

PLANT PATHOLOGY

Deliberate Infection May Double Strawberry Yield

► BY deliberately infecting a super-sensitive European strawberry with plant diseases, scientists are trying to give you twice as many strawberries for breakfast from the same number of plants.

They are crossing American varieties with an imported strawberry called *Fragaria vesca*. Growing wild in Europe, it was found to have a marked reaction to viruses which damage commercial and garden varieties in this country.

Researchers can thus use it as a guinea-pig plant, learning quickly whether a certain native strain is diseased, and if so, what sort of virus is attacking it.

Dr. George M. Darrow, who heads deciduous fruit work at the Department of Agriculture's research center, said U. S. strawberry diseases are probably the most serious of all fruit enemies. Incurable, they can ruin an entire strawberry bed quickly.

Research in 1950 will be aimed at finding a virus-free strawberry stock and boosting, perhaps even doubling, the yield per plant, Dr. Darrow said.

Science News Letter, April 22, 1950

FORESTRY

More Trees for Winter Protection of Pheasants

► THE RING-NECKED pheasant, prince among U. S. game-birds, is bringing more and more trees to one of the nation's most treeless states, South Dakota.

A top project under the Pittman-Robertson Federal aid to wild-life bill, passed by Congress, will be the planting of more shelterbelts in South Dakota to help the state's huge annual crop of pheasants through severe winter storms, the U. S. Fish and Wildlife Service said.

State conservationists hope eventually to plant four cover areas in each township. Properly spaced, they will mean pheasants and other wildlife will always be within a mile and a half of a wooded refuge. Asparagus and white clover will be planted as well as trees to give the birds something to eat when grain fields are buried in snow.

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MEDICINE

Anti-Fatigue Chemical Helpful in Arthritis

► NEW aid for arthritis patients may come from a substance hailed during the war as a possible anti-fatigue chemical.

This substance is pregnenolone. It is a synthetic chemical related to the anti-arthritis hormone, cortisone. Given to a group of 30 arthritis patients, pregnenolone brought "striking improvement" to 15, mild improvement to 11 and left four unim-

proved, six researchers report to the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (April 15).

The six are: Harry Freeman, Gregory Pincus, Carroll W. Johnson, Samuel Bachrach, George E. McCabe and Harold MacGilpin, of the Worcester Foundation for Experimental Biology, Shrewsbury, Mass., and the arthritis clinic of Memorial Hospital, Worcester, Mass.

Patients were not cured, relapsing two to 16 weeks after treatment was stopped.

The synthetic chemical is available in the form of pills to be swallowed and has no adverse side effects, the Worcester Foundation scientists report. They think it may prove useful as a substitute for scarce cortisone and ACTH, or as a secondary medicine to hold the improvement brought about by cortisone and ACTH.

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WILDLIFE

U. S. Waterfowl Population Drops Nearly 25 Percent

► A DROP of nearly 25% in North American waterfowl—ducks, geese, brant, coot and swans—was shown by the 1950 migratory bird census.

The annual inventory was taken Jan. 10 to 13 in the U. S., Canada, Mexico and the West Indies. Albert M. Day, director of the U. S. Fish and Wildlife Service, reported the findings.

The sharp decrease under the 1949 count means shorter hunting seasons next fall unless northbound flocks find favorable conditions on breeding grounds in Arctic tundras and marshes.

Losses in continent-wide populations of almost all species of waterfowl were evident, Mr. Day reported. He blamed a late breeding season in 1949 combined with droughts and excessive drainage of waterfowl havens in the prairie sections of this country and Canada.

The drop in waterfowl numbers contradicts winter-long reports of local sportsmen "who in many areas have seen more ducks and geese this year than in former years," Mr. Day said.

This was because millions of waterfowl stayed in this country during the unusually mild fall, instead of moving on to Mexico and other southern wintering grounds, he explained.

"In addition, birds were concentrated on reservoirs and other large bodies of water. Drought conditions . . . dried up marshes in some parts of the country," he added.

