

BIRCH VENEER & PLYWOOD DEMAND: PROJECTED NEEDS OF THE INDUSTRY

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INTRODUCTION

PRODUCTION OF HARDWOOD plywood in the United States has increased steadily from 1955 to 1967 — almost doubling during this period (table 1). The peak year for shipments of hardwood plywood was 1965, for all species (1,668,313,000 square feet surface measure) and also for birch (600,723,000 square feet surface measure). The U.S. Bureau of Census figures are not available yet for 1968; however, they should be as high as those for 1965.

In the total shipment of veneer core, birch made up from 28 percent (1961) to 38 percent (1967). In the total shipment of plywood board core, birch made up from 17 percent (1968) to 29 percent (1965).

Before 1960 Canada was the largest exporter of birch plywood to the United States. Now Japan is the largest exporter (table 2). Since 1963 Finland has shipped more birch

plywood to the United States than Canada has. Korea and the Philippines tried exporting birch plywood in 1967, but evidently they found it unprofitable compared to the exporting of lauan plywood; and in 1968 they cut down their shipments to a small amount.

Of the 16 countries that exported birch plywood to the United States during the period 1962 to 1968, the country that will bear watching in the future is the Union of Soviet Socialist Republics. Even though the U.S.S.R. pays a much higher advalorem duty on its plywood, it can still undersell other countries. Customers have said that the sanding of Russian birch plywood is not up to the quality of Finnish birch plywood. Russia has the raw material and could be a formidable exporter of birch veneer and plywood in the future.

In 1962-68 (table 2), total U.S. imports of birch plywood from all countries have increased from 161,445,140 square feet sur-

Table 1.—Hardwood plywood shipments, 1955-67
(In thousands of square feet surface measure)

Year	Veneer core		Year	Board core*	
	Total, all species	Birch		Total, all species	Birch
1955	813,480	244,896	1955	68,693	16,111
1956	820,285	254,547	1956	66,355	13,785
1957	735,174	243,285	1957	59,124	12,066
1958	752,982	256,475	1958	50,590	12,610
1959	915,404	311,051	1959	61,313	11,669
1960	791,995	277,766	1960	58,272	10,906
1961	1,048,437	299,073	1961	50,840	12,799
1962	1,156,121	392,480	1962	58,719	12,152
1963	1,353,524	485,417	1963	60,736	12,613
1964*	1,442,229	516,716	1964	73,088	15,917
1965*	1,568,835	571,768	1965	99,478	28,955
1966*	1,523,529	566,972	1966	104,856	23,058
1967*	1,441,581	547,475	1967	83,340	14,462

* Includes lumber core, particle-board core, hardboard core, etc.

Table 2.—United States imports of hardwood plywood, by country of origin, 1962-68

