

ENTOMOLOGY-PLANT PATHOLOGY

Plant Pests and Disease Kept Out of Country

VIGILANT sentinels of science on all the borders of the United States stopped over twelve thousand invasions of American territory by insect pests and fungus diseases of plants in a single year. A detailed report of the period covered—July 1, 1931 to June 30, 1932—has just been published by the U. S. Department of Agriculture.

At least eight distinct species of fruit flies were stopped, as stowaways on a long list of fruits and vegetables from an even longer list of foreign ports. Most prominent among them was the Mediterranean fruit fly, whose outbreak a few years ago in Florida caused a serious situation and was suppressed only with much labor and expense. This world-distributed pest was detected on fruits from Algeria, France, the Azores, Bermuda, Hawaii, Italy, Spain and Venezuela.

As yet, the airplane appears to be of relatively little importance as a means of invasion by pests and plant diseases. Of the total twelve thousand interceptions made, only ninety of insects and three of plant diseases came by plane. Nevertheless, because of the rapidity with which a plane can move from infested to uninfested areas, it is necessary to watch air traffic closely.

Twice as many interceptions were made of insects as of plant diseases: 8,000 as against 4,000. The largest number of insect interceptions, 3,191, originated in North America, but the high score for plant diseases, 2,328, goes to European ports. South America was lowest in insect pests stopped, with 244, while Australasia, with only 81 interceptions, held low mark for plant diseases.

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PUBLIC HEALTH-ELECTRICITY

Electric Eye Watches Purity of Water Supply

TO KEEP watch over the health of the people is a new duty of the "electric eye" described before the American Institute of Electrical Engineers by J. V. Alfriend, Jr., of the Westinghouse Electric and Manufacturing Company. Mr. Alfriend said that the "electric eye," or photoelectric cell, makes a more dependable watchman than the man it replaces.

The cell regulates the amount of chlorine that is liberated as a germ killer into the water supply of cities. Its action is prompted by color changes caused by the addition of an indicating substance.

The photoelectric cell had been used for this purpose under manual operation, Mr. Alfriend said, but this method was expensive, slow and inaccurate. Two regulation schemes have been worked out which automatically apply the corrections indicated by the photoelectric examination.

"The first or 'balanced bridge' arrangement," Mr. Alfriend explained, "utilizes two light sensitive photo tubes simultaneously to inspect the light transmitted through a sample of the unknown liquor and the light transmitted through a standard colorimetric sample representing the desired quantity of the variable chemical. The second or 'null' method uses a single photo tube inspecting simultaneously the light transmitted by the unknown sample and the known sample."

Similar automatic photoelectric control has been applied to maintaining the acidity of paper mill stock solutions, holding the proper amount of sand in coal washing water, and in regulating the acidity of the electrolyte in electrochemical industries.

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PHYSICS

X-Ray Apparatus Improved By Commercial Insulator

CHEAPER and better high voltage X-ray apparatus promises to result from the use to which Drs. C. C. Lauritsen and Richard Crane, California Institute of Technology physicists, have put a commercial transformer insulator.

Using this porcelain tube about as tall as a man and a foot and a half inside diameter, Prof. Lauritsen has made an X-ray tube which operates successfully up to 650,000 volts. The porcelain tube was found to be more rugged than glass and less liable to puncture. Important also is the saving in space that results, since the porcelain X-ray tube can be made smaller than glass equipment.

The porcelain tube is standard electrical equipment known as a transformer bushing. Its adaptation to X-ray use is expected to allow the installation of high voltage X-ray tubes in some hospitals that might not otherwise be equipped with this device.

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IN SCIENCE

CHEMISTRY

New Method Tells Amount Of Weighting Added to Silk

A RELIABLE method of determining the amount of metallic salts and other substances used to "weight" silk has been developed by Ralph T. Mease of the U. S. Bureau of Standards. Hot water, and weak solutions of sodium carbonate, hydrochloric and hydrofluoric acids are used to wash out the weighting and finishing materials added to the pure silk during the process of manufacture. Determination of the added material is important in testing silk textiles.

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PHYSICS

Real Show Backstage Where Science Marvels Perform

THE real spectacle at the new 6100-seat Radio City Music Hall in New York is behind the scenes, in the opinion of O. H. Caldwell, editor of *Electronics*, who suggests that the management might well charge admission for a visit back-stage to see the marvels of science there.

"It was the electronic tube that made Radio City possible," he says, "And Radio City's two great theatres, just completed, present the last word in applications of thousands of tubes, for sound, light control and miscellaneous uses. In the electronic installations alone, nearly half a million dollars have gone into tube and similar equipment.

"Here is the roll call for tube applications now in regular operation: thyratron control of stage and auditorium lighting; sound-picture reproduction; public-address or 're-inforcing' system; rehearsal system connecting all operating stations; paging throughout dressing rooms and back-stage; Bechstein-piano amplification; radio programs in lobbies; outlets for headphones for deaf patrons; high frequency air-conditioning; dial-controlled radio-phonograph system; private broadcast studio for Roxy's gang."

