

RESEARCH COUNCIL OF ALBERTA

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POPLAR MARKET SURVEY



**RESEARCH COUNCIL OF ALBERTA  
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POPLAR MARKET SURVEY

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## POPLAR MARKET SURVEY

### I. TIMBER RESOURCES OF ALBERTA.

#### Accessible Merchantable Timber in Alberta.

The significance of existing stands of timber depends on the nature of the stand (productive or unproductive forest) and accessibility (accessible and inaccessible forest). Unproductive forests are those in which, because of the character of the land, trees cannot be expected to reach merchantable size. The remaining (productive) forest may be accessible or inaccessible. Accessibility depends on distance and transportation facilities; and the margin of accessibility will vary with changes in the relation between costs and prices. Given the transportation factors and the cost-price relation, the area of economically accessible forest is determined. The immediate significance of accessible forest depends upon the size of the timber, i.e., on the total stand of timber of merchantable size.

Within the nine provinces of Canada there are some 1,167,960 square miles of forested area. This is equivalent to 58% of the total land area.<sup>(1)</sup> The area of productive forest is estimated at 813,000 square miles: economically accessible forest at 435,000 square miles. It is said that about one-half of the productive forest bears timber of merchantable size. Assuming that one-half of the accessible forest consists of merchantable timber, the area of productive, accessible, merchantable timber would be 217,500 square miles.

In Alberta the total area of forested land is estimated to be 130,635 square miles, or about 58% of the total land area.<sup>(2)</sup> Approximately 20,680 square miles are considered merchantable,<sup>(3)</sup> and of this area some 10,000 square miles

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(1) Canada Year Book, 1947, p. 387.

(2) Economic Aspects of the Forests and Forest Industries, Harrison, J.D.B.; King's Printer, Ottawa, 1938, p. 10.

(3) Forest and Forest Industries, Harrison, J.D.B.; King's Printer, Ottawa, 1936, p. 29.

are judged to be accessible. Thus, by area, the proportion of accessible, merchantable timber to total forested area in Alberta is significantly lower than the proportion for the nine provinces together.

Further information on accessible timber in Alberta is contained in Tables 1 and 2. The estimates in these tables were made in a survey conducted in 1935.

Table 1. Accessible, Merchantable Timber, Sawlog Size, Alberta \*

Species	M. Ft. B.M.	Equivalent Standing Timber**	
		M. Cu. Ft.	% of Total
Jack & Lodgepole Pine	1,700,000	372,300	18.7
Larch	10,000	2,190	0.1
Spruce	5,000,000	1,095,000	55.1
Balsam Fir	190,000	41,610	2.1
Douglas Fir	100,000	21,900	1.1
White Birch	100,000	17,520	0.9
Poplar	2,000,000	438,000	22.0
All Species	9,080,000	1,988,520	100.0

\* Economic Aspects of the Forests and Forest Industries.

\*\* Conversion factor: 1,000 Ft. B.M. = 219 Cu. Ft. standing timber.

Table 2. Accessible, Merchantable Timber, Under Sawlog Size, Alberta \*

Species	M. Cords	Equivalent Standing Timber**	
		M. Cu. Ft.	% of Total
Jack & Lodgepole Pine	55,000	6,435,000	53.1
Larch	200	23,400	0.2
Spruce	18,400	2,152,800	17.7
Balsam Fir	700	81,900	0.7
Douglas Fir	100	11,700	0.1
White Birch	1,000	95,000	0.8
Poplar	35,000	3,325,000	27.4
All Species	110,400	12,124,800	100.0

\* Economic Aspects of the Forests and Forest Industries.

\*\* Conversion factors: 1 cord soft wood = 117 Cu. Ft.  
1 cord hard wood = 95 Cu. Ft.

From the estimates in Tables 1 and 2 it appears that, as the forests of Alberta mature, pine will ultimately replace spruce as the principal species;

and, taking account of its more rapid growth, poplar will increase in relative importance.

Depletion of Alberta Conifers.

Reduction in the quantity of timber may be brought about by utilization (cutting), fires, and natural factors (insects and fungi.)

