Forest Resources of Japan.

By

MITSUNAGA FUJIOKA

General.

Although the Empire of Japan forms a long narrow chain of numerous comparatively small islands, stretching north and south from the Kuriles to Formosa, it is still essentially a forest country, the forest making one of the most important natural resources. The forest land including "Genya" in Japan covers 43,824,675 ha. in area and its distribution among the five administrative regions is as follows:

Adiministrative region	Forest (ha.)	Genya (ha.)	Total (ha.)
Old Japan #	14,250,458	2,342,544	16,593,002
Hokkaido	5,424,205	879,428	6,303,633
Karafuto	3,093,432	160,000	3,253,432
Chosen	12,862,427	2,212,848	15,075,275
Taiwan	2,172,251	427,082	2,599,333
Total	37,802,773	6,021,902	43,824,675

The area of forest given above represents nearly 55 per cent and the total forest land approximate 65 per cent of the entire area of the country (67,969,354 ha.).

These forests may by character of ownership be divided into crown, state, communal, and forests belonging to temples and shrines and to private individuals as shown in the following table:

Ownership	Old Japan (ha.)	Hokkaido (ha.)	Karafuto (ha.)	Chosen (ha.)	Taiwan (ha.)	Total (ha.)
Crown	550,044	811,007	—	—	—	1,361,051
Forest	423,661	769,385	—	—	—	1,193,046
Genya	126,383	41,622	—	—	—	168,005
State	4,227,819	3,536,206	3,253,432	8,405,858	2,389,708	21,813,023
Forest	3,124,878	3,352,422	3,093,432	7,183,035	2,005,944	18,759,711
Genya	1,102,941	183,784	160,000	1,222,823	383,764	3,053,312
Communal	3,502,250	776,973	—	526,007	4,031	4,809,261
Forest	2,441,333	674,196	—	419,090	2,306	3,536,925
Genya	1,060,917	102,777	—	106,917	1,725	1,272,336
Temple & Shrine	129,656	1,621	—	150,854	—	282,131
Forest	117,144	1,008	—	138,353	—	256,505
Genya	12,512	613	—	12,501	—	25,626

The general name adopted for the sake of convenience, comprising Honshu, Shikoku, Kyushu, Luchu and Bohnine islands. "Genya" is waste land covered with various weeds and shrubs which may be utilized for grazing, harvesting of forage and also for forest growth in the main.

(Continued)

Ownership	Old Japan (ha.)	Hokkaido (ha.)	Karafuto (ha.)	Chosen (ha.)	Taiwan (ha.)	Total (ha.)
Private	8,183,234	1,177,825	—	5,992,556	205,594	15,559,209
Forest	7,143,443	627,193	—	5,121,949	164,002	13,056,587
Genya	1,039,791	550,632	—	870,607	41,592	2,502,622
Total Forest	14,250,458	5,424,205	3,093,432	12,862,427	2,172,252	37,802,773
Total Genya	2,342,544	879,428	160,000	2,212,848	427,082	6,021,902
Total Total	16,593,002	6,303,633	3,253,432	15,075,275	2,599,333	43,824,675

The detailed areas according to the kinds of forests in old Japan and Hokkaido are classified as follows:

	Old Japan	Hokkaido	Total
Total area (ha.)	16,593,002	6,303,633	22,896,635
Forest stands (ha.)	14,250,458	5,424,205	19,674,663
Conifers	4,131,025	596,276	4,727,301
Broad-leaved	5,879,075	2,247,824	8,126,899
Mixed	3,605,276	2,580,105	6,185,381
Bamboo	132,975	—	132,975
Other	471,743	30,360	502,103
Genya (ha.)	2,342,544	879,428	3,221,972

Because of the great variety of climatic, topographical, and many other conditional factors, the character of the forest is very diversified so that the particulars thereof are rather conveniently described in each separate administrative region.

Old Japan.

