Acknowledgment

The authors wish to gratefully acknowledge the review of this bulletin by Dr. Harold A. Core, Professor of Forestry, University of Tennessee, Knoxville, Tennessee.
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<td>Wenge</td>
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<td></td>
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</tr>
<tr>
<td></td>
<td>Okwen</td>
</tr>
<tr>
<td></td>
<td>Balaustre</td>
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FOREIGN WOODS UTILIZED IN MAINE — 1969

N. P. Kutscha and L. L. Emery

Introduction
Over the past decade, there have been definite trends toward increasing importation of foreign woods into the United States. The form in which foreign woods are imported has varied over this period with the current emphasis being on veneer and plywood, followed by lumber. Roundwood importation has been dropping off primarily because of the importance being placed on primary and secondary processing by the developing nations which supply much of this material. As the demands in this country for veneer, plywood, and lumber continue to rise above domestic supplies, we will have to turn more and more to foreign sources, such as the tropical hardwood forests of Latin America, Africa, and Southeast Asia. The purpose of this study was to: (a) evaluate the extent to which foreign woods are utilized in the State of Maine, (b) to see if any problems exist in the utilization of these woods, (c) to compile information on the characteristics of the species utilized and provide this information to the users by supplying them with a copy of this bulletin, and (d) to provide for a better understanding of the significance of foreign wood utilization in the state.

Procedure
A questionnaire was prepared and sent to every secondary processor of forest timber products in the state. The source listing for these processors was the Maine Buyers' Guide and Directory of Maine Manufacturers, published by the Department of Economic Development, Augusta, Maine. The questionnaire was designed to obtain information as to species of foreign wood used in 1969, volume used, products manufactured from these species, possible technical problems associated with their use, and producer attitude towards foreign timber imports. A copy of the questionnaire and letter of transmittal are shown in appendix I.

The questionnaire was sent to 222 firms in the state. The method used to select the firms was relatively simple, the only criterion being that they were the type of businesses that might use a foreign timber species. Based on existing knowledge, it was expected that many of the firms would not respond because they were not using such species and

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1 Research financed under McIntire-Stennis Research Project 5004.
2 Assistant Professor, Wood Technology, School of Forest Resources, University of Maine, Orono, Maine.
3 Master of Science Degree candidate, Wood Technology.
were not interested in using such species. Responses were received from 114 firms of which 57 did not use foreign timber and were not interested in using such material, 20 firms had not used them but were interested and 37 firms did use such species.

The firms responded to the question: “What species of foreign or tropical woods are you using or have you used in the past?” with 20 commercial names of a general nature. After referring to current literature, these 20 commercial names were expanded to 44 possible commercial names of a more specific nature, and to approximately 74 possible scientific names of species. This phenomenon illustrates one of the problems in dealing with foreign woods, that of nomenclature. Obviously, the variability in properties between species of wood can contribute to unsatisfactory production results when several species are treated as one material. Since a commercial name can include many genera and species from different parts of the world, all purchase orders for such material should specify the scientific name of the species desired. A list of possible species and commercial names corresponding to the 20 reported commercial names is shown in appendix II. It was not within the scope of this study to obtain wood samples from the various firms and carry out the involved microscopic procedure required for exact species identification.

The total volume of foreign woods utilized in the state during 1969 is shown in appendix III. The numerical values reported in this table are considered only as approximate since not all firms kept exact records as to volume used for each wood. The volumes are reported in board feet, cubic feet, square feet, and tons, for easy comparison. It is felt that this table readily indicates that a rather significant amount of foreign wood is being used in the state.

An attempt was made to determine the economic value of the reported woods by contacting a number of importers and other groups. It was felt that an aggregate dollar—volume value for each species would weight the physical volume reported in appendix III as to economic importance. However, price information was not available for enough woods to make a valid comparison and henceforth this data is not presented. From the information obtained along these lines it seems quite apparent that the prices paid for foreign timber species seems to be highly arbitrary and evolves from the relative bargaining power of buyer and seller. Some factors that contribute to price include: species, physical form, port-of-entry, source, quality or grade of material, volume desired, and current availability.

The products manufactured by the 37 firms using foreign woods include: boat and yacht components such as decking, planking and finish work (fig. 1, 2, 3), tool handles (cover photograph), dowels,
FIGURE 1. Many boats such as this one are constructed each year along the Maine coast and require outstanding craftsmanship. Often these boats utilize such woods as Burma teak for decking and Philippine mahogany for planking, as well as a number of other foreign and native woods.
FIGURE 2. A strip of one-eighth inch African mahogany veneer laid over part of the form for construction of a Trimaran. The hull is constructed by covering the form with three layers of African mahogany, each layer being oriented in a different direction.
FOREIGN WOODS UTILIZED IN MAINE

FIGURE 3. Completed Trimaran whose basic hull is composed of three layers of one-eighth inch African mahogany veneer.

patterns, millwork, furniture and furniture components, cases and cabinets, core stock for decorative paneling, wood carvings, cutlery handles (fig. 4), knife blocks (fig. 5), brace heads and handles (cover photograph), gavels, and duck calls. The largest group of firms in number is the boatbuilders. The wood accounting for the largest volume is Philippine mahogany for use as core stock in decorative paneling.

Few technical problems were reported. It appears that the manufacturers are able to rely on experience in modifying factors of production to overcome initial difficulties encountered with an unknown species. If a new species gives too much difficulty, it is usually rejected as an unsuitable material. In general, the firms responding indicated that their individual cost estimates, prejudice against foreign materials, knowledge of, or ignorance of, foreign timber working properties, and supply of suitable domestic material determines their use or non-use of foreign woods.

A description of the species listed in appendix II is contained in appendix IV which also contains the definitions for terms used throughout the appendix. The species descriptions are arranged by commercial name as supplied by the firms responding. Each description is a separate page and pertains to one species, or one genus, if the species comprising
Figure 4. A load of Bubinga which has been shipped in by rail in twenty-foot lengths and was subsequently bucked into short lengths. End checking indicates that a certain amount of waste, upon resawing, can be expected. The wood will primarily be used for knife handles.
FIGURE 5. Genuine mahogany can be readily sculptured into attractive knife blocks.
the genus are not normally separated in the literature. The information contained in appendix IV was drawn from many sources but the bulk of the information was taken from the following references:

*Commercial Foreign Woods on the American Market*
David A. Kribs

*Timbers of West Africa*
B. Alwyn Jay
Timber Research and Development Association

*Timbers of South America*
R. P. Woods
Timber Research and Development Association

*Timbers of Southeast Asia*
Gerald Hart
Timber Research and Development Association

*Timbers of the World*
Alexander L. Howard

*Timbers of the New World*
Samuel J. Record and Robert W. Hess
Yale University Press, New Haven. 1943.

*Commercial Timbers of the World*
F. H. Titmuss

Much research has been conducted throughout the world on the species listed in this bulletin as well as on many other foreign woods. Unfortunately, there is at present no central clearing house where this information is available. It is available in the form of books, journal articles, trade bulletins, etc., which can be obtained from various institutes, laboratories, and other organizations. This situation, in general, makes obtaining this type of information rather difficult. Appendix V is a bibliography of selected publications which illustrate the type of information that is available. These references were largely obtained through *Forestry Abstracts* which is published by the Commonwealth Forestry Bureau, Oxford, England. These *Abstracts* cover all aspects of forestry and also contain a species index.

