

observed what we feel quite sure is mottle leaf, gummosis, wither tip and brown rot. We also noticed several scales. After looking the field over, we thought the best thing to do would be to proceed to Rio and meet the officials there, see Dr. Willis, and spend two or three weeks in the *Library* and *Botanical Garden*; then return to Bahia and systematically study the *Bahia Navel Orange* proposition.

Brazil. Rio Janeiro. Mr. A. D. Shamel writes from on board R. M. S. P. "Alcala", November 6, 1913: We have left Rio after a strenuous three weeks and are on our way to Bahia. We had a most interesting and I believe profitable stay at Rio: It is a most wonderful city. It was a great surprise to me, a pleasant one. The combination of bay, mountains, tropical vegetation and picturesque buildings is irresistible and most fascinating.

Through an acquaintance we made on the "Van Dyck" we were given unusual opportunities for studying citrus and other tropical fruits in the vicinity of Rio. He is A. G. Foutes, a native of Brazil. He owns a fine country place and farm about 12 miles from Rio. He introduced us to a neighbor, a multi-millionaire farmer, who has an unrivaled collection of farm plants and animals. On these farms we got next to the real thing. We were given "Carte blanche" to everything on both farms, including fine dinners. We took full advantage of those conditions. In this district and in Nictheroy (across the bay) we got considerable amount of what I hope will prove valuable material, budwood, illustrations, methods, etc.

One of the most striking methods that we have found is the practise of orange growers renewing their orchards. They cut back old trees to within about a foot of the ground, allow them from one to three sprouts to grow, from which a new top is developed. A few trees in each orchard are treated in this way each year, renewing the grove as a whole gradually.

No means of combating the numerous insect pests and fungus diseases are practised. In spite of the conditions the trees are fairly productive, bearing from 200 to 500 fruits each. Considering the planting, 12 ft. by 12 ft., this means a heavy production per acre.

Oranges sell for 10 cts. apiece in Rio. Not enough are produced to supply the local demand even at this or higher prices.

No fertilizer and usually no cultivation is used. Little pruning except to cut off the lower branches so that people can walk under the trees easily. All labor is hand labor. The fruits are pulled from the trees and handled just like we handle potatoes. The loss from decay