Owing to the difference in the degree of the latitude and that of the altitude above sea level, there is a considerable climatic difference in various districts so that the forests in old Japan are usually divided into four zones from the climatic point of view:

(1) Subtropical, (2) Warm, (3) Temperate, and (4) Frigid zone.

(1) Subtropical Forest Zone. This zone covers the southern half of the Luchu Islands, the Yaye-yama Islands and the Bohnine Islands the annual mean temperature in this zone being over 21°C. The representative trees in the last islands are

Biro (*Livistonia chinensis* R. Br.),
Tako-no-ki (*Pandanus boninensis* Warb.),
Ogasawara-ichibi (*Abutilon indicum* G. Don.),
Momo-tamana (*Terminalia Catappa* L.),
Hasu-no-ha-giri (*Hernandia peltata* Meissn.),
Ogasawara-guwa (*Morus boninensis* Koidz.),
Akatetsu (*Siederoxylon ferrugineum* Hook. et Arn.),

while those in the other islands are

Ryukyu-matsu (*Pinus luchuensis* Mayr),
Isu (*Distylium racemosum* S. et Z.),
Okinawa-urajiro-gashi (*Quercus Miyagii* Koidz.),
Tabu-no-ki (*Machilus Thunbergii* S. et Z.),
Iju (*Schima liukiuensis* Nakai),
Mokkoku (*Ternstroemia Mokof* Nakai),

and mangroves.

(2) Warm Forest Zone. Forests in this zone are found in the northern half of the Luchu Islands (at 20°½ N. L.) where the representative forest trees are

Inu-maki	(*Podocarpus macrophyllus* Don.),
Ko-jii	(*Shiia cuspidata* Makino),
Tabu-no-ki	(*Machilus Thunbergii* S. et Z.),
Iju	(*Schima liukiuensis* Nakai),
Mokkoku	(*Ternstroemia Mokof* Nakai)

Kyushu, Shikoku and the southern part of Honshu (at 36° N. L. and southwards), the annual mean temperature in this zone being 13–21°C. Varieties of trees which posses an important value in the forest economy are very numerous and they may be divided into three groups which are ever-green broad-leaved, deciduous broad-leaved and coniferous species.

The most important evergreen broad-leaved species in this zone are as follows:

Tsuge	(*Buxus japonica* Muell. Arg.),
Shii	(*Shiia Sieboldi* Makino & *Shiia cuspidata* Makino),
Tabu-no-ki	(*Machilus Thunbergii* S. et Z.),
Kusu	(*Cinnamomum Camphora* Sieb.),
Ichii-gashi	(*Quercus gilva* Blume),
Tsubaki	(*Camellia japonica* var. *spontanea* Makino),
Isu-no-ki	(*Distylium racemosum* S. et Z.),
Mokkoku	(*Ternstroemia Mokof* Nakai),
Iju	(*Schima liukiuensis* Nakai).

As the principal deciduous broad-leaved trees of economic importance the following may be enumerated:

Kuri	(*Castanea crenata* S. et Z.),
Kiri	(*Paulownia tomentosa* Steud.),
Keyaki	(*Zelkowa serrata* Makino),
Shioji	(*Fraxinus commemoralis* Koidz.),
Kuwa	(*Morus bombycis* Koidz.),
Mizume	(*Betula grossa* S. et Z.),
Kaki	(*Diospyros Kaki* L. f.).

Of the coniferous woods produced in this zone the following are usually put on market:

Sugi	(*Cryptomeria japonica* Don.),
Aka-matsu	(*Pinus densiflora* S. et Z.),
Kuro-matsu	(*Pinus Thunbergii* Parl.),
Himeko-matsu	(*Pinus parviflora* S. et Z.)
Ryukyu-matsu	(*Pinus luchuensis* Mayr),
Momi	(*Abies firma* S. et Z.),
Tsuga	(*Tsuga Sieboldii* Carr.),
Koya-maki	(*Sciadopitys verticillata* S. et Z.),
Inu-maki	(*Podocarpus macrophyllus* Don.).