Year	Total hardwood plywood (square feet surface measure)	Value	Birch plywood (square feet surface measure)	Value
FROM CANADA				
1962	56,565,774	\$ 5,708,563	54,368,700	\$ 5,502,572
1963	71,503,450	7,200,935	67,635,421	6,798,888
1964	67,375,000	6,966,849	65,661,000	6,752,109
1965	62,640,152	6,488,102	61,263,138	6,315,836
1966	61,585,000	6,426,840	58,003,000	5,937,926
1967	46,199,000	4,758,751	43,057,000	4,430,123
1968	51,169,000	5,331,597	47,356,000	4,950,555
FROM FINLAND				
1962	63,846,071	\$ 5,974,977	63,844,495	\$ 5,974,714
1963	76,576,766	7,337,320	77,531,953	7,330,411
1964	92,435,000	8,866,581	92,435,000	8,860,885
1965	103,490,534	10,103,151	103,480,934	10,099,656
1966	133,595,595	13,309,355	133,593,592	13,308,388
1967	104,721,000	11,201,626	104,721,000	11,201,626
1968	134,437,000	13,974,897	134,410,000	13,967,738
FROM FRANCE				
1962	4,446,097	\$ 413,660	12,000	\$ 1,218
1963	2,136,960	245,106	—	—
1964	2,385,000	311,739	—	—
1965	2,200,607	326,116	—	—
1966	1,804,000	245,459	—	—
1967	1,884,000	248,551	—	—
1968	1,027,000	154,704	—	—
FROM WEST GERMANY				
1962	1,756,864	\$ 290,347	—	\$ —
1963	732,903	150,632	—	—
1964	725,000	126,967	—	—
1965	434,007	166,639	28,886	2,750
1966	269,000	91,751	—	—
1967	162,000	67,906	—	—
1968	696,000	96,849	—	—
FROM JAPAN				
1962	740,103,236	\$53,731,611	43,149,848	\$ 6,880,289
1963	739,941,879	55,610,169	51,183,464	7,885,666
1964	680,986,000	50,905,470	68,847,000	9,316,488
1965	768,316,182	50,419,815	105,411,598	12,655,889
1966	765,922,000	54,856,470	119,332,000	14,511,327
1967	632,083,000	47,689,008	143,760,000	15,602,807
1968	920,714,000	71,918,638	173,077,000	20,085,483
FROM SOUTH KOREA				
1962	51,427,767	\$ 2,588,458	—	\$ —
1963	120,513,110	5,592,152	—	—
1964	205,245,000	9,414,392	—	—
1965	336,735,786	14,652,977	—	—
1966	573,626,000	25,232,188	—	—
1967	701,967,000	30,140,133	3,140,000	120,739
1968	1,167,156,000	53,438,959	101,000	9,091

CONTINUED

Table 2—continued

Year	Total hard- wood plywood (square feet surface measure)	Value	Birch plywood (square feet surface measure)	Value
FROM NANSEI & NANPO ISLANDS				
1962	45,193,347	\$ 2,098,984	—	\$ —
1963	37,420,944	1,503,668	30,912	2,894
1964	34,086,000	1,394,560	64,000	8,192
1965	42,864,682	1,768,844	—	—
1966	35,929,000	1,513,685	—	—
1967	25,858,000	994,502	—	—
1968	32,643,000	1,295,168	—	—
FROM POLAND				
1962	—	\$ —	—	\$ —
1963	—	—	—	—
1964	193,000	13,336	193,000	13,336
1965	—	—	—	—
1966	—	—	—	—
1967	—	—	—	—
1968	134,000	8,839	134,000	8,839
FROM THE PHILIPPINES				
1962	214,442,465	\$14,538,308	—	\$ —
1963	246,717,081	15,419,115	—	—
1964	355,691,000	21,566,510	—	—
1965	307,759,563	18,055,850	—	—
1966	398,004,000	22,362,017	29,000	3,349
1967	471,425,000	23,733,078	1,046,000	107,329
1968	602,244,000	29,879,187	154,000	15,551
FROM PORTUGAL				
1962	618,400	\$ 54,966	—	\$ —
1963	711,798	57,089	6,400	525
1964	1,057,000	91,298	—	—
1965	527,296	44,962	—	—
1966	64,000	5,579	—	—
1967	—	—	—	—
1968	—	—	—	—
FROM SURINAM				
1962	13,444,411	\$ 1,128,370	—	\$ —
1963	16,268,141	1,475,012	—	—
1964	10,340,000	1,038,627	—	—
1965	8,176,774	870,381	—	—
1966	6,846,000	737,676	—	—
1967	6,252,000	691,851	16,000	1,521
1968	5,993,000	678,812	123,000	9,779
FROM SWEDEN				
1962	6,720	\$ 1,125	6,720	\$ 1,125
1963	—	—	—	—
1964	304,000	21,413	83,000	9,392
1965	—	—	—	—
1966	276,000	33,814	276,000	33,814
1967	—	—	—	—
1968	60,000	9,572	60,000	9,572

