

A DESCRIPTIVE SUPPLIMENT TO  
A PICTORAL SUMMARY OF COMMERCIAL FORESTS  
AND TIMBER PRODUCING AREAS OF THE WORLD



Thesis by  
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EFFICIENCY  
ERASE BOND  
NO CONTENT

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NORTH AMERICA (EXCEPT U.S.)

Canada II & III

596,000,000 acres - 25% of land surface  
250,000,000 acres commercial forest

892,900,000,000 Bd. ft. or 82% of volume is softwood  
201,000,000,000 Bd. ft. or 18% of volume is hardwood

93% Public

Forest Regions:

1. St. Lawrence valley and Great Lakes peninsula - oak-hickory type
2. South of the St. Lawrence and east, including Nova Scotia - birch, beech, maple, forest with spruce and fir inclusions
3. From the 50th parallel south, and from Winnipeg to the east coast - northern pine forest, hardwood forest of oak, beech, ash, maple, etc. with pine.
- 4.& 5. Small areas of white (East portion) and yellow pine in the Rockies, below the 53rd parallel.
6. Fir, hemlock, spruce type between 58th parallel and the U.S. border, along the coast and up to 200 miles inland.
7. From 50th parallel to the Alaskan border, in the Cascades and along the coast in the north - spruce forest.
8. Interior Northern region - Arctic spruce type.

Alaska I

90,000,000 acres - 20% of land area - conifers  
5,000,000 acres temperate hardwoods

85% - spruce  
15% - hemlock, cedar

100% Public

Newfoundland III

6,400,000 acres - 25% of land surface

Pine, spruce, fir, main species. Chief value is for pulp.

Figures for the United States are given not as the latest and most accurate survey but merely for a general comparison value, since periodic corrections are put out by the Forest Service and any attempt to give an exact figure would be out of date almost as soon as it reached the paper.

Commercial forest area  
495,000,000 acres

40,000,000,000 bd. ft. cut aimed for in 1943

75% coniferous - Northeastern pine-spruce forest  
Lake states pine forest  
Southern pine forest  
Rockie mountain pine-fir forest  
Western white pine forest  
Western yellow pine forest  
Fir-hemlock forest  
Sugar pine forest  
Redwood forest

25% hardwoods - Beech-birch-maple Eastern forest  
Chestnut forest  
Oak-hickory forest  
Oak-pine mixture  
Cypress and semitropical forest

## CENTRAL AMERICA VI

The greatest supply of tropical hardwood timbers comes from this area, because it is readily accessible in comparison to other sources. The forest species of mahogany are those cut in Central America and cedro and balsa wood are supplied largely from this region. None of the forest are pure stands, and as an example, one Cuban operator cuts 105 species of hardwood in his mill alone.

In the central and highland region, quite a bit of pine and cedar is logged, although dominance in cut is with the hardwood.

### British Honduras

1,706,000 acres conifers

2,120,000 acres tropical hardwoods

Mahogany, ebony, rosewood, logwood, mangrove, etc.

### Costa Rica

9,000,000 acres - 75% of land surface

Virtually all tropical hardwoods, including mahogany, balsa, rosewood, lignum vitae, etc.

### Guatemala

2,000,000 conifers, chiefly cedars

18,000,000 hardwoods

### Honduras

14,000,000 acres conifers, chiefly pine

9,700,000 hardwoods - mahogany, etc.

### Nicaragua

6,400,000 acres conifers, chiefly slash pine, cedar

16,000,000 acres hardwoods, largely mahogany, Brazilwood, etc.

### Panama

12,400 acres - 86% of land surface

Tropical hardwoods, mainly cedro

### West Indies

281,200 acres conifers - cedar, spruce, and white pine

1,877,800 acres hardwoods - mangrove, mahogany, ebony, satinwood

### Salvador

150,000 acres conifers - cedar

775,000 acres hardwoods - rosewood, laurel, balsam

### Mexico

49,400,000 acres commercial forest

35,000,000 conifers - chiefly pine

25,000,000 temperate hardwoods - cottonwood, ash, walnut, etc.

14,000,000 tropical hardwoods - mahogany, Sp. cedar, logwood

CENTRAL AMERICA

Cuba

650,000 acres conifers - cedar  
12,350,000 acres tropical hardwoods, especially mahogany

85% Private

Dutch West Indies

No commercial forest area

Haiti

200,000 acres conifers  
4,050,000 acres tropical hardwoods

60% of land surface

Porto Rico

441,000 acres tropical hardwoods - 5% of land surface

Santo Domingo

1,350,000 acres conifers  
8,150,000 acres hardwoods - lignum vitae, mahogany, etc.

Virgin Islands

No commercial timber

Two types of forest are clearly distinguishable in South America. One is the tropical hardwood region of the North and the Amazon and Parana valleys, including the large quebracho region. In vast areas, white man has penetrated little and the best figures of volume are but estimates. The Greenheart area of British Guiana has been exploited and mapped fairly well, and with the quebracho region, comes closest to the pure stand of any of the tropical hardwoods, but still isn't found in truly pure stands.