(3) Temperate Forest Zone. The forests extend over the northern part of Honshu and as far as the south-western section of Hokkaido corresponding to 43°½ N. L., the annual mean temperature ranging from 6°C. to 13°C.

The trees producing sawtimber in this zone belonging to old Japan are divided into two groups of deciduous hard-woods and conifers as given below.

Deciduous hard-woods:

Harigiri	(*Kalopanax ricinifolium* Miq.),
Ho-no-ki	(*Magnolia obovata* Thunb.),
Buna	(*Fagus crenata* Blume),
Kuri	(*Castanea crenata* S. et Z.),
Kiri	(*Paulownia tomentosa* Steud.),
Keyaki	(*Zelkowa serrata* Makino),
Katsura	(*Cercidiphyllum japonicum* S. et Z.),
Mizu-nara	(*Quercus crispula* Blume),

Tochi (*Aesculus turbinata* Blume),
Itaya-kaede (*Acer pictum* Thunb.),
Kaede (*Acer palmatum* Thunb.),
Shioji (*Fraxinus commemoralis* Koidz.),
Han-no-ki (*Alnus japonica* S. et Z.),
Oni-gurumi (*Juglans Sieboldiana* Maxim.).

Conifers:

Hiba (*Thujopsis dolabrata* S. et Z.),
Sugi (*Cryptomeria japonica* Don.),
Aka-matsu (*Pinus densiflora* S. et Z.),
Goyo-matsu (*Pinus pentaphylla* Mayr),
Kara-matsu (*Larix Kaempferi* Sarg.),
Hinoki (*Chamaecyparis obtusa* Endl.),
Sawara (*Chamaeyparis pisifera* Endl.),
Nezuko (*Thuja Standishii* Carr.),
Tohi (*Picea hondoensis* Mayr),
Shirabe (*Abies Veitchii* Lindl.),
Koya-maki (*Sciadopitys verticillata* S. et Z.).

(4) Frigid Forest Zone. This forest zone occupies the portion where the annual mean temperature is below 6°C. In Kyushu there is no forest belonging to this zone. In Shikoku we can hardly find the upper portion of this zone at the height of 1970 meters. This forest zone finds its existence on the upper half of high mountains in Honshu, starting at the height 1830 m. and ending at the height of 2590 m., but the forest is of comparatively limited extent. Although even the trees capable of producing sawtimber found in this zone, such as Shirabe (*Abies Veitchii* Lindl.), Aomori-todo-matsu (*Abies Mariesii* Mast.), Tohi (*Picea hondoensis* Mayr), Dake-kaba (*Betula Ermani* Cham.), etc. are of little value from the point of exploitation because of inaccessibility, their influence on the water supply and on the general welfare are of great importance and comes always into consideration.

As to the amount of standing and growing timber in old Japan the figures based on the accurate surveys of both crown and state forests together with those of value estimation of the forests of the other ownership are given here.

Ownership	Conifers (1000 fm)	Hardwoods (1000 fm)	Total (1000 fm)	Percentage
Crown	40,561	16,900	57,461	5.1
State	123,334	301,498	424,832	37.4
Others	456,106	197,787	653,893	57.5
Plantation forest	282,990	4,822	287,812	25.3
Natural forest	173,116	192,965	366,081	32.2
Grand total	620,001	516,185	1,136,186	100.0
Percentage	54.6	45.4	100.0	

For state forests some more detailed figures according to the methods of management are also available as below:

Methods of management	Area	Percentage	Growing stock (fm)			
			Conifers	Hardwoods	Total	Per ha.
Clear-cutting high forest.	1,888,017	45.29	56,819,756	154,494,910	211,494,666	112
Several-storied high forest.	69,559	1.67	93,957	9,309,342	9,403,299	135
Preregeneration high forest.	102,154	2.45	9,381,283	8,354,939	17,736,222	174

