FORESTRY

Chemical Retards Spread Of Dutch Elm Disease

➤ A NEW CHEMICAL treatment gives promise of preventing the spread of Dutch elm disease. It is SMDC (sodium N-methyl dithiocarbamate), developed by a University of Wisconsin researcher.

Gayle L. Worf, University of Wisconsin plant pathologist, told a conference on shade trees that this chemical has been successful in breaking underground root connections between elm trees growing close together. The treatment was developed by Dr. Eugene B. Smalley, assistant professor of plant pathology at the University of Wisconsin, Madison.

An estimated 75% of all cases of Dutch elm disease are transmitted from one tree to another through underground connections. The chemical SMDC forms a chemical trench around infected trees, isolating them and preventing the spread of the disease-bearing sap to healthy trees.

In the recommended treatment with SMDC, the chemical is poured into three-foot deep holes drilled at nine-to 12-inch intervals between the infected and healthy elms. Prof. Worf said the treatment did not harm birds and other wildlife, but it might kill grass in the immediate area.

The SMDC treatment should be used in addition to previously recommended controls, such as destroying dead or diseased elm wood and spraying healthy trees with DDT or methoxychlor while they are dormant.

• Science News Letter, 87:8 January 2, 1965

PHYSIOLOGY

Electronic Devices Spot Hearing Troubles

➤ HEARING PROBLEMS in infants can be spotted early through new techniques of testing with videotape and electronic "slices of white noise."

Research under the direction of Dr. John P. Moncur of the University of California at Los Angeles Medical School's division of otology is aimed at assessing the normal range of hearing in youngsters three to eight months of age.

At this early age there is little to indicate how well any infant does hear. A loud sound may produce a startle reflex, or the child may begin to seek the source of certain sounds with his eyes. But parents often have so little to go on that they may not realize a child has a serious hearing problem until he is approaching one year of age.

Pure bell-like tones are used in assessing adult hearing, but youngsters do not respond to these tones. They do respond to voices, however, which are not precise enough sounds to accurately measure a range of hearing.

The investigators have substituted a "white noise," an electronically produced hissing sound that covers a wide frequency range evenly. This range is similar to that of the human voice and infants seem curious about it.

The white noise is electronically sliced into narrow bands of different frequencies to provide a more precise tool for testing different hearing levels.

Since the infant cannot describe what he hears, trained observers watch for subtle reactions which may denote that the sound was heard. These responses are recorded on videotape for detailed analysis.

Although the present research is aimed at establishing normal hearing responses at this early age, such a test would be useful in spotting hearing deficiencies during the first year of life. Many deficiencies might be corrected before they pose serious difficulties.

• Science News Letter, 87:8 January 2, 1965

OCEANOGRAPHY

New Process Measures Radioactive Wastes

➤ A NEW METHOD to determine the quantity of radioactive silicon 32 in the ocean may help scientists estimate how much radioactive waste can be dumped there.

The technique works by lowering an empty bag that can hold 10,000 gallons of water into the ocean. At a certain depth, a device opens the nine-foot mouth of the bag and water flows into it through a funnel as the bag heads toward the surface.

When filled, the bag turns over, disengaging the funnel, and then rises to a point 50 feet below the surface where the silicon is separated from the water and processed. After processing, the radioactivity of the material is measured by a Geiger counter.

About two ounces of silicon can be removed from more than 40 tons of ocean water.

Since the rate at which silicon 32 decays is known, the method, devised by Dr. David R. Schink, an oceanographer at the University of Rhode Island, Kingston, can indicate the "age" and movements of the sea water. This information is valuable for finding out how much radioactivity the ocean can absorb.

Carbon 14 dating techniques, well known for their use in archaeology, are also being used in sea water experiments, said Dr. Schink, who believes that it is good to have a second measuring process so that accuracy of results can be compared.

• Science News Letter, 87:8 January 2, 1965

ICHTHYOLOGY

Record-Size Marlin Now in Smithsonian

➤ THE LARGEST FISH of any kind taken on a rod and reel, a black marlin weighing 1,560 pounds and 14 feet six inches long, is now in the Smithsonian Institution.

The fish was caught by Alfred C. Glassell Jr., of Houston, Texas, off Cabo Blanco, Peru on August 4, 1953.