Utilization of Alberta coniferous timber is estimated at approximately 100,000 M.Cu.Ft. per year.<sup>(1)</sup> Whether this depletion is offset by new growth cannot be accurately determined. Estimates of the average growth of conifers range from 8 cu. ft. per acre to 40 cu. ft. As an annual growth of 7.9 cu. ft. per acre would compensate for the depletion through cutting, it seems probable that utilization alone is not reducing the total quantity of timber in the Province.

Table 3. Total Annual Depletion of Accessible, Coniferous Timber, Alberta.

	M. Cu. Ft.
Fire Losses, unsaleable, 15-year average	59,379*
Loss from Insects and Disease	4,577**
Utilization, 10-year average	97,926***
Total Annual Depletion	161,882

\* Annual Report, Department of Lands and Mines, Calculated.

\*\* Economic Aspect of the Forest.

\*\*\* Economic Aspects; amended to allow for poplar cut, years 1926 - 35; p. 19.

In addition to logging operations, the forests are depleted each year by fires, insects and fungi. Fire losses in Alberta are estimated at about 60,000 M. cu. ft. per year, based on a 15-year period from 1930 to 1945.<sup>(2)</sup> The annual loss from disease and insects is estimated at over 4,000 M. Cu. Ft. Total annual depletion of coniferous timber probably exceeds the annual growth. (Table 3).

(1) Economic Aspects, p. 19.

(2) Annual Report, Department of Lands and Mines, Alberta - Computed.

In addition to a reduction in the total coniferous timber in Alberta, forest operations will result in local shortages of some species, particularly spruce. Operators in some areas will no longer be able to cut large trees 200 or 300 years old. They will be forced to utilize the smaller timber, extend their operations into less accessible areas, or substitute hard woods.

#### Demand for Forest Products.

The growing local scarcity of soft woods would be accentuated if the over-all demand for forest products increased. Current demand and utilization are high because of heavy construction programs; but this high level of demand may be considered uncertain over the next few years.

Taking the longer view, increased utilization of forest products is to be expected; although, for certain uses, the development of wood substitutes may check expansion. Apart from the growth of demand associated with an expanding economy, technical developments are creating new uses for wood and increasing the efficiency of productive processes.<sup>(1)</sup>

Under conditions of increasing over-all demand, wood users will turn, as they have done during the period of war-time shortages to the use of the inferior wood.

#### II. PRESENT SOURCES, OUTPUT AND USE OF ALBERTA POPLAR.

##### Present Sources of Alberta Poplar.

Poplar is cut for lumber in many parts of the Province. The main area, at this time, is north and west of Edmonton within a radius of approximately 150 miles of the City. The main centres are Wildwood, Entwistle and Drayton Valley. Other reports indicate that some milling of poplar takes place north-east of Edmonton, west of Red Deer, and around Hoadley and Winfield. The poplar cut is generally supplemental to operations for spruce and pine, and good stands

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(1) Canadian Bank of Commerce. Monthly Commercial Letter. "Utilization of Wood", March, 1948.

of poplar occur in other parts of the Province.

Small quantities of British Columbia poplar (cottonwood) are marketed in Alberta. Cottonwood is used mainly in construction, furniture making and plywood manufacture. Shipments originate principally from around Kamloops, the Arrow Lakes, and from some of the Coast mills; the destination, in most cases, being Calgary.

Kind and Form of Poplar Supplied.

Both the white and black poplar are used, but it is generally conceded that white poplar is superior to the black for lumber. White poplar is generally more uniform in color and quality and is better grained; whereas, the black often has a dark or rotten heartwood. On the other hand white poplar is generally not as large as the black; consequently the number of board feet of lumber is less per tree and the waste greater. Also, since the white is of smaller diameter it cannot always be used for certain purposes, for example, making plywood. The size of poplar not only varies with the kind but also with the locality; and, according to some lumbermen, the quality of the same kind varies with different areas, for example, some poplar was reported to contain more moisture than others although cut during the same season. However, no definite conclusions respecting the above were gained from the survey. Nevertheless, it is evident more detailed information respecting the stands of poplar is necessary especially if more systematic commercial cutting is to be promoted.

As with spruce, poplar lumber is supplied in all lengths. It is generally 1" or 2" in thickness and 4", 6" or 8" in width. The most common form is 6" or 8" material because of the small diameter of the trees.

Some poplar comes into Edmonton in the form of logs for the making of plywood. These logs are eight feet or more in length and from 12" to 16" in diameter.

Poplar Output of Sawmills from Crown Leases.

