

TECHNOLOGY

**First Ocean Delivery
Of Liquid Methane**

THE METHANE Pioneer, a converted 5,000-ton dry cargo ship, has made its first delivery of liquid methane to gas-deficient England, successfully completing the first trans-oceanic delivery of liquid methane in history.

The ship carried the methane at atmospheric pressure and minus 258 degrees Fahrenheit in special aluminum tanks installed in the hold of the ship. The maiden voyage climaxed five years of research and development by Constock International Methane Ltd., which is owned by Union Stock Yard and Transit Company, Chicago, Ill., and the Continental Oil Co. of Houston, Texas.

Methane is the principal component of natural gas and liquefies at minus 258 degrees Fahrenheit. When it liquefies, it reduces to 1/600th its gaseous volume. It is impractical to hold large amounts of methane as a liquid under pressure, and scientists for years have been studying methods of transporting liquid methane at extremely cold temperatures to avoid the pressure problem.

The voyage is said to mark the beginning of a new era in which natural gas, previously wasted or shut in for want of accessible markets, can be liquefied and transported by tanker to countries where gas is not naturally available and energy must be supplied by gas manufactured from coal or oil at high costs.

Science News Letter, June 6, 1959

AERONAUTICS

**Jet Planes Seen No Threat
To Real Estate Values**

JET PLANES will not adversely affect the value of real estate in the vicinity of airports.

Studies of properties surrounding airports in Chicago, Los Angeles, Denver, Newark, Dallas, and New York City show that, "generally speaking," municipal airports do not unfavorably influence the market value of real estate in adjacent areas, H. O. Walther, past president of the American Institute of Real Estate Appraisers, said.

Speaking in Chicago at a panel discussion on the effect of the jet on real estate, sponsored by the American Society of Real Estate Counselors, he offered the following six findings in support of his conclusion:

1. More than 800 double transactions revealed that market behavior is about the same in airport areas as in non-airport areas.

2. More than 30,000 buildings, mostly homes, had been built within a mile of the six airports in a 12-year period from 1940.

3. The number of properties for sale in the airport areas was in most cases less than in comparable areas.

4. No appreciable difference in market

behavior was apparent between areas in the path of flight and other areas.

5. Airport areas which included homes were in good condition with better-than-average maintenance.

6. Trade opinion of real estate brokers active in the areas showed that airports had not influenced the value of homes adversely.

Although noise, interference and anxiety do exist in areas adjacent to airports, Mr. Walther said, the studies suggest that either their effect is small or there are other compensating factors.

Among the compensating amenities, he listed better transportation facilities developed because of the airport, strengthened demand for housing by airport employees, and new, airport-oriented industries that offer more job opportunities.

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NUTRITION

**Insufficient Diet Causes
Little Alarm**

PEOPLE SUFFER from poor diets because they also suffer from another condition—apathy.

Apathy, or indifference, is one of the major causes of inadequate diets, Dr. L. A. Maynard of Cornell University says.

Although sufficient food supplies are available, surveys continue to show that a considerable number of persons fail to follow diets that meet the recommended dietary allowances.

There is a widespread lack of appreciation of the importance of a good diet and a lack of knowledge of how to select such a diet, he asserts.

An adequate diet can be obtained by selecting foods from each of the following basic food groups. Milk is the first group. This includes cheese and ice cream. Dr. Maynard recommends that children have three to four cups of milk daily; teenagers, four or more cups; adults, two or more, and expectant mothers, four or more cups. Meat is the second group. Two or more daily servings of beef, veal, pork, lamb, poultry, fish or eggs are recommended. Dried beans, peas, and nuts may substitute for meats.

The third group includes fruits and vegetables. Four or more selections should be included each day. These servings should consist of at least one dark green or deep yellow vegetable at least every other day, citrus fruit or other fruits containing vitamin C, and vegetables including potatoes.

The last group includes bread and cereals. Dr. Maynard recommends four or more daily servings from this group.

The food supply of this country is so large and provides such rich and varied sources of the nutrients needed that it is readily possible for everyone to have an adequate diet from those foods available, he concludes.

Dr. Maynard's remarks appear in the *Journal of the American Medical Association* (May 23).