• Science News Letter, 87:8 January 2, 1965

IN SCIEN

ORNITHOLOGY

Birds Become Fat or Thin With Seasons

➤ BEING FAT is for the birds.

Swallows, warblers and other long-distance travelers may have as much as 50% of their body weight stored in fat reserves when they are ready to fly on long migrations in the spring.

This fat provides energy to the winged voyagers during long flights across the oceans or at night when they cannot or do not stop for food, reported Drs. James R. King and D. S. Farmer at the Conference on Adipose Tissue Metabolism and Obesity, sponsored by the New York Academy of Sciences.

Yet these same birds can grow exceedingly thin at other times of the year when they are molting or losing their feathers, and also when they are reproducing, state the two scientists from Washington State University, Pullman, Wash.

At these lean times of the year, the fat reserves in the birds are only five percent of the body weight.

When captive birds are kept outside in cages, they show the same cyclic variations in their fat reserves as the wild birds.

These captive birds begin to store up reserves of fat in their bodies when they are artificially stimulated with light to imitate the lengthening of daylight hours in spring, or when they are injected with prolactin, a hormone that stimulates development of the crop-sac in pigeons and milk production in mammals.

• Science News Letter, 87:8 January 2, 1965

OPTOMETRY

New Kind of Glasses Can Replace Bifocals

➤ THE SHARP dividing line of bifocal eyeglasses has been eliminated in a new lens which gets rid of the grandfatherly appearance of old-style glasses.

The far-sightedness due to advancing age, called presbyopia, ordinarily calls for bifocal or trifocal lenses, or special reading glasses, but the new eyeglasses do the same job with gradually increasing power from top to bottom. There is no blur area or transition zone.

The "Omnifocal" lenses are produced in Columbus, Ohio, at The House of Vision optical company's manufacturing subsidiary, All-Site, Inc., which did the research leading to their development during the past two years. The glasses are now available in the Midwest and will soon be available in other parts of the United States.

They are reported to be slightly more expensive at first than bifocals.

• Science News Letter, 87:8 January 2, 1965

CE FIELDS

PHYSICS

Garden Hose Clarinet Blows Just as Sweet

➤ A WOODWIND of any other stuff would blow as sweet, judging from a study by a California physicist.

Dr. John Backus of the University of Southern California says that the tone of a woodwind instrument, such as a clarinet or flute, is not affected by the material from which the instrument is made. To prove his point, Dr. Backus tested instruments made of brass, plastic and even a length of garden hose.

Most musicians, he said, are convinced that the material determines the tone quality of the instrument. Metal clarinets are thought to have a dull, flat tone; on the other hand, wooden flutes have lost their popularity and have been replaced by instruments of silver alloys, or even pure silver, gold or platinum.

Dr. Backus believed that neither the elasticity of the material nor the sound made by its vibrations affect the tone of the instrument. To find out for sure, he made a clarinet out of a length of plastic tubing, like that in a garden hose, into which he had bored holes.

Although the clarinet was too pliable to be played well, its tone sounded surprisingly like that of a "normal" clarinet.

For more exacting tests, Dr. Backus used electronic equipment to measure the harmonics generated by brass and plastic tubes of approximately the same length. Although the equipment showed slight differences, he said, his ear could not detect them. In general, the sound made by the body vibrations of woodwinds was 40 decibels softer than that made by the air columns inside the instruments, much too faint to have any effect on the tone.

The physicist commented that he would like to investigate the effects of the material in brass instruments. At present he is experimenting on organ pipes. His work was reported in the Journal of the Acoustical Society of America.

• Science News Letter, 87:9 January 2, 1965

TECHNOLOGY

Houses Will Soon Stick Together Without Nails

➤ NEW PLASTIC ADHESIVES that will make it possible to build houses, cars and airplanes without nails, screws or rivets will soon be developed and the prices of all standard plastics, rubbers and staple fibers will soon drop, a top scientist predicted.

Plastic and rubber prices will dip to between 20 and 30 cents a pound, with some as low as 15 cents, while staple fiber prices will sink to between 40 and 60 cents, with some as low as 25 to 30 cents.

These and other predictions were made by Dr. Herman F. Mark, plastics authority and dean of faculty of the Polytechnic Institute of Brooklyn, Brooklyn, New York.

Dr. Mark attributed much recent progress to scientists' increased understanding of natural polymers, such as wood, cotton, wool, silk and rubber.

