

ZOOLOGY

Cultivate Bacteria-Free Variety of Vinegar Eel

➤ EVER HEAR the phrase "as sour on life as a vinegar eel?"

Well, the vinegar eel leads a very wholesome life even though it resides in vinegar barrels and thrives on a diet of vinegar and bacteria, Dr. Clark Read and H. A. Ells of the University of California at Los Angeles have found.

They have been able to cultivate a bacteria-free variety. This is considered quite an accomplishment among zoologists, because the vinegar eel is a relatively highly organized animal and bacteria-free animals are rare even among most simple one-celled animals. The bacteria-free vinegar eel is providing an excellent medium for nutritional studies. This "eel" is really a worm, not a fish like those in the sea and rivers.

If you think the vinegar eel is eccentric, you should consider its cousin, "the felt beer mat eel," Dr. Read says. It apparently exists only in the brew-soaked felt mats which Germans customarily use as coasters for their steins.

It also has a couple of peculiar relatives that prefer climatic extremes. One lives only in hot springs such as you find in Yellowstone Park. The other exists only in the ice fields of Spitzbergen.

They are all a part of a worm group known as *Nematodes*. The black sheep of the usually harmless clan is the hookworm that wreaks havoc with man and animal.

Science News Letter, December 6, 1952

ELECTRONICS

Tracking System Checks Ship's Speed Secretly

➤ NAVAL ENGINEERS secretly determined the "ground speed" of the shiny new superliner S. S. United States through a modified electronic tracking system used previously to follow the wanderings of high-flying weather balloons.

Reporting to the Society of Naval Architects and Marine Engineers meeting in New York, J. P. Comstock, assistant naval architect at the Newport News Shipbuilding and Dry Dock Co., and C. E. Hastings, president of the Hastings Instrument Co., Newport News, Va., said the system prevents unauthorized persons from figuring out the ship's speed during tests.

Extremely accurate, the system replaces the "measured-mile" course over which ships usually are clocked during speed tests. Only two such courses are widely used on the eastern coasts of North America and Cuba. Neither was satisfactory as a test site for the United States.

The Raydist system, as it is called, has these advantages over the measured-mile course:

It can be used in "truly deep" water, whereas the measured-mile course must be visible from the shore.

The speed measurement remains secret. That is, the ship's speed cannot be figured out by unauthorized persons.

It is not restricted to daylight operation, or limited by poor visibility.

It permits the ship to maneuver more easily, especially when turning and when building up speed for the test run.

It permits runs to be made into, across, or with the wind as desired.

Basically the system consists of a transmitter aboard the vessel to be tested and a receiver-transmitter floating in a buoy a few miles away. A measure of the phase relationships of the radio signals yields the distance traveled by the ship toward the buoy in a given length of time.

Science News Letter, December 6, 1952

INVENTION

Patent Process for Cleaning Dirty Eggs

➤ SO-CALLED "heavy dirty" eggs can be cleaned by a process which subjects them, as one important step, to a spray of water at the boiling point for a very few seconds. The process was invented by Harry A. Mulvany, Berkeley, Calif., for which he received patent 2,618,216.

"Heavy dirty" eggs, those with a great deal of dirt on the shell, must be cleaned before they find a market. The dirt helps along the rotting process as well. Mr. Mulvany first blasts his eggs with sand and water, then subjects them to a spray of boiling water for three seconds. This washes off the remaining sand and water and makes the shells sterile without bringing the albumen to the coagulating point.

The eggs are then coated with a sterile oil. Eggs treated in this manner, according to the inventor, shrink at a very much lower rate than untreated eggs, and may be held for a period of weeks without undue drying and without becoming so-called "rots."

Science News Letter, December 6, 1952

CHEMISTRY

Pure ACTH Isolated But Synthesis Remote

➤ ACTH, the pituitary gland hormone which stimulates the adrenal gland to produce cortisone and, like cortisone, is famous for bringing relief in arthritis, asthma and other diseases, has been isolated in pure form by researchers at Armour Laboratories in Chicago.

This pure ACTH is a white powder, soluble in water, and with a molecular weight of about 3,500, much less than originally estimated. It is a protein consisting, apparently, of a single chain of amino acids.