Information secured from the Forestry Branch, Department of Lands and Mines, shows the number of operators and their output of poplar lumber from Crown timber permits or leases. There were 93 operators cutting poplar in 1945, and 96 in 1946. However only 31 were cutting poplar in both years. The scale of operations is indicated in Tables 3 and 4.

Table 3. Poplar Lumber Manufactured 1945

Classification According to Output, Bd. Ft.	No. of Operators	Amt. Bd. Ft. Manufactured	Percent of Total
Under 5,000	24	62,130	1.3
5,000 - 10,000	11	73,196	1.5
10,000 - 50,000	39	805,025	16.5
50,000 - 100,000	8	534,348	10.9
100,000 - 250,000	8	1,140,408	23.4
250,000 - 500,000	1	393,316	8.1
Over 500,000	2	1,869,501	38.3
Total	<u>93</u>	<u>4,877,924</u>	<u>100.0</u>

Table 4. Poplar Lumber Manufactured 1946

Classification According to Output, Bd. Ft.	No. of Operators	Amt. Bd. Ft. Manufactured	Percent of Total
Under 5,000	21	54,691	1.4
5,000 - 10,000	16	107,183	2.7
10,000 - 50,000	43	1,022,281	25.6
50,000 - 100,000	5	406,142	10.1
100,000 - 250,000	8	1,086,605	27.2
250,000 - 500,000	2	792,696	19.8
Over 500,000	1	529,562	13.2
Total	<u>96</u>	<u>3,999,160</u>	<u>100.0</u>

From the foregoing, it is evident that 15 to 20 operators cut from 70% to 80% of all the poplar. Most of the other operators are on a small scale; however, a few large operators take out small amounts of poplar along with spruce and pine.



Total Amount of Poplar Entering Commercial Channels.

The estimates shown in Tables 5 and 6 were prepared from information secured through interviews and questionnaires, and from published sources. The totals do not correspond with the totals in Tables 3 and 4. Tables 3 and 4 show the cut of poplar on leases and permits, the data being taken from reports made to the Forestry Branch. These data do not include poplar cut on private lands, substantial quantities of which are used for box car doors, mine timbers and other purposes. The estimates included in Tables 5 and 6 of poplar cut annually for personal use or for local sale are unquestionably low. No reliable estimate of the quantity so used is possible.

Table 5. Amount of Poplar Entering Commercial Channels, 1945

Use	Ft. B. M.	Cords	Equivalent in Standing Timber * Cu. Ft.	% of Total
Box Car Doors	4,987,810	-----	1,092,336	39.2
Mine Timbers	-----	4,424	422,308	15.1
Excelsior	-----	-----	-----	
Own Use -				
Local Sale	2,498,728	-----	547,221	19.7
Plywood	-----	-----	-----	
Boxes and				
Crates	285,000	-----	62,415	2.2
Furniture	100,000	-----	21,900	0.8
Construction				
Lumber	1,592,172	-----	348,686	18.5
Building Logs	-----	63	6,002	0.2
Fuel	-----	3,000	285,000	10.2
All Uses	9,463,682	7,487	2,783,862	100.0

\* Conversion factor: 1,000 F.B.M. equals 219 cu. ft. of standing timber  
1 cord equals 95 cu. ft. of standing timber.

Table 6. Amount of poplar Entering Commercial Channels, 1946

Use	Ft. B. M.	Cords	Equivalent in Standing Timber* Cu. Ft.	% of Total
Box Car Doors	4,079,442	-----	894,398	31.3
Mine Timbers	-----	4,266	405,285	14.2
Excelsior	-----	90	8,550	.3
Own Use -				.
Local Sale	2,508,283	-----	549,314	19.2
Plywood	-----	216	20,520	.7
Boxes and Crates	285,000	-----	62,415	2.2
Furniture	100,000	-----	21,900	.7
Construction				.
Lumber	2,769,798	-----	606,586	21.2
Building Logs	-----	55	5,271	.2
Fuel	-----	3,000	285,000	10.0
All Uses	9,742,523	7,627	2,859,239	100.0

\* Conversion Factor: As in footnote to Table 5.

Changes in the Use of Poplar, 1945 and 1946.