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IN SCIENCE

VOLCANOLOGY

**Volcanic Eruption
In Belgian Congo**

ONE OF THE MOST important eruptions of a volcano in the area during the last 50 years occurred last year in the Belgian Congo.

Dr. E. Berg of the Institute for Scientific Research in Central Africa, Belgian Congo, said the lava outflow, when it stopped on Nov. 21, 1958, measured about 12 miles. The highest outflows from the very spectacular cinder cone were about 50 cubic yards in a second.

A preliminary eruption occurred on Aug. 7, on the northern side of Nyamuragira in the active area of the eastern Belgian Congo. A swarm of very small earthquakes preceded the eruption by about three hours, and continued to the beginning of the main eruption on Aug. 10 at a place called Kitsimbanyi. Dr. Berg's report appears in the *Journal of Geophysical Research* (May), published by the American Geophysical Union with support of the Carnegie Institution of Washington and the National Science Foundation.

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FORESTRY

**New Virus Threatens
American Elms in East**

A SLOW moving "fire" is leaving a trail of scorched elms.

The fire is a virus disease that poses a new threat to the elm tree and the American elm in particular, Dr. Horace V. Wester, plant pathologist, U. S. Department of the Interior, told SCIENCE SERVICE. So far some ten percent of the elm population is affected in the Washington, D. C., area, with every indication it is widespread in the Southeast.

Elm scorch, as the disease is called, moves slower than the Dutch elm disease, but it definitely ruins a tree. Leaves turn brown as though scorched by fire and then die off. Preliminary studies indicate cork elm is resistant to the disease.

There is no cure for the disease. How the virus is spread is currently under study, with tiny leafhoppers or tree hoppers the most suspicious of the insect vectors or carriers. Dr. Wester is hopeful that researchers will be able to "run down" the vector in the next couple of years. It takes approximately four to six years for the virus to kill a tree.

A report on the successful transmission of elm scorch from diseased to healthy trees, prepared by Dr. Wester and Dr. Edward W. Jylkka, also with the Interior Department, appears in the *Plant Disease Reporter* (May 15).

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E FIELDS

MEDICINE

Juggling Drug Therapy Protects TB Patient

JUGGLING THE SEQUENCE of drug combinations in tuberculosis cases delays the development of eventual bacterial resistance to the drugs.

Alternating the combinations dodges temporarily the big problem in antimicrobial therapy, Dr. E. T. Peer of the Niagara Peninsular Sanatorium Association, St. Catharines, Ont., Canada, reported. Dr. Peer spoke at the National Tuberculosis Association meeting in Chicago.

Two drugs are ordinarily given over long periods of time in treating tuberculosis. The most effective combinations are isoniazid and PAS, para-aminosalicylic acid, or isoniazid and streptomycin.

The tubercle bacilli have never been known to develop resistance to a drug in less than three weeks when the drug was used alone, Dr. Peer pointed out. Furthermore, resistance is delayed when two drugs are used together.

Thus, the Canadian physician has employed a regimen of streptomycin and PAS for the first month, then isoniazid and pyrazinamide for the second, then back to the first regimen, and so on, alternating the drug regimen every month.

Two hundred patients who had never before received any tuberculosis drugs were tested by Dr. Peer.

He found that by using this alternating method, every case became bacteria-free within six months. Most cases became bacteria-free in two or three months. However, the bacteria have not regained a foothold and none of Dr. Peer's patients have suffered from a bacteriological relapse, he said.

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MEDICINE

Monkey "Executives" Get Ulcers Also

MONKEYS develop stomach ulcers when subjected to stress-producing conditions, Dr. Robert W. Porter of the University of California Medical School, Los Angeles, has found.

He said the ulcer-producing experiments are designed so that monkeys are constantly meeting new situations involving electrical shocks and making decisions as to how to avoid the shocks.

Thus, he reported, the animals are under considerable stress, "roughly equivalent" to the pressures of a modern business executive.

In a few weeks under these stressful conditions, the monkeys developed stomach ulcers similar to those of human beings. In addition, significant changes in the cholest-

terol level were recorded and there was some indication after autopsy that atherosclerosis had developed.

In another part of the study monkeys electrically stimulated a certain part of their brain by pressing a lever. Apparently this elicited a pleasurable sensation, for the monkeys sat for hours pressing the lever rapidly. This self-stimulation resulted in many of the psychosomatic disorders seen in the other experiments.