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Table 2—continued

Year	Total hard- wood plywood (square feet surface measure)	Value	Birch plywood (square feet surface measure)	Value
FROM SWITZERLAND				
1962	62,777	\$ 6,373	62,777	\$ 6,373
1963	42,862	3,583	—	—
1964	—	—	—	—
1965	—	—	—	—
1966	—	—	—	—
1967	—	—	—	—
1968	—	—	—	—
FROM TAIWAN				
1962	212,504,529	\$10,119,135	—	\$ —
1963	273,028,050	10,908,233	—	—
1964	461,352,000	19,269,196	—	—
1965	468,602,587	18,983,287	—	—
1966	528,336,000	21,747,451	352,000	13,098
1967	485,432,000	19,449,506	84,000	4,320
1968	829,621,000	34,306,368	35,000	4,569
FROM UNITED KINGDOM				
1962	646,556	\$ 56,932	600	\$ 225
1963	226,245	54,814	—	—
1964	219,000	52,394	1,000	204
1965	182,183	47,854	600	196
1966	178,000	52,426	—	—
1967	132,000	41,106	7,000	362
1968	259,000	100,846	1,000	306
FROM U.S.S.R.				
1962	—	\$ —	—	\$ —
1963	5,922	793	5,922	793
1964	—	—	—	—
1965	4,310	420	4,310	420
1966	—	—	—	—
1967	367,000	23,732	367,000	23,732
1968	2,833,000	166,969	2,833,000	166,969

face measure in 1962, valued at \$18,336,516, to 358,600,000 square feet in 1968, valued at \$39,228,452.

U.S. hardwood plywood consumption in 1967 (domestic shipments plus imports less exports) was 4,128,243,000 square feet surface measure. In 1957 apparent U.S. consumption was 1,632,000,000 square feet. Projected growth in construction, furniture, and other markets suggests further substantial increases in future use of hardwood plywood. Per-capita consumption of hardwood plywood has increased from 10 square feet in 1951 to 31 square feet in 1968.

In addition to hardwood plywood, the United States annually imports a fairly large quantity of hardwood veneer (table 3). In 1964 nearly 800 million square feet of hardwood veneer were imported, mostly from Canada. And in 1968 the import of hardwood veneer had risen to over 1 billion square feet. These imports were mostly from Canada, but Singapore captured nearly 20 percent of the trade—whereas in 1964 Singapore exported little or no hardwood veneer to the United States. The total value of hardwood veneer imported in 1968 was estimated at over \$24,000,000.

The U.S. Forest Service stated in their publication *The Demand and Price Situation for Forest Products 1967* that, "In view of continuing declines in the size and quality of domestic timber suitable for the manufacturer of hardwood plywood and veneer, nearly all of the additional demand for hardwood plywood may be supplied by imports."

The Battelle Memorial Institute made a 9-month study of the plywood industry for the Iowa Development Commission in 1967. Battelle estimates hardwood plywood production for 1970 at 3,280,000,000 square feet, and for 1975 at 4,832,000,000 square feet. With 1967 market shipments at 1,663,129,000 square feet, the United States' industry faces a real challenge to meet Battelle's 1970 estimate.

Domestic manufactured birch plywood is cheaper today than it was 19 years ago (table

4). The United States producer has had to lower prices to meet import competition, yet his cost of logs, labor, and machinery continue to go up.

BIRCH MARKETS

Door Manufacturers

Birch flush doors have been a popular product in the United States. There are approximately 125 flush-door manufacturers in the United States. Each flush door uses two doorskins of 1/8-inch plywood. Interior doors are usually 2 feet 8 inches wide x 6 feet 8 inches and have hollow cores. Exterior doors are usually 3 feet 0 inches x 7 feet 0 inches and have solid cores. About 30 hardwood plywood manufacturers in the United States and four in Canada manufacture doorskins. The production of flush doors with hardwood

