

eral location of the spots in figure 1 shows that the shape of the leaf base and the proportionate length of the petiole are correlated in the entire sample. While the other three characters *tend* to align themselves along with these two, there are many exceptions, though "exceptional" is scarcely the word to use in this connection since we expect some of them in the progeny of species crosses. Much more disturbing for our simple hypothesis is the fact that the bulk of these exceptions occur in the same part of the chart. There are a considerable number of trees whose leaves are broad at the base and with a medium short petiole, which tend to be small, glaucous and anise-scented. This concentration of exceptions may be due to the fact that a third species with small, glaucous leaves, wide at the base, went into the formation of these cultivated avocados. On the other hand, it may represent the fact that a hybrid with these characteristics was growing in the vicinity of Atlixco and that a considerable number of the trees in the Rodiles Grove trace back to this particular hybrid. By making measurements of the other seedling groves and measuring groups of wild-growing avocados it should eventually be possible to build up a history of the avocado which would incorporate all these seeming exceptions. — *Missouri Botanical Garden, Washington University, St. Louis, Missouri.*

## TWO NEW PERSEAS FROM CENTRAL AMERICA

Louis O. Williams

THE two species of *Persea* described below, along with a number of others, were collected while making special trips from Mexico south to Costa Rica in search for species of *Persea* which might be useful as root stocks for the cultivated kinds.

### ***Persea nubigena* L. Wms., sp. nov.**

Arbor usque ad 25 m. Folia elliptica vel elliptico-oblan-  
ceolata, acuta vel acuminata, basi cuneata, membranacea vel  
coriacea; petioli graciles, canaliculati. Inflorescentiae axilla-  
res, paniculatae. Flores flavescentes; petala elliptica vel oblon-  
go-elliptica, acuta; sepala quam petalis breviora. Fructi glo-  
bosi.

Tree up to 25 m. tall and 1 m. in diameter at the base, erect, branching above, the spread of the top usually quite small; younger trees often branching from near the base but losing the lower branches as the tree matures. Twigs glabrous, dark green, drying almost black, annual growths puberulous, soon becoming glabrous. Leaves elliptic to elliptic-oblongate, acute or short acuminate, tapered and cuneate at the base, puberulous becoming glabrous above, puberulous on the lower surface, submembranaceous, becoming coriaceous with age, with about six pairs of lateral nerves, blades of mature leaves 10-15 cm. long and 3-6 cm. broad; petiole slender, canaliculate above, often with transverse ridges above at the base in age, puberulous becoming glabrous, 1-2.5 cm. long, about one-fifth the length of the blade. Inflorescences axillary, borne on the bases of the new flushes, shorter than the flushes or the leaves, paniculate, many-flowered, puberulous or tomentulose, up to 15 cm. long, usually shorter; pedicels short, densely pilosulose, subtended by 1-2 fugacious bracteoles. Flowers small, yellowish-green; petals 5-7 mm. long and 2-2.5 mm. broad, elliptic to elliptic-oblongate, acute, fleshy, puberulous; sepals 4-5 mm. long, about as broad as the petals, acute to obtuse, puberulous, fleshy; stamens of the two outer series about 10, introrse, oblong, about 2 mm. long, filaments pilosulose, flat or canaliculate, about 2 mm. long; stamens of the inner series about 3, similar to those of the outer series but extrorse and the filaments a little longer, each subtended by a short stipitate gland on either side and with a longer subsagittate gland alternating with each stamen. Pistil simple, about as long as the stamens. Fruit globose, 2.5-4.5 cm. in diameter, skin smooth or slightly rugose, relatively thick, abundantly provided with stone cells within, apparently green when mature; flesh scanty, about 5 mm. thick, fairly good flavor; seeds globose, plumule below the center.

GUATEMALA: flowers pale greenish-yellow, tree 20 m. along road (between km. posts 97-98), Cerro Chichoy near Chichoy in cloud forest, department of Chimaltenango, alt. 2800 m., July 6, 1949, *Williams & Molina 16833* (TYPE in Herb. Escuela Agrícola Panamericana, duplicate in Herb. Chicago Nat. Hist. Mus. and in other herbaria); in forest along Chichoy ridge road between Tecpán and Los Encuentros, be-

tween Km. posts 97-98, department of Chimaltenango. alt. 2800 m., July 9, 1947, *Popenoe & Williams 13200, 13201, 13202* (accompanied by color photographs of fruit).