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Methods of management.	Area	Percentage	Growing stock (fm)			
			Conifers	Hardwoods	Total	Per ha.
Selection high forest.	498,159	11.95	30,609,696	49,869,101	80,478,797	162
Coppice.	253,783	6.09	1,400,048	13,464,156	14,864,204	58
Coppice with standards.	76,213	1.83	418,256	5,032,745	5,451,001	72
Others.	1,281,032	30.72	24,605,532	60,784,736	85,390,268	67
Total	4,168,917	100.00	123,328,528	301,489,929	424,818,457	102
Bamboo grove	567		5,495	7,982 179,809 bundles	13,477 179,809 bundles	16

The total amount of growing stocks given above are further be divided between the principal species as follows:

Kinds of conifers		Amount of standing timber (1000 fm)
Vernacular name	Scientific name	
Sugi	*Cryptomeria japonica* Don.	28,222
Tsuga	*Tsuga Sieboldii* Carr.	21,551
Hiba	*Thujopsis dolabrata* S. et Z.	17,601
Aka-matsu	*Pinus densiflora* S. et Z.	14,727
Momi	*Abies firma* S. et Z.	10,129
Hinoki	*Chamaecyparis obtusa* Endl.	3,320
Shirabe	*Abies Veitchii* Lindl.	3,015
Kuro-matsu	*Pinus Thunbergii* Parl.	2,455
Aomori-todomatsu	*Abies Mariesii* Masters.	2,130
Himeko-matsu	*Pinus parviflora* S. et Z.	1,861
Nezuko	*Thuja Standishii* Carr.	1,717
Karamatsu	*Larix Kaempferi* Sarg.	1,200
Tohi	*Picea hondoensis* Mayr.	936
Sawara	*Chamaecyparis pisifera* Endl.	581
Koyamaki	*Sciadopitys verticillata* S. et Z.	342
Others		13,547
Total		123,334
Bamboo		179,809 bundles

Kinds of hardwoods		Amount of Standing timber (1000 fm)
Vernacular name	Scientific name	
Buna	*Fagus crenata* S. et Z.	104,740
Nara	*Quercus crispula* Blume.	35,589
Isu-no-ki	*Distylium racemosum* S. et Z.	4,217
Kuri	*Castanea crenata* S. et Z.	3,991

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Kinds of hardwoods		Amount of Standing timber (1000 fm)
Vernacular name	Scientific name	
Itaya-kaede	*Acer pictum* Thunberg.	3,510
Tabu	*Michilus Thunbergii* S. et Z.	3,377
Evergreen oaks	*Quercus* spp.	3,073
Shiias	*Shiia* spp.	2,824
Tochi	*Aesculus turbinata* Blume.	2,771
Akagashi	*Quercus acuta* Thunberg.	2,495
Maples	*Acer* spp.	2,192
Itajii	*Shiia Sieboldi* Makino	1,980
Hornbeams	*Carpinus* spp.	1,894
Shira-kashi	*Quercus myrsinaefolia* Bl.	1,737
Birches	*Betula* spp.	1,168
Sawa-gurumi	*Pterocarya rhoifolia* S. et Z.	1,150
Others		124,970
Total		301,498

Hokkaido.

During the earlier period there had timely been an awakening of public opinion to the need of a careful husbanding of the natural resources all energy of the foresters had been directed toward the overcoming many of the difficulties encountered in the course of its land settlement, so that the forests in Hokkaido escaped from the destruction by fire and excessive cutting which were very liable to be reduced to. The actual cutting of timber is restricted to an amount not greater than the annual growth although besides its local supply the surplus timber is exported in large quantities. The forests in Hokkaido may be broadly divided into two zones: (1) Temperate, and (2) Frigid zone.