Table 3.—United States imports of hardwood veneer, by country of origin, 1964-68

Year	Total hardwood veneer (square feet surface measure)	Value	Birch veneer (square feet surface measure)	Value
FROM CANADA				
1964	781,682,310	\$25,050,957	732,617,286	\$23,636,773
1965	852,171,174	26,308,453	792,154,865	24,611,629
1966	792,846,000	26,093,908	746,177,000	19,260,000
1967	775,157,000	24,585,145	728,897,000	23,048,766
1968	837,476,000	25,586,064	792,995,000	24,072,904
FROM DENMARK				
1964	—	—	—	—
1965	—	—	—	—
1966	467,000	\$ 33,258	4,000	\$ 2,191
1967	—	—	—	—
1968	—	—	—	—
FROM FINLAND				
1964	415,320	\$ 14,084	415,320	\$ 14,084
1965	—	—	—	—
1966	—	—	—	—
1967	806,000	29,743	634,000	23,169
1968	576,000	24,285	576,000	24,285
FROM WEST GERMANY				
1964	16,539,473	\$ 723,916	90,090	\$ 5,288
1965	—	—	—	—
1966	—	—	—	—
1967	—	—	—	—
1968	—	—	—	—

CONTINUED

Table 3—continued

Year	Total hard- wood veneer (square feet surface measure)	Value	Birch veneer (square feet surface measure)	Value
FROM INDONESIA				
1964	—	\$ —	—	\$ —
1965	—	—	—	—
1966	—	—	—	—
1967	2,913,000	27,677	2,913,000	\$ 27,677
1968	—	—	—	—
FROM ITALY				
1964	—	\$ —	—	\$ —
1965	—	—	—	—
1966	2,828,000	103,570	8,000	834
1967	—	—	—	—
1968	—	—	—	—
FROM JAPAN				
1964	—	\$ —	—	\$ —
1965	—	—	—	—
1966	3,074,000	117,606	6,000	3,533
1967	3,271,000	179,822	623,000	31,962
1968	—	—	—	—
FROM MEXICO				
1964	—	\$ —	—	\$ —
1965	—	—	—	—
1966	—	—	—	—
1967	—	—	—	—
1968	1,484,000	19,848	1,438,000	19,283
FROM THE PHILIPPINES				
1964	—	\$ —	—	\$ —
1965	—	—	—	—
1966	522,727,000	10,606,872	540,000	6,050
1967	—	—	—	—
1968	—	—	—	—
FROM SINGAPORE				
1964	—	\$ —	—	\$ —
1965	—	—	—	—
1966	—	—	—	—
1967	—	—	—	—
1968	192,394,000	2,732,003	2,032,000	22,400
FROM SWEDEN				
1964	158,887	\$ 16,240	27,070	\$ 2,357
1965	—	—	—	—
1966	—	—	—	—
1967	—	—	—	—
1968	—	—	—	—
FROM UNITED KINGDOM				
1964	—	\$ —	—	\$ —
1965	—	—	—	—
1966	2,177,000	194,344	294,000	7,354
1967	—	—	—	—
1968	—	—	—	—

faces in the United States for the years 1958 and 1963 was as follows:

<i>Hollow core</i>		
<i>Year</i>	<i>Quantity</i>	<i>Value</i>
1958	14,904,000 ¹	\$ 90,547,000
1963	19,862,000	\$106,560,000

<i>Solid core</i>		
<i>Year</i>	<i>Quantity</i>	<i>Value</i>
1958	1,385,000	\$ 25,984,000
1963	2,350,000	\$ 39,633,000

Source: 1963 Census of Manufacturers—Lumber and Wood Products Major Group 24.

The importation of birch doorskins from Canada has not constituted any threat to the domestic producers of birch doorskins, and presumably will not in the future, any more so than other competing domestic producers.

This is due partially to the fact that Canadian wage rates are near enough to U.S. wage rates that Canadian manufacturers do not have any substantial price advantage over the U.S. manufacturers. The Hardwood Plywood Manufacturers Association (HPMA) has always cooperated with the Canadian Hardwood Plywood Association in its campaigns to promote the sale of birch veneer and plywood in the United States.