*Persea nubigena* belongs in a complex of wild species all, except *Persea floccosa* of Mexico, of which are as yet undescribed, —the complex extends from Mexico to Honduras and probably on to Costa Rica. The nearest relative is the cultivated and ubiquitous *Persea americana*, which is cultivated throughout the tropics and even into the edge of the temperate zone.

The plants of this complex, with the possible exception of one which we know inadequately as yet, are all highland species. The present species grows at the highest elevation at which Dr. Popenoe has seen a *Persea* during his study of avocados and avocado-like plants, which extends over a period of more than thirty years.

***Persea Popenoei* L. Wms., sp. nov.**

Arbor usque ad 12 m. vel ultra. Folia elliptica, elliptico-lanceolata vel oblongo-elliptica, acuta vel obtusa vel breviter acuminata, basi cuneata, chartacea, subtus pannosa. Inflorescentiae axillares, paniculatae. Fructi globosi, parvi.

Tree to 12 m. or more tall, trunk 60 cm. or more in diameter, tall and slender with restricted cope, rounded and handsome when in forest openings; twigs coarse, blackish, leaf-scars prominent, glabrous or nearly so, twigs of the flushes densely puberulent, becoming glabrous. Leaves elliptic to elliptic-lanceolate or oblong-elliptic, acute or obtuse, occasionally short-acuminate, cuneate to the base and slightly decurrent, chartaceous, margins cartilaginous, glabrous above, minutely fulvous-pannose below or in age white-pannose, 7-16 cm. long and 2.5-8 cm. broad (from juvenile tree to 23 cm. long), the veins glabrous or nearly so, 7-11 pairs; petioles 0.8-1.8 cm. long, thick, strongly canaliculate and subulate. Inflorescence axillary on the flushes, paniculate, about as long as or slightly exceeding the leaves. Flowers unknown. Fruit globose, metallic blue-green when fresh, drying black, 8-12 mm. in diameter, subtended by the oblong-lanceolate to suborbicular, acute, densely puberulent, coriaceous perianth lobes.

HONDURAS: tree 12 m., common in cloud forest area in

mountains above San Juancito, department of Morazán, alt. 2200 m., February 20, 1948, *Williams & Molina 13692* (TYPE in Herb. Escuela Agrícola Panamericana, dupl. in Herb. Chicago Nat. Hist. Museum and in other herbaria); same locality, 1947-1948, *Williams & Molina 13338, 13349, 13699, 13765*.

Allied to *Persea chiapensis* Lundell from south Mexico from which it is distinguished by the smaller fruits, simpler inflorescence, somewhat differently shaped leaves which are cuneate rather than subquadrate at the base. There is another allied, but undescribed, species which we have collected in the Cordillera de Talamanca in Costa Rica.

The tree is often exceedingly common in the cloud forest in the mountains above San Juancito, has not been collected on any of the other high cloud-forest covered mountains of central Honduras.

Named for Dr. Wilson Popenoe who has been collecting and observing the species of *Persea* in tropical America for more than thirty years.

## TEOSINTE IN HONDURAS

Paul C. Standley

ONE of the most perplexing and genetically important native American plants is teosinte, *Euchlaena mexicana* Schrad., the only close wild relative of maize. There has been much speculation regarding its phylogenetic status, which, if established, would shed light on the origin of cultivated maize, whose immediate relatives are presumed to be extinct. Their disappearance is proof of a long cultivation of maize, which in numerous differing forms was grown in most temperate and tropical parts of the Americas before the arrival of Europeans, and was the basis of their culture.

For some time, in recent years, it was believed that teosinte was a natural hybrid between maize and wild grasses of the genus *Tripsacum*. Recent experimental work is now considered to have disproved this theory, and the trend of current opinion is that *Euchlaena* is an amply independent genus of grasses,