

## PLANT PATHOLOGY

**Soil Heat Treatment Controls Plant Diseases**

AERATED STEAM at about 140 degrees Fahrenheit can be used to kill plant disease organisms in the soil, but does not destroy harmless organisms.

This treatment, which has proved effective in experimental disease control of field-grown nursery plants, was developed by Dr. Kenneth F. Baker, plant pathologist at the University of California.

It is a part of a general "public health" or disease prevention program designed for the nursery industry.

Previous soil heat treatment involved a 212 degree temperature. This rendered the soil completely sterile, killing all organisms and leaving a "biological vacuum."

The new method reduces recontamination of the treated soil by disease organisms, which usually occurs in the field from the air or nearby untreated soil.

Since competition among soil organisms for available nutritional resources is so great, the re-invading disease organisms have a more difficult time in the soil in which moderate heat treatment has permitted competing non-disease organisms to survive.

Antibiotics produced in the soil by the "good" organisms further limit those which cause disease.

Disease organisms re-establish themselves rapidly in soil treated by the old sterile method. Thus the disease may again attack plants, sometimes more severely than before.

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## PUBLIC HEALTH

**Federal Order to Mean Fewer Lipstick Shades**

FEWER LIPSTICK shades will be available to women as a result of a new Federal order.

The Food and Drug Administration has ordered the removal of 17 coal-tar colors, used principally in lipsticks, from the list of colors permitted for unrestricted use in drugs and cosmetics.

The order is based on the Federal Food, Drug and Cosmetic Act, which specifies that any coal-tar color that is harmful in significant amounts in the diet of test animals, though safe in smaller amounts, must be banned for human use.

Feeding tests have shown that the 17 colors involved in this order, including shades of red, orange and yellow, were harmful to laboratory animals.

The Department of Health, Education and Welfare has sponsored legislation, now pending in Congress, that would authorize the FDA to set limits on the amount of a color that can be used safely, to specify products in which it may be used, or both.

Under the present law, a color that cannot qualify as completely "harmless" must be banned altogether.

Whether the 17 colors affected by the order could be used under the safeguards provided in the proposed legislation has not been determined, the FDA reported. Fur-

ther laboratory tests on animals will be necessary for such a determination.

By the FDA order, 13 of the affected colors may continue to be certified for safe use in drugs and cosmetics applied externally and that cannot get into the digestive system, such as lipstick can. The other four colors have never been offered to the FDA for certification for use in drugs or cosmetics and have been removed from the list of colors that may be used by manufacturers for this purpose.

Of the 70-odd colors certified by the FDA for use in drugs and cosmetics, about 33 were used in making lipsticks.

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## BIOLOGY

**Rediscover Survivors Of Once Abundant Ant**

SURVIVORS of the mound-building ant, *Formica cinera*, have been rediscovered near Platteville, Wis., on a remnant of prairie that has never been touched by a plow.

The mound-building ants once thrived on the vast prairies of southwestern Wisconsin, but they were unable to survive on land cultivated for crops. Their present untouched prairie home is a strip only about one mile long and as wide as a large living room, which has escaped cultivation. It is known as Ipswich Prairie.

The above-ground dome of an ant mound may reach 16 inches in height and, for the tiny ant, building such a mound is as great an accomplishment as the Great Pyramids of Egypt is for man. A man-sized equivalent would be some 400 feet high and more than 500 feet in diameter. In addition, the ant mounds reach as deep as eight feet underground. More than 6,000 ants were counted in one mound that was dug up.

The mound-building ants on Ipswich Prairie are under continuous study by Russell O. Wagner, associate professor of biology at Platteville State College, and an assistant, Michael Schuldt. Study of the ants has been supported by a grant from the Wisconsin Alumni Research Foundation.

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## ENGINEERING

**Certify Accuracy of Length Measurement**

FOR THE FIRST time in history, the National Bureau of Standards has certified the accuracy of its length measurements made on two commercial gauge blocks to better than one part in 5,000,000.

Steel gauge blocks are used to monitor manufacturing processes in the mass production of interchangeable machined parts. It has been said that an error of one-millionth of an inch in the borehole of a gyro can result in a complete miss of a moon shot. Measuring that millionth of an inch, the Bureau reported, can be compared to an attempt to detect one 25-cent coin in a stack of quarters three times as high as the Empire State Building.