Importation of lauan doorskins is a different matter. After the General Agreement on Tariffs and Trade (GATT) negotiations of 1950, imports of hardwood plywood into the United States swelled from 66,761,000 square feet (approximately 8 percent of the domestic market) in 1951 to 3,838,134,000 square feet (more than 50 percent of the domestic market) in 1968. In the early 1950's the predominant doorskin used in the United States

Table 4.—Wholesale price index for plywood.
(1957-58 = 100)

Year	Hardwood plywood	Birch plywood*	Gum plywood**
1947	96.7	86.5	102.8
1948	100.9	90.3	107.5
1949	88.7	89.0	88.3
1950	96.7	96.4	96.7
1951	105.8	103.9	106.6
1952	96.6	102.0	92.9
1953	103.4	107.6	100.5
1954	95.7	101.9	91.5
1955	97.9	103.5	94.1
1956	99.9	103.6	97.4
1957	99.0	99.8	98.4
1958	99.7	100.0	99.6
1959	101.4	100.3	102.1
1960	102.8	101.2	103.8
1961	101.4	98.9	104.4
1962	97.8	94.7	103.8
1963	97.3	93.2	104.0
1964	98.5	94.4	104.9
1965	98.2	94.1	104.9
1966	99.0	95.0	105.8
1967	97.7	92.7	107.8
1968	98.1	93.3	108.5

Source: United States Department of Labor, Bureau of Labor Statistics.

* Birch 1/4-inch standard panel (specifications as below).
 ** Gum 1/4-inch standard panel grade 1-3 or 1-4, type II glue, 3-ply, 48 x 96 inches, car lots, manufacturer to wholesaler or dealer, f.o.b. factory, per M square foot.

was gum. Lauan doorskins shattered domestic production of gum doorskins.

We believe that 40 to 50 percent of the birch plywood imported in 1963-68 was doorskins. Finnish birch doorskins did not go over in the United States, probably because the grain ran the width of the door rather than the length.

The National Woodwork Manufacturers Association (NWMA) made a survey in 1968 of their members who manufacture birch doors. Seventeen manufacturers responded with total annual volume: 1967—1,508,712; 1968—1,707,713 (+ 13.2-percent increase). NWMA asked the 17 manufacturers if they expected to produce more birch doors in 1969. Here is the breakdown of replies:

YES: 10 firms (average 1968 production 82,000, or 48 percent of total 1968 production).

NO: 2 firms (average 1968 production 266,000, or 31 percent of total 1968 production).

NO ANSWER: 5 firms (average 1968 production 70,000, or 21 percent of total production).

Other than this relation between size and optimism, the survey disclosed another bit of insight. In total volume of production, solid-core doors held about the same place in 1968 as in 1967, (less than 1 percent change).

The aggregate +13 percent gain in 1968 was accounted for entirely by hollow-core doors. Hollow-core doors posted a 24-percent increase in volume for 1968 over the preceding year. Also, hollow-core doors gained a 5-percent greater share of total production in 1968.

The firms covered by this survey do not constitute a valid statistical sample. However, the results are an interesting barometer of recent trends.

Although 101,000 more housing starts took place in the United States in 1963 than in 1968, the number of flush doors used in 1968 was probably as great as in 1963 because there is a trend to use more doors in a home or apartment (table 5). The average number of doors in a typical house 5 years ago was 11; today there are about 25.

Five years ago, closets had one door, now many have four (bi-fold) doors.

Our Federal Government has proposed that we build 2 million homes a year for the next ten years. If mortgage funds are made available and we build 500,000 more homes each year than we did in 1968, this will create a tremendous expansion of the market for wall paneling, flush doors, kitchen cabinets, furniture, etc.

Cabinet Manufacturers

The 1968 edition of *Builder's Kitchen Guide* lists 163 manufacturers of wooden cabinets (and vanities). In the early 1950's probably 70 percent of the wooden cabinets were jerry-built on the site. Shoddy construction gave the market to metal cabinets.

Toward the end of 1950, wood recaptured the major share of the cabinet market with factory-built and factory-finished cabinets designed in furniture style concepts. Birch is probably the most popular hardwood plywood species used for kitchen cabinets.

Birch plywood's big competitors today in the cabinet field are wood-grained plastics.

Probably 70 percent of the wooden cabinets sold go into new homes, and the other 30 percent for remodeling.