One of the most recently available sources for information on foreign woods is the *Proceedings* of the Conference on Tropical Hard-

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*Copies of these Proceedings are available from Coordinator of Continuing Education, State University College of Forestry, Syracuse, New York, 13210 at a cost of $10.00*
FOREIGN WOODS UTILIZED IN MAINE

woods held on August 18-21, 1969, at the State University College of Forestry at Syracuse, New York. This conference dealt with such aspects as properties of major species, comparison of tropical versus native hardwoods, uses, research needs, foreign trade, and sources of information. On substituting foreign woods for native species, some examples of which were listed, it was pointed out that suitable substitutes will rarely substitute for the native wood in every respect and prospective users are urged to correspond with the appropriate research organization about any foreign wood which they contemplate using. Uses for various foreign woods were also discussed at the conference for such categories as furniture manufacture, paneling and plywood manufacture, flooring, turnings, and marine uses.

Conclusions

Results of this study indicate that foreign woods have been, and will probably continue to be, important production materials in the state's forest products industry. However, this study, as well as the Conference on Tropical Hardwoods mentioned earlier, has pointed out that there is a definite lack of information in particular areas and that certain definite problems exist:

a) information on the current and future availability of foreign timbers in commercial quantities is needed.

b) identification, nomenclature, and marketing problems exist due to the confusion of common names.

c) information on importing firms handling these materials is inadequate and the pricing mechanism does not allow the purchaser any good means to compare prices or to develop cost estimates.

d) there is a lack of international standards for units of measurement, sizes of material, mechanical testing procedures, specifications, and grades.

e) more basic technical information is needed in terms of dimensional stability, seasoning characteristics, decay resistance, allergenic qualities, and strength in order to determine the suitability of various woods for manufacture and service.

f) additional processing information is needed regarding machining, gluing, and finishing which are greatly influenced by such factors as silica content, density, degree of interlocked grain, and presence of tension wood.

g) a convenient and reliable source for the above type of information is needed.

In spite of these problems and lack of information, foreign woods are becoming increasingly important for wood-using industries. By supplementing the domestic supply of decorative and other fine hardwoods they can help conserve our own valuable native hardwoods. The
great diversity in appearance and properties of these foreign woods pro-
vide additional opportunities for improving the competitive position of
wood with other materials, for developing new areas of wood use and
for opening new markets.
March 17, 1970

Dear Sir:

I am attempting to evaluate the extent to which foreign or tropical wood species are being utilized as components of domestic wood products in the State of Maine.

The enclosed questionnaire was designed to obtain the required information. Specific information related to your firm’s activities will be held in strict confidence.

The results of this survey will dictate research which will best serve the interests of firms, such as yours, in the State of Maine with respect to the utilization of foreign or tropical woods.

Thank you very much for your cooperation.

Respectfully,

(signed)

Larry L. Emery
Graduate Research Assistant
in Wood Technology
FOREIGN WOOD UTILIZATION QUESTIONNAIRE

1. Are you presently utilizing or have you ever utilized any foreign or tropical wood species?
   Yes .............. No ..............

2. If the answer to question 1 is no, skip to question 7.

3. What species of foreign or tropical woods are you using or have you used in the past?

   Names of Species

   ........................................................................................................................................
   ........................................................................................................................................

4. What was the approximate volume of each species used in 1969?

   species  | bd.ft.  | cu.ft.

   ........................................................................................................................................
   ........................................................................................................................................
   ........................................................................................................................................

5. What products were manufactured from these species?

6. Are you experiencing any specific technical problems with the species used?

   Machining ............ Seasoning ............ Gluing ............ Other ............

   Explain:

7. If you are not presently using foreign or tropical woods, do you believe that you could use them?
   Yes .............. No ..............

8. Do you have any additional comments?

9. ........................................................................................................................................

   Name of Firm  

   Address
## Appendix II

Possible species corresponding to twenty reported commercial names for woods utilized in Maine.

<table>
<thead>
<tr>
<th>Reported Commercial Name</th>
<th>Preferred and Other Possible Commercial Name(s)</th>
<th>Scientific or Species (spp.) Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Balsa</td>
<td>Balsa</td>
<td>Ochroma pyramidale</td>
</tr>
<tr>
<td>4. Brazilian mahogany</td>
<td>Andiroba, Albarco</td>
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<td></td>
<td>Vinhatico</td>
<td>Cariniana spp.</td>
</tr>
<tr>
<td>5. Bubinga</td>
<td>Bubinga</td>
<td>Plathymenia reticulata Benth.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Guibourtia spp.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Didelotia africana Baile</td>
</tr>
<tr>
<td></td>
<td>Dika</td>
<td>Irvingia gabonensis Baill.</td>
</tr>
<tr>
<td></td>
<td>Guayacan, Bethabara</td>
<td>Tabebuia spp.</td>
</tr>
<tr>
<td></td>
<td>Okan</td>
<td>Cylcodiscus gabunensis Harm</td>
</tr>
<tr>
<td>8. Imbuya</td>
<td>Imbuia</td>
<td>Phoebe porosa (Nees &amp; Mart) Mez.</td>
</tr>
<tr>
<td>10. Obeche</td>
<td>Obeche</td>
<td>Triplochiton scleroxylon K. Schum</td>
</tr>
<tr>
<td>11. Okoume</td>
<td>Okoume, Samara</td>
<td>Aucoumea klaineana Pierre</td>
</tr>
<tr>
<td></td>
<td>White peroba</td>
<td>Paratecoma peroba (Rec.) Kuhl.</td>
</tr>
<tr>
<td>13. Philippine mahogany</td>
<td>Almon, Philippine mahogany, light red</td>
<td>Shorea almon</td>
</tr>
<tr>
<td></td>
<td>Bagtikan, Philippine mahogany, light red</td>
<td>Parashorea plicata</td>
</tr>
<tr>
<td></td>
<td>Mayapis, Philippine mahogany, light red</td>
<td>Shorea palosapis (Blco.) Merr.</td>
</tr>
<tr>
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<td>White lauan, Philippine mahogany, light red</td>
<td>Pentacme contorta Merr. &amp; Rolfe.</td>
</tr>
<tr>
<td></td>
<td>Red lauan, Philippine mahogany, dark red</td>
<td>Pentacme mindanensis</td>
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<tr>
<td></td>
<td>Tanguile, Philippine mahogany, dark red</td>
<td>Shorea negrosensis Foxw.</td>
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<tr>
<td></td>
<td>Guijo, Philippine mahogany, dark red</td>
<td>Shorea polysperma (Blco.) Merr.</td>
</tr>
<tr>
<td></td>
<td>Lumbayau, Philippine mahogany, dark red</td>
<td>Shorea guiso (Blco.) Bl.</td>
</tr>
<tr>
<td></td>
<td>Maranggo, Philippine mahogany, dark red</td>
<td>Tarrietia javanica Blume</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Azadirachta integrifoliola</td>
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</table>