The second type is the soft wood species found in two regions, Southeastern Brazil and Northeastern Argentina, containing immense stands of parana pine, estimated to contain 300,000,000,000 board feet of clear lumber; and Southern Chile with soft wood stands chiefly of *auracaria* and *lahuan*. *Pinus auracaria* is quite similar to Douglas fir.

#### Argentina

255,000,000 acres hardwoods - quebracho, chiefly  
5,000,000 acres conifers - Parana pine

91% Private

#### Bolivia

115,000,000 acres tropical hardwoods  
13,000,000 acres temperate hardwoods

78% Public

#### Brazil

90,000,000 acres conifers - Parana pine (large producer)  
760,000,000 acres tropical hardwoods - Amazon teak, Brazilwood,  
satinwood, mahogany, etc.

Mostly public

#### British Guiana

49,780,000 acres - 86% of land surface  
All tropical hardwoods - Greenheart and crabwood, especially

99% Public

#### Chile

4,100,000 acres commercial timber

Commercial species largely conifers - *Pinus auracaria*, *lahuan*

#### Colombia

35,000,000 temperate hardwoods  
115,000,000 tropical hardwoods - mangrove, mahogany, *lignum vitae*,  
*divi-divi*

SOUTH AMERICA

Surinam

26,500,000 - 90% of land surface

Entirely tropical forest - Greenheart, cedar, and ironheart

Ecuador

47,000,000 acres tropical hardwoods - balsa, cedra, copal  
10,000,000 acres temperate hardwoods

French Guiana

21,000,000 acres - 98% of land surface

Entirely tropical forest - substitutes for oak and teak

Paraguay

37,000,000 acres - 58% of land surface

Tropical forest - chiefly quebracho, and Sp. cedar

98% Private

Peru

200,000,000 acres tropical - dyewoods and Sp. cedar  
24,000,000 acres temperate forest

Uruguay

1,070,000 acres - 2.3% of land surface

Tropical forest

100% Private

Venezuela

103,000,000 acres - 41% of land surface

Tropical forest - dyewoods, cedar, lignum vitae

70% Public

## EUROPE

European forests can be divided into three main types or divisions, each of which has distinct characteristics separating it from the rest of the continental forest areas. The Northern area, including Norway, Sweden, Finland, and Northern Russia is the most extensive of the three and is a highly productive area, containing mainly the pine, fir, spruce types. The full gamut of management is run here; from the very progressive management plan in Sweden to the complete lack of knowledge of the producing areas in Eastern Russia and the Siberian border.

The second type is the Central coniferous belt, through Germany, Poland, Czechoslovakia, and Austria. This area, in the past, has been the supply store for the European lumber markets and differs from the first area mentioned mainly because it lacks virgin timber in any great extent and a higher degree of management is common. This area is typically a softwood forest region, although in the South and West hardwoods become plentiful.

The third type of European forest is the hardwood region in the West and South, including France, Italy, the Balkan states, and Turkey. These forests aren't as productive as the softwood forests, but they supply a sizable income from a few stands of high value. Large quantities of wood are cut annually for resident fuelwood consumption from scrubby stands that otherwise have no economic value.

### Northern Coniferous Region - Plate X

#### Sweden

Three species of trees dominate the productive forests of Sweden. Two conifers and one hardwood. Ninety-nine per cent of all the lumber cut is from pine or spruce and some mixed hardwoods, while birch, the largest hardwood-producing hardwood, accounts for only 1% of all the lumber cut in Sweden. There are other uses such as veneer and charcoal, which take quite a bit of hardwood lumber.

The only two conifers found in Sweden to a recognizable quantity are pine and spruce.

The Alpine birch region is the Northernmost forest type, and is found at heights above the limits of the conifers. This is a pure birch forest. Next is the Northern forest of spruce and birch, consisting largely of virgin stands of a long rotation period, about 180 to 200 years. To the South is the Southern coniferous region, which is mostly second growth, containing most of the lumber industries and two-thirds of the population. Though this is the largest producing area, the Northern region is greater in expanse. The fourth and least important region is the beech forest in Southern Sweden, containing stands of pure beech and stands of mixed hardwoods.

Since the fifteenth century, mining, agriculture, and forest

## EUROPE

industries have competed and as a result, throughout Sweden, there is a fairly well-balanced economy that eliminates many of the problems of a specialized or one-sided industrial economy.

### Commercial Forest Area and Production

54,808,000 acres - 55% of land surface

1,533,000,000 cu. ft. annual cut  
434,000,000 cu. ft. saw timber - 85% boards under 8"  
426,000,000 cu. ft. pulp wood

85% conifers - pinus silvestria, pinus excelea  
15% hardwood - birch, aspen, oak, beech, ash

### Norway

14,000,000 acres productive-17.5% of land surface

432,000,000 cu. ft. annual cut - largely pulp

75% conifers - pine and spruce  
25% hardwoods - birch, beech, elm, and oak

Western Norway is practically without commercial forests at all, and what is left is predominately second growth. Small areas are being cut for pulp since the clear cut areas revert to pure spruce stands.