(1) Temperate Forest Zone. Forests in this zone cover the southern half of the Island. The most important trees from an economic standpoint are divided into conifers and deciduous hardwoods which show here the most splendid growth and are of the greatest importance. In the first group are included Ezo-matsu (*Picea jezoensis* Carr.), Aka-ezo-matsu (*Picea Glehni* Mast.), Todo-matsu (*Abies sachalinensis* Mast.), and Araragi (*Taxus cuspidata* S. et Z.); the most valuable trees in the second group are:

Mizu-nara	(*Quercus crispula* Blume),
Ho-no-ki	(*Magnolia obovata* Thuub.),
Shina-no-ki	(*Tilia japonica* Sink.),
Oba-bodaiju	(*Tilia Miyabei* Jack),
Yachi-damo	(*Fraxinus mandshurica* Rupr.),
Hari-giri	(*Kalopanax ricinifolium* Miq.),
Buna	(*Fagus crenata* Blume),
Katsura	(*Cercidiphyllum japonicum* S. et Z.)
Itaya	(*Acer pictum* Thunb.),
Kihada	(*Phellodendron sachalinense* Sarg.).

(2) Frigid Forest Zone. This forest zone covers the northern half of the Island, representative species as seen from the economic point of view are Ezo-matsu (*Picea jezoensis* Carr.), Aka-ezo-matsu (*Picea Glehnii* Mast.), and Dake-kaba (*Betula Ermani* Cham.).

The estimation of the amount of standing timber in Hokkoido is shown in the table below:

Ownership	Conifers (1000 fm)	Hardwoods (1000 fm)	Total (1000 fm)	Percentage
Crown	34,225	69,319	103,544	16.2
State	177,089	258,887	435,976	68.0
Communal	20,009	58,142	78,151	12.2
Temple & shrine	2	17	19	—
Private	2,033	20,737	22,770	3.6
Total	233,358	407,102	640,460	100.0
Percentage	36.3	63.7	100.0	

Taiwan (Formosa).

The area of forest land is estimated at 2,599,333 ha. which is about 80 per cent of the total area of the island; about two thirds of the forest area are inhabited by wild peoples. Since the island is located partly in the tropical and partly in the subtropical zone and occupied by the central range of high mountains extending from north to south, the highest peaks being often more than 3650 m. in altitude, there are four forest zones from the point of forest resources: (1) Subtropical, (2) Warm, (3) Temperate, and (4) Frigid zone.

(1) Subtropical Forest Zone. This zone extends below 610 m. above sea level in the southern part and below 300 m. in the northern part of the island and there are chiefly found Ako (*Ficus Wightiana* Wall.), Binroji (*Areca Catechu* L.), Fu (*Liquidamber formosana* Hance), and bamboos, besides several species of mangroves in the tidal region and cultivated exotic trees in the plains, such as Biruma-nemu-no-ki (*Albizzia Lebbek* Benth.), Mokkwa (*Carica Papaya* L.), Chiik (*Tectona grandis* L.f.), Futo-momo (*Eugenia Jambos* L.), etc.

(2) Warm Forest Zone. In regard to the altitude this zone lies in the mountain regions between 450 and 1830 m. above sea level on the average and comprises a large proportion of forest in the island, mostly occupied by evergreen broad-leaved trees with very few scattered conifers. The representative trees producing sawtimber are as follows:

Akagi	(*Bischoffia javanica* Blume),
Ara-kashi	(*Quercus glauca* Thunb.),
Ichii-gashi	(*Quercus gilva* Blume),
Kuri-kashi	(*Castanopsis taiwaniana* Hayata),
Kusu-no-ki	(*Cinnamomum Camphora* Sieb.),
Oba-tabu	(*Machilus Kusanoi* Hayata),
Ogatama-no-ki	(*Michelia compressa* Max.).

