DEPARTMENT OF COMMERCE

BUREAU OF FOREIGN AND DOMESTIC COMMERCE

E. E. PRATT, Chief

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TEAK IN SIAM AND INDO-CHINA

BY

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DEPARTMENT OF COMMERCE,
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Washington, October 8, 1915.

SIR: There is submitted herewith a report by Commercial Agent Franklin H. Smith on the teak-market situation in Siam and Indo-China. Mr. Smith discusses the various grades and prices of this valuable wood and the methods obtaining in the industry, and presents detailed statistics of exports from both the countries visited in connection with this branch of his investigations. There is a short introductory account of the properties and utilization of teak wood.

Respectfully,

E. E. PRATT,
Chief of Bureau.

To Hon. WILLIAM C. REDFIELD,
Secretary of Commerce.

TEAK IN SIAM AND INDO-CHINA.

PROPERTIES AND USES OF TEAK.[a]

When teak wood, or teak, as it is generally known, is first cut, the heartwood is a dark, golden yellow. The wood darkens with age and finally, after a number of years, becomes almost black. The sapwood of teak is white and usually forms only a narrow band between the heartwood and bark. The qualities of teak vary to quite an extent, depending on the conditions under which the material is grown. Teak logs when first cut will not float. The average weight of seasoned material is generally placed at 45 pounds per cubic foot. The average weight for material dried in an oven until all moisture was removed, as shown by a limited number of tests made by the Forest Service, was about 36 pounds per cubic foot. It is probable that a weight of 45 pounds per cubic foot indicates that the wood contains approximately 20 per cent moisture.

The wood of teak is moderately hard and strong, with a rather open, straight grain in which the annual rings are distinctly marked by bands of pores. The wood is strongly and characteristically scented, of oily texture, and the surface feels greasy to the touch. The oil is considered to resist the entrance of water into the wood and to prevent the wood becoming watersoaked after it has once been thoroughly seasoned.

Tests made by the Forest Service indicate that the wood has a low free acid content and therefore does not corrode iron and steel when placed in contact with them.

Definite records of the durability of teak are not available. All authorities, however, seem to agree that it is an extremely durable wood, and the opinion is prevalent that the oil in the natural wood acts as a preservative. Reports on the use of teak in the Tropics indicate that it is rarely attacked by white ants or termites. The condition of old pieces of furniture made of teak shows that it has the ability to keep its shape without warping or shrinking after it has once been seasoned.

EMPLOYED PRINCIPALLY IN SHIPBUILDING.

The principal use of teak is in shipbuilding, especially for decking and as backing for armor plate. Its durability and lack of corrosive effect on steel make it particularly suitable for armor backing. In the United States, in addition to the teak used for ship and boat building, a small quantity goes into house and car finish. About 927,000 board feet have been reported as employed annually by the

[a] This brief preliminary discussion of the properties and utilization of teak was prepared by the Forest Service of the United States Department of Agriculture.

wood-using industries of the United States. In England, while the principal use is in shipbuilding, considerable quantities also go into the construction of railway carriages, greenhouses, and a high class of carpentry work. The wood is considered too costly for use out of India and the Far East, except for special work. Teak has been used to some extent for gun carriages but is not now considered well adapted for that purpose, on account of its splitting too readily. In India it is used for all purposes in house and ship building, for bridges, railway sleepers, furniture, shingles, etc. It is also used for carving, the Burmese carved teak wood being especially noted.

SIAM.

GENERAL SITUATION OF TEAK INDUSTRY AND MARKET.

The teak production of Siam is in the hands of seven concerns operating mills at Bangkok, the timber coming from the same general region at the headwaters of the Menam River. The timber is cut from concessions granted by the Siamese Government, and the logs are hauled out to the small streams and floated to the main river for driving down to the mills. The question of the cost of logging was not gone into, but it is said to be expensive, since teak is not found in stands or groups but is scattered; further, the more available timber was removed years ago, so the logs that are now coming out have to be hauled a considerable distance to water. Labor is said to be higher paid in Siam than any of the other countries in the East. The Government has undertaken to conserve the teak supply by regulating logging so as to prevent wasteful methods, involving unnecessary destruction of the forest. Cutting is allowed only for a limited number of years on the various areas held by the concessionaires, and a minimum diameter for logs is fixed by law. The smallest log that may now be cut under the regulations is 76½ inches in girth. The royalty paid the Government is 12 ticals ($4.44 gold) per log.

NUMBER OF LOGS PASSING GOVERNMENT STATION.

At Paknampoh is a station maintained by the Government for the counting, measurement, and assessment of teak logs. The Directory for Bangkok and Siam gives the average number of logs arriving at this station each year as 100,000, with another 20,000 at Moulmein. The Bangkok Market Report for April, 1915, published monthly by the Bangkok International Chamber of Commerce, lists the number of teak logs that passed the duty station at Paknampoh during the fiscal year 1914–15 (Siamese fiscal year ends Mar. 31) as follows: April, 7; May, 87; June, 164; July, 13,935; August, 1,733; September, 6,843; October, 4,347; November, 16,049; December, 8,995; January, 6,481; February, 65; March, 182; total, 58,888. October and November mark the high-water periods of the year, and this fact explains the heavy percentage of logs coming down during November.