In 1966, the National Kitchen Cabinet Association indicated that approximately 20 percent of the sales dollar of a cabinet manufacturer went into hardwood plywoods. This same survey estimated that 3 million kitchens would be sold in the United States in 1966 at a conservative average manufacturer's selling price of \$250 per kitchen, or sales of \$750,000,000. Using the figure of 20 percent of the sales dollar as the overall share of hardwood plywood costs, we have a potential

Table 5.—Housing starts in the United States, 1963-68

Year	Single-family construction	Multi-family construction
1963	1,020,700	589,600
1964	971,500	557,800
1965	963,800	509,100
1966	778,500	386,500
1967	843,900	447,500
1968	899,400	609,900

Sources: U.S. Bureau of Census NAHB.

volume of \$150,000,000 to be spent with plywood manufacturers.

Increasing amounts of Finnish birch plywood are being used in the cabinet industry, primarily because of price. Finnish birch has a uniform light color and has more plies than U.S.-manufactured birch. A 3/16-inch Finnish panel is of 4-ply construction; a 1/4-inch panel manufactured in the United States is usually of 3-ply construction. A 1/2-inch Finnish panel is 9-ply; a 1/2-inch U.S. panel is 5-ply. Some risks are involved in using the Finnish birch—in deliveries, dock strikes, and poor communications. The importers have eased the danger of delayed shipments by warehousing sizable inventories of plywood in the States, cut to size, and graded for their customers.

Mobile Home Manufacturers

Birch plywood is used in mobile homes for wall paneling, kitchen cabinets, and flush doors. The new models become more luxurious each year, and hardwood plywood adds to the luxury look. The outlook for continued expansion of the mobile home and travel trailer industry and for increased use of this mode of housing throughout the United States is excellent.

The U.S. Department of Housing and Urban Development (HUD) reports mobile homes sales up from 235,000 in 1967 to 330,000 in 1968. The Mobile Home Manufacturers Association (MHMA) estimates 1972 production around 400,000. Mobile homes are 10 to 12 feet wide and 29 to 59 feet long.

A U.S. Forest Service study in 1966 estimated cost of finished plywood paneling and cabinets at 23 to 25¢ a square foot, totalling \$78,800,000 (translating this mobile home material into dollars). Information gathered from 9 major mobile home manufacturers (31 separate plants) revealed that the use of native hardwood plywood—mostly birch, oak, ash, and elm—averaged 440 square feet for each home. Imported plywood, mostly lauan, averaged 400 square feet. In 1968, MHMA reported that approximately 2,116 square feet of hardwood plywood are used in the average 12- x 60-foot unit.

The three large potential markets for mobile homes are: (1) for vacation, second home, and rural homes; (2) for mobile home development comparable to permanent home development; and (3) for adaptation of

mobile homes to low-rise sectionalized construction (especially in urban rehabilitation).

The U.S. Department of Commerce estimates that the value of mobile home manufacturer's shipments in 1969 will increase 19 percent over 1968. The estimates forecast that mobile homes will provide 80 percent of the new single-family housing made available in 1969 at prices up to \$15,000 per unit. The average cost of a mobile home, furnished, is just at \$8.70 per square foot, compared with \$18.50 for a furnished house built in the conventional manner, land cost excluded.

Home Builders

Birch plywood is used primarily by the home builder for paneling, kitchen cabinets, and flush doors. The greatest use of hardwood plywood in residential construction is in paneling of dens or recreation rooms. Paneling is a popular product for do-it-yourselfers because of the simplicity of installation, and is used in many kitchen-remodeling, add-a-room, and basement-remodeling projects.

The U.S. Census reported that total prefinished, printed, embossed, and vinyl-laminated hardwood plywood in 1967 was 1,481,048,000 square feet surface measure. Lauan is the species most frequently prefinished. Birch is second: over 225,000,000 square feet surface measure were prefinished in 1967.

Furniture and Fixtures

Wholesale sales of household furniture have increased in the past decade from \$2.5 billion in 1958 to an estimated \$4.3 billion at the end of 1968. According to Charles O. Gordon, president of the Southern Furniture Manufacturers Association, furniture sales will double by 1982.

Some of the uses of birch plywood in furniture and fixtures are indicated in table 6.

It is difficult to estimate the amount of birch plywood going into the furniture industry because there is a large captive production of hardwood plywood within the industry. This captive production is not included in the Bureau of Census annual report on hardwood plywood shipments.