(3) Temperate Forest Zone. This zone extends up as high as about 3,050 m. in the central portion. The principal trees are Hinoki (*Chamaecyparis obtusa* S. et Z.), Benihi (*Chamaecyparis formosensis* Mats.) which occur mostly in dense pure beautiful stands and make now the source of most of the softwood lumber utilized in the island. Taiwan-sugi (*Taiwania cryptomerioides* Hayata) is also scattered among the cedar forests. Taiwan-tsuga (*Tsuga formosana* Hayata), Takane-goyo (*Pinus Armandi* Franchet.), Koyo-zan (*Cunninghamia lanceolata* Hook.), and Niitaka-tohi (*Picea morrisonicola* Hayata) are also found in this region.

(4) Frigid Forest Zone. This zone covers only the inaccessible summit of the highest mountains and is of simple vegetation. Pure stands of Niitaka-todo-matsu (*Abies Kawakamii* Hayata) and some shrubby broad-leaved trees are found.

As to the amount of standing timber in Taiwan the forest survey does not yet come to end but the stand is roughly estimated at 42,074,000 fm of conifers and 111,195,000 fm of broad-leaved trees.

Karafuto (Saghalien).

The part south of 50°N.L. was originally endowed with abundant natural resource of forests. As the result of land settlement the destruction by forest fires which were very frequent and extensive, and the excessive cutting to make the available supplies keep pace with the increased need for

wood in Japan proper (including old Japan and Hokkaido) have continued for the last several years. There are but moves in the right direction timely now to perpetuate this valuable resource. It is for this reason that the last great bodies of softwood in the island will soon be gone otherwise and the pulp and paper mills there located will not be able to look upon wood as the foundation before long. A conference was held with success under the leading timber exporters this year (1932) and restricted the export of timber of the island to certain amount, with result of stimulating the forest exploitation in Japan proper on the other hand.

The forests belong to frigid zone at all, possessing dense primeval nature, and comprise fir (*Abies sachalinensii* Mast.), spruce (*Picea jezoensis* Carr.), and larch (*Larix Gmelini* Gordon), and among the broad-leaved trees birch (*Betula Ermani Chamisso* var. *genuiana* Regel), poplar (*Populus Maximowiczii* A. Henry), alder (*Alnus hirsuta* Turcz., *Alnus Maximowiczii* Call.), Willow (*Salix* spp. and *Toisusu cardiophylla* Kimura var. *Urbaniana* Kimura) predominate.

According to the last report made by the competent authorities concerned, Japanese Saghalien contains the forest area and amount of standing timber shown in the following table:

Ownership	Conifers (fm)	Hardwoods (fm)	Total (fm)	Plantation area (ha.)
State	149,215,012	20,973,525	170,188,537	2,606,790
Land settlement	11,764,414	—	11,764,414	370,840
Land settlement prospected	8,273,903	1,933,951	10,207,854	180,420
University	15,924,883	—	15,924,883	95,382
Total	185,178,212	22,907,476	208,085,688	3,253,432

Of all annual production of timber and lumber about the half was needed for the domestic consumption, including materials for ten pulp and paper mills which are there at present, while the other half was exported as shown below:

Year	Timber & lumber produced (fm)	Export amount (fm)
1927	2,787,017	1,465,939
1928	3,275,185	1,880,659
1929	3,553,991	2,183,963
1930	3,202,399	1,921,964

Chosen (korea).

Although Chosen possesses the largest forest land, next to old Japan, forming about 53 per cent of the total land area, most part of the mountains are practically bare and deprived of even watershed protection, a result of reckless cutting and neglect in the past, with the exception of the northern forests along the Yalu and Tumen Rivers. Governmental reclamation work for the denuded areas was planned and is now being carried on a very large scale throughout the peninsula. But the existing forests may be divided into three zones: (1) Warm, (2) Temperate, and (3) Frigid zone.

(1) Warm Forest Zone. In Chezu Island this zone is found below 520 m. above sea level while it meets with sea level in the southern end of the peninsula, with much similarity of the representative trees to the same zone in Kyushu.

