

PEAR BLIGHT AND ITS CONTROL UPON THE PACIFIC COAST

This is the Fourth of a Series of Articles That Will Be Printed Daily Until Subject Is Completed—Every Orchardist in the West Should Save These Issues for Future Reference, as They Contain Valuable Information.

By PROFESSOR O'GARA, Assistant Pathologist United States Department of Agriculture. Written especially for the Medford Mail Tribune. Copyright, 1910, by the Medford Mail Tribune.

(Continued from Tuesday, May 10.)

The Bacillus and Its Life History.

The germ causing this disease is named by bacteriologists "bacillus amylovorus." For our purpose of discussion we may call it the pear blight bacillus, the pear blight germ or the pear blight microbe, all these terms meaning practically the same thing. These germs as you probably know, are among the most minute of living things. Bacteria or germs are vegetable organisms and are as truly plants as trees, grasses, etc. However, they are very low down in the scale of the vegetable kingdom since they consist of a single cell, which may be elliptical or rod like in form. They multiply by lengthening a little and then pinching in two. This is the only way in which they may increase their numbers. This process can take place within half an hour or less, and this I have proven by observation in a hanging drop culture under the microscope. Although they are extremely minute, they may be measured by means of microscopical apparatus. The standard of measurement for these minute objects is the micrometer, and a millimeter is about one twenty-fifth part of an inch. The pear blight germ is from two-thirds to three-fourths of a micrometer wide, and from one to one and one-half micrometers long when it has reached its mature stage. As another illustration showing their minute size I may say that if 25,000 pear blight germs were placed end to end they would scarcely measure an inch in length. Curiously enough, the young germs are longer than the older ones. When they are growing rapidly their development in length goes on more rapidly than their division. This germ forms no spores, and for this reason can not live over in the dry season, such as the germs of an hour which form spores. The pear blight germ is very sensitive to drying and, in fact, is a very short lived germ. The fact that it does not form spores is highly important, as spore-forming bacteria are capable of living over in dust which may be blown about by the winds. The germ dies rapidly in the blighted tissues, as soon as the tissues have become fully killed. It cannot withstand drying, usually dying within two weeks or so. It is killed by exposure to direct sunshine in a very few minutes, usually not more than ten minutes unless protected by the bark or twigs. It rapidly dies when it is washed into the soil, since it can not longer get the necessary food for its existence and multiplication. In fact, the pear blight germs disappear and die very shortly after they are exuded or washed out by the rains from the twigs and branches. It also dies when the blighted bark dries up. It can only live along the advancing margin of the disease in the thick fleshy bark or cambium which has been invaded by the bacteria, and which does not have time to dry out until the cool weather approaches. The thick bark of the large limbs, branches and root system remains moist during a long period, especially in the winter. By this method, the importance of which we will show later, the germs are able to carry over, or live over, from one season to another. As a matter of fact, it is only by this means that the pear blight germ can live over during the dormant period of the trees. The germs are killed by high temperature, they are wholly destroyed when subjected to liquid culture to the temperature of 55 degrees centigrade for ten minutes. They are wholly uninjured, on the other hand, by any degree of cold. Temperatures of 10 degrees below zero have no effect whatever. They may be found to be frozen at this temperature, but thaw out immediately when plunged into warm water and go on with their activities uninjured. Cold retards their development, but it also prolongs their life. Like other vegetable organisms, cold storage has the effect of prolonging life over a long period of time. In the laboratory the organism lives for a relatively short time at room temperatures, while if the cultures are put into the icebox the germs may live for months providing the culture medium does not dry out.

Life History of the Germ.

In the life cycle of the germ, blossom blight may be considered as the first step, at least, this is the first