It will be observed that the fiscal year 1914–15 was a short year for logs, since approximately but 60 per cent of the average number came down; 1913–14 also was reported as having developed a shortage of logs. The small input, according to the teak millmen, was due to low water during both years, which restricted the number of logs floated out. It may be assumed, however, that curtailment was practiced to a certain extent in order to prevent too many logs coming down and breaking a market regarded as none too strong in price. So far as could be ascertained, 1915–16 will see more logs brought to market

than during the preceding two years, since it is anticipated that a big demand for teak squares and plank will follow the close of hostilities in Europe.

CONCERNS OPERATING AT BANGKOK.

The seven concerns—five Europeans and two Chinese—previously referred to as operating mills at Bangkok are:

Siam Forest Co., Ltd. (British; S. H. Hendrick).
Louis T. Leonowens, Ltd. (British; J. M. Mills, G. Roland).
Borneo Co., Ltd. (British; W. E. Adams, W. T. Collis-Cooke).
East Asiatic Co. (Danish; I. C. Christensen).
Bombay-Burma Trading Corporation (British; Hamilton Price).
Wing Seng Long & Co. (Chinese).
Kim Seng Lee & Co. (Chinese).

In addition to the foregoing, there are possibly a dozen Chinese yards where a few logs of teak are whipsawed in the course of a year, with logs of other species. The output of these yards, even in the aggregate, need not be considered as affecting the situation.

NAMES AND CHARACTERISTICS OF GRADES.

No standard grading for teak is employed by the mills at Bangkok. Each concern grades its squares, plank, decking, scantling, and boards according to its own individual rules, but when these several grades are analyzed it is found that the grades designated variously do not differ seriously one from another. The specified grades of the European mills follow:

Siam Forest Co. (Ltd.):
- No. 1 square—Called Europe quality.
- [Intermediate] square—Called Crown quality.
- No. 2 square—Called selected India.
- No. 3 square—Called No. 1 India.
- No. 4 square—Called No. 2 India.
- No. 1 plank—Called Europe quality.
- No. 2 plank—Called Eastern quality.

Louis T. Leonowens (Ltd.):
- No. 1 square—Called 1st-class Europe squares.
- No. 2 square—Called 2d-class Europe squares.
- No. 3 square—Called 1st-class India.
- No. 1 plank—Called ordinary 1st class.
- No. 2 plank—Called 2d class.

Borneo Co. (Ltd.):
- No. 1 square—Called Europe squares.
- No. 2 square—Called No. 1 India.
- No. 3 square—Called No. 2 India.
- No. 4 square—Called No. 3 India.
- No. 1 plank—Called Europe quality.
- No. 2 plank—Called No. 1 India.

East Asiatic Co.:
- No. 1 square—Called Europe quality.
- No. 2 square—Called selected India.
- No. 3 square—Called ordinary India.
- No. 1 plank—Called Europe quality.
- No. 2 plank—Called Eastern quality.

Bombay-Burma Trading Corporation:
- No. 1 square—Called Europe quality.
- [Intermediate] square—Called Crown quality.
- No. 2 square—Called selects.
- No. 3 square—Called 1st India.
- No. 4 square—Called 2d India.
- No. 1 plank—Called No. 1 India.
- No. 2 plank—Called No. 2 India.

A careful inspection of the squares in the yards of each of the concerns revealed practically no difference in the quality of the timber classified as No. 1 grade, despite a difference in nomenclature. No 1 grade consists of squares with no bee holes, but one or two or perhaps three small, sound, hard knots; no checks or splits, but with some waney edge. No. 2 grade admits of a greater number of defects; perhaps 50 per cent or even more of No. 2 grade would, in the writer's opinion, meet the specifications given in schedule 7551 of the United States Navy Department. No. 3 and No. 4 grade squares probably could not be used by the Government.

While, as in the grading, no hard and fast rule is followed as a standard, the practice among all the mills is to classify the squares as long or short. In both No. 1 and No. 2 grade squares the longs are put in the following piles:

	Per cent.
Pile AA, 23 feet and up by 22 inches and up	5
Pile A, 23 feet and up by 15 inches and under 22 inches	70
Pile B, 23 feet and up by 12 inches and under 15 inches	20
Pile C, 23 feet and up by under 12 inches	5

The average length of the squares going into the longs is, as nearly as could be determined, 26 feet.

The shorts consist of squares 15 feet to 22 feet 6 inches in length, with an average length of 17 or 18 feet. The piles consist of the following lengths and dimensions:

	Per cent.
Pile AA2, under 23 feet by 22 inches and up	32
Pile A2, under 23 feet by 15 inches and under 22 inches	65
Pile B2, under 23 feet by 12 inches and under 15 inches	2
Pile C2, under 23 feet by under 12 inches	1

Out of the usual run of logs at a mill, approximately 60 per cent of the squares will go into the longs and 40 per cent into the shorts. The average cubic contents of the squares in both longs and shorts is 40 cubic feet per square.