Analysis of blood constituents and waste products of the stressed monkeys is giving a picture of the hormonal or chemical changes produced by stress.

It is through such detailed studies of the neurophysiological and biochemical processes produced by stress that there is hope of finding preventive measures for resultant psychosomatic disorders, Dr. Porter said.

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METEOROLOGY

High Winds Charted By Copper Chaff

JET AGE airplane passengers will have smoother rides and persons plotting the paths of missiles will have fast and accurate information on winds aloft, thanks to a new method of charting motions of air up to some 100,000 feet above the earth's surface.

The new method involves tracking "chaff" made of copper instead of aluminum foil, after it has been automatically tossed out of a high-flying rocket. Chaff reflects radar waves and was first used during World War II to clutter enemy radar scopes. Now weathermen are using its reflecting properties to learn about the winds at high altitudes.

The copper chaff payload for HASP, the High Altitude Sounding Projectile, was designed by scientists at the Naval Ordnance Laboratory, White Oak, Md. Its successful use means that weather information at high altitudes obtained by HASP will be gathered much more swiftly and accurately than was previously possible.

In tests at the Naval Aviation Ordnance Test Station, Chincoteague, Va., the new payload was tracked by radar from 100,000-foot altitude down to 50,000 feet in 15 minutes. At these altitudes, the copper chaff falls at an average speed of about 3,100 feet per minute, compared to only 450 feet per minute for the standard aluminum foil chaff.

This performance now enables weathermen to determine with one HASP payload the wind direction and velocity over an altitude spread ten times greater than that previously measured by the slower-falling and faster-dispersing aluminum chaff.

From the tests Navy scientists learned that wind speed averaged about 20 miles an hour at 100,000 feet. At 50,000 down to 40,000 feet, the much faster wind velocities of the westerly jet stream were from 100 to 160 miles per hour, respectively, for each altitude. The wind speed decreased to 110 miles per hour at 20,000 feet, and to 80 miles per hour at 15,000 feet.

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TECHNOLOGY

Fission Wastes Stored Underground in Glass

A WAY safely to store dangerous strontium-90 and other radioactive fission products underground in glass has been developed.

At Chalk River, Ontario, Canada, the Atomic Energy of Canada Limited has been seeking a cheap and long-lasting treatment for dangerous waste products, Dr. A. R. Bancroft told the Chemical Institute of Canada meeting in Halifax, Nova Scotia. The investigators found a reasonably simple operation will entomb fission products in glass.

Glass is only slightly attacked by water, thus it could be safely buried without endangering future generations through eventual release of fission products from it.

When nuclear reactors are used for the generation of electricity, each reactor generating 200,000 kilowatts will produce about 1.5 pounds of fission products per day. The processing of these fission products into glass would be a small but important operation in the nuclear power system. Preliminary estimates of the cost of disposing of fission products this way have proved favorable, said Dr. Bancroft. This factor will be studied closely in the next year.

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PUBLIC HEALTH

15-Minute Rabies Test Proves Successful

RABIES can now be successfully detected in animals within 15 minutes, compared to the old mouse inoculations that took several weeks.

The new 15-minute test is done with a fluorescent labeling agent or dye developed by the Borden Chemical Company's Dajac Laboratories, Philadelphia.

Antibodies against rabies are covered with the dye. Then the mixture is poured over a slide containing the material to be diagnosed. If rabies is present, the dye will "tag" the harmful organism with a greenish fluorescence.

This technique may also be used in the future for more rapid diagnosis of other diseases such as diphtheria, polio, influenza, typhus and Rocky Mountain spotted fever. Studies are now underway to determine how useful this test will be in detecting venereal diseases.

The dye, fluorescein isothiocyanate, was used in a Florida field trial. It proved successful in 144 cases of suspected rabies in animals. Specimens from the animals were given the new test as well as the mouse inoculation test, which up to now has been the only completely accurate means of detecting the rabies virus. The results of the two methods agreed 100%, the U. S. Department of Health, Education and Welfare's Communicable Disease Center reported.

Scientists hope soon to be able to detect rabies virus in humans by this quick method. The test is based upon a fluorescent antibody technique discovered ten years ago by Dr. A. H. Coons of Harvard University.

Science News Letter, June 6, 1959