(2) Temperate Forest Zone. This zone reaches so high as 1530 m. in the southern portion and 920 m. in the northern portion. The most of growing trees are the same species as those of Honshu with one noticeable exception of Buna (*Fagus crenata* Blume) which does not grow in the peninsula at all.

(3) Frigid Forest Zone. This zone is found mostly on the mountain range over the height of about 1060—1520 m. while in those regions covering the upper courses of the Yalu and Tumen

Rivers, where the governmental logging is carried, extends to 300—600 m. of height.

The principal forest trees growing in these wooded portions of northern Chosen, which makes the prevailing source of timber supply, are Chosen-matsu (*Pinus Koraiensis* S. et Z.), Chosen-momi (*Abies holophylla* Max.), To-shirabe (*Abies nephrolepis* Max.), Yezo-matsu (*Picea jezoensis* Carr.), Chosen-kara-matsu (*Larix Gmelini* Gordon var. *olgensis* Ostenfeld), Manshu-gurumi (*Juglans mandschurica* Max.), Ono-ore-kanba (*Betula Schmidtii* Regel), Mongori-nara (*Quercus mongolica* Blume), Kihada (*Phellodendron amurense* Rupr.), Itaya-kaede (*Acer pictum* Thunb.), Amuru-shina-no-ki (*Tilia amurensis* Kom.), Yachi-damo (*Fraxinus mondschurica* Rupr.), etc.

According to the latest census the amount of growing stock in Chosen is estimated at about 275,000,000 fm, of which 70 per cent belong to the state forest.

Ownership	Conifers (fm)	Hardwoods (fm)	Total (fm)
State	119,897,287	76,402,545	196,299,832
Others	64,165,371	14,928,338	79,093,709
Communal	3,650,505	1,526,303	5,176,808
Temple	2,323,750	1,258,441	3,582,191
Private	58,191,116	12,143,594	70,334,710
Grand total	184,062,658	91,330,883	275,393,541

Artificial Plantation in Japan Proper.

It is quite worthy of our notice to outline this article because the artificial plantation in Japan proper has no equal in the world in regard to its history and scale, which the plantation is being carried on. Besides many old stands established in the feudal times, accurate census shows the following figures as to the artificially planted area during the last 45 years in old Japan, principal species being Sugi (*Cryptomeria japonica* Don.), Hinoki (*Chamaecyparis obtusa* S. et Z.), Kara-matsu (*Larix Kaempferi* Sarg.), and Aka-matsu (*Pinus densiflora* S. et Z.).

Ownership	Artificial plantation area (ha.)	Forest land area (ha.)	Percentage
Crown	88,225	550,043	16.0
State	701,500	4,227,819	16.6
Communal	449,889	3,502,250	13.0
Temple & shrine	31,384	129,656	24.0
Private	1,917,388	8,183,234	22.0
Total	3,188,386	16,593,002	19.2

It also may call attention that governmental plantation on communal forest land is spreading on and increased scale from year to year.

Because of the fact that the forests in Hokkaido as a whole have been treated since the beginning of the land settlement not merely as available exploitable materials, but also as a perfectly renewable resource to be perpetuated and improved, the area of artificial plantation is not so much extended to a comparable amount with that in old Japan, showing only 1.62 per cent of the total forest land as below:

Ownership	Artificial plantation area (ha.)	Total forest land (ha.)	Percentage
Crown	5,183	811,007	0.64
State	13,553	3,536,206	0.37
Others	83,225	1,956,420	4.25
Total	101,961	6,303,633	1.62

The most part of the planted species is larch (*Larix Kaempferi* Sarg.) which is introduced from old Japan and forms many woodlots near towns and villages, and merely small quantity of Sugi (*Cryptomeria japonica* Don.) is also planted in the southern portion.

In these plantations of Japan proper the rotation is generally 70—100 years for both crown and state forests while it is in majority of cases 30—50 years for private forests.