Science News Letter, October 17, 1959

**IN SCIENCE**

## PUBLIC HEALTH

**Iron-Curtain Queries On Water-Testing Method**

ABOUT HALF of the inquiries received so far on a new, fast, inexpensive radio-isotope method of determining drinking water purity have come from behind the Iron Curtain, reports Gilbert Levin, sanitary engineer of Resources Research, Inc., Washington, D. C. (See SNL, July 25, p. 50.)

Mr. Levin, along with three scientists at Georgetown University's School of Medicine, has been working on a new and better way of detecting coliform bacteria in public water supplies. He said the system is not yet perfect, but expressed hope that perfection is close.

If, he said, Iron Curtain countries were to take available information and perfect and apply the system, they would have the latest, fastest and cheapest way of detecting coliform bacteria in drinking water. Coliform bacteria are associated with sewage and can cause illness.

Mr. Levin said efforts to interest U. S. Government groups in further research on the possibilities of the system so far have generally failed. An exception is the U. S. Public Health Service, which is financing the research at Georgetown University through a National Institutes of Health grant.

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## SURGERY

**Non-Surgeons Perform Half of U. S. Surgery**

ONE-HALF of all surgery performed in this country each year is done by persons who are not primarily surgeons, the new president of the American College of Surgeons said at Atlantic City, N. J.

Virtually all surgery is done by trained and qualified surgeons throughout Europe and Great Britain, Dr. Owen Wangenstein, professor of surgery and chairman of the department at the University of Minnesota, reported. This is not true in America, however, he said.

The American surgeon at the turn of the century did general practice and culled his surgery from it. But the causes no longer exist that preserved the tradition that anyone licensed to practice medicine in the U. S. is also competent to perform operations, he told the 10,000 surgeons attending the annual convocation ending the College's clinical congress.

If local and national accreditation groups, working together, fail to curb the practice of untrained and unqualified practitioners performing major operations, steps must be taken with licensing boards to establish better controls in the public interest, Dr. Wangenstein said.

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# E FIELDS

## ICHTHYOLOGY

### Some Fish Have Built-In Antifreeze

SOME FISH seem to have a built-in supply of antifreeze to keep them from freezing in cold weather.

Discovery some years ago of an antifreeze-like substance in the blood of supercooled shallow-water fishes of Hebron Fjord in Labrador led a group of scientists to make an expedition to this fjord last March in hopes of finding out more about what the substance actually was. A more recent discovery that some frost-hardy insects use glycerol in high concentrations as an antifreeze and supercooling facilitator also added to their curiosity.

M. S. Gordon of the University of California, B. H. Amdur of Harvard University, Cambridge, Mass., and P. F. Scholander of Scripps Institution of Oceanography, La Jolla, Calif., told the International Oceanographic Congress meeting in New York of their findings in Hebron Fjord.

By fishing with hand lines through holes in the ice in six to 30 feet of water, they caught large numbers of two species of fish, the shorthorn sculpin and the fjord cod. Both the temperature of the fish and that of the water were a few degrees Fahrenheit below freezing.

Once caught, the fish were taken to a heated laboratory where samples of drained blood were centrifuged. Serum or plasma samples were frozen and analyzed at home laboratories.

These tests showed that the amount of antifreeze added to the blood of shallow-water fishes is variable. The extra blood concentration does not come from the common inorganic ions, glucose, glycerol, proteins, or urea and ammonia. The antifreeze of the fjord cod, but not that of the sculpin, is probably a component of the non-protein nitrogen fraction.

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## SURGERY

### Electrical Current Stops Severe Hemorrhages

BLEEDING WOUNDS usually difficult to seal off can be "sewn" closed by a small direct electrical current.

The technique has been tested on blood vessels, spleen and liver incisions on animals. Three surgeons from the State University of New York Downstate Medical Center, Brooklyn, explained their method to colleagues attending the meeting of the American College of Surgeons in Atlantic City, N. J. The team consists of Drs. Philip N. Sawyer, Sigmund A. Wesolowski and Eustace E. Suckling.

Their experimental tools were quite simple, consisting of number nine telephone dry cells, an ammeter, a variable resistance

and several small platinum electrodes. Currents from two to 100 milliamperes were used.

