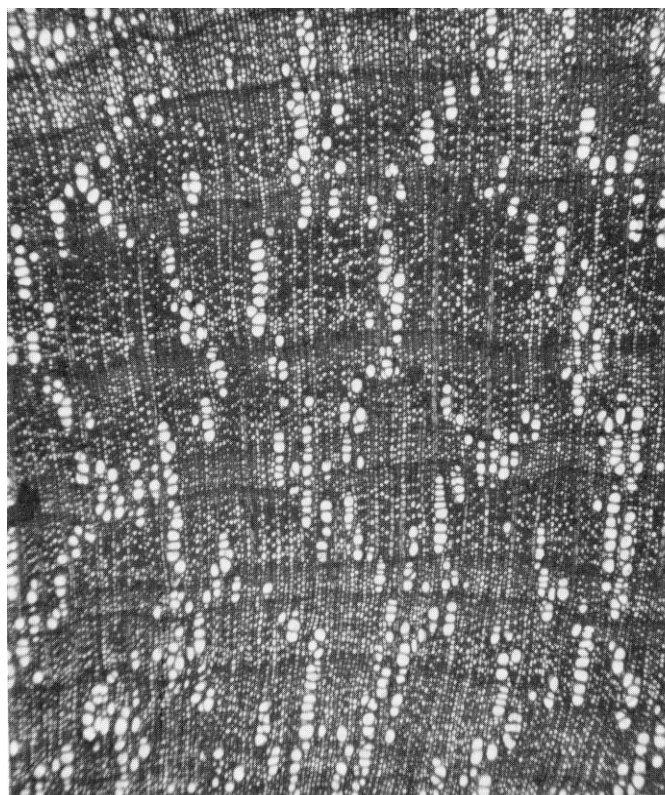

**WOOD ANATOMY
OF THE
NEOTROPICAL SAPOTACEAE**

XXIII. GAYELLA

RESEARCH PAPER FPL 374

*FOREST PRODUCTS LABORATORY
FOREST SERVICE
U.S. DEPARTMENT OF AGRICULTURE
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Abstract

Gayella splendens (A. DC.) Aubr., the sole member of this genus, is a tall shrub, endemic to Chile. Baehni and Eyma place G. splendens in Pouteria but Aubréville recognizes Gayella as distinct. Anatomically, the alliance of Gayella is not with Pouteria but with Pradosia and particularly with lactescens and ptychandra.

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 percent 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 synonymy. 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 Gayella is the twenty-third 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:

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| I. Bumelia--Res. Pap. FPL 325 | XII. Neoxythece--Res. Pap. FPL 353 |
| II. Mastichodendron--Res. Pap. FPL 326 | XIII. Podoluma--Res. Pap. FPL 354 |
| III. Dipholis--Res. Pap. FPL 327 | XIV. Elaeoluma--Res. Pap. FPL 358 |
| IV. Achrouteria--Res. Pap. FPL 328 | XV. Sandwithiodoxa--Res. Pap. FPL 359 |
| V. Calocarpum--Res. Pap. FPL 329 | XVI. Paralabatia--Res. Pap. FPL 360 |
| VI. Chloroluma--Res. Pap. FPL 330 | XVII. Gambeya--Res. Pap. FPL 361 |
| VII. Chrysophyllum--Res. Pap. FPL 331 | XVIII. Gomphiluma--Res. Pap. FPL 362 |
| VIII. Diploon--Res. Pap. FPL 349 | XIX. Chromolucuma--Res. Pap. 363 |
| IX. Pseudoxythece--Res. Pap. FPL 350 | XX. Manilkara--Res. Pap. 371 |
| X. Micropholis--Res. Pap. FPL 351 | XXI. Barylucuma--Res. Pap. 372 |
| XI. Priurella--Res. Pap. FPL 352 | XXII. Pradosia--Res. Pap. 373 |

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.

ANATOMY OF THE NEOTROPICAL SAPOTACEAE

XXIII. GAYELLA

By

B. F. Kukachka, Botanist^{1/}

Forest Products Laboratory,^{2/} Forest Service
U.S. Department of Agriculture

Introduction

Gayella splendens (A. DC.) Aubr. is a tall shrub or small tree attaining a height of 5 to 6 meters in Chile. The specific name valparadisaea is also in use for this species but is regarded as a synonym of splendens by Aubréville (1)^{3/} and Baehni (2). Baehni (2) and Eyma (3) place Gayella in synonymy with Pouteria while Aubréville (1) regards the genus as distinct and notes an affinity with Neoxythece on the basis of the leaves. Pires (personal communication 1979) notes an affinity with Neoxythece and Pradosia.

Anatomically, Gayella shows little, if any, similarity with Pouteria or Neoxythece but appears to be most closely allied with Pradosia as suggested by Pires. Within Pradosia it shares features with lactescens and ptychandra which have been included in Neopometia by both Aubréville and Baehni.

Description

Based on several specimens from a single stem collected by Dr. Mélica Muñoz S. at Los Molles, Aconcagua, Chile. The wood sections ranged from 2 to 4 cm in diameter and were taken from a plant about 2 meters tall. The author is indebted to Dr. B. A. Krukoff for transmitting these specimens for the present study.

General: Sapwood thin, light-colored merging into the pale reddish-brown heartwood. Growth rings generally distinct and very narrow. Wood very fine textured with a specific gravity of approximately 0.85. Bark 3 to 4 mm thick, smooth, dark colored; under a lens showing distinctive islands of fibers.

^{1/} Pioneer Research Unit, Forest Products Laboratory.

^{2/} Maintained at Madison, Wis., in cooperation with the University of Wisconsin.