Mexican wildlife observers, cooperating in the inventory, found a drastic decline in the wintering populations of waterfowl in coastal marshes and bays and in highland water areas.

Comparative figures on various types of waterfowl were not released by the Wildlife Service. The report indicated, however, that even swans, which are not hunted, showed an appreciable decline.

Science News Letter, April 22, 1950



PHYSICS

Filter Removes Radioactive Particles, Prevents Smog

► A FILTER paper, developed in Cambridge, Mass., will remove radioactive particles from gaseous wastes escaping from processes in which the particles are made or used. It can also be used to filter smoke stack gases to prevent smog.

This new paper-like filtering material was developed by Arthur D. Little, Inc., under contract with the Atomic Energy Commission. Establishments of the Commission use cooling or ventilating air which may become contaminated with radioactive particles. It is highly desirable that the contamination be eliminated before the used air is discharged into the atmosphere.

The material in the filters contains treated paper-making fibers in combination with very finely divided mineral asbestos fibers. It is formed in soft, flexible sheets which can be pleated and formed into shapes to fit filtering units of large capacity. It is a relatively inexpensive product, and can be made on paper making machines which are now employed to fabricate soft, saturating papers.

In addition to applications to remove radioactive particles from discharge gases and smog-causing fumes in factory-stack discharges, other uses are possible. Important is filtering incoming ventilating air for biological laboratories and hospital buildings, particularly for operating rooms.

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PHARMACY

New Headquarters for U. S. P. Near WHO

► U.S.P., short for U. S. Pharmacopoeia, dedicated its new home in New York. Pharmacopoeia headquarters formerly were in Philadelphia.

The Pharmacopoeia is a book which provides the standards for the most important medicines used in the United States and many Latin American countries.

Established in 1820, it is revised every five years by a national voluntary committee of medical and pharmaceutical experts. Its standards are enforced by the U. S. Food and Drug Administration and by many state and municipal health agencies.

One reason for the move from Philadelphia is said to be the proximity to World Health Organization headquarters in New York. WHO is now working on the first International Pharmacopoeia and the U.S.P. committee of revision chairman has been assisting with this task.

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E FIELDS

AGRICULTURE

Find Soil Lacks Sulfur, Essential Plant Element

► AN acute shortage of sulfur, essential element in plants that supports human life, has been disclosed.

Dr. Frank A. Gilbert, assistant supervisor of the agricultural division of the Battelle Memorial Institute, Columbus, Ohio, states that sulfur has proved to be "the most underrated plant nutrient."

New analytical techniques that are more accurate than those previously available have shown that plants need from two to 100 times as much sulfur as was formerly believed. Sulfur in plants is the ultimate source of all sulfur for animals, Dr. Gilbert states.

Sulfur-deficient soils are found particularly in rural areas, distant from industrial operations, where relatively little of the element is precipitated from the air. Sulfur is a constituent of protein and has long been known to be essential to plant growth. Sulfur also affects the formation of chlorophyll.

When plants are severely deficient in sulfur, their leaves may be light green in color. If fertilizer containing sulfur is then given to these pale plants, the leaf color soon changes to a dark, healthy green, Dr. Gilbert points out.

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AGRICULTURE

An Ounce of Prevention For Weedless Fields

► THE day is coming when farmers will mix weed-killing chemicals with fertilizers, and crops will grow in weedless fields.

A two-year study of so-called pre-emergence dressing at the Jeallott's Hill Research Station of Imperial Chemical Industries, Ltd., in England, "points to new possibilities of weed control in crops," Drs. W. G. Templeman and J. O. Wright report in the British journal, *NATURE* (April 8).

The Department of Agriculture said that this idea of killing weeds before they get started is also under scrutiny in many U. S. agricultural experiment stations.

The British scientists mixed three different weed killers in test plots as much as eight weeks before sowing kale, mangolds, lettuce, onions, field beans, peas, lucerne, sugar beets and swedes.

The chemicals were iso-propylphenyl-carbamate, methoxone and the famed, war-developed 2,4-D. Tested alone, each showed they could kill certain types of weeds and grasses.

