or short-styled, may develop an achene-like, empty ovary already designated a *cenocarp* by Condit.[8] For such an ovary when inhabited by *Blastophaga psenes* we propose the name, *psenocarp.* A psenocarp differs from an achene in that Blastophaga occupies the position of the embryo.

It seems clear to us that the term "gall flower" should be omitted from future publications or, if used, be accompanied by a suitable definition. In redefining it the following statement should suffice: Gall flower, a term erroneously applied to short-styled fig flowers inhabited by fig insects; such flowers are normal and show no swelling or excrescences typical of galls. See Psenocarp.

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## A GUMMOSIS OF CITRUS ASSOCIATED WITH WOOD NECROSIS

STUDIES during the past seven years at the Lower Rio Grande Valley Experiment Station have disclosed that the most prevalent and most serious citrus tree disease in this section is a type of gummosis; and that the gumming arises from cracks in the bark overlying and connected with irregular bands of necrotic wood, the greater part of which lies well beneath the outer wood layers. Reference has been made to this disease in annual reports of the Texas Agricultural Experiment Station.

Cross sections through a gumming branch disclose the end views of the necrotic bands of wood lying often an inch or more beneath the surface, irregular in thickness (varying from one fourth to two inches) and varying in width from a fraction of an inch to several inches, sometimes extending to three quarters or more of the circumference. Longitudinal sections show that the longitudinal extension of the necrotic band is usually several times the lateral spread. Spread is both upward and downward in the trunk or branch.

Affected wood is firm, and only slightly darker in color than normal wood, except that the advancing border region is a more or less salmon pink, becoming brighter in color soon after exposure to the air. Histologic studies of transverse and longitudinal sections through the wood in the peripheral pink region disclose the presence of hyphae of extremely small diameter and of what appear to be spores of equal diameter budding off their tips. The organism is suggestive of an Actinomyces in appearance. Its advance through the tissues is both inter- and intracellular, and in medullary rays as well as in longitudinal wood fibers. Aside from the spore-like bodies mentioned, no fungus fruiting bodies of any kind have been found consistently associated with the organism. The dead wood, however, in the older necrotic regions, is invaded by secondary organisms, chief among which is *Diplodia natalensis.*

Numerous attempts to isolate the primary organism in pure culture on ordinary organic nutrient culture media and on synthetic media have thus far failed. Inoculations into healthy branches, following the usual preparatory aseptic measures, using pink border wood as the inoculum and placing it well into the wood in a chisel wound, have in most cases brought about typical spreading necrotic bands in the wood, followed by gummosis. It would seem to be clear that this citrus tree disease is parasitic in origin. Points of entrance into the wood have been found in unprotected pruning wounds, particularly those large in diameter and with cracks or "checks" a half inch or more in depth; in branches broken by a storm; in wood injured and cracked by freezing; and in bark injuries made by the shoes of pickers and pruners. Spread is at times rapid. A spread of one and one half feet downward in thirty days occurred in one case under observation.

Exploratory excavations of affected trunks, to learn the extent of the path of spread, have disclosed that downward spread appears to stop at the line of bud union between the root stock and the top. The sour orange root stock would thus appear to be immune. The disease occurs commonly in sweet orange, grapefruit and the Meyer lemon.

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## WHY THE RAINBOW AND THE CORONA NEVER ARE SEEN IN THE SAME CLOUD

NEARLY every good book on general physics explains (very inadequately, as a rule) how the rainbow is formed by the action of water drops on incident light from the sun or the moon, and some of them explain how the corona or small rainbow-colored ring around the sun or moon also is caused by water drops, but why, then, one never sees a rainbow in the corona-producing cloud appears always to be left to the reader to figure out for himself, which, presumably, he generally forgets to do.

Well, anyhow, the reason is that while a rainbow must be produced by the same cloud that shows the corona, it is too broad and indistinct, owing, as explained in Humphreys' "Physics of the Air" and elsewhere, to the minuteness of the drops to be clearly discerned. Perhaps, though, it might occasionally be glimpsed by persons of keen vision on looking at the right place (where the topmost portion of the usual

[8] Ira J. Condit, *Hilgardia,* 6(14): 459, 1932.