PLANKS AND DECKING.

Every teak log that comes to the mill is sawn into a square if that is possible. It is only where a log shows a rotten heart, or is hollow butted for 3 or 4 feet, or develops some serious defect upon being slabbed, that it is sawn up into planks or decking. Some plank and some decking is, of course, sawn to order; but as a general rule all planks and decking reach a pile because of a defect in the log from which sawn that would not permit of a square being turned out. Higher prices proportionately are obtained by the mills for plank and decking than for squares, but the producers prefer that the consumer take the risk of opening up a square and determining its contents. Plank and decking may truly be called a by-product. Both in plank and decking but two grades are recognized—No. 1 and No. 2. No. 1 generally allows of absolutely no defects, if a small, sound, tight knot be considered no defect. No. 2 grade provides for one clear face; the other face may contain small bee holes and sound knots with no wane nor any defect that would weaken the piece.

Two standard sizes of decking are cut. One is 5 by 3 inches (5-inch face) and the other 5 by 2½ inches. When for any reason decking is turned out, unless a specific order calls for a distinct

size, these two sizes alone are cut. As a matter of fact, the decking is invariably cut full by $\frac{1}{8}$ inch; in other words, it will measure $5\frac{1}{8}$ by $3\frac{1}{8}$ inches or $5\frac{1}{8}$ by $2\frac{5}{8}$ inches. This over size permits surfacing to a full 5-inch face and a 3-inch or $2\frac{1}{2}$-inch thickness.

In cutting planks, unless upon special order, the widest and thickest planks obtainable are gotten out of the log. If necessary, these planks can be resawed, and this would be the case where a large order for decking was to be filled in a hurry.

BOARD MEASURE NOT USED BY TEAK COMPANIES.

As might have been expected, the specifications of the United States Navy Department came up for discussion in each interview. The schedule in question called for so many thousand feet board measure. In two interviews it was necessary to explain exactly what was meant by board measure. Teak is measured and sold on the basis of cubic contents. The basis for quotations and sale is a load, equivalent to 50 cubic feet. Orders are usually placed for so many loads or so many tons. The dry weight of teak is 46 to 48 pounds per cubic foot; teak containing considerable moisture will weigh up to 60 pounds per cubic foot. While bidders in the United States might submit a bid on the basis of board measure, none of the teak concerns would do so. The ordinary commercial specifications usually call for so many tons of squares 15 feet and up—which admits of nothing under 15 feet and averages 21 feet. Occasionally an average cube of perhaps 40 cubic feet is specified.

Apparently it would not be difficult to secure at least in part the teak decking called for in schedule 7551. Stocks of decking at Bangkok would not at the time of the preparation of this report (May, 1915) provide the full requirements, but a considerable quantity could be picked up and more manufactured from plank in pile. From a close examination of the two grades of decking, as sawed at Bangkok, and comparison with the United States Navy Department specifications, it would appear to the writer that No. 2 grade decking would meet the requirements for practical purposes. With one face clear, the bee holes on the reverse side or either narrow face could be plugged and since teak does not rot no damage would result. Of the No. 2 teak decking examined no defect was of such a character as structurally to weaken the piece. Attention is directed to the fact that the standard length of decking as cut by the Bangkok mills is 16 feet and up. This standard length, while admitting of pieces 16 feet in length, will average 20 feet 6 inches long. In order to fill a Government order for 5 by $2\frac{3}{4}$ inches it is likely that the mills, if not cutting specially, would surface 5 by 3 inch stock. In the case of 6 by $3\frac{1}{4}$ inch decking, it would be necessary to manufacture the stock or rip up plank, probably at considerable disadvantage. In either case, the price would be higher than for the Bangkok standard of 5 by 3 inches and 5 by $2\frac{1}{2}$ inches.

THE CROWN GRADE OF SQUARES.

Two concerns—the Siam Forest Co. (Ltd.), and the Bombay-Burma Trading Corporation—make a so-called Crown grade of squares, which is a grade between No. 1 and No. 2. It permits of a

greater amount of wane than is ordinarily allowed in No. 1 grade squares and is not so soundly boxed at either end. The Crown grade also averages higher in cubic contents than No. 1. For some purposes it is apparently well adapted—such as for use by the average dockyard, which buys its teak in squares and saws out such material as is needed—since the proportion of sapwood is greater than in the smaller squares of No. 1 grade. A difference of £5 ($24.30) to £7 ($34.02) per load of 50 cubic feet exists between the price of No. 1 grade (Europe squares) and Crown-grade squares.

Exception was taken by one mill to specifications allowing but 2 inches of taper on the whole length of the log. According to the person making the objection, the allowance is too small and throws out a fair percentage of logs that would slightly exceed the 2-inch taper, particularly in the case of the longer logs.

