WOOD ANATOMY OF THE NEOTROPICAL SAPOTACEAE

VI. CHLOROLUMA

RESEARCH PAPER FPL 330

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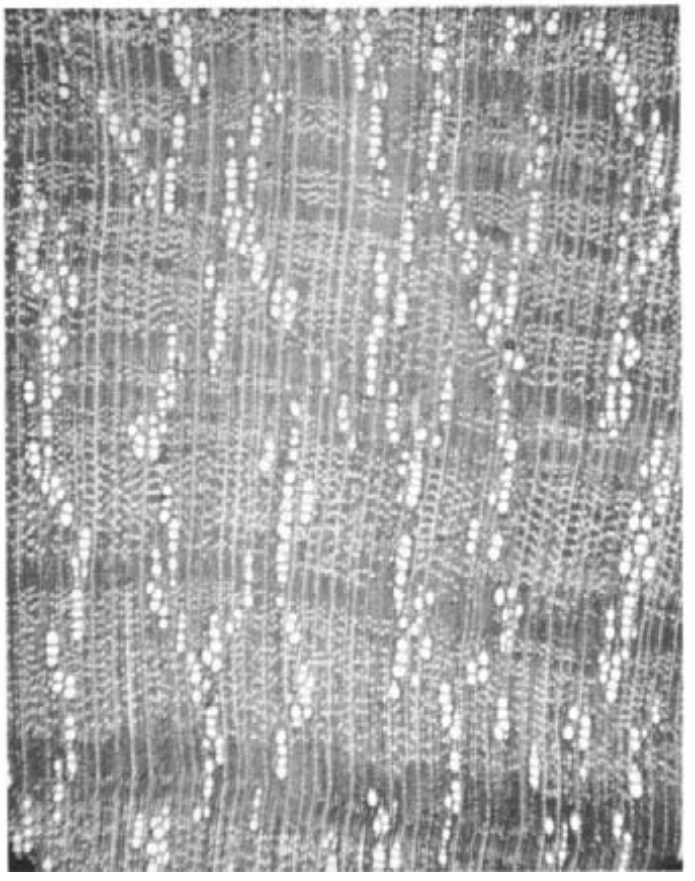

Preface

The Sapotaceae form an important part of the ecosystem in the neotropics; for example, limited inventories made in the Amazon Basin indicate that this family makes up about 25% of the standing timber volume there. This would represent an astronomical volume of timber but at present only a very small fraction is being utilized. Obviously, better information would help utilization--especially if that information can result in clear identification of species.

The Sapotaceae represent a well-marked and natural family but the homogeneous nature of their floral characters makes generic identification extremely difficult. This in turn is responsible for the extensive synonomy.

Baehni and Bernardi state the situation with respect to Peru but this would hold equally well for all of the neotropics: "For instance, of the 39 species and one variety described hereunder, 13 are known only from the Peruvian type; and 23 taxa here presented have no fruit or seed. It is universally admitted that the taxonomy of this family is almost impossible without--for the same species--leaves, flowers, fruits, and seeds."

Unfortunately, species continue to be named on the basis of flowering or fruiting material alone and this continues to add to the already confused state of affairs.

This paper on Chloroluma is the sixth in a series describing the anatomy of the secondary xylem of the neotropical Sapotaceae. The earlier papers, all by the same author and under the same general heading, include:

I. Bumelia--Research Paper FPL 325
II. Mastichodendron--Research Paper FPL 326
III. Dipholis--Research Paper FPL 327
IV. Achrouteria--Research Paper FPL 328
V. Calocarpum--Research Paper FPL 329

Publication in this manner will afford interested anatomists and taxonomists the time to make known their opinions and all such information is hereby solicited. At the termination of this series the data will be assembled into a single comprehensive unit.

WOOD ANATOMY OF NEOTROPICAL SAPOTACEAE:

VI. CHLOROLUMA

By

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Abstract

The old genus Chloroluma has been reinstated to generic status after having been in synonomy under Chrysophyllum for many years. The description is based on the type species C. gonocarpa which is characterized by: Its clear yellow wood; pores in radial-echelon arrangement; rhombic, two-sized, and microcrystals frequent in the axial parenchyma and wood rays; colored cell contents and silica lacking; very large crystals occasionally found in the tyloses.

Introduction

The genus Chloroluma was first described by Baillon in 1891 but was soon reduced to synonomy under Chrysophyllum. Aubreville (1) reinstated Chloroluma to generic rank typified by C. gonocarpa (Mart. and Eichl.) Baillon, which occurs in southeastern Brazil, northern Argentina, Paraguay, and Bolivia. Aubreville (1) included three additional species in this genus: C. viridis (Mart. and Eichl.) Aubr., C. bahiensis Baill., and C. imperialis (Linden) Aubr. Baehni (2) maintains the species in Chrysophyllum except for C. imperialis, which he includes in the old world genus Planchonella. Aside from the widespread C. gonocarpa, the three other species attributed to this genus by Aubreville occur in eastern Brazil.