### Finland

Forest enterprises support 45% of the population of Finland. Her rich resources are much the same in character as Swedish forests, with birch predominate in the extreme north and spruce and pine forests in the main body of the land. Mixed hardwoods occupy the southern coastal district. Many of the forests are young and are still recovering from the practice of burning to make farm lands, and large peat bogs are being drained in the lake area so that they may be operated profitably as forests.

### Commercial Forest Area and Production

37,000,000 acres of commercial forest - 40% of land

1,316,600,000 cu. ft. annual cut

80% conifers - pine and spruce  
20% hardwoods - birch, oak, and alder

## EUROPE

### Russia

In the northern section of Russia, from the Finish border eastward and south into the Urals is an extensive belt of conifers, containing similar species to the Swedish and Finish forests, except in the East where larch predominates. There is quite a bit of second growth because of the ancient practices of sartage and jardinage. The plains area to the south and in the mining district of the Urals is chiefly oak, maple and mixed hardwood forest. Much of this in the mining area is managed as coppice.

### Commercial Forest Area and Production

367,300,000 acres - 30% of land surface

7,000,000,000 cu. ft. annual cut

88% conifers - pine, spruce, and larch

12% hardwoods - oak, maple, basswood, elm, ash

### Estonia

2,000,000 acres - 13% of land surface

### Latvia

4,200,000 acres - 20% of land surface

70% spruce, pine

30% mixed hardwoods

### Lithuania

4,500,000 acres - 19% of land surface

70% spruce, pine

30% mixed conifers

## EUROPE

### Central Coniferous Region - Plate XII

#### Germany

Germany has the most progressive of all forest management plans, and wood plays one of the largest parts in the whole German economy. The bulk of her forests are softwoods, pine predominating. Along the Baltic seacoast there is very little forest growth because of a high rate of transpiration and soil drying from coastal gales, but inland, the forests though mostly second growth are the most productive of all Europe for their extent. If a line were drawn through the center of Germany, from north to south, the timber on the Eastern half would be 85% conifer. The western plains area of Germany is predominately hardwood. The German program of natural protection is so intensive that it provides even for the leaving of certain hollow trees which serve as nesting places for insectivorous birds. On the poorer soil pine predominates, and farther south spruce has replaced other species. Fifty-eight per cent of forests are in Prussia.

#### Commercial Forest Area and Production

31,268,000 acres - 27% of land surface

1,489,000,000 cu. ft. annual cut

250,000,000 cu. ft. annual cut of pulp wood

43.7% pine

27% spruce

8% hardwood coppice

5.2% oak

2.4% birch

13.2% beech

#### Czechoslovakia

The richest forests of central Europe are here and consist mainly of spruce, fir, and pine. In the south and east, hardwoods lead in importance, chiefly beech and oak.

#### Commercial Forest Area and Production

12,500,000 acres - 34% of land surface

565,000,000 cu. ft. annual cut

363,000,000 cu. ft. saw timber

75% conifers - spruce, fir, pine

25% hardwoods - oak, beech

EUROPE

Poland

18,500,000 acres - 19% of land surface

667,000,000 possible annual cut

53% hardwoods - oak, birch, and beech

47% conifers - pine

## EUROPE

### Southern and Western Hardwood Region - Plate XI-XII

#### France

France is largely a country of hardwoods. The small amount of softwood growth now existant is mostly the result of artificial plantings. Roughly, the forests may be divided into two classes: the plains and the mountains. Among the plains forests are the oak, maritime pine forests of the West coast and the Parisian plateau. Also included in this is the Mediterranean coastal forest area. Except for the extreme eastern part of this area, the trees are too small to be valuable for timber, but they supply quantities of cork. The mountain areas include such regions as the hills of Alsace-Lorraine, the Alps, Juras, and the Pyranees. At the foothills, beech predominates and in the higher levels, pine and spruce lead. France produces a very high grade of resin and supplies about 20% of the world's naval stores from forests that are on land that was once barren sand.

#### Commercial Forest Area and Production

24,430,000 acres total

23,100,000 acres commercial forest - 17% of land

890,000,000 cu. ft. annual cut

30.9% saw timber

76.7% hardwoods oaks, beech, hornbeam

23.3% conifers - fir, pine, spruce, larch

22% of world's naval stores (1932-33)