This increased understanding has made possible the creation of many new polymers, he said.

Polymers are chemical compounds formed by a chemical reaction in which two or more small molecules combine to form larger ones. Less than 100 years ago the chemical composition and structure of polymers was virtually unknown.

Other important progress that Dr. Mark foresees in the near future include:

Creation of polymers that remain flexible and supple at temperatures as low as 100 degrees below zero centigrade, and of others that can withstand temperatures of 500 degrees centigrade for long periods.

Polymerization of liquids or solids at low temperatures, permitting rapid continuous production of many high purity polymers, with convenient control of molecular weight.

Further improvement in methods for characterizing polymers.

Dr. Mark reported his predictions in Science, 146:1023, 1964.

• Science News Letter, 87:9 January 2, 1965

ARCHAEOLOGY

Sequence of 6,000 Years Of Prehistory Revealed

➤ EXCAVATIONS at Hasanlu, Iran, have disclosed a mass of previously unknown details about life in the area, particularly during the ninth century B.C., and have provided "an outline sequence of 6,000 years of prehistory," said field director Robert H. Dyson.

Archaeologists of the University Museum of the University of Pennsylvania and the Metropolitan Museum of Art of New York City have concluded their eighth season of exploration of ancient levels of occupation, announced Dyson, assistant director of the University Museum's Near Eastern Section.

The Excavators' final day of work was near the first trench dug in 1956. The entire circuit of the fortification wall with its 11 ninth century B.C. towers, two seventh century B.C. towers, and its 24 bastions, has been recorded. The wall reaches almost 600 meters around the top of the Citadel mound.

A total of 1,026 objects were catalogued during the season, he added. Since the start of the excavations more than 5,000 artifacts and art treasures have been uncovered including the famous "Golden Bowl."

The bulk of the more than 1,000 objects catalogued this year were found in the vicinity of Burned Building II. Among these, for the first time, were two inscribed stone bowls and three inscribed maceheads. The inscriptions written in cuneiform could not be deciphered in the field, but, hopefully, when the archaeologists have access to libraries, they will give up their secrets.

• Science News Letter, 87:9 January 2, 1965

EDUCATION

University Will Try British Tutoring System

➤ A BETTER GRASP of subject matter is obtained by the tutoring systems used by most British universities, claims Dr. O. Meredith Wilson, president of the University of Minnesota, who plans to adopt it soon at his own school.

The British system differs from the familiar college lecture sessions in that a tutor-professor meets every week or two weeks with his students and guides their work, which they often do independently of one another.

Dr. Wilson recently completed a comparison of U.S. and British higher education systems. He believes that the tutor program in the long run would require no more faculty members per student than now used for conventional classroom lecture courses.

A tutor program begins with the faculty members of a department outlining some eight to ten problems or propositions, which the student must master. The student, using a list of recommended books, prepares an essay explaining each of the problems.

He is allowed substantial freedom so that "his own personality" can be expressed in his paper, Dr. Wilson said.

The student, who works on the specialized problems during his last two or three years as an undergraduate, has prepared a small book by the time he finishes.

If such a program were established in U.S. colleges, it would, at least for the good students, seem much more attractive than attending lectures. It might also lead the students to a greater maturity, said Dr. Wilson, who made his recommendation at a meeting of the Association of State Universities and Land-Grant Colleges in Washington, D. C.

• Science News Letter, 87:9 January 2, 1965

PUBLIC HEALTH

World Fluoridation Gains Are Reported

➤ AT LEAST 71 MILLION people are drinking artificially fluoridated water, according to a worldwide survey conducted by Federation Dentaire Internationale.

The United States, with 2,519 "fluoride communities" serving some 45,883,261 persons, led by far among the reporting nations.

Canada was next with 202 plants serving an estimated 3,851,306 population.

The International Dental Federation sent its fluoride questionnaire to 90 states and territories in the spring of 1963. All replied except Argentina, Belgium, Cuba, El Salvador and Spain.

In Europe, The Netherlands headed the list with 15 fluoridation plants serving 51,899 people and another 125 projects planned which will eventually affect 2,836,920 persons.

Puerto Rico and Hong Kong reportedly are the only areas in which the entire population receives fluoride-treated tap water.

• Science News Letter, 87:9 January 2, 1965