Used in combination, say the researchers, they "gave excellent weed control, each

acting upon the weed species susceptible to it."

The chemicals were more effective when applied before weeds had even pushed through the ground. They must be used varying numbers of weeks before the crops are sown, the report warns. Otherwise the crops themselves may be harmed.

The U. S. Department of Agriculture established a weed control division within the last six months. Dr. Karl S. Quisenberry, U.S.D.A. agronomist, said, "Someday pre-emergence treatment may be widely used. Right now, too little is known about it."

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TEXTILE ENGINEERING

Fabric Mildew and Rot Resistance Developed

► TREATMENT for all types of fabrics to make them highly resistant to mildew and rot has been developed in Fair Lawn, N. J.

A chemical, copper-8-quinolinolate, does the trick. It is poisonous to lower organisms, but not for higher animals, Dr. Samuel Lee of the Interchemical Corporation states.

The chemical is bonded to the textile fiber with a resin. It promises to gain back for many fabrics fields that have been lost to the plastics, such as shower curtains, tropical fabrics, oil cloth and cotton shades.

Dr. Lee states that the chemical extends the horizons of textiles to fields in which it has never been much of a factor, such as fungus-proof sheets.

The treatment is applicable to both vegetable fibers, such as cotton, and animal fibers, such as wool.

Application of this chemical allows, at a reasonable cost, almost any degree of permanence of mildewproofing. Rot and mildew result largely from the growth of fungi and the bacteria on the surface of textile fibers. The compound destroys the organisms that promote rot and mildew.

Protection of the chemically-treated fabric is gradually lost upon repeated launderings.

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CHEMISTRY-PHYSICS

Electron Beams Do Not Decrease Vitamin Content

► ELECTRON beams being used to preserve food by sterilizing it do not decrease the vitamin content appreciably, Dr. Wolfgang Huber, of the Electronized Chemicals Corp. New York told the American Chemical Society. Short and tremendously powerful bursts of electron or cathode rays kill bacteria and spores, he claimed, but do not harm the taste, color and appearance of the food. Pure vitamins in solution are chemically disrupted by the radiation effect, but loss of vitamins in the food is insignificant, he reported.

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CHEMISTRY

Prized Bouquet of Wine Due to Over 50 Flavors

► IN a fine wine more than 50 identified flavors, born of the growing grapes, the fermented substances and the yeasts themselves, give the prized bouquet.

Dr. A. J. Haagen-Smit, Dutch-born chemist of the California Institute of Technology, told the American Chemical Society in Philadelphia about the favorable complexity of wine as an example of the possibilities of analyzing chemically the extremely small amounts of substances in the food we eat.

Of the world's great resource of living plants, with about a quarter million different kinds listed by the botanists, only a few thousand have been studied in the laboratory for their volatile products, he told the chemists.

Industry and science would benefit from a wide-spread study of just what unusual materials can be obtained from many unexplored plants. Dr. Haagen-Smit made this prediction upon the basis of 20 years of research on flavorings, perfumes and other essential oils recognized by the \$1,000 Fritzsche prize awarded him.

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AGRICULTURE

Off-Flavored Milk Can Be Prevented

► MILK that tastes the same all year round is possible by feeding cows the right kind of roughage.

The promise that the metallic or fishy taste of some milk may be prevented was made by Prof. Vladimir N. Krukovsky of Cornell University in Philadelphia, Pa.

He explained to members of the American Chemical Society that these off-tastes are associated with the deterioration of the thin membrane that surrounds each tiny globule of fat.

This membrane can be preserved to some extent by vitamin E, which is found in varying amounts in the oil of many plants. Thus the type and quality of roughages fed to the cow can account for peculiar flavors that sometimes cause children to refuse milk.

Prof. George A. Richardson of Oregon State College told the same meeting the food and usage values of natural milks may be calculated from the fat percentages. This method is accurate enough to be used as a basis of payment to the producer and by the consumer.

Carotene is a very good substance for coloring butter, Prof. Richardson said. It is a means not only of maintaining a favorable eye appeal but also a more uniform vitamin A potency throughout the year.

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