step in its life cycle that is noticed by the casual observer. For a long time it was a great puzzle where the germs came from that produced the first blossom blight in the spring of the year. This one link in the chain, where the germs remained during the dormant season, was missing. No one knew how the first blossoms became infected. Given a number of blossoms infected, it was comparatively easy to discover the methods by which the germs were carried about. Not only in natural infections, but in those artificially produced with pure cultures, insects were found visiting the blighted blossoms. The germ multiplies in the nectaries of the blossoms as readily as it does in a culture medium, since the nectar glands exude a sugary solution which furnishes the organism the necessary food supply. The enzyme or ferment given off as a by-product by the germ dissolves the delicate cells beneath, permitting the germ to pass downward with the greatest of ease. Ordinarily, the entire pear tree is sealed up with an air tight and water tight cuticle composed of a thin layer of the same composition as cork. Even the breathing pores are plugged up during the dormant season of the tree so as to prevent evaporation from the tissues. This cuticle keeps out the pear blight germ unless it is injured or broken. The nectary is not covered by cuticle and is, therefore, an easy place for the germs to enter. The gummy exudate pushes out of the infected blossoms adding to, or even taking the place of the nectar; and honey bees, wild bees, wasps, flies, and perhaps 50 other species of insects visiting the pear blossoms or apple blossoms carry the germ-infected material. When once the insects' mouth parts and feet are infected, blossoms which it visits thereafter become, in turn, infected as the insects drop off a few germs into the nectary. The blight virus being also a sticky material and usually requiring a considerable mass, speaking from the microscopic standpoint, to produce infection, is not blown by the wind. Of course, the negative of such a proposition is hard to prove conclusively, but experiments have been made to decide this matter by covering blossoms with mosquito netting along side of artificially infected flowers, and it was readily found that the uncovered flower visited by insects contracted the blight, while those covered by bags, mosquito netting and other material which kept out insects remained free from the disease. Occasionally, a humming bird visits the infected blossoms. This has been observed in a number of instances. Doubtless, birds get the gummy material on their feet and carry the blight long distances. However, we look upon insect distribution as by far the most immediate means of infection, especially in blossoms; in carrying the fruit from flower to flower, tree to tree and orchard to orchard, although doubtless occasional long distance distribution is accomplished by birds or some other agencies, including man himself. After the blossoming period is over, or even before it is entirely finished, blight may be found attacking the tender twigs. Our common insects have been found to be active agencies in not only the distribution of the disease, but in puncturing the tissues and thereby introducing the germs into them. While it is easy to prove that insects cause some of the infections of some of the twigs, it is not absolutely certain that they do all the inoculating. Twigs are sometimes found with blight started in the axils of the leaves or in the tender bark where no punctures can be found on careful examination. It is possible that the germ may enter in damp weather through growth cracks where the cuticle is ruptured exposing the tender tissues.

(To be Continued.)

CHARGE DOCTOR WITH CRUELTY; IS TRANSFERRED

SAN FRANCISCO, Cal., May 11.—It has become known that Dr. Dunlop Moore of the United States marine hospital here has been transferred to Baltimore. Hospital officials intimate that the transfer, which was made very quietly, was the result of protests against Dr. Moore, alleging cruelty. Dr. Moore is accused of slapping a dying patient at the hospital. While slapping is sometimes considered a proper form of medical treatment, the Sailors' union took up the case and charged that it was, in this instance, brutality.

Haskins for Health.

KISS ALL YOU WANT! IT WON'T HURT YOU

"Bacteria? Bosh! Only the Heart Is Affected," Says Harvard Professor—Puts "O. K." on the Art.

CAMBRIDGE, Mass., May 11.—Harvard has officially put her O. K. on kissing. Dr. A. M. Worthington of the medical school, an expert on bacteria, not osculation, says that there is no reason whatever why healthy and well intentioned couples shouldn't indulge in kissing to their hearts' content. Incidentally, his statement shatters the theory advanced many times by professors of other universities that kissing is dangerous, because it makes a swap of microbes and illness in one or both parties to the union often follows such diversions. Said Dr. Worthington: "Kissing harmful? Certainly not! No, sir! There is no possible reason in the world, or proof in the world, why when two self-respecting, wholesome persons meet lip to lip they can't break away without upsetting the bacterial balance. Perhaps the only serious danger springing from such a union would affect the heart only." Dr. Worthington also ably defended our friends the "microbes," referring to them in other circumstances. He asserted that if bacteria were driven from the land the world would become a desert scattered with the world's dead. Germs are humble in their needs, but stubborn in their life work.

HOUSEHOLD CARES.

Tax the Women of Medford the Same as Elsewhere.

Hard to attend to household duties. With a constantly aching back. A woman should not have a bad back. And she wouldn't if the kidneys were well. Doan's Kidney Pills make well kidneys.

Here is a Medford woman who endorses this claim: Mrs. Mary Winterhalter, near W. Jackson street, Medford, Or., says: "I have used Doan's Kidney Pills myself with good results while suffering from kidney trouble and I know of other persons who have taken them with the same beneficial effect. Since I took Doan's Kidney Pills about a year ago, I have not had the least trouble from my kidneys. This remedy deserves my hearty endorsement."