CONCLUSIONS

Thomas C. Mason, Director of the Forest Products Division of BDSA, U.S. Department of Commerce, stated at an HPMa meeting

Table 6.—Birch plywood used in selected manufacturing industries, 1965
(In thousand square feet, $\frac{3}{8}$ " basis)

Industry	Native birch plywood	Plywood from imported birch
Total ¹	179,530	25,314*
<i>Lumber and Wood Products, Except Furniture:</i>		
Hardwood dimensions	470**	—
Millwork plants	56,485	3,721**
Veneer and plywood plants	1,837**	726**
Prefabricated wooden buildings and structural members	637*	—
Nailed and lock-corner wooden boxes and shooks	429**	(²)
Other wood products	521*	(²)
<i>Furniture and Fixtures:</i>		
Wood household furniture, except upholstered	62,309	15,577**
Wood household furniture, upholstered	828*	183
Metal household furniture	2,968**	715**
Mattresses and bedsprings; other household furniture	68**	—
Wood office furniture	223**	300
Metal office furniture	1,564*	—
Public building and related furniture	4,217*	126**
Wood partitions, shelving, lockers; office and store fixtures	16,677	1,870**
Metal partitions, shelving, lockers; office and store fixtures	797**	—
Other furniture and fixtures	948*	141**
<i>Leather and Leather Products:</i>		
Luggage	295*	(²)
<i>Transportation Equipment:</i>		
Motor vehicles and motor vehicle equipment	(²)	—
Trailer coaches, housing type	18,794	163**
<i>Machinery, Except Electrical:</i>		
Mechanical power transmission equipment, except ball and roller bearings	—	1,133**
<i>Miscellaneous Manufacturing Industries:</i>		
Musical instruments and parts	495**	—
Games and toys, except dolls and children's vehicles	1,232**	447**
Sporting and athletic goods	(²)	—
Signs and advertising displays	6,741**	143**
<i>All Other Selected Industries</i>	921*	(²)

* Standard error of estimate between 16 and 30 percent. Unmarked figures have a standard error of estimate of 15 percent or less.

** Standard error of estimate of over 30 percent.

¹ Figures may not add exactly to the totals because quantities less than 50,000 square feet have been omitted.

² Less than 50,000 square feet.

Source: Preliminary Summary Tables—Wood Used By Manufacturers Industries, 1965. T. G. Gill, U.S. Forest Service.

in March 1964 that the supply of yellow birch veneer logs grown in the Northeast and the Lake States was virtually exhausted. The supply of large-diameter high-grade birch logs and bolts is extremely limited. The hardwood plywood and veneer manufacturers complain constantly that the quality of logs is going down each year and the price of logs going up so the manufacturer is being forced to haul birch logs greater distances than ever before.

The situation will probably get worse before it gets better. The supply of birch from both old-growth stands and from stands that originated after the heavy cuttings of the turn-of-the-century is rapidly being exhausted, and there are relatively few stands in the less-than-50-year-old age bracket because of the extensive use of partial cuttings and uneven-aged management in 1930-60.

In the face of decreasing supplies, projections for the future indicate that the demand for hardwood veneer logs of all species may increase by as much as 170 percent by the year 2000. Unless this demand can be met, other materials will surely be substituted in

the manufacture of fine furnitures, paneling, and other products.

To meet future demands, every effort must be made to encourage timberland owners — both private and public — to care for their birch timber and to initiate more intensive birch culture on the better sites. New research information will be needed to increase the efficiency of birch timber production, and to reduce the time required to produce a quality crop.

Though reconstituted wood products such as flakeboards, particle boards, and hardboards may eventually replace traditional lumber for many products, it seems certain that the market for high-quality veneers will continue to expand. Thus future markets will continue to place a premium on clear defect-free logs in the large size classes.

The hardwood plywood and veneer industry must adapt technology that will allow it to economically process logs of both small diameter (11 to 14 inches) and low quality, to expand its use of domestic species, and to compete with other wood-processing industries for the available log resource.