The most noticeable change between the two years (as revealed by Tables 5 and 6) was the increase in the amount of poplar milled for lumber. This was largely the effect of the policy and operation of one firm. There was a significant increase in the amount of poplar used in the manufacture of plywood and some use for excelsior in 1946. Here again a single firm was involved in each case. Although definite information is not available there are indications that the total will be less in 1947, with the principal decline in construction lumber.

Poplar in Relation to Total Manufacture of Primary Forest Products.

In the foregoing tables commercial units have been changed to equivalent volume of standing timber applying the conversion factor used by the Dominion Bureau of Statistics up to and including the 1945 Canada Year Book. In subsequent publications the Bureau gives timber cut in equivalent volume of merchantable timber. The Estimate of Forest Production, 1945, gives Alberta's 1945 cut of timber in equivalent cu. ft. of merchantable timber. Estimates for 1946 are not yet available nor is there any indication whether production increased

or decreased between 1945 and 1946. It is therefore assumed that the 1946 manufacture of primary forest products was unchanged in the two years. The Dominion Bureau of Statistics estimate of primary forest produce manufacture in Alberta, 1945, is 108,055 M.Cu. Ft. of merchantable timber, which might be considered equal to 133,988 M. Cu. Ft. of standing timber.

A comparable estimate may be made from data, for the fiscal year, published by the Forestry Branch, Department of Lands and Mines, commercial units being converted into Cu. Ft. of standing timber. This estimate is 96,972 M. Cu. Ft. or 37,016,000 Cu. Ft. less than the estimate from the Dominion Bureau of Statistics data. Using the latter estimate, it appears that poplar represents about 2% of the total primary forest produce manufacture in Alberta.

$$\frac{\text{Total Poplar Cut}}{\text{Total Manufacture of Primary Forest Products}} = \frac{2,783,862}{133,988,000} \times 100 = 2.08\%$$

### III. TRADE REPORTS: SURVEY OF ALBERTA FIRMS USING POPLAR.

During 1946 information was secured from wood-using and wood-handling firms in Alberta, and in other parts of Canada. This information disclosed the actual uses to which poplar is being put, and the opinions of users as to the suitability of the wood for various purposes.

A large number of Alberta firms were interviewed. The information obtained is reported by product classifications.

#### Box Car Doors.

Several lumbermen supply poplar box car doors to the railways. Most of the milling operations for these doors are centred around Entwistle, Granada, and Wildwood. The railroads let contracts to several individuals and these men again contract with small local mills to supply a certain number of doors. Often farmers supply the doors from poplar cut on their land during clearing operations.

These doors are made of 1-inch rough lumber 6 1/2 ft. x 2 ft. with 3 cross braces. Some doors are supplied closed, others are made with an open space

of about 4 inches in width. The proportion of open to closed is about 50-50. Both black and white poplar are used. The doors must be cut free from bark and rotten heart. These box car doors are sent to various mining areas; such as Drumheller, Brazeau, Edson and to coal and salt areas in Saskatchewan.

Wood of special quality is not required for box car doors. The primary consideration is to have a cheap door that will hold the coal during transportation. Seldom are doors returned--the salvage rate is about 20%.

According to Tables 5 and 6, box car doors constitute the largest single poplar product, and from interviews with contractors and purchasers of doors it seems reasonable to expect the volume of output to be as great in the next few years as in the past, with a possible increase depending on the movement of Alberta coal.

#### Construction Lumber.

In the construction industry poplar is not recognized as a foremost wood. It has not been milled with the same skill and enterprise as other woods, and the general opinion is that it warps more than spruce or pine. Some men criticize the wood severely in this respect, while others are more inclined to ascribe this tendency to a lack of care in seasoning. It is important to take special care (more so than with spruce), to see that it is properly air-piled to insure circulation of the air around each board. If the boards are piled close together the wood has a tendency to mill-dew.

Poplar lumber has been kiln dried in Alberta. The object of drying in the kiln was to avoid the marketing delay occasioned by air drying. Consequently no special effort was made to adapt the process to the drying of poplar; and when spruce and poplar were put through the kiln together, the greater tendency for poplar to warp was evident.