PRICES AND METHODS OF BANGKOK CONCERNS.

Rather than attempt to list prices quoted by Bangkok concerns, a summary of existing conditions is given:

All business in first-quality squares (No. 1 grade) done by the East Asiatic Co. (Ltd.) is conducted by the main office in Copenhagen. The concern handles about 10,000 logs a year. Mr. Christiansen gave the price of No. 1 squares (Europe quality) as c. i. f. London £20 ($97.20) to £28 ($136.08) per load of 50 cubic feet. No. 2 squares f. o. b. Bangkok were quoted as worth £12 ($58.32) and No. 3 squares £8 ($38.88) to £9 ($43.74) per load. In plank, No. 1 (Europe quality) was quoted at £32 ($155.52) per load c. i. f. London. Freight rates on teak to London were reported to have gone from 60 to 135 shillings ($14.58 to $32.81); to Hongkong, from $8 Straits ($4.54) to $14 Straits ($7.95).

All the big business, particularly in No. 1 squares, done by Louis T. Leonowens (Ltd.), is conducted through the main office in London. Half an interest in the company's teak business in Siam is held by the lumber brokerage house of Denny, Mott & Dickson, of London. It was understood at the Bangkok office that a partial bid on schedule 7551 had been made by Charles Este, of Philadelphia, Pa., who has sold some of the Leonowens stock in the United States. The Leonowens firm has held for several years the contract for teak for the British Admiralty. The concern has on the yard in Bangkok [May, 1915], available for sale, about 40 tons of AA squares, 80 tons of A squares, and 40 to 50 tons of B squares, all No. 1 stock, in addition to 100 tons of plank, 15 feet and up, and averaging 20 feet 3½ inches thick and 11 inches wide; in decking, 11 tons of No. 1 (5 by 3 inches) and 20 tons of No. 2 (5 by 2½ inches), all 16 feet and up and averaging 20 feet 6 inches in length. A ton is figured as equivalent to 42 cubic feet. Mr. Mills would not quote authoritative prices without first cabling to London. However, he approximated the value of AA squares as £25 ($121.50) c. i. f. London; A squares, £22 ($106.92); and B squares £20 ($97.20); No. 1 decking 5 by 3 inches, £28 ($136.08) c. i. f. London; and 5 by 2½ inches, £29 ($140.94). About 15,000 logs are handled annually. The capacity of the plant at Bangkok is being doubled, the sheds being up and machinery having been ordered.

For the last three years the Siam Forest Co. has sold all its logs to Louis T. Leonowens (Ltd.), and did not operate its mill at Bangkok.

The mill was overhauled and started up in April, 1915, and, it was expected, would continue in operation with a few logs until the main rafts come down in October and November. Mr. Hendricks stated that he expected to have about 350 tons in stock in three months' time [from May, 1915]. He quoted the value of No. 1 squares (Europe quality) at £22 ($106.92) per load f. o. b. Bangkok. Mr. Hendricks urged that more attention should be given by shipbuilders to the so-called Crown quality of squares—the grade between No. 1 and No. 2. He stated that a number of the larger English shipbuilding concerns had found Crown squares highly desirable for cutting-up purposes. A difference of £5 ($24.30) to £7 ($34.02) per load in favor of the Crown grade made it the more attractive. The Crown-grade logs are large and will run 60 to 70 cubic feet to the log, in contrast to the 40 to 45 cubic feet in No. 1 grade. The lower price at which these squares are offered is due, of course, to the passing on to the buyer of the uncertainty as to what the square will produce when opened up.

Owing to a shortage of logs and to other conditions the Borneo Co. (Ltd.) has not operated its teak mill at Bangkok for more than six months [this report written in May, 1915], and has only about 100 tons of stock that could be sold. Mr. Adams quoted No. 1 grade of squares as worth approximately £16 ($77.76) f. o b. Bangkok. The Borneo Co. also operates a sawmill in the Siam portion of the Malay Peninsula, but cuts no teak there. The company has made a number of sales of teak to Gibb, Livingston & Co., of Hongkong, and it is possible that part of the stock thus sold has been reshipped to the United States or to the Philippines.

Wing Seng Long & Co., a Chinese concern, probably produces the smallest amount of teak of any one of the Bangkok mills, sawing about 4,000 logs a year. Much of the stock produced by this concern is bought by the European-owned teak mills at Bangkok and sold by the purchasers as their own stock. Wing Seng Long & Co. offered to furnish No. 1 grade squares 15 by 15 inches and up, averaging 18 inches, 18 feet and up, at 250 ticals ($91.25) per load, at mill Bangkok. In decking they offered either 5 by 3 inch or 5 by 2½ inch, average length 18 feet, at 287.50 ticals ($104.94) per load for No. 1 stock, and 262.50 ticals ($95.81) per load for No. 2 grade.