The following description of the wood of the type species, C. gonocarpa, upholds the reinstatement of Chloroluma to generic status by Aubreville (1).

1/ Pioneer Research Unit, FPL. The Laboratory is maintained at Madison, Wis. in cooperation with the University of Wisconsin, Madison.

Description

General: Wood yellow; moderately heavy and very fine textured. Growth rings apparent and demarcated by zones of fibrous tissue which are relatively free of parenchyma. Specific gravity ranges from 0.60 to 0.89 with an overall average of 0.76.

Anatomical:

Pores in echelon arrangement (figs. 1 and 2). Pores mostly in radial multiples of 2-4(6); longer multiples will be found to consist of multiples interspersed with vascular tracheids. Maximum tangential diameter of pores of the specimens examined range from 55 to 87 µm except in Schmidt 1 where they are obviously larger and attain a maximum of 118 µm. In Schmidt 1 there is a decided tendency toward a diffuse arrangement (fig. 3).

Vessel member length averages range from 450 µm to 680; with 820 µm in Schmidt 1, and an overall average of 540 µm. Perforations simple. Inter-vessel pits 6-8 µm in diameter. Tyloses thin-walled and occasionally contain large rhombic crystals.

Axial parenchyma reticulate (fig. 4) but appearing under a hand lens as closely and irregularly spaced bands; the banding is generally limited to the space between the wood rays. Short crystalliferous strands common, containing the usual rhombic crystals or two-sized crystals; microcrystals frequent. Colored, organic deposits lacking.

Wood rays (1) 2-3 (4) seriate; heterocellular. Short strands of regular or two-sized crystals present in the square or erect marginals. Colored deposits lacking. Vessel-rays pitting irregular in shape and size. Maximum height of multiseriate portion of rays ranges from 197-331 µm with an average maximum of 227 µm. Microcrystals occasionally present in the marginal cells.

Wood fibers thick-walled, with an average length of 1.23 mm. Vascular tracheids common.

Diagnostic features: Wood yellow; pores in echelon arrangement, the individual pores not exceeding 118 µm in tangential diameter; crystals common, rhombic and two-sized; microcrystals frequent in axial parenchyma and ray margins; colored cell contents and silica lacking. Very large crystals occasionally found in tyloses.

Literature Cited

1. Aubreville, A.
   1961. Notes sur les Sapotacées Africaines et Sud-Americaines. Adansonia: 1(1):31-33.

2. Baehni, Charles.
   1965. Mémoires sur les Sapotacées. III. Inventaire des genres Boissiera II:72.

3. Cronquist, Arthur.
   1946. Studies in the Sapotaceae. V. The South American species of Chrysophyllum. Bull. Torrey Bot. Club. 73(3):294-295.

Table 1.--Wood specimens of chloroluma examined

Species	Collector and number		Origin	Number of wood Collection	
				MADw	SJRw
gonocarpa (Mart. and Eichl.) Baillon ex Aubr.	Schmidt	1	Bolivia		50147
	Noverras	40	Argentina		14996
	Lindeman and de Haas	5361	Parana	32981	
	?	101	Argentina		6249
	Pires	12230	Parana ?		
	Pires	12361	Parana ?		
	Pires	12486	Parana ?		
	Curran	704	Argentina		1713
	Field Museum	9089	Paraguay	23440	19910

* U.S. GOVERNMENT PRINTING OFFICE: 1979—650-640

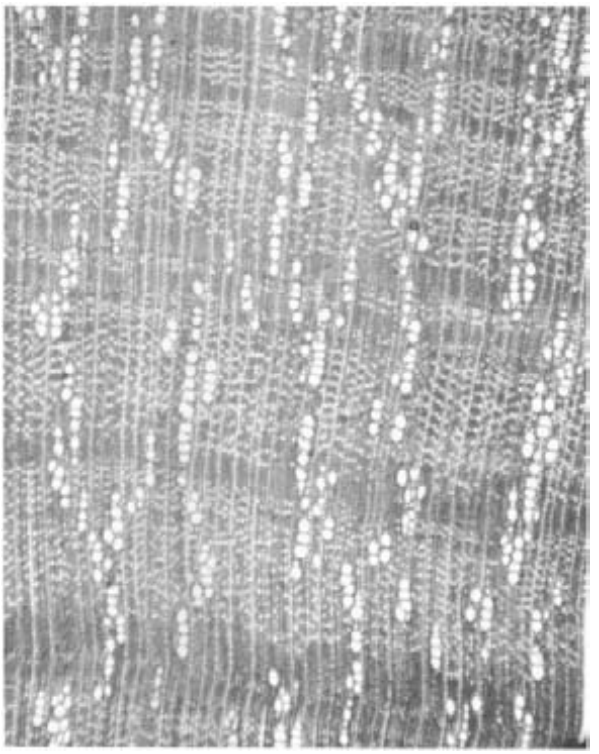

Figure 1.--C. gonocarpa pore and parenchyma arrangement. (Lindeman-de Haas 5361) X 30.