#### Great Britain

2,500,000 acres - 3% of land surface

45,000,000 cu. ft. annual cut

28,000,000 cu. ft. annual cut of saw timber

Predominately conifer - scotch pine

Hardwoods include ash, oak, beech, spruce

#### Spain

9,000,000 acres productive - 8% of land surface

Largely hardwood - oak, beech

Softwoods include maritime pine, alleppo pine

#### Portugal

4,000,000 acres

125,000,000 cu. ft. annual cut

80,000,000 cu. ft. saw timber

EUROPE

Austria

7,600,000 acres - 32.6% of land surface

215,000,000 cu. ft. annual cut

132,500,000 cu. ft. construction material

60% conifers - spruce, black pine, and fir

20% hardwoods - beech

20% mixed

Belgium

1,300,000 acres - 18.2% of land surface

83,200,000 cu. ft. annual cut

29,000,000 cu. ft. saw logs

70% hardwoods - chiefly oak coppice

30% conifers - pine

Bulgaria

7,500,000 acres - 28% of land surface

68,000,000 cu. ft. annual cut

18,500,000 cu. ft. saw timber

67% hardwoods - oak, beech

33% conifers - pine

Denmark

700,000 acres - 6.5% of land surface

36,000,000 cu. ft. annual cut

32,000,000 cu. ft. boards and round and sawn timbers

61.6% hardwoods - beech, oak

48.4% conifers - spruce, Douglas fir

Alsace-Lorraine

1,000,000 acres

74,000,000 cu. ft. annual cut

25,000,000 cu. ft. saw timber

66% hardwoods - oak, beech, and hornbeam

34% conifers - pine

Greece

2,000,000 acres - 7% of land surface

121,700,000 cu. ft. annual cut

5,000,000 cu. ft. saw timber

## EUROPE

### Greece

65% conifers - pine, fir  
35% hardwoods - oak, beech

### Italy

14,252,000 acres 18% of land surface  
10,000,000 acres of commercial forest

385,000,000 cu. ft. annual cut  
50,000,000 cu. ft. saw timber

89.1% hardwoods - beech, oak, chestnut  
10.9% conifers - spruce and fir

### Hungary

3,150,000 acres - 27% of land surface

94,500,000 cu. ft. annual cut  
19,000,000 cu. ft. saw timber

95% hardwoods - beech and oak  
5% conifers - pine

### Jugo-slavia

18,500,000 acres - 25% of land surface

783,660,000 cu. ft. annual cut, chiefly saw timber

75% hardwood - beech and oak  
25% conifers - spruce and pine

### Luxemburg

197,000 acres - 31% of land surface

6,000,000 cu. ft. annual cut

87.5% hardwoods - beech and hornbeams  
12.5% conifers - spruce and pine

### Netherlands

612,000 acres - 7.5% of land surface

32,000,000 cu. ft. annual cut

47.5% conifers - pine  
41 % oak and willow coppice  
8.7% hardwoods - oak and willow

### Rumania

21,750,000 acres - 27.5% of land surface

EUROPE

Rumania

308,800,000 cu. ft. annual cut

150,700,000 cu. ft. saw timber

50% hardwoods - oak

30% conifers - pine, spruce, fir

20% mixed

## AFRICA

As one passes from the equatorial regions of Africa to the south away from the region of high rainfall toward the Namib desert, he perceives a change from the tropical rain forest to the high grass, low tree savannah - dry forest - acacia, tall grass - acacia, desert grass - desert shrub, and desert areas. This change is entirely gradual since it is occasioned not by the topographical irregularities but by varying rainfall.

Going from the same point up to the highlands of east Africa, we go to the temperate rain forest, mountain grassland, and Alpine meadow type. This deviation is caused chiefly by temperature change, and here again the change in vegetation type is the only thing that delimits each climatic unit.

We have three main forest types in Africa, which are clearly different from each other both in the type of timber they produce and in the character of the forest site. The most important is the tropical rain forest, which is located in central Africa along the Gold Coast and in the valley of the Congo river. This forest is not as extensive as is generally supposed, and consists mainly of hardwoods from 125 to 200 feet tall. The annual rainfall in this area exceeds 60 inches throughout.

The second area and next in importance is the dry forest, located principally in Rhodesia and Portuguese West Africa. Mahoganies and highly decay-resistant hardwoods are the chief species in this area, where the rainfall averages between 30 and 40 inches per annum. Here we have an annual drought period of four to six months during the winter. The stands are not generally as dense as those in the tropical forests and are free of heavy vine underbrush. The undercover is grassland, subject to frequent firing by natives and the natural causes. The high population of uneducated natives makes Africa the world's worst fire risk, and constant burning over of land next to the tropical forest belt has turned the area into an immense grassland. New fires sweep the area annually, preventing any natural reforestation. With proper management, African forest land could be doubled.

The third area and the smallest is the oak-conifer area in North-western Africa. This area is entirely unlike any other forest area in Africa, since it is located far North of the equatorial region. Characteristic trees are similar to other temperate zone forest trees. Oaks, junipers, and pines are the predominant species. A great portion of the world's cork supply comes from this section of North Africa.

## AFRICA

### Tropical Forest - Western - Plate XV - XII

The tropical forest consists of large hardwoods 125 to 150 feet high forming a dense canopy. There are frequent under-stories of smaller trees. Some areas vary from this general pattern. For instance, the Liberian-French border forests contain many hardwoods, ranging from 180 to 240 feet tall, and in this area Bombax and Calcidra branch first at 125 feet and form umbrella-like canopies. One generally can proceed through the forest without paths although the underbrush is extremely heavy. In the lowlands, many trees stand on high prop roots to get sufficient air in the inundated lands. It is this Liberian-French region and the Congo region that is the home for most African wildlife. Elephants, parrots, monkeys, crocodiles, and baboons abound. Among forest products other than timber are oil, kola, raffia, and rubber. Reproduction is rather rapid in this area, despite the fact that most of the timber is hardwood, but it comes in two stages. The one following the liquidation is known as the secondary forest stage.