Prodnction and Consumption.

Formerly, we had been prone to call Japan as a whole a lumber exporting country as described in all publications hitherto, but it changed the situation in lumber trading and became a lumber importing country since 1921. The imports were largely stimulated by the last catastrophe in 1923, while the exports were held in check by the enactment of drastic tariff upon our woods in abroad.

Among five administrative regions Karafuto and Hokkaido have an excess of production over consumption and the other have a shortage of wood as shown by the figure in 1930 for instance:

Administrative region	Timber and lumber produced (fm)	Consumption (fm)
Old Japan	7,543,333	13,358,342
Hokkaido	2,624,396	2,077,630
Karafuto	3,202,399	1,017,840
Chosen	1,350,512	1,492,240
Taiwan	164,648	424,691
Total	14,885,288	18,370,743

Import amount of timber and lumber in the same year will also be cited here.

Administrative region	Districts, from which wood imported	Imported amount (fm)	Percentage
Old Japan	North America	1,788,863	73.97
	Siberia	514,379	21.27
	China	11,736	0.48
	Others	103,417	4.28
	Total	2,418,395	100.00
Hokkaido	North America	1,926	44.25
	Siberia	2,426	55.75
	Total	4,352	100.00
Karafuto		—	—
Chosen		163,711	
Taiwan		84,412	
Total		2,670,870	

For the many uses, to which wood may be put in Japan proper (including old Japan and Hok-

kaido) a special census for the domestic consumption in 1919 was once made and gave the following results:

Uses	Annual comsumption of timber in old Japan and Hokkaido (1000 fm).
General building and construction	5,873
Mine timbers	1,699
Pulp-wood	589
Packing-boxes	495
Staves	362
Ship and boat building	329
Telegraph poles and cross-arms	281
Railway ties	270
Wooden clogs	216
Civil engineering and bridge timbers	202
Agricultural implements	168
Woods used for *Cortinellus shiitake* P. Henn.	149
Match-sticks and match-cases	72
Lacquer-wares	66
Car construction	65
Army supplies	56
Shuttles, spools, and bobbins	48
Camphor woods	28
Funeral timbers	19
Chip-braids and chip boxes	19
Excelsior	10
Pencils	7
Molding	7
Bouy	6
Sporting and athletic goods	4
Bending wood	4
Weighing apparatus	2
Other uses	115
Total	11,161

To these must be added 38,344,000 fm of fire wood and 28,730,000 fm of charring material to show the total estimation of wood consumption in Japan proper.

As obviously seen from the facts shown in the previous tables, old Japan and Hokkaido where wood using industries are developed most, have to meet the intricate forest problem first in regard to the duration of timber supply. The recent remarkable fall in exchange rates naturally is affecting the trade to a large extent. The decrease of foreign supply the together with the control of export in Karafuto as previously stated, is giving rise to the advance of home wood to market in Japan proper and it is already noticeable that Ezo-matsu and Todo-matsu from Hokkaido have repleaced to some extent the American woods used for building and even the private forestry which had been on hard time and inactive for several years is now somewhat enlivened again. It is of all probability that the forestry conditions are gradually changed and picking up, and it is now generally accepted that, to meet the demand in near future we have to look more upon the home wood again, the imports being confined merely to long and large timbers for special purposes.

The recent progress made in the improvement of forestry equipments or new devices in the means of timber transportation much favour this tendency. The forest roads now springing up on all sides as one of the relief works also will serve to facilitate new exploitation.

Therefore, as to the future timber supply in Japan proper, there prevails an unique opinion founded on sustained yield basis that Japan may be self-sustaining at present and remain self-supporting and self-sufficing in regard to timber even after 50 years with its doubled population, provided that the actual plan of increase of artificial plantation on crown, state, and communal forest land of about 1,200,000 ha. will be finished within 20 years hereafter.