<table>
<thead>
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<th>Reported Commercial Name</th>
<th>Preferred and Other Possible Commercial Name(s)</th>
<th>Scientific or Species (spp.) Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>14. Ramin</td>
<td>Ramin (Borneo), Melawis (Malayan)</td>
<td>Gonystylus bancanus Baill.</td>
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<td>15. Rosewood</td>
<td>Brazilian rosewood</td>
<td>Dalbergia nigra Fr. Allem</td>
</tr>
<tr>
<td></td>
<td>Honduras rosewood</td>
<td>Dalbergia stevensonii Standl.</td>
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<tr>
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<td>Amazon rosewood</td>
<td>Dalbergia spruceana Benth.</td>
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<td>Cocobolo</td>
<td>Dalbergia retusa Hemsl.</td>
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<tr>
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<td>Brazilian tulip wood</td>
<td>Dalbergia aff. frutescens (Vell.) Britt</td>
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<tr>
<td></td>
<td>East Indian rosewood</td>
<td>Dalbergia latifolia Roxb.</td>
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<tr>
<td></td>
<td>Amyris wood</td>
<td>Amyris spp.</td>
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<tr>
<td></td>
<td>Rosamay</td>
<td>Dysoxylon fraseranum Benth.</td>
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<td></td>
<td>Tracwood</td>
<td>Dalbergia cochinchinensis Pierre</td>
</tr>
<tr>
<td></td>
<td>Sipo</td>
<td>Entandrophragma utile Spr.</td>
</tr>
<tr>
<td>17. Spanish cedar</td>
<td>Cedro</td>
<td>Cedrela spp.</td>
</tr>
<tr>
<td>18. Teak, genuine</td>
<td>Teak</td>
<td>Tectona grandis L.</td>
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<tr>
<td></td>
<td>Balaustre</td>
<td>Centrolobium spp.</td>
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### Aggregate Volumes of Foreign Woods Utilized in Maine—1969

<table>
<thead>
<tr>
<th>Report Commercial Name</th>
<th>Board Feet</th>
<th>Cubic Feet</th>
<th>Square Feet</th>
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<td>25,319</td>
<td>813,568</td>
<td>494</td>
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<tr>
<td>Balsa</td>
<td>50</td>
<td>4</td>
<td>133</td>
<td>0.02</td>
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<tr>
<td>Brazilian mahogany</td>
<td>3,000</td>
<td>249</td>
<td>8,000</td>
<td>4</td>
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<tr>
<td>Bubinga</td>
<td>192,771</td>
<td>16,000</td>
<td>514,120</td>
<td>400</td>
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<td>Goncalo alves</td>
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<td>2,490</td>
<td>80,010</td>
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<td>Greenheart</td>
<td>350</td>
<td>29</td>
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<tr>
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<td>706</td>
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<td>1,000</td>
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<td>2,667</td>
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<td>3,775,799</td>
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</table>

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1 Exact volumes for Beefwood, Zebrawood, Sapele, and Imbuya were not reported and personal communication indicated that these volumes were relatively small.

2 Conversion factors used exclude kerf and other machining loss; were used for approximate volume comparison only:

- 1 board foot = 0.083 cubic feet = 2.667 square feet (assuming 3/4 inch thick basis)
- 1 ton = 2000 pounds; pounds per cubic foot for each wood was estimated from data in Appendix IV.
Appendix IV
Definition of Terms

Color—indicates the color of the wood as it is commonly used, commercially.

Luster—is the ability of a longitudinal face of the wood to reflect light or exhibit sheen.

Specific Gravity—is a measure of the amount of wood material present; it is the ratio of its oven-dry weight to the weight of the water displaced by the wood at a given moisture content (air dry, green, or oven-dry).

Grain—refers to the alignment and arrangement of the cells in a piece of wood.

Straight grain—is present when the cells are aligned parallel to the long axis of the piece of wood.

Spiral grain—is present when the cells are aligned in a helical orientation around the axis of the stem.

Interlocked or interwoven grain—is the result of an alternate orientation of cells in successive layers of growth increments; radial sawn boards from wood with interlocked grain demonstrates a ribbon figure or pattern.

Curly or wavy grain—results in a piece of wood when the cells undulate more or less abruptly to the left and right, repeatedly, from the normal vertical direction of cell alignment.

Silver grain—is that grain pattern resulting from the presence of conspicuous woods rays in radial-sawn material.

Texture—refers to the relative cross-sectional size of the wood cells present; small diameter cells would result in a fine texture, large ones in a coarse texture.
Species Descriptions

AFRICAN MAHOGANY
(Family—Meliaceae)

Species
Khaya ivorensis A. Chev.
K. klainei Pierre
K. grandifoliola C. DC.
K. senegalensis A. Juss.
K. anthotheca C. DC.

Commercial Name
Khaya

Other Names
African mahogany

General Characteristics
Color—pale rosy red to dark reddish brown, often with a purplish cast
Luster—high and golden
Specific Gravity—0.46 to 0.80 (air dry)
Weight—28 to 50 lbs. per cu. ft.
Grain—straight but often roey producing a ribbon figure
Texture—medium

Reported Working Properties
Works easily with a high lustrous finish, seasons well but somewhat prone to warp, heart shakes may occur extensively.

Reported Uses
Boatbuilding, furniture, cabinets, piano cases, interior finish, millwork, patterns, exterior use, musical and scientific instruments, turnery and sculpture, veneer, plywood, and gunstocks, also, used as a substitute for genuine mahogany.

Sources
Ghana, Ivory Coast, Gabon, Cameroon, Nigeria, Sudan, Uganda, and Democratic Republic of the Congo
Appendix IV, continued

BALSA
(Family—Bombacaceae)

Species
Ochroma pyramidale

Commercial Name
Balsa

Other Names
Gonote, Maho

General Characteristics
Color—white, cream or pale brown, sometimes with a pinkish cast
Luster—high and silky
Specific Gravity—0.12 to 0.20 (oven dry)
Weight—7 to 12 lbs. per cu. ft.
Grain—straight
Texture—coarse

Reported Working Properties
Easy to work and finishes with a high luster.

Reported Uses
Life preservers, ring buoys, life rafts and floats, aquaplanes, core material in sandwich construction, insulation of all kinds, sound deadening in house construction, model airplanes, and toys.

Sources
Mexico, Central America, Brazil, Bolivia, Peru, Ecuador, and Venezuela
FOREIGN WOODS UTILIZED IN MAINE

Appendix IV, continued

BEEFWOOD
(Family—Sapindaceae)

Species
Manilkara bidentata (A. DC.) Chev.
M. huberi (Ducke) Standl.
M. jaimiqui (C. Wr.) Dubard
M. emarginata (L.) Britt. & Wils.

Commercial Name
Bulletwood

Other Names
Beefwood

General Characteristics
Color—uniformly light red, dark red, or dark reddish brown
Luster—low
Specific Gravity—0.90 to 1.20 (air dry)
Weight—56 to 75 lbs. per cu. ft.
Grain—straight
Texture—fine

Reported Working Properties
A very hard material which is difficult to nail without splitting and difficult to work but finishes smoothly with a high polish.

