

HORTICULTURE

Citrus Fruit Threatened

"Quick decline", caused by a virus, is endangering orange and grapefruit trees. Virus has not been isolated and the carrier has not been identified.

➤ AN INVISIBLE virus is threatening the entire American citrus fruit industry. The disease of orange and grapefruit trees is called "quick decline."

Latest step in combatting it is the discovery that quick decline is due to a microscopically invisible, filter-passing virus. Dr. H. S. Fawcett and Dr. J. M. Wallace of the University of California's Citrus Experiment Station made the discovery. Belief that it might be due to mineral lacks in the soil had previously been disproven by experiments of their colleague, Dr. H. D. Chapman.

Drs. Fawcett and Wallace demonstrated the virus nature of quick decline by grafting shoots of diseased trees into branches of healthy ones, which subsequently became sick. Control grafts with healthy shoots into healthy trees produced no ill effects.

The virus itself has not yet been isolated, nor has the insect or other carrier that transfers it from tree to tree been found. These are next steps in the battle.

Outstanding symptom of quick decline, which occurs only in sweet orange and grapefruit grafted onto sour orange stocks, is a failure of the carbohydrate

foods formed in the leaves to pass the graft junction into the roots. They are thus starved to death and presently decay; then the whole tree withers and dies.

Although Drs. Fawcett and Wallace do not mention it in their report, this fatal course of the disease is apparently identical with that observed in tristeza, highly fatal citrus-tree malady that is wiping out thousands of orange trees in Brazil and neighboring countries in South America, and is known also from South Africa and the Netherlands Indies.

This would suggest that quick decline and tristeza are one and the same disease, except for one thing: the spread of quick decline through an orchard is much slower than that of tristeza. Either they are not identical (though possibly related), or the virus is carried by a slower insect or other carrier, or some unknown factor in climate, soil, etc., works to retard the spread in California orchards.

Thus far quick decline has not been found in citrus orchards in Florida, Texas, Arizona or other states.

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ASTRONOMY

Solar Eclipse Expeditions

➤ AT LEAST nine expeditions are being planned by astronomers and amateurs anxious to observe the total solar eclipse on May 20 from points in South America, according to information received by Prof. Charles H. Smiley of Brown University from astronomer friends in Brazil, Argentina, England and New Zealand.

Three parties will observe from Argentina, but none of these will represent foreign groups. Six expeditions will have headquarters in Brazil, where totality will last longer. Two of these will be from the United States, one from England, one from New Zealand and two representing Brazil.

An expedition, under the direction of Dr. Enrique Gavioli, from the Ar-

gentine National Observatory at Cordoba, is expected to make its headquarters about fifty miles north of Cordoba. A group from the La Plata Observatory, probably headed by Dr. C. V. Cesco, will locate near Corrientes, in northern Argentina near the border of Paraguay, or at Tostado, southeast of Corrientes. This party may divide its work between the two sites. A group representing the Asociacion Argentina "Amigos de la Astronomia," under the leadership of Dr. B. H. Dawson, will observe the eclipse at Itati, also in northern Argentina near Paraguay.

In Brazil three sites are likely to be occupied. These include Araxa, about 300 miles northwest of Rio de Janeiro, by the Brown University-Skyscrapers

Expedition, Lassance and Bocaiuva, about 400 miles north of Rio, by the National Geographic Society-Army Air Forces Expedition.

There will be in Brazil an expedition headed by Dr. C. B. Michie, representing the New Zealand Astronomical Society, and one led by Dr. J. A. Carroll from London, England. It is understood that two parties of Brazilian astronomers plan to observe the eclipse from points near Araxa and Lassance.

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ENGINEERING

Panama Soil to be Tested In View of Canal Proposals

➤ ROCK AND SOIL from the Panama Isthmus will be tested in Harvard laboratories within the next few months, the university revealed.

The tests will be to determine their ability to withstand earthquake shocks, volcanic activities, and the effects of vibrations set up by heavy explosions such as might result from bombs.

The testing is in connection with proposals to increase canal facilities between the Atlantic and the Pacific, now approaching the maximum of the present canal's capacity. Three such proposals are receiving serious consideration.

These include the addition of a third set of locks to the present canal; converting the present waterway to a sea-level route; and the digging of a new canal in another part of the Isthmus. The decision is a matter that rests with Congress; the objective is a waterway across the isthmus that will accommodate the largest commercial and naval ships, as well as the thousands of smaller craft that use the shortcut from ocean to ocean, and also to assure passageway from the Atlantic to the Pacific in spite of wartime enemy attacks.

The Panama canal, 50 miles in length, was opened Aug. 15, 1914, but was not officially completed until 1921. The cost to then was over \$525,000,000. The surface of Gatun Lake, through which the canal runs, is normally 85 feet above sea level. The locks, by means of which ships are raised to the higher levels of the canal, were originally constructed about 1,000 feet long and 110 feet wide at their bottoms. The depth of the canal is 41 feet or over.

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That *hunting* is a favorite American sport is shown by the fact that nearly 10,000,000 persons paid \$20,000,000 for hunting licenses during 1946.