University's Lamont Geological Observatory, Palisades, N.Y., and Joaquin Sanchez, a geologist of the Instituto de Investigaciones de Geologicas de Chile.

The crater lies among the foothills in an area 10,000 feet above sea level and cannot be reached except on foot. The scientists recovered meteoritic material from the crater and its surroundings, but did not find any meteorites.

• Science News Letter, 89:41 January 15, 1966

SURGERY

Surgery to Relieve Angina Pain Improved

➤ IMPROVEMENT of an operation to relieve unbearable chest pain of angina pectoris was reported by Dr. Arthur Vineberg of the Royal Victoria Hospital, Montreal, Canada, to the American Heart Foundation.

First performed as early as 1954, the operation has been tried by only a small number of surgeons. In the meantime, Dr. Vineberg has been perfecting it, until he has achieved an unusually large number of survivals.

Fifty-nine of a group of 62 angina sufferers who underwent the new operation lived, and 88% of them improved as time went on. This contrasts with the usual survival rate in some other cardiac surgery, in which 59% survival is considered good.

Some surgeons have approached the angina pain problem by scooping out the clogged material in arteries that narrow in the chest and block the blood supply to the heart. The operation is called endarterectomy. However, Dr. Vineberg makes no attempt to remove the obstructing material, but only adds to the supplemental blood supply.

In his original procedure, he used only a piece of the mammary artery, an expendable portion that supplies the breast region with blood. The main disadvantage in this is that the mammary artery supplies blood only to the left ventricle. Sometimes the right ventricle is obstructed too.

The mammary artery surgery is now the last part of the improved operation. First, Dr. Vineberg takes off the membranous "skin" of the heart called the pericardium, which opens up exposed blood vessels. Second, he cuts a piece of tissue from the abdominal lining that covers the intestines and wraps it around the entire heart to supply extra blood to the exposed vessels.

The third and last part of the lengthy operation is the poking of an end of the mammary artery into the heart. The combination of techniques has been praised by heart authorities and is expected to be adopted by many of them.

Dr. Vineberg is quick to say that not all angina patients will respond to the operation. X-ray techniques will help a surgeon to diagnose conditions that can be helped by this type of surgery.

• Science News Letter, 89:41 January 15, 1966

MEDICINE

White Miniature Hogs Used to Test Drugs

➤ WHITE MINIATURE HOGS are a new type of animal being used in research for drug testing. Weighing about one-third as much as an ordinary hog, they respond to drugs like a man, and are relatively easy to handle and keep.

These small hogs weigh about 160 to 225 pounds—about the weight of a man, said Dr. Frances L. Earl, veterinary toxicologist at the U.S. Food and Drug Administration, working with Dr. J. C. Taylor of the Agricultural Research Service, part of the U.S. Department of Agriculture.

The scientists have been breeding a miniature hog for two reasons, said Dr. Earl. First, hogs are physiologically more like humans than are other nonprimates and second, smaller hogs are easier to handle than the huge 600 pounders.

Hogs are similar to humans in a number of ways. For example, their bodies require much the same kind of food, and they digest it in much the same way. Hogs are subject to many of the same maladies, even including peptic ulcers. A hog's heart and major blood vessels are much like those of a man, and the animal can get a form of hardening of the arteries caused by deposits of fat.

The common hog grows much too large for handling in research laboratories, Dr. Earl pointed out. Not only are they difficult to keep, feed and handle but they require large doses of costly experimental drugs.

Miniature hogs were first bred at the Hormel Institute of the University of Minnesota about 16 years ago. Their poundage was reduced at the rate of about two pounds every generation.

The herd at the Agricultural Research Service now includes about 45 to 50 breeding sows which are enough to supply research needs. These hogs are also bred for white skin so that side effects such as measle-like rashes, caused by antibiotics, can be traced.

Animal husbandry specialists may turn to breeding miniature strains of sheep, cattle and poultry for biological research.

• Science News Letter, 89:41 January 15, 1966

ARCHAEOLOGY

Artifact of Ice Age Discovered in Illinois

➤ A GRAY STONE artifact, recently exposed by heavy road machinery cutting through ancient soil in west-central Illinois, may have been shaped and flaked by human hands during the last Ice Age, 35,000 to 40,000 years ago.

The stone object, about one and a half inches long, may be extremely important in determining the age of man in the New World, report Patrick J. Munson of the University of Illinois and John C. Frye of Illinois State Geological Survey in Urbana, Ill. A few other artifacts have been found in North America dating back to the Ice Ages.

The stone is partly convex, well trimmed and has been flaked by percussion. One end of it is broken by an old fracture, they reported in Science, 150:1722, 1965.

The implement was found isolated in a sheer cut gouged through an area of yellowish brown, sandy and pebbly silt that dates back to the Wisconsin stage, or last of the four great Ice Ages.

There is an "unlikely possibility" that the specimen was dragged from another area by the machinery or fell from the surface above and was pushed into the face of the cut. Another "equally implausible possibility" is that the specimen was carried into the ground by burrowing animals or growing plant roots.

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BIOTECHNOLOGY

Quicker Method Devised To Measure Bile Pigment

➤ NEWBORN BABIES suffering from a congenital blood condition in which the bile pigment, bilirubin is produced in dangerously large amounts, will soon benefit from a device that can detect blood changes in only 60 seconds.

Dr. Sanford H. Jackson of the Toronto Hospital for Sick Children developed the fast new device called a bilirubinometer, which can replace the old procedure that used to take an hour to measure the blood's bile pigment content.

Bilirubin results from the breakdown of hemoglobin, the oxygen-carrying red pigment in the blood that nourishes the tissues. Too much bilirubin in the blood can lead to brain damage and even death.

The conventional method of measuring bilirubin is a chemical one that takes time. In addition, it requires a spectrophotometer, an expensive instrument that must be handled by skilled technicians. Since it also measures the hemoglobin content in the blood, the unit must be reset each time to calculate the bilirubin content.

The new device, designated Mark III, will make the measurement of bilirubin nearly as simple as the determination of hemoglobin. It will be manufactured and marketed by the Special Products and Applied Research Division of De Havilland Aircraft of Canada, Toronto.

• Science News Letter, 89:41 January 15, 1966