The nail holding power of green poplar is relatively low; however, if it is dry it is almost equal to spruce. The softness and generally uniform texture of poplar permit the use of large nails without undue splitting. Other characteristics of the wood also affect its popularity among lumbermen. Most poplar has fewer knots than spruce but often they are not as tight and small. The knots in spruce make very little difference to the lumber, except where it is required for a finished surface, when the knots are a drawback. With poplar however, the knot is often larger and sometimes has a tendency to loosen. This results in a higher percentage of culls in milling. On the other hand, poplar produces boards of greater area free from knots. This is important where clear, straight-grained wood is required for cabinet tops and other finished surfaces.

When poplar is properly seasoned it is a tough wood. It is classed as a hardwood and although soft when first milled it hardens considerably with age. As it hardens it toughens, and is therefore recommended for truck and dray flooring, wagon boxes and for bridge flooring. Black poplar is highly recommended for barn flooring, as it absorbs moisture and does not splinter with shoe caulks and hoofs.

A number of firms are using poplar for their own buildings as roofing and siding to be covered. They report that it is quite satisfactory, but if used on outside work it weathers badly unless well protected with paint. The present general opinion is opposed to using poplar for exterior finish.

Some of the lumbermen referred to the size of tree. Trees cut range in size from 7 to 16 inches in diameter. The size depends on the area and the kind, whether white or black poplar. The white poplar is generally not as large as the black but is considered preferable for lumber, as it is not as subject to rotten heartwood and dark centre wood as the black. Most lumbermen do not recommend poplar for studding and rafters.

Despite the fact that poplar has its own special qualities the tendency has been to handle the wood in the same way as spruce or pine. This utilization of the wood under adverse conditions has resulted in an inferior product, and there has been a tendency to underrate all of its qualities. Until more adequate data are available it appears that the fault may lie in other factors, such as milling and drying, rather than the product itself.

In 1946 the demand for all kinds of lumber was so great that the retail trade was glad to find any available poplar lumber and they could have sold all they could get. All firms agreed that, in the long-run, poplar lumber would find a more favorable market if it were milled and merchandized with the same care as spruce and pine.

#### Boxes and Crates.

There are two box factories in Calgary and three in Edmonton. The two factories in Calgary do not use any poplar. About 2% of the wood used by the Edmonton firms is poplar.

As in the construction and furniture business, poplar has a mixed reception among the box manufacturers. One firm in Calgary did not like poplar wood because it was asserted that it warped badly, pulled the nails, absorbed too much moisture even though kiln dried, and when cut left a wooly end. This was said to apply more particularly to the black poplar they had used. On the other hand some of the other box men were ready to promote the use of the product, especially white poplar, and for their purposes some of its drawbacks did not affect the manufacture of their product.

As certain woods are more suitable than others for boxes there are trade restrictions respecting the woods to be used especially for food boxes. Poplar is not suitable for boxing certain foods that absorb taints, such as butter. It is now being used in a very limited way for fish boxes, egg crates and some boxes for use in packing houses.

The limitations respecting the use of poplar for certain boxes or parts of boxes adds to the cost of production. Competition is keen among the box firms and dimensions of lumber are carefully calculated so as to utilize every square inch of material. If it is necessary to run poplar side by side with spruce for certain milling operations and the waste from poplar cannot be economically used, then the cost increases. This is an important consideration as a number of box factories also supply some of the Saskatchewan market, and one firm supplies boxes for British Columbia, Ontario and Quebec. These firms must supply a good product, of stipulated material, at a competitive price, and compete against a higher freight rate in the west.

A small amount of poplar is used for crating. One firm uses it to crate doors, window frames and sashes. Some of the wood is used to make the rough frame in graves. Its use for crating can be very varied, especially on the local market, but for export some of the business men say it is not as suitable as other woods.

#### Furniture and Cabinet Making.

There are fewer furniture and cabinet-making factories in Edmonton than in Calgary, and with one or two exceptions they operate on a relatively small scale. However, several of the lumber yards have their own factories and make special orders, such as store counters and fireplace fronts. Some of the firms handling poplar use the best material for "glue joints" and sell the rest for construction purposes.

Opinions of the furniture men are divided as to the possibilities for Alberta poplar in their business. Some reported having used it in the past and found it unsatisfactory; others were not acquainted with poplar but would like to try it; others were satisfied with the wood but could find none available. The chief drawbacks mentioned include warping, knottiness, and loosening of the nails. Some advantages mentioned include those of holding when glued, and taking a good finish with paint and varnish.