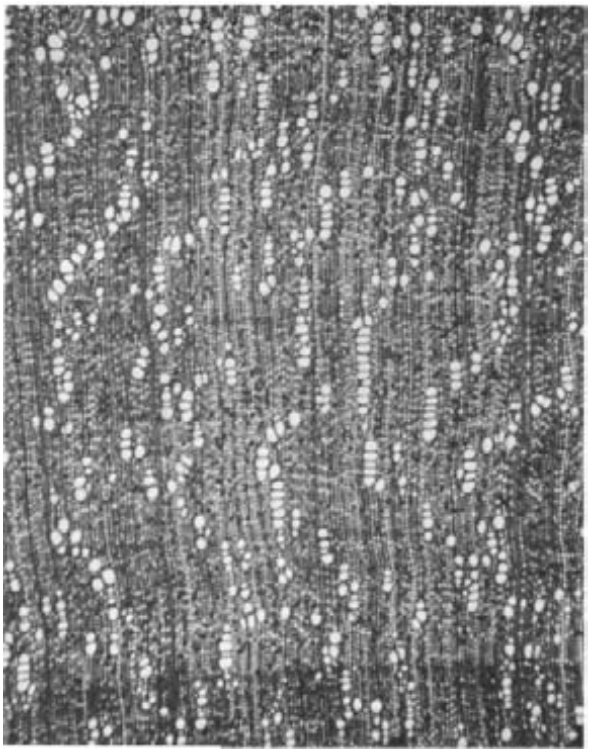

Figure 2.--C. gonocarpa pore and parenchyma arrangement (Pires 12361) 30.

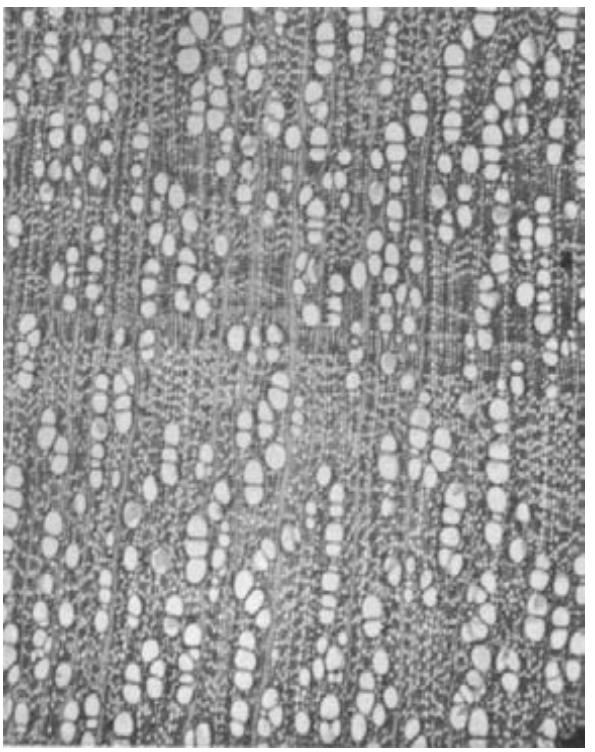

Figure 3.--C. gonocarpa showing the approach to diffuse-porous (Schmidt 1) X 30.

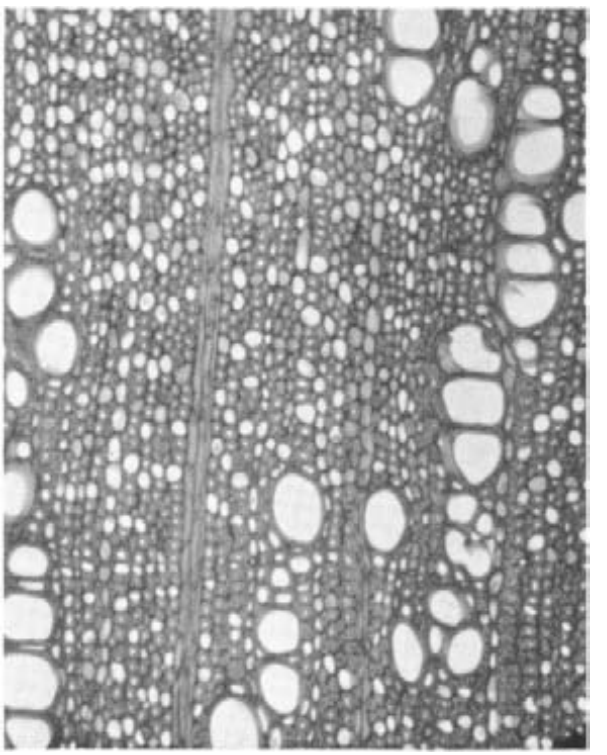

Figure 4.--C. gonocarpa showing detail of parenchyma (Pires 12386) X 110.