Their results indicate that positive electrodes are highly effective in controlling hemorrhage. Electrical currents appear to be more satisfactory in certain types of tissue than does the use of high frequency alternating current electro-coagulation, the researchers said. The new technique can be used where there is considerable bleeding merely by thrusting the electrode into the blood that is collecting.

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## GEOLOGY

### Yellowstone Geysers Returning to Normal

MOST GEYSERS in Yellowstone National Park are returning to normal activity after having their usual patterns upset by last August's severe earthquake.

There were "no outstanding changes," such as Old Faithful no longer being faithful, scientists at the National Park Service have found. Reports from park naturalists indicate that some hot springs cooled off and some cool springs became hot ones.

The situation is one where such a large earthquake, in which some 20 persons lost their lives and a new lake was formed, causes certain shifts in the earth's crust. The noticeable effects of these shifts, such as seen in different geyser schedules and changes in temperatures of springs, are slowly dying out.

Whether all of the geysers will subside to their pre-earthquake activity level and schedule is not yet known.

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## PUBLIC HEALTH

### Strontium-90 Levels Up But Called "Safe"

LEVELS of radioactive strontium-90 in the nation's major rivers increased during the second quarter of 1959, but are still "very substantially below" the levels set for safe lifetime exposure for the general public.

The U. S. Public Health Service said it had "no ready explanation" for the slight increase, but thought spring rains may have washed a little more strontium-90 out of the sky than normally would have fallen. It predicted July-August-September figures would show a general decrease.

Of 47 stations that reported readings in both quarters, 33 showed slight increases. Only 13 reported a drop in radioactivity, and one held steady for both quarters.

The highest level was recorded on the Tennessee River near Chattanooga. It had a level of 4.8 micro-microcuries—still far below the 80 micro-microcurie "maximum" the National Committee on Radiation Protection and Measurements says is safe.

Samples were taken on 17 major rivers by 51 stations every week for the strontium-90 analysis.

This 51-station "water quality network," as it is called, is expected to increase to 75 stations during the coming year and will eventually be expanded to 250.

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## AERONAUTICS

### "Flying Ship" Ready For Its Public Debut

A PROTOTYPE SHIP that can fly two feet over water at 50 miles an hour is to be unveiled sometime in November.

Spacetratics, Inc., Washington, D. C., reports that its aluminum cargo-carrying craft is designed to float on a cushion of air provided by a powerful engine near the bow.

A big horizontal propeller will shove air between the ship and water with enough force to lift the craft about two feet high. Aft-mounted fans will drive it forward as it rides on this almost-frictionless cushion of air.

Now nearing completion, the teardrop-shaped vehicle will be 32 feet long, 24 feet across its widest point, and two feet high.

This flying platform, as it is called, is envisioned by the company as the prototype of "fantastic, cargo-carrying craft intended to streak between ports."

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## MEDICINE

### Treat Brain Cancers With More Powerful Drugs

ANTI-CANCER DRUGS can be injected into the brain to fight cancer, animal experiments reported at the American College of Surgeons in Atlantic City, N. J., show.

The drugs can be perfused into the head at dosages several times that which the body as a whole could withstand.

Isolated treatment of the head was achieved by using a heart-lung machine hooked up to the carotid (neck) artery for infusion and the jugular (throat) vein for collecting venous return blood.

No damage occurred to brain tissues and there was no sign of poisoning, Drs. M. S. Mahaley, Jr., and Barnes Woodhall of Duke Hospital, Durham, N. C., and Dr. W. H. Knisely, professor of anatomy, University of Kentucky, reported.

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## CHEMISTRY

### Beryllium Will Be Ready for Use Soon

BERYLLIUM is expected to take its place in industry as a workhorse metal in about two years.

Lyle M. Christensen, design specialist in Northrop Corporation's Norair Division, told the Society of Automotive Engineers meeting in Los Angeles that the feasibility of bare beryllium extrusion "has been undisputedly" proved.

Beryllium is a strong, lightweight, toxic metal that could cut the weight of a transport airplane about 50% if used instead of aluminum. Although the metal now costs about \$100 a pound in powder form, producers predict that any real application of beryllium in the aircraft industry will "result in drastically reduced prices," Mr. Christensen said.

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