

45540 to 45553—Continued.

seen it cultivated in Antigua and am told that it occurs wild in that region as well.

"The wild trees, which grow on rocky, rather dry slopes, reach 20 feet in height. In April and May they produce numerous flowers 2 inches in diameter, white upon first opening, but later becoming bright pink. When in full bloom the tree is very decorative in appearance and worthy of a trial in the warmest sections of the United States."

45551. (Undetermined.)

"(No. 208a. November 8, 1917.) A flowering vine from the summit of the Cachil Mountains, north of Salama, Baja Vera Paz; altitude 5,250 feet.

"This plant is occasionally seen climbing over shrubs and small trees. It does not make very luxuriant growth, but produces clusters of small red flowers which are very attractive. The flowers are followed by winged seed capsules. For trial in California and Florida."

45552. GLIRICIDIA MEISTOPHYLLA (DODD. SM.) Pittier. Fabaceæ.

"(No. 209a. November 8, 1917.) Seeds of a leguminous shrub from the mountains of northern Baja Vera Paz."

45553. PERSEA AMERICANA Mill. Lauraceæ.

Avocado.

(*P. gratissima* Gaertn. f.)

"Avocado seeds to be grown for stocks."

45554 to 45557.

From Buitenzorg, Java. Seeds presented by the director of the Botanic Gardens. Received November 30, 1917.

45554. PAVETTA ZIMMERMANNIANA Valet. Rubiaceæ.

A small rubiaceous tree or shrub, with opposite, nearly elliptic leaves and clusters of small, slender-tubed white flowers.

"The remarkable researches of Zimmermann and Faber detailed in the *Jahrbücher für Wissenschaftliche Botanik*, vol. 51, p. 285, 1912, and vol. 54, p. 243, 1914, make this species of unusual interest. Faber has proved that the leaves of this and of several other species of Pavetta, Psychotria, and possibly other genera of the Rubiaceæ contain colonies of a nonmotile, nitrogen-fixing bacterium which he names *Mycobacterium rubiacearum*. The bacteria of this species almost invariably inhabit the micropyle of the young seed and, when the seed germinates, grow through certain stomata of the very young leaves and into the intracellular spaces formed in the leaf tissues around these stomata. Cavities are formed through the growth of the epidermal cells, which later close entirely and make bacterial nodules which are deeply embedded in the leaf tissues. A single leaf may have several dozen of these symbiotic bacterial nodules. Faber was able, by treating the seeds with hot water and a sublimate solution, to kill the inhabiting myco-bacteria and, later, to infect part of the seedlings grown from these seeds with pure cultures of the bacterium. The artificially infected seedlings grown in soil free from combined nitrogen grew well and remained healthy for four months, whereas those not so infected turned yellowish white and died in three or four weeks. The plants from unsterilized seeds produced leaves bearing many more bacterial nodules than did those from sterilized seeds which were later artificially inoculated. In view of the facts that these rubiaceous plants with