It was not possible to secure any definite information in the short time at hand concerning Kim Seng Lee & Co., another Chinese concern. The best the Chinese interpreter could develop was that the concern had no stock in pile, was not operating, and even when operating sold nearly all of its stock to a neighboring ship and boat building plant. Other information was to the effect that all the output of the mill was sold to Wing Seng Long & Co., the present arrangement being that the latter concern buys all of the former's logs.

THE QUESTION OF BUSINESS COOPERATION.

To what extent the Bangkok teak producers cooperate one with another in a business way or maintain a community of interests can not be stated offhand. Bangkok is not a large place, and Europeans, particulary the heads of the larger concerns, naturally come together socially and in the clubs. Then, too, the teak people are interested as a whole in what the Siamese Government has done, is doing, or may

do in the matter of regulating the cutting of teak or in granting new or extending old concessions. It may safely be assumed that in the event of big orders being in prospect or in the case of a big buyer coming to Bangkok, all would be aware of the facts. It was said to be not unusual for one yard to call on another to furnish material needed to make up a shipment.

With reference to prices the head of one of the largest concerns spoke with evident concern of the advance in the cost of teak and the danger of forcing consumers to search more diligently for a substitute. He considers this a real danger, and intimated that it had been the subject of discussion with other teak producers.

TRANSPORTATION AND FREIGHT RATES.

The question of transportation is at the moment serious [May, 1915]. In the case of delivery of teak at Manila it would be necessary for the contractor to charter a small Swedish or Norwegian steamer, since no regular line operates between Bangkok and Manila, and irregular sailings are few and far between. Charters from Bangkok for the west and east coasts of the United States are made with difficulty. In order to have parcel shipments reach the west coast, consignments are made generally to Hongkong for transshipment. For Atlantic coast ports of the United States transshipment would probably be made at Singapore, and possibly the cargo might be shipped via European ports. So much uncertainty exists as to how far freight rates may advance and whether tonnage may be secured at all that shippers have shown hesitation in contracting for future delivery except on a basis of f. o b. point of shipment. An idea of the great advance in freight rates since hostilities began in Europe may be obtained from the citing by one millman of an old rate of $14.40 per ton to United Kingdom ports and a rate to-day of $29.40. Another mill quoted a prevailing rate to-day of $30 for squares and $26.40 for planks. Incidentally, a difference of approximately $1.20 a ton is made between deck and cargo hold space on teak shipments. The old rate from Bangkok to Hongkong on teak was $3.68, while the existing rate is $6.44.

The following excerpt with respect to shipping from Bangkok is from the Bangkok Market Report:

> There is a bar at the mouth of the river (Menam). Vessels can cross at high water drawing a depth of from 12 feet 6 inches to 14 feet 6 inches, according to the season of the year. Vessels of any depth which can not complete loading inside the bar find safe anchorage all the year round at Kohsichang, an island about 25 miles from the mouth of the river. Cargo can be brought out to them in steam or sailing lighters, with both of which the port is well supplied. There is telegraphic communication between Bangkok and Kohsichang. Aughin is no longer used as an outside anchorage.

Navigators figure 35 miles as the distance between the Borneo Co.'s dock and the bar.

STATISTICS OF EXPORTS.

The following figures show Bangkok's teak exports for the first five months of 1915 and the corresponding period of 1914. The data are taken from the Bangkok Market Report. In connection with the statistics for the 1915 period, it should be noted that the figures

for the first four months represent the actual amounts, while those for May are an approximation, the addition of these giving the numbers as they appear in the table.

Destination and periods.	Squares.	Planks.	Scantlings and boards.	Shingles.	Butt ends and log ends.	Unenumerated.	Total.
Europe, including Port Said (for orders):	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*
January–May, 1914	5,258.43	1,118.03	521.12	.....	.....	387.14	7,285.22
January–May, 1915	25.00	723.11	470.10	.....	.....	154.00	1,372.21
India and Colombo:							
January–May, 1914	9,844.34	115.00	2,518.05	17.00	25.00	131.28	12,651.17
January–May, 1915	6,466.17	315.00	2,539.42	12.00	92.02	128.23	9,553.34
Hongkong, China, and Japan:							
January–May, 1914	4,934.34	119.05	344.17	.....	261.48	10.00	5,670.04
January–May, 1915	2,607.35	57.25	106.25	.....	162.04	36.00	2,969.39
All other countries:							
January–May, 1914	142.45	291.11	162.32	70.27	96.12	98.46	862.23
January–May, 1915	109.32	239.32	69.35	88.00	30.03	177.05	714.07
Total for January–May, 1914	20,179.56	1,643.19	3,545.66	87.27	382.60	626.88	26,468.66
Total for January–May, 1915	9,207.84	1,334.68	3,185.12	100.00	284.09	495.28	14,609.01

It will be observed from the table above that the total quantity of squares (No. 1 grade, chiefly) going to Europe amounted to only 25 tons for the first five months of 1915, as compared with 5,258.43 tons for the corresponding period of 1914. A better showing is made for plank. Part of the quantity credited as going to India and Colombo also was No. 1 grade. The quality shipped to Hongkong, China, and Japan is largely low grade. The total amount shipped to all four of the classified destinations for the 1915 period was 14,609.01 tons, in comparison with shipments of 26,468.66 tons in 1914.