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CE FIELDS

ARCHAEOLOGY

Adam and Eve Named on 3200-Year-Old Clay Tablets

MENTION of Adam and Eve and other Bible names has been found on inscribed tablets of the fourteenth century B.C. The writings belong to the period shortly after the lifetime of Moses, who led the Israelites through the wilderness toward their Promised Land of Palestine.

The tablets which have been deciphered were discovered at Ras Shamra, which is on the Syrian coast, to the north of Palestine.

The writers of the tablets had no single deity, but various gods. Among these is the Old Testament name, Elohim, which was the name for God as given in the original Hebrew in the first book of Genesis. Adam is referred to as the man from the East. This conforms to traditional geography, which places the Garden of Eden to the east of Syria and Palestine, in Mesopotamia.

The similarities to Biblical names and ideas point back to some earlier origin, which both the Hebrews and the people of Syria had in common.

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ORNITHOLOGY

Bald Eagle, National Bird In Need of Protection

THE BALD EAGLE, hailed in a thousand patriotic orations as America's bird of freedom, is very much in need of protection if it is not to be exterminated from the land. Only five states of the forty-eight grant it legal immunity by special act, and there is no Federal legislation whatever for its protection, notwithstanding the fact that it is the official emblem of the United States of America.

So declares the National Association of Audubon Societies, which defends the bird against charges commonly made to its disparagement. The bald eagle's occasional choice of dead fish, which sometimes replaces fresh fish in its diet, has been used as a slur on its character, but this trait, the Associa-

tion points out, is actually in the eagle's favor, making it useful as a cleaner-up of beaches and stream-banks. Scientific records show that the bald eagle does little harm as a predator. It belongs to a class of large and picturesque birds that have been for many years the object of an ignorant prejudice although few do more harm than good, while the great majority are either harmless or positively beneficial in their food habits.

The bald eagle, especially, has been too long misunderstood and misrepresented, an officer of the Audubon Societies declared. Most people fail to realize the character of the actual eagle, but carry in their minds an impression of a false and imaginary bird, a fabulous creature that is an angel to politicians, a devil to game wardens, and a mythical feathered ogre out of Grimm's Fairy Tales to the rest of us.

Franklin's tirade against the bald eagle doubtless was based on pique, since Congress refused to adopt his own candidate, the wild turkey, as the emblematic national bird. Audubon, in quoting Franklin, was evidently striving to paint a colorful, well-rounded portrait, for his account likewise contains a classic appreciation of the noble bird's many admirable points.

Science News Letter, February 18, 1933

PHYSICS

Atom-Smashing Generator Built in Vacuum Tank

TREMENDOUS possibilities lie ahead for high voltage research using a large electrostatic generator operating in a vacuum, the group of Massachusetts Institute of Technology physicists engaged in high voltage research predict.

A generator, of the same type as the 10,000,000 volt giant that will soon be utilized to smash the atom, has been constructed within a tank that can be highly evacuated by a high-speed mercury condensation pump and liquid air trap. This has already been tested to 50,000 volts.

Dr. R. J. Van de Graaff who devised the electrostatic generators and his associates, Dr. Karl T. Compton, president of the M. I. T., and Dr. L. C. Van Atta expect to have the vacuum-surrounded generator in operation in a few months, and in the Physical Review they express confidence that vacuum insulation is the ultimate insulation for electrostatic devices.

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CHEMISTRY

New Iodine Plant Could Supply America's Needs

ENOUGH iodine to supply the entire present American market could be produced at the end of a year's expansion program of a new chemical plant recently established at Los Angeles to extract this widely used element from California oil-well brines. Its present production is several hundred pounds of iodine a day, but it can be expanded to produce 350 tons a year, the present American consumption, if this should prove necessary.

The plant has already wrecked the monopoly price formerly maintained by the Chilean nitrate corporation, which obtained iodine as a by-product of its fertilizer production. Some months ago the Chilean corporation cut its former price of \$4 a pound to \$3; within the past few weeks a further cut was made to the present prevailing price of \$1.95 a pound.

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MEDICINE

Chance is Important in Development of Cancer

CHANCE is an important factor in the change of a normal cell to a cancer cell, in the opinion of Drs. M. R. Curtis, W. F. Dunning and F. D. Bullock of the Institute of Cancer Research at Columbia University.

The Columbia investigators base this opinion on studies of tumors produced in rats as a result of tapeworm infestation, which they report in *Science*.

Heredity they consider an incidental factor in the development of cancer. They suggest that the initial change from a normal to a cancer cell probably occurs by a process somewhat like that which produce bud sports on trees, for example, the one which resulted in navel oranges. Scientists call this process somatic mutation. Such a change cannot be blamed on the germ chromosomes which are concerned in heredity.

Hereditary factors determine this change, and thus play a part in cancer only in so far as they determine whether the individual will have a long or short life and whether or not he will be susceptible to some specific irritant or condition which is favorable to the change process.

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