There is little chance, however, of synthesizing it, F. W. Specht, president of Armour and Company, said. The pure ACTH will be available only for research.

Science News Letter, December 6, 1952

IN SCIEN

ENGINEERING

Robot Machines Cut Waste in Production

➤ AUTOMATIC MACHINES that watch the products they make are becoming a necessity today in plants that must maintain tight quality standards, H. L. Waddell, editor of *Factory Management and Maintenance*, told the American Society of Mechanical Engineers meeting in New York.

The machines do not pay for themselves solely by eliminating a worker or several workers, he said, but rather by cutting down waste. The cost of the extra equipment needed to produce 10 units to get five acceptable units is eliminated. The cost of reworking or scrapping unacceptable units also is slashed.

Mr. Waddell said he did not think that increased use of automatic machines would bring about grave problems of unemployment.

"If ultimate automation of every major factory were to arrive in a short span of time," he said, "the dislocations would certainly be serious. But it's obvious that ultimate automation will not take place in every company on the same day—or the same year. So I have every confidence that the 'economic feedback control' within our competitive system will prevent major dislocations."

Science News Letter, December 6, 1952

BIOCHEMISTRY

Ion Exchange Resins Speed Medical Advances

➤ BLOOD PLASMA can be made safe for transfusion, antibodies against disease germs can be purified, high blood pressure patients can be helped and stomach acidity can be determined without the need for swallowing a stomach tube.

All these medical advances are possible through the use of ion exchange resins which can take the salt out of sea water or hold back the salt and take out organic material.

How the ion exchange resins can be used for these various medical purposes was reported at a New York Academy of Sciences conference in New York. Reporting were the following scientists: Dr. Henry C. Isliker of Harvard University; Drs. K. G. Kohlstaedt, B. L. Martz, R. S. Griffith and O. M. Helmer of the Lilly Laboratory, Indianapolis, Ind., and Dr. Harry L. Segal of the University of Rochester, N. Y., School of Medicine and Dentistry.

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CE FIELDS

GENERAL SCIENCE

Foundation Grants Aided Nobel Research

► THIS YEAR'S Nobel award in physics has increased to eight the number of Americans who have both become Nobelists and received Research Corporation grants to help conduct the researches that won the Nobel prizes.

Dr. Felix Bloch of Stanford University and Dr. Edward M. Purcell of Harvard University both received a series of Research Corporation grants, beginning in 1946, for their independent studies on the measurement of magnetic fields in atomic nuclei which won for them jointly this year's physics prize.

Other Nobelists who received financial support from the foundation resulting from the late Dr. F. G. Cottrell's electrical precipitation patents are: Dr. Harold C. Urey, chemistry, 1934; Dr. Ernest O. Lawrence, physics, 1939; Dr. Isidor I. Rabi, physics, 1944; Dr. Percy W. Bridgman, physics, 1946; Dr. Edward C. Kendall, medicine, 1950; and Dr. Edward M. McMillan, chemistry, 1951.

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HYGIENE

Window Sill Dust Is Not Black Smoke

► DO NOT judge a smoke stack by the smoke you see coming from it. The chances are that such smoke, thick as it may look, is not what makes dust fall on your window sill.

This advice, in effect, was given by W. C. L. Hemeon, engineering director of the Industrial Hygiene Foundation, Mellon Institute, at the Foundation's annual meeting in Pittsburgh.

Scientific methods must be used to determine whether or not a given stack is polluting the air and soiling homes, shops and other buildings in the neighborhood, Mr. Hemeon declared.

Fine particles, from improper burning of coal or other fuels, are the ones you see as they leave the chimney. They can be seen because of the light scattering power characteristic of all very fine particles. These fine particles are responsible for visible haze over a city. As they are slowly and imperceptibly deposited on ceilings and walls, they gradually stain these surfaces. The stain will be black if the particles are from coal smoke.

But the coarse particles that settle fairly fast on porches, sills and other outside objects are practically invisible when they come out of the chimney. They cause the

nuisance called "dust fall," but do not add to the visible haze over a city.