Reported Uses
Boatbuilding (frames and keels), general construction, flooring, tool handles, posts, cross ties, mill rollers, beaters, agitator bars, picker-sticks (looms), furniture, cabinets, violin bows, and turnery.

Sources
Florida, West Indies, Costa Rica, Panama, Colombia, Venezuela, Guyana, Surinam, Brazil, and Peru
Appendix IV, continued

BEEFWOOD
(Family—Sapindaceae)

Species
Mimusops elengi Roxb.

Commercial Name
Bulletwood, Asian

Other Names
Bukal, Kabiki

General Characteristics
Color—deep red to dark reddish brown, often with darker streaks
Luster—low
Specific Gravity—0.80 to 1.02 (air dry)
Weight—50 to 63 lbs. per cu. ft.
Grain—straight to irregular or slightly roey
Texture—fine

Reported Working Properties
None reported.

Reported Uses
Heavy construction, piles, bridges, posts, shipbuilding, tool handles, flooring, and turnery.

Sources
Philippines and India
Appendix IV, continued

BRAZILIAN MAHOGANY
(Family—Meliaceae)

Species
Carapa guianensis Aubl.
C. nicaraguensis C. DC.
C. macrocarpa

Commercial Name
Andiroba

Other Names
Crabwood, West Indian mahogany, Surinam mahogany, Andiroba mahogany

General Characteristics
Color—pale brown or light to dark reddish brown
Luster—golden
Specific Gravity—0.60 to 0.90 (air dry)
Weight—37 to 56 lbs. per cu. ft.
Grain—straight to roey
Texture—medium

Reported Working Properties
Works easily with a lustrous finish.

Reported Uses
General construction, boatbuilding, flooring, furniture, cabinets, interior finish, veneer and plywood.

Sources
West Indies, Central America, Guinea, Surinam, Colombia, Venezuela, Ecuador, Peru, and Brazil
BRAZILIAN MAHOGANY

(Family—Lecythidaceae)

Species
Cariniana pyriformis Miers.
C. legalis (Mart.) Kuntz

Commercial Name
Albarco

Other Names
Brazilian or Colombian mahogany, Bacu

General Characteristics
Color—yellowish brown, pinkish brown, or dark reddish brown
sometimes with purplish tinge or darker streaks
Luster—medium to high
Specific Gravity—0.50 to 0.70 (air dry)
Weight—31 to 43 lbs. per cu. ft.
Grain—straight to roey
Texture—medium

Reported Working Properties
Easy to work with a knife, holds its shape well when manufactured, takes a smooth glossy finish, dulls saws due to the presence of silica deposits in the parenchyma cells, experience with other timbers demonstrates that silica content does not interfere seriously with the manufacture of sliced or rotary cut veneers.

Reported Uses
Furniture, cabinets, interior finish, and general construction.

Sources
Colombia, Venezuela, and Brazil
BRAZILIAN MAHOGANY
(Family—Leguminosae)

Species
Plathymenia reticulata Benth.

Commercial Name
Vinhatico

Other Names
Brazilian mahogany, Brazilian yellow wood

General Characteristics
Color—yellow to golden brown sometimes with darker streaks and turning deep russet with age
Luster—high and satiny
Specific Gravity—0.56 to 0.65 (air dry)
Weight—35 to 40 lbs. per cu. ft.
Grain—straight to roey
Texture—medium

Reported Working Properties
Works easily, finishes with a high golden sheen, fairly resistant to decay, seasons readily, holds its place well when manufactured.

Reported Uses
General construction, millwork, boatbuilding, furniture, cabinets, interior finish, parquet flooring, veneer, and plywood.

Sources
Brazil
Appendix IV, continued

**BUBINGA**
(Family—Leguminosae)

*Species*

- Guibourtia tessmanii J. Leonard (Copaifera tessmannii Harms)
- G. ehie J. Leonard
- G. arnoidiana (Dewilld.) J. Leonard
- Didelotia africana Baile

*Commercial Name*

- Bubinga (red), Benge (brown)

*Other Names*

- African rosewood, Eban, Kevazingo

*General Characteristics*

- **Color**—light red, brown or violet with fairly evenly spaced purple stripes of varying widths, somewhat resembling growth rings
- **Luster**—high
- **Specific Gravity**—0.80 (air dry)
- **Weight**—50 lbs. per cu. ft.
- **Grain**—wavy or roey
- **Texture**—medium

*Reported Working Properties*

Machines without difficulty taking a lustrous finish and veneers well, rotary-peeled veneer is denoted as Kevazingo.

*Reported Uses*

Furniture, cabinets, interior finish, pianos, brush backs, knife handles, hand-carved woodware, and as a substitute for rosewood.

*Sources*

- Cameroon, Gabon, and Ivory Coast
GONCALO ALVES
(Family—Anacardiaceae)

Species
Astronium fraxinifolium Schott.
A. obliquum Gris.
A. LeCointe Ducke
A. Graveolens Jacq.

Commercial Name
Goncalo alves

Other Names
Kingwood, Zorrowood, Tigerwood, Zebrwood, Mura

General Characteristics
Color—light golden brown to reddish brown with blackish brown streaks of variable spacing producing a beautiful striped or mottled figure
Luster—dull to medium
Specific Gravity—0.85 to 1.28 (air dry)
Weight—53 to 80 lbs. per cu. ft.
Grain—wavy or roey
Texture—fine

Reported Working Properties
A material very similar to American dogwood, works with difficulty, suitable for cutting into veneers, turns readily, takes a high polish, should be seasoned at a slow rate to avoid excessive warping and checking.

Reported Uses
Boatbuilding (keels), general construction, exterior use, furniture, cabinets, flooring, shuttles and bobbins, substitute for dogwood, turnery, veneer and plywood.

Sources
Guyana, Colombia, Ecuador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Peru, Salvador, and Trinidad
Appendix IV, continued

GREENHEART
(Family—Lauraceae)

Species
Ocotea rodiaei (R. Schomb.) Mez.

Commercial Name
Greenheart

Other Names
Bebeere, Bebeeru, Beeberoë, Beberuboom

General Characteristics
Color—light to dark olive usually with a lighter and darker areas intermingling and frequently with dark olive to black streaks
Luster—medium
Specific Gravity—1.05 to 1.23 (air dry)
Weight—66 to 77 lbs. per cu. ft.
Grain—straight to roey
Texture—fine

Reported Working Properties
A material noted for its strength and durability, difference in radial and tangential shrinkage is exceptionally low, difficult to season, splits may occur in transit, partial air drying before kilning is advised, works with difficulty but takes a high polish, dust may be irritating to mucous membranes.

Reported Uses
Marine construction such as piling, piers, sluice gates, shipbuilding, paving blocks, posts, fishing rods, and durable construction.

Sources
Guyana and Surinam
GREENHEART
(Family—Simarubaceae)

Species
Irvingia gabonensis Baill.