In the Eastern Belgian Congo, a little temperate rain forest occurs, but this is relatively unimportant.

#### Description of Forest Areas from Northwest Southward

Senegal contains two regions of forest, neither of which is very extensive. One is the mangrove forest along the coast and the other is a temperate hardwood area in upper Senegal, containing many valuable species.

Gambia was the original source of the world's supply of Khaya, African mahogany, but not cuts virtually no timber.

Portuguese Guinea forests are all the mangrove type, containing also, mahogany, ebony, and acacia.

French Guinea. Here again the forest area is largely the mangrove type along the coast and swamp area.

Sierra Leone. Once, nearly the entire country was covered with valuable hardwood forests, but the natives have cut and burned it out to make farm land which was soon abandoned, so not it is grass land, swept annually by fire. The forests now left are along the coast and consist of mahoganies, walnut, and African oak which can be managed to produce 2,500,000 cu. ft. annually.

Liberian forests are similar to those on the Ivory Coast. Mahogany,

## AFRICA

oak, walnut, satinwood and red ironwood are the most important tree species.

Ivory Coast. More than one-third of the Ivory Coast is covered with valuable commercial forests. Over three hundred species similar to teak and the mahoganies, as well as light fibrous pulp woods, are found in abundance.

Gold Coast. Six varieties of mahogany (African) are exploited in this region. Papao is the other chief timber specie, although its bole seldom exceeds 25 feet in height.

Togoland. This area was formerly heavily wooded, but now has very little commercial timber. However, if properly operated, the forests could supply all the local needs for timber and firewood.

Dahomey. The forest area of Dahomey is nearly all commercial in character, extending along a fifty-mile wide coastal strip.

Nigeria. The mangrove area along the cost, though inundated, is highly valuable, but is exceeded in importance by the hardwood belt 50 to 100 miles wide, extending along the coast. Several mahoganies are found here and farther back in a more temperate zone important species are pearwood, walnut, and African teak.

### Total Forest Area and Annual Cut

#### Senegal

1,500,000 acres - 2% of land surface

4,350,000 cu. ft. annual cut

#### Gambia

130,000 acres - 5% of land surface

#### Portuguese Guinea

900,000 acres - 10% of land surface

#### French Guinea

3,200,000 acres - 5% of land surface

1,000,000 commercial forest

9,000,000 cu. ft. annual cut

#### Sierra Leone

218,000 acres - 1% of land surface

218,000 acres commercial forest

AFRICA

Sierra Leone

6,800,000 cu. ft. annual cut

150,000 cu. ft. saw timber annually cut

Liberia

16,000,000 acres - 63% of land surface

Ivory Coast

30,000,000 acres - 37.5% of land surface

9,400,000 cu. ft. annual cut

Gold Coast

24,350,000 acres - 47.5% of land surface

9,000,000 acres commercial forest

11,000,000 cu. ft. annual cut

Togoland

340,000 acres - 1.5% of land surface

150,000 acres commercial forest

200,000 cu. ft. annual cut

Dahomey

2,770,000 acres - 10.5% of land surface

Nigeria

140,000,000 acres - 65% of land surface

107,500,000 commercial forest

86,000,000 cu. ft. including firewood

2,500,000 cu. ft. annual cutting of saw timber

## AFRICA

### Central Tropical Forests - Plate XV-XVI

These forests are similar to the Western tropical forests, but are larger in area and production.

This plate includes a small amount of temperate forest in Angola, which, though they contain luxuriant growth, are very small in extent.

### Description of Forest Areas by Countries

#### French Equatorial Africa

This colony stands head and shoulders above any other French colony in timber resources. The tropical forest extends from the Nigerian border to the Congo for an average depth of 120 miles. The stand is estimated to have 700 to 1,000 cubic feet to the acre of good saw timber. One-third of the area is virgin forest, while two-thirds is second growth. Among the virgin forest species are eight mahoganies, thirty good cabinet woods, and thirty woods suitable for interior finish. The second growth, which has covered the area burned by the natives, is characterized by the umbrella tree and is suitable for pulp wood.

The coastal region and estuaries are covered with a heavy mangrove growth that is used as a valuable export producer.

#### Rio Muni

Geographically, this small country can be considered the same as French Equatorial Africa or the Belgian Congo.

#### Belgian Congo

This contains the largest and most compact forest area on the continent, but the Belgian system of concessions and regulations makes a great hinderance to exploitation, so that practically all consumption is for firewood and saw timber production is almost nil. Transportation by rail and the Congo river system will be cheap and convenient when this area is allowed to open. All trees less than 35" in circumference are reserved and cutting areas are not to be less than 125 or more than 1,250 acres. This obviously is nearly an unsurmountable restriction for a large scale operation and is only one of the many placed upon logging.

Nearly all the commercial hardwoods in Africa are to be had in the Belgian Congo, and there is also a patch or two of temperate hardwood forest in the Eastern mountains of the region.