^{3/} Underlined numbers in parentheses refer to literature cited at the end of this report.

Anatomical:

Pores in radial-echelon arrangement (fig. 1); solitary pores present but more commonly in radial multiples of 2 to 6 (8). Longer multiples as viewed with a hand lens will be found to be interrupted by tracheids or fibers. Maximum tangential diameter of 79 μm was observed.

Vessel-member length averages 400 μm ; intervessel pitting 6 to 8 μm in diameter. Perforations simple, very rarely scalariform with two bars. Tyloses thin-walled.

Axial parenchyma mostly diffuse or locally reticulate. The cells generally free of contents except for occasional cells with brown contents. Microcrystalline deposits frequent to sparse. It was necessary to cut the radial sections 30 to 35 μm in thickness to retain the crystalline contents. Rhombic crystals absent; silica occasional.

Wood rays 1 to 2 (3) seriate; heterocellular with vertical fusions. The maximum body height of the 2 (3) seriate portion up to 158 μm . Vessel-ray pitting irregular in shape and size or linear. Silica common and generally confined to the tabular cells; particles spheroidal to irregular, attaining diameters of 20 μm . A silica content of 0.32 percent was determined by chemical analysis. A few cells with brown contents were observed. Ray cells with microcrystals generally confined to the square or upright cells. Rhombic crystals absent.

Wood fibers thick-walled with an average length of 0.95 mm. Vascular tracheids common.

Diagnostic features: Heartwood pale, reddish-brown; growth rings numerous and usually distinct. Parenchyma diffuse-reticulate and abundant. Pores in radial-echelon arrangement. Microcrystals present in the rays and parenchyma. Silica common in the wood rays. Generally similar to Pradosia lactescens and P. ptychandra, but in these species the parenchyma is distinctly banded.

Literature Cited

1. Aubréville, A.
1961. Notes sur des Poutériées Américaines. *Adansonia* 1:2:179-180.
2. Baehni, Charles.
1965. Mémoires sur les Sapotacées III. Inventaire des genres. *Boissiera* II:57.
3. Eyma, P. J.
1936. Notes on Guiana Sapotaceae. *Rec. Trav. Bot. Neerl.* 33:161-162,.

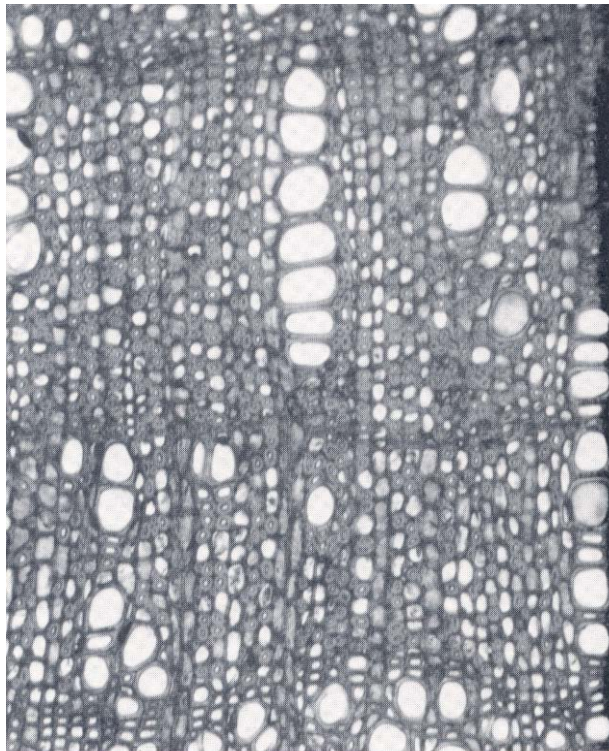


Figure 1.--Gayella splendens, pore and parenchyma arrangement (Melica Munoz S. s.n.) X 30.

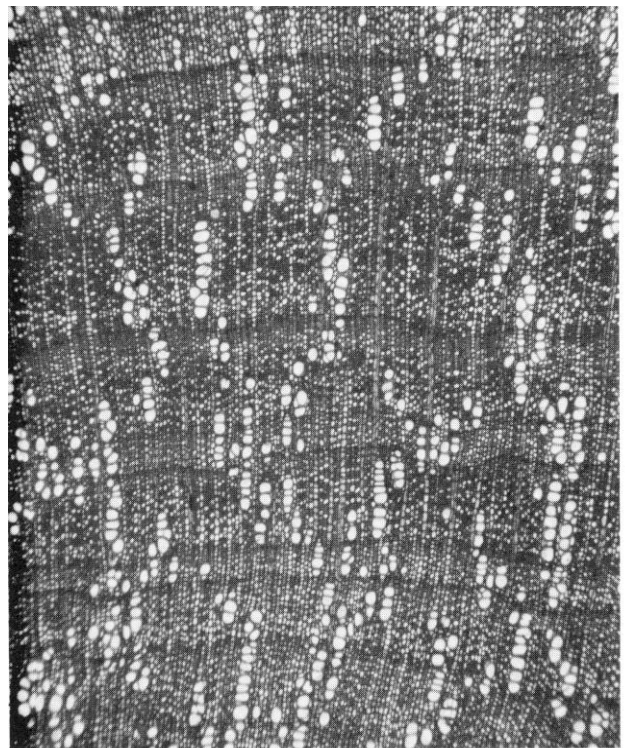


Figure 2.--Same as figure 1, parenchyma detail at X 110.

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Wood Anatomy of the neotropical Sapotaceae: XXIII.
Gayella, by B. F. Kukachka, FPL.
4 p. (USDA For. Serv. Res. Pap. FPL 374).

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