Commercial Name
Dika

Other Names
Dika-nut, Gabon chocolate, African or wild mango, Duika mahogany, Greenheart

General Characteristics
Color—uniform pale rose fading to grayish brown, yellowish brown, or dark yellow, sometimes with darker streaks
Luster—low
Specific Gravity—0.83 (air dry)
Weight—52 lbs. per cu. ft.
Grain—straight to interlocked
Texture—fine

Reported Working Properties
Information not available

Reported Uses
General construction, boat building (decking), bridge and mine timbers, posts and poles, cross ties, flooring, tool handles, agricultural implements and vehicles, sporting and athletic goods, turnery, and a substitute for persimmon and dogwood.

Sources
Senegal to Sierra Leone, Ivory Coast, Ghana, Dahomey, Nigeria, Cameroon, and Gabon
Appendix IV, continued

GREENHEART
(Family—Bignoniaceae)

Species
Tabebuia serratifolia (Vahl.) Nich.
T. ipe (Mart.) Standl.
T. chrysotricha (Mart.) Standl.
T. heterotricha (DC.) Hemsl.
T. rufescens J. R. Jonston
T. guayacan (Seem.) Hemsl.

Commercial Name
Guayacan, Bethabara

Other Names
Arcwood, Bastard lignum-vitae, Bethabara, Noibwood, Demerara
or Surinam greenheart, Washiba, Guayacan

General Characteristics
Color—light to dark olive-brown, often with lighter or dark
streaks
Luster—low to medium
Specific Gravity—0.95 to 1.25 (air dry)
Weight—59 to 78 lbs. per cu. ft.
Grain—straight to very irregular
Texture—fine

Reported Working Properties
A highly durable material difficult to work, inclined to be
splintery, but takes a high polish, fairly easy to season.

Reported Uses
Agricultural implements and vehicles, boatbuilding (frames,
keels), cross ties, flooring, marine piling and construction, exterior use,
sporting and athletic goods, tool handles, professional and scientific
instruments, general durable construction, furniture, cabinets, millwork,
and turnery.

Sources
Mexico, Central America, Guyana, Surinam, Colombia, Peru,
Paraguay, Brazil, Trinidad, and Venezuela
Appendix IV, continued

GREENHEART
(Family—Leguminosae)

Species
Cylicodiscus gabunensis Harm

Commercial Name
Okan

Other Names
African greenheart

General Characteristics
Color—lustrous golden brown with dark brown or reddish brown streaks
Luster—high
Specific Gravity—0.96 to 1.04 (air dry)
Weight—60 to 65 lbs. per cu. ft.
Grain—roey producing a ribbon figure
Texture—medium

Reported Working Properties
Works with difficulty, tends to check and distort in seasoning, very strong, very resistant to decay, takes a high lustrous finish.

Reported Uses
Heavy construction, marine piling and construction, agricultural implements and vehicles, carving, turnery, and a substitute for greenheart and lignum vitae.

Sources
Sierra Leone, Liberia, Ivory Coast, Ghana, Nigeria, and Cameroon
Species
Phoebe porosa (Nees. & Mart.) Mez.

Commercial Name
Imbuia

Other Names
Brazilian walnut, Imbuya, Embuia

General Characteristics
Color—yellowish brown, olive brown, chocolate brown either plain or variegated
Luster—medium
Specific Gravity—0.70 to 0.76 (air dry)
Weight—43 to 47 lbs. per cu. ft.
Grain—straight to roey producing a ribbon figure
Texture—medium

Reported Working Properties
A highly durable material which works easily and holds its place well when manufactured taking a high polish, can be selected for color to match any kind of walnut, sawdust reported allergenic.

Reported Uses
Furniture, cabinets, millwork, flooring, veneer and plywood, and as a substitute for black walnut.

Sources
Brazil
FOREIGN WOODS UTILIZED IN MAINE

Appendix IV, continued

MAHOGANY, GENUINE
(Family—Miliaceae)

Species
Swietenia mahagoni Jacq.
Sw. macrophylla King
Sw. humilis Zucc.

Commercial Name
Mahogany

Other Names
Cuban, Honduras, Mexican, Panama, Peruvian, Spanish, West Indian and True mahogany, Caoba

General Characteristics
Color—pale brown, pink, light red, dark red, or reddish brown
Luster—high and golden
Specific Gravity—0.40 to 0.85 (air dry)
Weight—25 to 53 lbs. per cu. ft.
Grain—straight to roey
Texture—medium

Reported Working Properties
A stable material, easy to work, seasons well, takes a high golden lustrous finish.

Reported Uses
Boatbuilding (decking, planking), furniture, cabinets, piano cases, interior finish, millwork, patterns, exterior use, musical and scientific instruments, turnery and sculpture, veneer, plywood, and gunstocks.

Sources
Florida, Central America, West Indies, Mexico, Colombia, Venezuela, Ecuador, and Peru
Appendix IV, continued

OBECHE
(Family—Sterculiaceae)

Species
Triplochiton scheroxylon K. Schum.

Commercial Name
Obeche

Other Names
African whitewood, Soft satinwood, Ayous, Wawa, Samba

General Characteristics
Color—uniformly cream, pale yellowish brown, or buff
Luster—high and satiny
Specific Gravity—0.36 to 0.40 (air dry)
Weight—22 to 25 lbs. per cu. ft.
Grain—straight to interlocked producing a ribbon figure on radial surface
Texture—medium

Reported Working Properties
Easy to work and takes a high satiny finish, seasons very rapidly and very well.

Reported Uses
Patterns, furniture, boxes and containers, interior finish, millwork, veneer and plywood, substitute for basswood, yellow poplar and white pine.

Sources
Guinea, Liberia, Ivory Coast, Ghana, Nigeria, and Cameroon
Appendix IV, continued

OKOUME
(Family—Burseraceae)

Species
Aucoumea klaineana Pierre

Commercial Name
Okoume, Samara

Other Names
Gaboon mahogany

General Characteristics
Color—salmon pink, pale pinkish brown, or reddish brown
Luster—high and satiny
Specific Gravity—0.40 to 0.50 (air dry)
Weight—25 to 30 lbs. per cu. ft.
Grain—wavy, curly, or roey producing an attractive figure
Texture—medium

Reported Working Properties
Easily converted into veneer (rotary or sliced), finishes smoothly
with a satiny luster, seasons and glues well, difficult to machine because
of the variability in grain and the silica deposits.

Reported Uses
Interior finish, door panels, furniture, shipbuilding, in place
of mahogany for small boats and canoes, plywood for boxes, packing
cases, trunks, cigar boxes, stage scenery, incubators, tubs, and dye vats.

Sources
Democratic Republic of the Congo, Republic of the Congo,
Guinea, and Gabon
PEROBA
(Family—Apocynaceae)

Species
Aspidosperma peroba Fr. Allem.

Commercial Name
Peroba rosa

Other Names
Amarello, Amargosa, Bucheiro, Muirjussara, Palo rosa, Red peroba

General Characteristics
Color—light rose red often with yellow or darker red streaks, color fades to light golden brown with age
Luster—medium
Specific Gravity—0.70 to 0.85 (air dry)
Weight—44 to 53 lbs. per cu. ft.
Grain—straight to irregular or roey
Texture—fine

Reported Working Properties
Comparable in general utility to oak, works easily and finishes smoothly with high polish.

Reported Uses
Furniture, cabinets, interior finish, flooring, sills, sashes, and doors.

