

for carpentry and even for cabinetmaking; the bark is employed in tanning; and silkworms relish the leaves. Native to moist situations in central Chile, where it ascends to nearly 4,000 feet. (Adapted from *Kew Bulletin of Miscellaneous Information*, 1907, p. 13, and *Curtis's Botanical Magazine*, pl. 8115.)

#### 54304. GLADIOLUS ALATUS L. Iridaceæ.

From Pretoria, Transvaal, South Africa. Seeds presented by I. B. Pole Evans, chief, Division of Botany. Received September 26, 1921.

A very interesting little South African plant with flowers of a delightful fragrance not unlike that of the sweetbrier; the three upper petals are bright orange-scarlet, the three lower ones are yellowish tipped with orange-scarlet. The bulbs are not larger than ordinary peas and can not remain long out of ground. (Adapted from *Allen, Bulbs and Tuberous-Rooted Plants*, p. 105.)

For previous introduction, see S. P. I. No. 44722.

#### 54305. PAULLINIA CUPANA Kunth. Sapindaceæ.

From Para Valley, Para, Brazil. Seeds presented by A. Law Voge, through J. A. McCutchin, Federal Horticultural Board. Received September 16, 1921.

"The seed requires three months to germinate and should be planted in clay soil mixed with sand, half and half. They are very delicate, being killed in two days when exposed to dryness. About 74 per cent of seeds, preserved in water for two weeks, germinated, although fermentation had set in. The plant is naturally a vine, though in commercial plantings in Brazil it is trained as a bush. It requires shade while young. The plant has the highest percentage of caffeine of any plant known." (*Voge*.)

From this species is obtained guarana, which is used not only as a remedy for intestinal trouble but also as a very powerful stimulant that enables one to endure almost superhuman fatigue. Guarana is a black paste, extracted from the seeds of the grapelike fruits found growing along the upper Tapajoz, and in the valley of the Orinoco in Venezuela.

In November the fruits mature; the moist soft seeds are carefully removed and spread in the sun to dry. A few hours are sufficient to give them a flinty brittleness. The kernels are then reduced to powder; and, with the addition of a little water or by exposure to the damp air of the swamps, a thick paste is obtained, which is molded into cylinders about an inch in diameter and 6 inches long. The dry cylinder assumes an almost mineral hardness. This is the guarana of commerce. When powdered it ferments rapidly and its medicinal properties come into play.

The Indians also utilize the roots and leaves of the Paullinia for the making of inferior grades of guarana. Even the blossoms are burned and the ashes yield still another variety known as "guarana putira," or "guarana flor." The Indians and whites who use guarana file a small portion from the cylinder, dissolve it in water, and drink it. The whites generally add sugar to neutralize the bitter taste of caffeine. The chief medicinal value of guarana is its salutary action on the intestinal secretions when taken in small and not too frequent doses. Repeated doses result in a general breakdown of the nervous system.

#### *Analysis of 100 grams of guarana.*

	Grams.
Caffein .....	5.388
Essential oil .....	2.950
Resin .....	7.800
Coloring matter .....	1.570
Saponin .....	.060
Guarana-tannic acid .....	5.902
Pyro-guarana acid .....	2.750
Starch .....	9.350
Glucose .....	.777
Pectic acid, malic acid, dextrin, etc .....	7.470
Vegetable fiber .....	49.125
Water .....	7.650