An examination of the Siamese Government customs returns shows no shipments of teak squares from Siam direct to the United States for the five fiscal years ended March 31, 1914, though 6 tons, valued at $153 (United States gold), went to the Philippine Islands during the fiscal year ended March 31, 1913. Some teak planks have been shipped direct—50 tons, valued at $2,738, in 1910–11, and 29.26 tons, valued at $2,543, in 1912–13. Teak scantlings amounting to 40 tons and valued at $1,971 went to the United States in 1910–11 and 22.37 tons, valued at $1,959, in 1912–13. Were it possible to trace the shipments made to Singapore and Hongkong it would be found that some of the teak consigned to these ports was transshipped for both Atlantic and Pacific coast ports of the United States. Further, London is a large market for teak, and a considerable quantity consumed in America is shipped from that point.

DISTRIBUTION BY COUNTRIES.

In order that the distribution of teak may be more easily understood, a table is appended showing the shipments of teak squares, planks, and scantlings to various countries for four fiscal years ended March 31, the quantities being given in tons and the values in United States dollars:

Exported to—	1910–11		1911–12		1912–13		1913–14	
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
TEAK SQUARES.								
Australia					7.26	$410		
Austria-Hungary	744.11	$35,172	340.44	$19,796	425.21	24,156	351.15	$19,754
Azores	932.00	51,027						
Belgium	100.19	4,397						
Ceylon	6,200.27	136,341	6,751.17	147,557	6,562.43	146,511	5,320.02	123,101
China	1,711.00	43,949	2,293.35	61,726	2,560.05	65,750	3,451.20	107,086
Cochin-China	141.31	7,465	53.24	1,581			14.47	1,233
Dalny			60.22	6,429	60.36	7,366		
Denmark	100.05	5,042	451.10	25,320	271.33	14,088	50.10	2,513
Dutch possessions	100.00	2,555						
Europe (ports unknown)	1,331.06	85,907	1,322.14	74,540			470.38	23,681
Formosa							282.00	7,205
France	2,699.18	154,568	2,665.42	163,179	1,849.47	110,815	1,930.11	96,640
Germany	627.34	20,002	200.00	10,950	200.11	10,813		
Hongkong	7,665.17	185,850	5,475.14	134,050	8,667.03	227,426	5,824.06	186,824
India	28,343.47	588,542	26,605.12	588,436	17,367.00	397,097	13,980.16	404,536
Italy	1,077.27	38,918	1,095.02	58,228	106.28	8,568	1,221.37	73,766
Japan	2,787.21	95,928	3,810.30	116,139	1,331.32	46,437	1,378.24	47,393
Netherlands India					14.04	636		
Penang					.35	54		
Philippine Islands					6.00	153		
Port Said			406.41	24,360	752.07	44,706	220.19	15,788
Singapore	268.44	8,353	458.02	14,599	566.16	21,762	508.03	25,177
Tonquin			60.00	1,533				
United Kingdom	6,576.17	386,785	2,526.35	134,317	4,900.30	344,292	4,371.49	304,458
Total	61,404.24	1,850,801	54,573.44	1,582,740	45,646.77	1,471,040	39,372.97	1,439,155
TEAK PLANKS.								
Australia			16.33	1,232	1.00	77		
Austria-Hungary	116.05	8,582					8.24	627
Azores	75.00	4,106						
Belgium							25.00	1,350
Canada	5.09	328	23.20	1,499	18.18	1,786	11.21	939
Ceylon					59.22	2,012		
China	102.42	7,914	11.25	168	10.00	637		
Cochin-China	53.25	2,288	26.28	1,286	34.02	1,780	39.00	1,489
Denmark	508.44	29,903	447.18	26,468	478.04	36,857	142.31	6,478
Europe (ports unknown)	685.16	47,560	658.20	43,398	21.39	1,801		
France	960.48	51,585	620.00	33,581	449.42	25,674	135.01	7,382
Germany	440.37	32,673	164.16	11,523	168.39	11,651	100.20	7,834
Hongkong	178.33	2,998	184.16	2,541	340.36	9,901	143.01	6,034
India	252.16	7,579	354.15	10,546	295.49	7,458	200.00	4,380
Italy	680.23	39,242	733.22	40,622	262.05	16,754	433.41	27,554
Japan	62.34	3,569	95.14	6,200	36.48	2,954	115.24	3,584
Norway					25.02	1,483		
Penang	2.46	182			31.10	2,141		
Port Said			21.08	1,013	50.07	3,548		
Singapore	656.33	31,805	542.49	30,080	676.06	34,598	641.18	42,482
South Africa	127.29	7,036			45.23	2,563	21.05	1,333
United Kingdom	2,524.35	155,609	1,413.21	87,365	1,373.31	101,587	849.15	64,839
United States	50.00	2,738			29.96	2,543		
Total	7,479.75	435,697	5,310.05	297,522	4,404.09	267,805	2,864.01	176,305
TEAK SCANTLINGS.								
Australia	25.00	1,232						
Austria-Hungary					25.00	1,232		
Canada					2.10	184	18.46	1,556
Ceylon	598.32	15,680	362.41	8,438	531.12	11,721	309.07	8,043
China	7.00	57	8.00	49				
Cochin-China	47.00	1,354	41.12	1,567	22.00	948		
Denmark	197.07	8,611	222.41	9,292	415.30	18,500	339.07	15,412
Europe (ports unknown)	45.29	2,360	268.40	11,199	12.00	591		
France	35.01	1,036			15.08	720	5.03	269
Germany	116.15	4,838	65.45	3,541	134.21	7,259	25.00	1,232
Hongkong	916.06	12,707	455.00	4,065	549.07	10,385	551.44	16,275
India	13,529.21	297,468	9,971.01	222,624	5,788.43	136,232	4,604.10	117,799
Italy	15.02	573						
Penang			5.00	109				
Singapore	426.48	13,342	254.20	9,904	449.40	21,051	538.46	31,947
South Africa	23.07	1,071						
United Kingdom	1,329.09	60,631	1,022.43	48,109	663.01	34,552	395.17	19,936
United States	40.00	1,971			22.37	1,959		
Total	17,349.77	422,931	12,675.43	318,897	8,629.09	245,334	6,785.80	212,469