Sources
Argentina and Brazil
FOREIGN WOODS UTILIZED IN MAINE

Appendix IV, continued

PEROBA
(Family—Bignoniaceae)

Species
Paratecoma peroba (Rec.) Kuhl.

Commercial Name
White peroba

Other Names
Ipe peroba, Peroba blanca, Peroba amarella, Peroba do campo, Peroba reseca

General Characteristics
Color—light olive with a reddish, greenish, or golden hue, occasionally with darker streaks
Luster—high
Specific Gravity—0.70 to 0.83 (air dry)
Weight—43 to 52 lbs. per cu. ft.
Grain—straight to wavy or curly
Texture—fine

Reported Working Properties
A highly durable material, works easily and finishes smoothly, if not properly dried it is likely to check when exposed to warm temperatures, dust may be allergenic.

Reported Uses
Furniture, cabinets, and interior trim.

Sources
Brazil
PHILIPPINE MAHOGANY
(Family—Dipterocarpaceae)

Species
Shorea almon

Commercial Name
Almon

Other Names
Philippine mahogany (light red)

General Characteristics
- Color—uniformly pink or pale red with golden luster
- Luster—high
- Specific Gravity—0.48 to 0.64 (air dry)
- Weight—30 to 40 lbs. per cu. ft.
- Grain—roey producing a ribbon figure
- Texture—medium

Reported Working Properties
- Easy to work and finishes smoothly.

Reported Uses
- Furniture, cabinets, interior finish, millwork, boatbuilding, boxes and crates, general construction, veneer, and plywood.

Sources
- Philippines
Appendix IV, continued

PHILIPPINE MAHOGANY
(Family—Dipterocarpaceae)

*Species*
Parashorea plicata

*Commercial Name*
Bagtikan

*Other Names*
Philippine mahogany (light red)

*General Characteristics*
- Color—pink or pinkish gray with a brownish cast
- Luster—high
- Specific Gravity—0.49 to 0.82 (air dry)
- Weight—30 to 51 lbs. per cu. ft.
- Grain—roey
- Texture—medium coarse

*Reported Working Properties*
Works easily with a high lustrous finish.

*Reported Uses*
Furniture, cabinets, interior finish, millwork, boatbuilding, general construction, veneer, and plywood.

*Sources*
Philippines
Species
Shorea palosapis (Blco.) Merr.

Commercial Name
Mayapis

Other Names
Philippine mahogany (light red)

General Characteristics
Color—uniformly pink with golden luster
Luster—high
Specific Gravity—0.52 (air dry)
Weight—32 lbs. per cu. ft.
Grain—roey producing a ribbon figure
Texture—rather coarse

Reported Working Properties
Works easily with a high lustrous finish.

Reported Uses
Furniture, cabinets, interior finish, millwork, boatbuilding, boxes and crates, general construction, veneer, and plywood.

Sources
Philippines
Appendix IV, continued

PHILIPPINE MAHOGANY
(Family—Dipterocarpaceae)

Species
Pentacme contorta Merr. & Rolfe
P. mindanensis

Commercial Name
White lauan

Other Names
Philippine mahogany (light red)

General Characteristics
Color—pale grayish or yellowish brown with pinkish cast and silvery sheen
Luster—high
Specific Gravity—0.45 to 0.68 (air dry)
Weight—28 to 33 lbs. per cu. ft.
Grain—roey
Texture—medium fine

Reported Working Properties
Works easily with a high lustrous finish.

Reported Uses
Furniture, cabinets, interior finish, millwork, boatbuilding, boxes and crates, general construction, veneer, and plywood.

Sources
Philippines
Appendix IV, continued

PHILIPPINE MAHOGANY
(Family—Dipterocarpaceae)

Species
Shorea negrosensis Foxw.

Commercial Name
Red lauan

Other Names
Philippine mahogany (dark red)

General Characteristics
Color—red to dark reddish brown with distinct golden luster
Luster—high
Specific Gravity—0.50 to 0.80 (air dry)
Weight—31 to 49 lbs. per cu. ft.
Grain—roey producing a conspicuous ribbon figure
Texture—coarse

Reported Working Properties
Works easily with a high lustrous finish.

Reported Uses
Used for the same purposes as genuine mahogany.

Sources
Philippines
PHILIPPINE MAHOGANY
(Family—Dipterocarpaceae)

Species
Shorea polysperma (Blco.) Merr.

Commercial Name
Tanguile

Other Names
Philippine mahogany (dark red)

General Characteristics
Color—light to dark red or reddish brown and distinct golden luster
Luster—high
Specific Gravity—0.49 to 0.81 (air dry)
Weight—30 to 50 lbs. per cu. ft.
Grain—roey producing a conspicuous ribbon figure
Texture—moderately coarse

Reported Working Properties
Finishes smoothly with a high luster.

Reported Uses
Used for the same purposes as genuine mahogany.

Sources
Philippines
Appendix IV, continued

PHILIPPINE MAHOGANY
(Family—Dipterocarpaceae)

Species
Shorea guiso (Blco.) Bl.

Commercial Name
Guijo

Other Names
Philippine mahogany (dark red), Orion

General Characteristics
Color—light reddish brown with distinct golden luster
Luster—high
Specific Gravity—0.75 to 0.87 (air dry)
Weight—46 to 54 lbs. per cu. ft.
Grain—roey producing a ribbon figure
Texture—medium fine

Reported Working Properties
Easy to work and takes a high lustrous finish.

Reported Uses
Furniture, cabinets, interior finish, bridges and wharves, and general house construction.

Sources
Philippines
Species
Tarrietia javanica Blume

Commercial Name
Lumbayau

Other Names
Philippine mahogany (dark red)

General Characteristics
Color—uniformly medium to dark reddish brown
Luster—high golden
Specific Gravity—0.65 (air dry)
Weight—40 lbs. per cu. ft.
Grain—usually straight
Texture—medium

Reported Working Properties
Easy to work and takes a high lustrous finish.

Reported Uses
Furniture, cabinets, interior finish, boats, veneer, and plywood.

Sources
Philippines
Species
Azadirachta integrifoliola Merrill

Commercial Name
Maranggo

Other Names
Philippine mahogany (dark red)

General Characteristics
Color—uniform light to dark reddish brown with distinct golden luster
Luster—high
Specific Gravity—0.57 (air dry)
Weight—35 lbs. per cu. ft.
Grain—straight to roey producing a ribbon figure
Texture—medium

Reported Working Properties
Small sound knots of frequent occurrence producing bird’s eye figure, but easy to work with a high lustrous finish.

Reported Uses
Furniture, cabinets, interior finish, musical and scientific instruments, and cigar boxes, and as a substitute for genuine mahogany.

Sources
Philippines
Ramin
(Family—Gonystylaceae)

Species
Gonystylus bancanus Baill.

Commercial Name
Ramin (Borneo), Melawis (Malaysia)

Other Names
None reported.

General Characteristics
- Color—whitish to pale yellow
- Luster—not available
- Specific Gravity—not available
- Weight—42 lbs. per cu. ft.
- Grain—straight to interlocked
- Texture—fine to medium

Reported Working Properties
Machines without difficulty and seasons well in a kiln or with
air dry procedures, subject to blue stain if not properly dried, takes
stains and finishes readily.