## AFRICA

### Angola

The mountain belts in Western Angola have rich growths of Angolan mahogany and coralwood with other hardwoods. The timber trade is unimportant, however, both because of the small extent of the stands and because of the difficulty of marketing the cut timber. Most of the territory consists of sterile plains, covered with grass or thorny brush.

### Northern Rhodesia

This is a region of high plateaus, covered with thin forests, none of which are commercially important.

### Southern Rhodesia

In the higher forests are found many dense stands of khaya and related evergreens up to 200 feet high. On the Eastern border, forests are characterized by very soft, workable cussonia, reaching 80 feet high. Other species forming valuable commercial areas are mahoganies, reaching 150 feet and more with diameters from 5 to 8 feet (exceptionally, 15 feet), redwood or Rhodesian teak, which is highly decay- and termite-resistant, swyn or bak, reaching 120 feet with diameters over  $7\frac{1}{2}$  feet, and many related species.

A highly developed mining industry in Rhodesia uses a large quantity of timber for mine stulls and timbers.

### Union of South Africa

Forests occupy a very small part of the Union, and for the most part, are found only on the steep valleys or on the flanks of mountains facing the sea. This country deserves particular attention, though, because of the success of a large scale experiment in forestry. Through an active forestry program, nearly one-third of her forests are exotic, transplanted species, and are now yielding saw timber. The control of shifting Coastal sands has been obtained through forest plantations. The chief species used in this experiment are mostly North American pines.

*Pinus insignis*, *pinaster*, *canariensis*, *longifolia*, and *acacia decurrens* have also proven successful.

### Portuguese East Africa

Mangrove forests, producing timber and tanbark for export, grow along the mouth of the Zambezi river. Other than that, Portuguese Africa has little timber available for harvesting, but can manage to supply her own needs sufficiently.

### Total Forest Area and Annual Cut

#### French Equatorial Africa

115,000,000 acres - 38% of land surface  
60,000,000 acres commercial forest

AFRICA

French Equatorial Africa

52,500,000 cu. ft. annual cut of firewood  
5,500,000 cu. ft. annual cut of saw timber

Rio Muni

4,500,000 acres forest - 74% of land surface  
4,500,000 acres of commercial timber

Belgian Congo

449,000,000 acres of forest - 77% of land surface  
180,000,000 commercial forest

75,000,000 cu. ft. annual cut, virtually all firewood

Angola

10,000,000 acres - 3.2% of land surface  
1,500,000 acres commercial forest

10,000,000 cu. ft. annual cut

Northern Rhodesia

111,500,000 acres - 58% of land surface  
no commercial forest in any concentrations  
5,000,000 cu. ft. of saw timber annually cut  
60,000,000 cu. ft. firewood annually cut

Southern Rhodesia

58,000,000 acres - 60% of land surface  
12,000,000 commercial forest

61,500,000 annual cut in cu. ft.  
mining stulls chief saw timber product

Union of South Africa

2,500,000 acres - .5% of land surface  
600,000 acres commercial forest  
550,000 acres of plantation forest

5,000,000 cu. ft. saw timber annually cut  
60,000,000 cu. ft. firewood annually cut

Portuguese East Africa

18,800,000 acres - 6.9% of land surface

15,000,000 cu. ft. annual cut - nearly all firewood

## AFRICA

### Oak-Conifer Forest - Plate XIII-XIV

Temperate forests of the Cork oak and conifer type are located on the highlands near the Mediterranean coast of Morocco, Algeria, and Tunisia. Cork-oak, cedar, and pine are the most important commercial trees of this area. Cork-oak grows in dense forests and reaches cutting size in only 25 years. It is by far the most valuable species in this type. Zeen oak produces ties and wagon stock, while several pines and juniper produce saw timber. Growth in this area equals the cut at the present time, and the lumber industry can be expanded sufficiently to take care of the local market and a considerable amount of export trade without endangering the continuous supply of timber.

The present cutting rate in Morocco is higher than in Algeria or Tunisia, because the stands are of higher quality, more dense, and closer to the market than stands in these two countries. The greater amount of cutting is done in the luxuriant forests near the coast, although the Atlas Mountains contain a large amount of valuable timber.

#### Character of Commercial Forests

- 30% - cedar
- 25% - Cork-oak
- 20% - thuya
- 12% - evergreen oak
- 12% - junipers, pines, etc.

#### Total Forest Area and Annual Cut

##### Morocco

3,750,000 acres - 2.6% of land surface  
2,500,000 acres commercial forest

27,000,000 cu. ft. annual cut

##### Algeria

7,500,000 acres - 5% of land surface  
2,500,000 acres commercial forest

4,400,000 cu. ft. annual cut

##### Tunisia

3,000,000 acres - 9.4% of land surface  
1,500,000 acres commercial forest

8,500,000 cu. ft. annual cut

24

## AFRICA

### East Central - Plate XV-XVII

The forests of East-Central Africa are divided largely into three groups. The first and least important is the dense tropical forests of hardwoods, such as are found in Southern Egypt and Anglo-Egyptian Sudan. These are very small in comparison with the whole area and represent the only commercial timber in these two countries.