The table below shows the percentage of the three classes of teak exported to the various countries and the average value per ton for the fiscal year ended March 31, 1914. Attention is directed particularly to the variation in values, not only as between the classes of timber but between the several consuming countries as well.

Exported to—	Teak squares.		Teak planks.		Teak scantlings.	
	Percentage of shipments.	Average price per ton.	Percentage of shipments.	Average price per ton.	Percentage of shipments.	Average price per ton.
Austria-Hungary	0.89	$56.25	0.29	$76.09	.....	.....
Belgium	.....	.....	.87	54.00	.....	.....
Canada	.....	.....	.39	83.76	0.27	$84.29
Ceylon	13.51	23.13	.....	.....	4.56	26.02
China	8.77	31.02	.....	.....	.....	.....
Cochin-China	.03	85.21	1.37	38.18	.....	.....
Denmark	.13	50.15	4.97	45.52	5.00	45.45
Europe (ports unknown)	1.20	50.34	.....	.....	.....	.....
Formosa	.72	25.55	.....	.....	.....	.....
France	4.90	50.06	4.72	54.67	.07	53.47
Germany	.....	.....	3.50	78.18	.37	49.28
Hongkong	14.80	32.07	5.00	42.19	8.13	29.51
India	35.51	28.93	6.98	21.40	67.84	25.58
Italy	3.10	60.39	15.13	63.57	.....	.....
Japan	3.50	34.38	4.03	31.10	.....	.....
Port Said	.55	71.70	.....	.....	.....	.....
Singapore	1.29	49.55	22.38	66.25	7.94	59.33
South Africa	.....	.....	.74	63.32	.....	.....
United Kingdom	11.10	69.06	29.63	76.35	5.82	50.44
Average price of total exports	.....	36.55	.....	61.56	.....	31.31

Since the United Kingdom is such a large purchaser of teak, it may be of interest to give, for the last five calendar years, its total imports from foreign and colonial sources, together with its reexports of this wood. The figures are: 1910—imports, $4,647,346 (United States currency); reexports, $559,891; 1911—imports, $4,046,081; reexports, $530,648; 1912—imports, $4,168,879; reexports, $446,780; 1913—imports, $4,273,174; reexports, $431,374; 1914—imports, $3,706,984; reexports, $466,142.

INDO-CHINA.

OPERATIONS OF FRENCH COMPANY.

Perhaps the best way of reviewing the condition of the teak market in Indo-China is to summarize an interview with Mr. Amadee Champanhet, agent of the French East Asiatic Co., at Saigon. The company, with headquarters at 3 Rue Vignon, Paris, France, has rubber, timber, and other interests in the Far East, and the teak business handled from Saigon is only one of these interests.

According to Mr. Champanhet the company gets its timber in northern Siam from concessions leased by the company from that country. From the same general region comes the teak that finds its way to Bangkok. This situation would therefore result in the same quality of logs being found in both Saigon and Bangkok. Reference to a detailed map of the Laos country in Indo-China and of northern Siam will show a natural drainage of streams that would of necessity cause some timber cut in the Laos country to go to Siam and some of the timber cut in Siam to go into Indo-China.

THE DRIVE DOWN THE MEKONG RIVER.