Reported Uses
Furniture, flooring, plywood, and moldings.

Sources
Sarawak, Malaysia, and Borneo
Appendix IV, continued

ROSEWOOD
(Family—Leguminosae)

Species
Dalbergia nigra Fr. Allem.

Commercial Name
Brazilian rosewood

Other Names
Palisander, Pianowood, Caviuna, Jacaranda

General Characteristics
Color—various shades of brown and violet, with irregular black streaks
Luster—low to medium
Specific Gravity—0.75 to 0.90 (air dry)
Weight—47 to 56 lbs. per cu. ft.
Grain—straight to wavy
Texture—medium

Reported Working Properties
A very durable material not difficult to work, seasons well, dimensionally stable, sometimes brittle, usually takes a high polish, but sometimes too oily to take a high polish.

Reported Uses
Furniture, cabinets, interior finish, piano cases, knife handles, brush backs, turned articles, radio cabinets, and inlay work.

Sources
Brazil
Appendix IV, continued

ROSEWOOD
(Family—Leguminosae)

Species
Dalbergia stevensonii Standl.

Commercial Name
Honduras rosewood

Other Names
Nagaed wood

General Characteristics
- Color—light brown with purple or darker brown streaks
- Luster—low to medium
- Specific Gravity—0.92 to 1.08 (air dry)
- Weight—58 to 68 lbs. per cu. ft.
- Grain—straight to slightly roey
- Texture—medium

Reported Working Properties
A hard heavy material not difficult to work, finishes with a high polish, holds its shape well, but difficult to season.

Reported Uses
Cabinets, bars of marimbas and xylophones.

Sources
British Honduras
Appendix IV, continued

ROSEWOOD
(Family—Leguminosae)

Species
Dalbergia spruceana Benth.

Commercial Name
Amazon rosewood

Other Names
Jacaranda, j. do Para, Saborana

General Characteristics
Color—golden brown with narrow red or purple stripes
Luster—medium
Specific Gravity—1.00 (air dry)
Weight—63 lbs. per cu. ft.
Grain—mostly straight
Texture—medium

Reported Working Properties
Works without difficulty and takes a high polish.

Reported Uses
Furniture, cabinets, and interior finish.

Sources
Brazil
FOREIGN WOODS UTILIZED IN MAINE

Appendix IV, continued

ROSEWOOD
(Family—Leguminosae)

Species
Dalbergia retusa Hemsl.

Commercial Name
Cocobolo

Other Names
Nicaragua rosewood

General Characteristics
Color—orange, yellow, dark red, or reddish brown alternating with irregular black streaks, turning deep red or reddish brown with black streaks
Luster—low
Specific Gravity—0.99 to 1.22 (air dry)
Weight—60 to 77 lbs. per cu. ft.
Grain—straight to interwoven
Texture—medium to fine

Reported Working Properties
A very durable material, machines well, rubs to a fine polish without application of finishes, reported unsuitable for gluing, should be air seasoned prior to kiln-drying to reduce seasoning defect, dust arising in working may produce a rash or dermatitis resembling ivy poisoning.

Reported Uses
Knife handles, brush backs, tool handles, inlays, scales, musical and scientific instruments, and turnery.

Sources
Mexico, Salvador, Honduras, Nicaragua, Costa Rica, Panama, and Colombia
Appendix IV, continued

ROSEWOOD
(Family—Leguminosae)

Species
Dalbergia aff. frutescens (Vell.) Britt.

Commercial Name
Brazilian tulip wood, Tulip wood

Other Names
Pau rosa, Bois de rose

General Characteristics
Color—alternate stripes of bright yellow and red or violet
Luster—high to medium
Specific Gravity—0.90 to 1.10 (air dry)
Weight—56 to 96 lbs. per cu. ft.
Grain—straight to slightly roey
Texture—medium to fine

Reported Working Properties
A hard and splintery material not easy to work, but takes a high polish.

Reported Uses
Furniture, cabinets, flooring, inlays, brush backs, and turnery.

Sources
Brazil
Appendix IV, continued

ROSEWOOD
(Family—Leguminosae)

Species
Dalbergia latifolia Roxb.

Commercial Name
East Indian rosewood

Other Names
Bombay black wood, Malabar

General Characteristics
Color—light to dark violet brown to deep purple with fairly regular deep purple to black streaks resembling growth rings.
Luster—low to medium
Specific Gravity—0.84 (air dry)
Weight—53 lbs. per cu. ft.
Grain—irregular to roey
Texture—medium

Reported Working Properties
An exceptionally durable material difficult to saw, machines well, veneers well, seasons well, requires filling, but finishes smoothly and polishes well, sawing difficulty attributed to calcareous deposits, reported not to shrink on either way of the grain, retaining exact measurement after machining.

Reported Uses
Furniture, cabinets, sliced veneer, interior finish, piano work, and parquet flooring.

Sources
India and Ceylon
Appendix IV, continued

ROSEWOOD
(Family—Rutaceae)

Species
Amyris balsamifera L.
A. sylvatica Jacq.

Commercial Name
Amyris Wood

Other Names
Rosewood, West Indian sandalwood, Torchwood, Candlewood

General Characteristics
Color—pale yellow or pale yellowish brown, usually with darker streaks
Luster—medium to high
Specific Gravity—0.90 to 1.10 (air dry)
Weight—62 to 68 lbs. per cu. ft.
Grain—straight to irregular
Texture—very fine and uniform

Reported Working Properties
A very oily material highly resistant to decay, dimensionally stable when manufactured, turns and carves with a high polish, generally easy to work, but tends to be brittle.

Reported Uses
Cabinets, carvings, turnery, torches, and as a source of ethereal oil.

Sources
Florida, West Indies, Mexico, Central America, Colombia, Ecuador, and Venezuela
Appendix IV, continued

ROSEWOOD
(Family—Meliaceae)

Species
Dysoxylon fraseranum Benth.

Commercial Name
Rosamay

Other Names
Rosewood, Rose mahogany

General Characteristics
- Color—uniformly deep pink to reddish brown
- Luster—medium
- Specific Gravity—0.72 (air dry)
- Weight—45 lbs. per cu. ft.
- Grain—roey producing a ribbon figure
- Texture—medium

Reported Working Properties
- A durable material resistant to white ants, not difficult to work, taking a smooth finish.

Reported Uses
- Furniture, cabinets, interior finish, flooring, and veneer.

Sources
- Australia
Appendix IV, continued

ROSEWOOD
(Family—Leguminosae)

Species
Dalbergia cochinchinensis Pierre

Commercial Name
Tracwood

Other Names
Tonquin rosewood

General Characteristics
Color—light to dark reddish brown with dark brown to almost black streaks resembling growth rings
Luster—medium
Specific Gravity—not available
Weight—not available
Grain—roey
Texture—medium

Reported Working Properties
Not too difficult to work, finishing smoothly.

Reported Uses
Furniture, cabinets, and turnery.

Sources
Indochina
SAPELE
(Family—Meliaceae)

Species
Entandrophragma cylindricum Spr.