The second area or type is the temperate rain forest which is still inland and at a much higher altitude than the tropical forest. These contain highly valuable softwoods such as cedar and Podo. There are several stands of temperate hardwoods in this area also. The third type is the coastal forest. Mangrove and hardwoods, which are termite- and decay-resistant, are the chief commercial trees along the coast.

The Egyptian and Anglo-Egyptian Sudan regions are devoid of timber for any commercial use with the exception of a small area of dense tropical forest containing khaya, similar to mahogany, that is located along the Blue Nile. Eritrea, French Somoliland, Italian Somoliland and most of British Somoliland are also barren. The Golis mountain range has a small amount of valuable timber in British Somoliland, but it is inaccessible at about 9,500 feet above the sea.

On the high plateaus of Abyssinia you will find species of sycamore, juniper, laurel and yellowwood, but the natives find it too difficult to market. Considerable tropical timber follows the course of the tributaries of the Nile in this country, but it also lacks an easy means of marketing.

British East Africa contains all three types of forests found in this section of Africa. Along the coast quite a bit of mangrove bark is harvested. Much of the coast area has been cut over and is now used for farming. Farther inland and at a higher altitude are the country's most valuable commercial forests of cedar and Podo. In altitudes of 8 to 10 thousand feet extends a great bamboo forest.

Uganda is very rich in commercial timber supplies, many of which are not definitely mapped. All the forests of this country are inland and contain varied species of both hard and soft woods. The many species of woods resembling mahogany are well-known, and there are great supplies of a soft musoga which grows very tall and is an excellent substitute for spruce. Podo again grows here with a long clean bole and is one of the most valuable species.

Tanganyika contains 85,000 acres of Alpine forest and 50,000 acres highly valuable cedar. There are several other valuable species, chief of which are kahya, African oak, and podo. The only really commercial timber is in the rain and fog forest in the inland mountain region. Mixed broad-leaved species find good markets.

## AFRICA

Nyasaland has few trees that grow to merchantable dimensions and these cover an acreage of only 2,200. Most of this is too inaccessible to be reached even with a hand saw.

### Character of Commercial Forests

Cedar and podo most valuable commercial trees.

Mahoganies are next in importance.

Various species of decay-resistant hardwoods form the third body of saleable timber.

### Total Forest Area and Annual Cut

#### British Somoliland

500,000 acres - 1.1% of land surface

500,000 acres commercial forest

Virtually no cut

#### British East Africa

3,260,000 acres - 1.5% of land surface

2,300,000 acres commercial forest

3,400,000 cu. ft. annual cut

#### Abyssinia

14,000,000 - 6.6% of land surface

32,000,000 cu. ft. annual cut - nearly all firewood

#### Italian Somoliland

No commercial forest area at all.

#### Uganda

890,000 - 1.5% of land surface

850,000 commercial forest

149,000 totally inaccessible

13,500,000 cu. ft. annual cut

#### Anglo-Egyptian Sudan and Egypt

7,000,000 - .8% of land surface

7,000,000 commercial forest

8,000,000 cu. ft. annual cut

AFRICA

Nyasaland

280,000 acres - 1% of land surface

2,200 acres of commercial forest - totally inaccessible

French Somoliland

No commercial forest.

Tanganyika

9,600,000 acres - 4% of land surface

620,000 acres of commercial forest

31,000,000 cu. ft. annual cut

## ASIA

The expanse of Asiatic forests is a common conception, and with the thought of Asia comes the picture especially of the immense quantity of timber to be found in the Siberian plateau. This Northern forest region is virtually all temperate coniferous forest, with hardwoods predominating only in the extreme East and West. Bordering this region to the south are mixed temperate forests in China, Chosen, and Japan. These, although not as extensive, have perhaps contributed more to the economies of the regions involved than have the Siberian forests.

The Gobi desert separates the tropical forests of the mainland from the temperate zone, but along the coast and in Japan, they gradually blend into each other in an unspectacular way. These tropical forests produce many species of timber that contribute much to the world economy. Chief species among them are the Diterocarpus and teak.

The forest exploitation is not limited to the mainland, but has reached its most advanced stages on the islands belonging to the British and Dutch.

### Siberia XVIII - XXIII

The immense forests in the Northern coniferous region of Siberia are devoid of commercial timber north of the Arctic circle, and are not continuous as is commonly supposed. Land near river banks is seldom wooded, even in the commercial forest area. The trees grow generally on higher land and on south slopes, since land near rivers is frequently swampy and insecure. Many patches of bogs and large burns interrupt the continuity of the forest.

In the western strip are found such hardwoods as velvet tree, ash, and elm, while in the extreme east, maple, walnut, and birch predominate.

453,000,000 acres of commercial forest  
244,000,000 cu. ft. annual cut

80% conifers - spruce, pine, fir, cedar, larch  
20% hardwoods - velvet tree, elm, ash, maple, walnut, birch

### China XIX - XX - XXI

China has immense resources in forests largely of a temperate hardwood type. In the North are found spruce, pine, fir, larch forests bordering Chosen and Siberia. The Central region bordering the Yangtse River contains hardwoods much the same as are found in Eastern United States. Then, in the South, there is another region of hardwoods similar to these but with a much longer growing season and slightly more tropical nature.