The French company has its own woods crews, as well as river driving crews and additional coolies at points along the river where needed to assist in getting the logs through the rapids. Cutting of timber is done before the rainy season begins in June. The logs are put into the Mekong River or its tributaries in July at the beginning of high water, and it takes about four months—from July to October—for the logs to reach the mill plant near Saigon. In the early stages of the river trip the logs are made up into rafts with bamboo, in order that the heavy teak may have the added buoyancy of the bamboo and thus be got more quickly through shallow water and the smaller rapids. At one stage of the drive the logs must be broken up out of the rafts and sent through dangerous rapids in a narrow gorge. The rapids must be driven during the highest water, which covers a period of two months. About 4,000 logs a year are thus brought to Saigon.

Indo-China teak weighs approximately 1,000 kilos per 50 cubic feet (1 cubic foot = 44 pounds avoirdupois), or roughly, 3,600 pounds per thousand feet board measure.

The mill of the French East Asiatic Co. is located about 2 miles from the city of Saigon. It is a well-equipped plant, having one horizontal band capable of taking a log 75 inches in diameter, and two circulars, with several cut-off saws. The logs are handled from the pond and in the mill by an overhead crane. Considerable shed space is available for storage.

GRADES AND PRICES.

Four grades are recognized. No. 1 wood contains practically no defects. No. 2 admits of slight defects such as worm and bee holes, slight rot, and knots. No. 3 grade increases the number of defects allowed in No. 2 grade. No. 4 grade consists chiefly of culls. So far as it was possible to ascertain, no universal rules are followed for grading of teak. Logs will run about 25 per cent No. 1, 30 per cent No. 2, and Nos. 3 and 4 will, combined, make up the additional 45 per cent.

The price of teak in Saigon in May, 1915, was given as $110 gold for 50 cubic feet of No. 1; $55 to $65 gold for No. 2; $45 to $50 gold for No. 3; and about $35 gold for No. 4. These prices are from 5 to 10 per cent higher than existed prior to the outbreak of the European war. Figured on a basis of cost per thousand feet board measure, No. 1 teak would be worth approximately $183 per thousand feet; No. 2, $92 to $106 per thousand feet; No. 3, $75 to $83 per thousand feet; No. 4, $58 per thousand feet.

No No. 1 grade of teak is ever shipped to the United States, according to the informant. In 1914 this one company did, however, ship to the United States teak valued at about $15,000 gold. Much of the trade in the past has been handled by a German concern, with numerous branches throughout China.

In August, 1914, the French Government interdicted the exportation of teak from Indo-China except to France, the mother country. This prohibitory order was subsequently modified so as to permit of shipments to Great Britain or the latter's colonies. Apparently there would be nothing to hinder the consignment of teak to either Singapore or Hongkong.

The average length of teak shipped from Saigon is from 6 to 7 meters (18 to 21 feet), though lengths up to 40 feet are obtainable. They will run 12 inches square and up; the average squared teak timber, such as is exported, will average 40 to 42 cubic feet.

About all of the teak shipped from Saigon goes as deck cargo, and the lengths of the timbers are often regulated by the available deck space of the steamers.

The French East Asiatic Co. has in stock at its plant near Saigon about 700 tons of teak. This is unquestionably the biggest stock of teak in Indo-China. It developed that this concern would not contract for all of its No. 1 teak, nor for all of the teak in stock. The agent took the ground that he was uncertain what contracts, actual or prospective, the Paris office might have.

The prices quoted in the foregoing paragraphs were substantially the same as those given by Mr. Gustave Pierret, in charge of a sawmill at Pnom-Penh. Only a small portion of the output of the latter mill is teak. Mr. Pierret stated that by reason of an agreement with the French East Asiatic Co. he sold no teak for export. It was inferred from his statements that all the teak cut in the Pnom-Penh mill that was not sold for local consumption was bought by the Saigon company.

A number of Chinese are engaged in sawing lumber by hand throughout Indo-China. No estimate can be made of the product of these yards, but even in the aggregate the amount can not be large. A steam sawmill is operated at Bienhoa, about 20 miles from Saigon, but the output is limited. Information available would indicate that the mill does not figure in the export of teak.

EXPORTS FROM SAIGON.

Consul Lawrence P. Briggs furnished the following figures showing the export of teak from Saigon and the countries to which it was consigned during 1913: Round logs—France, 130,034 feet b. m.; Hongkong, 386,447 feet b. m.; Singapore, 13,636 feet b. m.; British India, 59,826 feet b. m.; Europe (except France), 38,957 feet b. m.; total, 628,900 feet b. m.; sawed lumber (less than 1.38 inches in thickness)—British India, 7,632 feet b. m.; grand total, 636,532 feet b. m.

Since teak is shipped from no port in Indo-China other than Saigon, it is seen that the total annual exports for 1913 amounted to but 1,501,254 cubic meters (1 cubic meter = 424 feet b. m.), or 636,532 feet b. m.

The amounts credited as being exported to Hongkong were unquestionably largely reexported from Hongkong to the United States and to European countries, since Hongkong and tributary territory would not consume that amount of teak in a year. The same conclusion may be drawn as to the quantity shipped from Saigon to Singapore.

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