For sale by all dealers. Price 50 cents. Foster-Milburn Co., Buffalo, N. Y., sole agents for the United States.

Remember the name—Doan's—and take no other.

FOOT HILL LAND.

100 Acres foothill land 1-2 miles from Phoenix; very best deep free soil; 30 acres in bearing trees; 13 acres of which are Spitzenburg apples, promising a big crop this year; 10 acres in alfalfa; good house and barn. It's above frost line with a beautiful view of the valley. This is an ideal fruit proposition and we are in a position to make exceptionally easy terms. Call at our office for particulars.

AYLOR & BARNETT.

Next to Mail Tribune Office.

City Property

Good 6-room house on North C street, lot 53x100, east front; a good buy at \$2400, one-half cash, balance one year at 7 per cent.

Modern 7-room house on Teuth street, lot 100x100; a fine home at \$3900, terms.

Modern 7-room bungalow, close to West Main street, lot 50x132, \$50 range connected with hot-water tank goes with the property; price for a short time, \$2500.

Ten lots on West Second street; these lots are worth \$300 each; improvements on property worth \$800, making a value of \$3800, that can be bought at \$2750.

Modern 7-room house, close in, on South C street; east front, lot 50x100; this property brings a rental of \$65 per month, pays 17 per cent net on investment; price \$4300, terms.

We have the best line of business property in the city and our prices are right. Let us show you.

W. T. YORK & CO.

THERE MUST BE A REASON

For the enormous sale of RARDON'S BREAD. Your grocer sells it.

Two Essentials

Every housewife knows that she must have good flour and good coffee. These are the two essentials, and we know that

Pure White Flour

—and—

Golden Gate Coffee

will fill the bill every time. Telephone your order and we will do the rest.

ALLEN & REAGAN

202 E. MAIN ST.

PHONE MAIN 2711

In Case of Sickness

—PHONE 3641—

MEDFORD PHARMACY

Near Post Office All Night Service Free Delivery



Graduation Presents

A Fine Collection

MARTIN J. REDDY

The Jeweler

NEAR THE POSTOFFICE.

Do You Wish To Buy a Home

ARE YOU WANTING A HOME? WHY RENT WHEN YOU CAN TAKE ADVANTAGE OF OTHER PEOPLE'S MISFORTUNES?

Parties are compelled to leave the city, and offer a fine new two-story, eight-room house, completely furnished, with high-grade furniture, best light and plumbing fixtures, lawn, cement walks and curb, south front, street to be paved. This is a beautiful home and is located on one of the best streets in the city. Price is very low, with or without furniture.

Modern Cottage For Sale

A neat, modern, five-room cottage, close in on Oakdale, east front, fine lawn and shrubbery, cement walks and curb, paved street, large range goes with house, large barn; lot 50x145.

New Five-Room Cottage

New five-room cottage, south front, lot 50x150, near South Newtown; price \$2000, terms.

J. W. Dressler Agency

WEST MAIN STREET

GOLD RAY GRANITE CO.

Office: 209 West Main St., Medford, Ore.

Operating Quarry at Gold Ray, Oregon

DEALERS IN —

BUILDING, MONUMENTAL AND CRUSHED GRANITE

Animal Insurance

We insure Horses and Cattle Against Death From Accident, Disease or Fire.

NATIONAL LIVESTOCK INSURANCE ASSOCIATION,

J. E. Tull, Agent, Medford.

WANTED

Timber and Coal Lands

ENGINEERING AND SURVEYING CONTRACTS TAKEN AND ESTIMATES FURNISHED.

B. H. Harris & Co.

MEFORD - - - - OREGON

Office in Jackson County Bank Upstairs

J. E. ENYART, President J. A. PERRY, Vice-President.

JOHN S. ORTIN, Cashier W. B. JACKSON, Asst. Cashier

THE MEDFORD NATIONAL BANK

CAPITAL \$50,000

SURPLUS \$10,000

Safety boxes for rent. A general Banking Business transacted.

We solicit your patronage.

REAL ESTATE

Farm Land Timber Land

Orchard Land

Residences City Lots

Orchards and Mining Claims

Medford Realty Co

Room 10, Jackson County Bank Building



Any Landlord Can Improve His Property

By wiring his house for electric light. Tenants are demanding this modern convenience more and more—and premises which do not have it are out of date. We are furnishing the G.E. MAZDA lamps to our customers who thus save money and get better light. We will give you all the information you need.

ROGUE RIVER ELECTRIC CO.