145,000,000 acres commercial forest  
1,972,000,000 annual cut in cu. ft.  
282,000,000 cu. ft. saw timber

## ASIA

### China

75% hardwoods - oak, chestnut, birch, poplar, elm  
25% conifers - pine, spruce, larch

### Tibet XXI-XXI

4,000,000 acres - conifers largely

### Manchuria XX

64,800,000 acres - hardwoods

### Japan XIX-XX

Japan does not have as large an area of forest as the countries we have just mentioned, but they are of a very high quality and vary with their location from conifers in the North to tropical hardwoods in the extreme south.

70,084,000 acres of commercial forest - (including Chosen)

2,225,620,000 cu. ft. annual cut

383,445,000 cu. ft. saw timber

40% conifers - cedar, hemlock

60% hardwoods - oak, beech, chestnut

### Malay XXI

22,570,000 acres

262,500,000 cu. ft. annual cut

Tropical hardwoods

### French Indo-China XXI

62,000,000 acres (being restored by French)

85,000,000 cu. ft. annual cut

100% of commercial forests are hardwood of type used for high finish interior decoration

### Siam XXI

The only wood exploited in Siam at present is teak. It is also the chief wood product of French Indo-China, India, Sumatra, and Java. Trees are girdled three years before cutting, and are rafted and skidded by elephants. Logging is a slow, laborious process, since it often takes three months for logs to float from the forest to the mill at Rangood.

35,000,000 acres of forest

4,000,000 acres of teak

48,458,000 cu. ft. annual cut

ASIA

India XXI-XXII

India's forests are most of the tropical hardwood type, though as a general rule, they are not entirely what the average person conotes by this term. Many species are soft and workable as aspen and cottonwood and pine. Similar woods to walnut, oak, and aspen are very common. Large quantities of teak are in the West coast forests, which form the largest forests of commercial nature. Teak forests are similar to mahogany forests in that the concentration of one species is very small and logging for any one species is often done only at a prohibitive expense.

Ceylon also has a sizeable amount of teak forest of commercial quality.

215,340,000 acres of forest land

347,000,000 cu. ft. annual cut  
174,000,000 saw timber

Indian forest practice is very progressive because of the activity of the British government. Exploitation is carried on in very modern manner, with several complete logging railroads that have been in operation for some time.

75% hardwoods - teak, Indian cottonwood, acacia  
25% conifers - pine and mixed species

Phillipines XX

The commercial species of the Phillipine Islands are nearly all of the Dipterocarp or false mahogany group. Other species range from hardwoods of a similar density to rosewood and ebony, but 80% of the commercial timber on the Islands is lauan.

31,850,000 acres of commercial forest

17,800,000 cu. ft. annual cut

80% lauan or dipterocarp  
20% mixed forest, including small amounts of conifers

Turkestan XXII

30,723,000 acres of commercial forest

75% hardwoods  
25% conifers

Mesopotamia

No commercial forest

ASIA

Palestine and Syria

770,000 acres

18,289,000 cu. ft. annual cut

70% conifers - cedar

Persia

5,000,000 acres of commercial forest

Mixed temperate hardwoods

Afghantistan

1,250,000 acres commercial forest

30,000,000 cu. ft. annual cut (firewood)

Arabia

No commercial forest

Borneo and British East Indies

25,500,000 acres of commercial forest

1,600,000,000 cu. ft. saw timber annual cut

Virtually all hardwoods

Ceylon

133,082,000 acres of commercial forest

15,630,000 cu. ft. annual cut

Teak forests

Netherlands East Indies

232,000,000 acres of forest

1,803,000 acres of teak

6,573,000 cu. ft. annual cut of teak and timber

Turkey

12,000,000 acres - 13.4% of land surface

50% hardwoods

50% conifer

## AUSTRALIA and OCEANIA

### Australia XXIV

Possessing only a relatively small forest acreage, Australia and Tasmania have very active forest management. The forests exist only in a limited coastal region in the East and West, with very little vegetation in the central region.

The chief species, karri, grows up to 300 feet tall and 8 to 10 feet in diameter, and is used extensively for lumber and pulp.

Tasmania has a single paper mill, putting out 500 tons of pulp weekly. Forests are almost entirely mixed types.

### Australia

40,000,000 acres - 5.8% of land surface

147,500,000 cu. ft. annual cut of firewood

46,711,000 cu. ft. saw timber

Almost wholly mixed hardwoods - karri is chief species  
Mostly Public.

### New Guinea

160,000,000 acres - 80% of land surface

Typically hardwood area

100% Public

### New Zealand XXV

17,073,000 - 25.7% of land surface

1,920,000 commercial

Predominately hardwoods, with large occasional stands of pine

42,000,000 cu. ft. of saw timber cut annually

61% Public

### South Sea Islands XXVI

16,000,000 acres of forest - 35.7% of land surface

Usually tropical hardwood type

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