In most cities where a coal-smoke wall-staining problem exists, it is caused by smoke from domestic furnaces, Mr. Hemeon said. This is clear from the fact that it is almost completely absent in summer.

Dust fall nuisances, on the other hand, almost always come from industrial operations. Technological improvements, Mr. Hemeon said, have had far greater effect in reducing air pollution than laws. Among such improvements he listed diesel engines instead of steam locomotives, and improved combustion equipment in factories.

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INVENTION

Rocket Pictures To Aid Research

► A WAY of taking continuous pictures of a high speed, experimental rocket, moving along a track, without moving the camera has been invented.

Previous difficulty has been that the track is too long to get the entire trip of the rocket onto film without "panning" the camera. At such high speeds, this is hard to do. Nevertheless, pictures are important in research work on rockets.

Dick R. Herman, Los Angeles, Calif., has invented a way of taking care of this. He has assigned his patent, number 2,618,195, to Northrop Aircraft, Inc., Hawthorne, Calif.

His camera views a bank of mirrors placed one above the other in the picture frame and independently adjusted so that a different portion of the rocket's track is seen in each mirror. In one particular set-up, the camera took constant pictures of the passage of a rocket along a track 1,850 feet long, using nine mirrors aimed at nine sections of the track.

Science News Letter, December 6, 1952

CHEMISTRY

Large Scale Production Of Rare Earths Possible

► LARGE-SCALE PRODUCTION of pure rare earths, 15 hard-to-separate metallic elements, is promised through the development of a new extraction method at the Argonne National Laboratory, Lemont, Ill.

The purity of the final product is not as great as by the ion exchange method, but the new process works much faster. The extraction method depends upon careful control of the strength and amounts of nitric acid and tributyl phosphate used.

A combination of the solvent extraction method and the ion exchange method would produce, for the first time, large quantities of high-purity rare earth elements, Dr. D. F. Peppard of the laboratory suggests. Co-workers in development of the new method were J. P. Faris, P. R. Gray and G. W. Mason.

Science News Letter, December 6, 1952

INVENTION

To Which Station Is Your Radio Tuned?

► A. C. NIELSEN CO., Chicago, one of the concerns which provides ratings of radio and television programs to sponsors and advertising agencies, can find out what station you are tuned to without calling you on the telephone. This can be done with an invention patented by Serge A. Scherbatskoy, Tulsa, Okla., and assigned to the Nielsen Company. Its number is 2,618,743.

There is a local oscillator in all super-heterodyne receiving sets. This oscillator puts out a signal the frequency of which changes as the set is tuned to different stations. This signal must be effectively shielded so that it does not interfere with other radio sets in the area.

The new gadget draws off a very small part of the local oscillator's signal and translates it into a signal which modulates at ultra-high frequencies. This signal is strong enough to be picked up at a central station several miles away.

The device which does this will be very small, having only one or two tubes, so that it can fit into the back of a typical radio cabinet. At the central station a receiver and a recording device are provided. Because the signal has been transferred into the ultra-high frequencies, the inventor says that it will be possible to receive permission from the Federal Communications Commission for its use.

Science News Letter, December 6, 1952

ENTOMOLOGY

Insecticide Causes High Birth Rate—in Flies

► FRUIT FLIES that survive exposure to a poison 240 times as deadly as DDT have an unusually high birth rate, partly making up for the toll of insecticides on the population.

This was reported by Dr. Herbert Knutson, zoologist at the University of Rhode Island, Kingston, following experiments to learn how insecticides affect insects through many generations. Dr. Knutson had noted that often, after use of insect sprays, the number of insects dropped rapidly for a while but came back greater than ever a few generations later.

He placed pairs of fruit flies that had survived exposure to dieldrin, a powerful poison, in rearing cages, then set up equal numbers of unexposed pairs in cages to act as controls. All eggs laid during the lifetime of both groups were counted.

Dr. Knutson found that dieldrin survivors laid five percent more eggs than the unexposed flies.

That five percent means a lot of flies, when you consider that a normal pair can produce 136,000 offspring in two generations, and there are 14 generations in a single season.

Science News Letter, December 6, 1952