Commercial Name
Sapele

Other Names
Scented mahogany, Sapele mahogany

General Characteristics
Color—light rosy red to dark reddish brown usually with a purplish cast
Luster—high and golden
Specific Gravity—0.60 to 0.85 (air dry)
Weight—37 to 53 lbs. per cu. ft.
Grain—straight to roey
Texture—medium

Reported Working Properties
Works without difficulty, glues easily, takes a high lustrous finish, but should always be quarter sawn if warping and splitting are to be minimized.

Reported Uses
Boatbuilding (decking and planking), furniture, cabinets, piano cases, interior finish, millwork, patterns, exterior use, musical and scientific instruments, turnery and sculpture, veneer, plywood, and gunstocks.

Sources
Ghana, Ivory Coast, Nigeria, and Democratic Republic of the Congo.
Appendix IV, continued

SAPELE
(Family—Meliaceae)

Species
Entandrophragma utile Spr.

Commercial Name
Sipo

Other Names
Sapele, Scented mahogany, Utile

General Characteristics
Color—light to dark reddish brown, often with purplish cast
Luster—high and golden
Specific Gravity—0.54 to 0.65 (air dry)
Weight—36 to 41 lbs. per cu. ft.
Grain—straight to roey
Texture—medium

Reported Working Properties
Works easily with a high lustrous finish

Reported Uses
Boatbuilding (decking and planking), furniture, cabinets, piano
cases, interior finish, millwork, patterns, exterior use, musical and sci-
centific instruments, turnery and sculpture, veneer, plywood, and gun-
stocks.

Sources
Ghana, Ivory Coast, Cameroon, Gabon, Uganda, Nigeria, and
Democratic Republic of the Congo
SPANISH CEDAR
(Family—Meliaceae)

Species
Cedrela odorata L.
C. mexicana Roem
C. fissilis Veil.
Toona Calantas Merr. & Rolfe.

Commercial Name
Cedro

Other Names
Cedar (Cigar Box, Spanish, West Indian, Philippine), Kalantas

General Characteristics
Color—pale brown, pink to pale red or light reddish brown or
dark reddish brown or dark red to maroon
Luster—high and golden
Specific Gravity—0.37 to 0.75 (air dry)
Weight—23 to 47 lbs. per cu. ft.
Grain—straight to roey
Texture—medium to coarse

Reported Working Properties
A strong material in proportion to its weight, highly durable,
dries readily without warping or splitting, dimensionally stable when
manufactured, easy to work, takes a lustrous finish.

Reported Uses
Cigar boxes, boatbuilding, general construction, exterior use,
furniture, cabinets, millwork, patterns, lining for chests, musical instru-
ments, veneer, and plywood.

Sources
West Indies, Central America, Guyana, Mexico, Ecuador, Surinam, Peru, Venezuela, Paraguay, Argentina, Brazil, and the Philippines
Appendix IV, continued

TEAK, GENUINE
(Family—Verbenaceae)

Species
Tectona grandis L.

Commercial Name
Teak

Other Names
Malaysian Teak, Burma Teak, Thai Teak

General Characteristics
Color—dark golden yellow turning dark brown or almost black with age
Luster—dull
Specific Gravity—0.55 to 0.70 (oven dry)
Weight—35 to 45 lbs. per cu. ft.
Grain—straight to wavy
Texture—coarse

Reported Working Properties
An easily worked material, with an oily surface, which shrinks little in seasoning.

Reported Uses
Boatbuilding (decking, planking, frames, keels), exterior use, furniture, cabinets, interior finish, millwork, general construction, flooring, carving, and turnery.

Sources
India, Burma, Malaysia, Java, Thailand, and Indochina
Appendix IV, continued

WENGE
(Family—Leguminosae)

Species
  Millettia laurentii Willd.

Commercial Name
  Wenge

Other Names
  Pallissandre, Dikela, Kiboto

General Characteristics
  Color—uniform dark brown to almost black in some specimens
  Luster—low
  Specific Gravity—0.96 (air dry)
  Weight—60 lbs. per cu. ft.
  Grain—straight to slightly roey
  Texture—coarse

Reported Working Properties
  A durable material with good resistance to bending and to shock,
  works easily, veneers well, but difficult to polish.

Reported Uses
  Heavy construction, cross ties, flooring, tool handles, furniture,
  cabinets, interior finish, carving and turnery.

Sources
  Democratic Republic of the Congo and Republic of the Congo
Appendix IV, continued

ZEBRAWOOD
(Family—Leguminosae)

Species
Brachystegia leonensis Hutch, & Davy
B. eurycoma Harms
B. nigerica Hoyle & Jones
B. boehmii Laub.
Microberlinia brazzavillensis A. Chev.

Commercial Name
Okwen

Other Names
Zebrawood

General Characteristics
Color—uniform cream, pale or golden brown to pinkish brown, usually with pronounced dark brown stripes
Luster—high
Specific Gravity—0.60 to 0.88 (air dry)
Weight—37 to 55 lbs. per cu. ft.
Grain—usually interlocked producing a ribbon figure
Texture—medium to coarse

Reported Working Properties
A durable material more or less termite proof, fairly easy to work, seasons well but slowly.

Reported Uses
Furniture, cabinets, millwork, flooring, general construction, veneer, and plywood.

Sources
Nigeria, Ivory Coast, Gabon, Cameroon, Tanzania, and Rhodesia
Appendix IV, continued

ZESEAWOOD
(Family—Leguminosae)

Species
Centrolobium paraense Tul.
C. robustum Mart.
C. Tomentosum Guill.
C. orinocense (Benth.) Pittier

Commercial Name
Balaustre

Other Names
Zebrawood, Cartan

General Characteristics
Color—yellow, or orange, but usually variegated, yellow, orange, and red, some with purplish streaks and sometimes turning uniformly dark red with age
Luster—usually high
Specific Gravity—0.75 to 1.00 (air dry)
Weight—47 to 63 lbs. per cu. ft.
Grain—straight to roey
Texture—fine to coarse

Reported Working Properties
A hard, heavy material which holds its place when manufactured and is easy to work finishing smoothly to a good finish, said to be very durable.

Reported Uses
Furniture and cabinets, interior finish, flooring, tool handles, carving, turnery, veneer, and plywood.

Sources
Colombia, Panama, Venezuela, Brazil, Guyana, and Ecuador
Appendix V


Arkwright, P. 1965. Know your timber, No. 132. Woodwkg. Ind. 22(7): 49. (Gonystylus bancanus)

Arkwright, P. 1965. Know your timber, No. 137. Woodwkg. Ind. 22(12): 44. (Ocotea rodiae)

Arkwright, P. 1966. Know your timbers, Nos. 146, 167. Woodwkg. Ind. 23(9): 41, 45. (Cedrela toona), (Dalbergia latifolia)


Appendix V, continued


Prasad, B. N., and Jain, N. C. 1964. Preliminary studies of cutting resistance of a few Indian woods. Indian For. 90(10): 698-701. (Cryptomeria japonica, Quercus spp., Tectona grandis, Dalbergia latifolia, Ochroma spp., Dalbergia sissoo.)