Actual statements will help to reveal the manufacturers opinions. "I got an order in about 5 years ago to try it out, but the poplar would not hold nails so just passed it off; furthermore it generally warps badly and is easily hammer marked."

"Poplar suits the purpose for a lot of things very well and can be used in place of any soft wood."

These two statements are typical. Some of the furniture men have very little use for poplar of any description; whereas others find poplar woods suitable for many purposes and would use more providing they could get it of good quality.

#### Plywood.

One firm in Edmonton makes plywood from poplar. The logs, from 10 to 16 inches in diameter are brought in from areas west of the City. These are peeled in thin layers, the sheets are then sorted, trimmed and dried, then glued and sanded for the finished product. The poplar peels easily and is free from resins, but often the logs are small, have deep knots, and the proportion peeled is low.

This firm supplies a 4' x 4' sheet, in 3, 5, and 7 layers. This plywood is sold to wholesale and retail markets. Some is used locally in construction and in the furniture trade and some is exported to other provinces.

In addition to the manufacture of plywood, the firm makes other products from the unused portion of the log. The small log, left over after peeling for plywood is used in the manufacture of charcoal.

#### Excelsior.

Only one firm in the Province makes wood excelsior. This company uses three woods, namely, spruce, pine and poplar, but expresses a preference for the latter. "The qualities most desired in excelsior wood are toughness, light color, light weight and freedom from odor. Aspen wood meets all the essential requirements for excelsior; it is tough, white in color, comparatively straight grained



and free from odor. It is quite likely, therefore, that the use of aspen will continue to increase for the manufacture of excelsior."<sup>(1)</sup> This quotation expresses the opinion of the management of the above firm, although their experiences with poplar were not entirely satisfactory as the wood was not properly seasoned and contained black carbon streaks from fires. They intend to find more suitable supplies of poplar and use it in preference to spruce and pine as these two woods have an objectionable odor.

This firm has various market outlets in Alberta and Saskatchewan. Some of the principal users include department stores, china stores, bakeries, upholstery shops, funeral parlors, fruit wholesalers, carting and storage firms and the operators of steam engines for water filtering.

#### Toys.

During the war very few toys were made from plastics or metal. As a result wooden toys came on the market in fairly large quantities. Some of these products were quite distinctive in design and finish, while others were only second-rate. A number of local factories started in Edmonton and Calgary, manufacturing regular lines such as wagons and sleighs, and novelties for special orders. These wooden toys were fairly expensive, especially if well made, as it takes a considerable length of time to shape, sand, and finish a really good product. The labor cost was the largest part of the total, and even poorly made articles generally sold above those made from plastics or metal.

It was the general opinion of toy manufacturers and retailers that plastic and metal toys will replace wood. As a result the factories were reconverting to other lines. Buyers of toys returning from sales in the east are all

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(1) Aspen, Availability, Properties, and Utilization - University of Minnesota Agricultural Experiment Station in cooperation with Forest Services United States Department of Agriculture. University Farm, St. Paul, August, 1930, Technical Bulletin 70, page 63.

agreed that the trend is away from wood and they are not buying any toys of this material that can be supplied in plastic and metal. This does not mean that wood will be replaced entirely. It will still be used for wagon boxes, sleigh blocks, etc., but wherever possible other materials will be substituted.

None of the factories or retail firms reported using poplar. It is an easy wood to turn but leaves a woolly end when cut. Often a light "fuzz" is raised after the first coat of varnish or paint and this must be sanded off.

One manufacturer makes wagons and sleighs. The wagons have fir sides and spruce bottoms and the sleighs are made of Alberta birch. This firm makes a good product and an article that will remain basically the same in construction. However, this cannot be generally said of most toys and it might be well to review the present trend very carefully before establishing wooden toy industries.

#### Mine Props.

The Department of Mines reports the use of some poplar in small mines, especially in shafts that are only to be mined for a short time. Poplar is not recommended for the more permanent shafts as it rots too quickly. Most poplar is used in mines in the parklands or the prairies where more desirable timbers are not accessible. Often mine props are supplied by farmers in exchange for a load of coal. As a result of this exchange system a portion of the timber used is not reported.

#### Fenceposts.

According to figures published by the Provincial Statistician there are approximately 100,000 farms in Alberta averaging 400 acres per farm. A conservative estimate of 1,500 fenceposts per farm would give a total for the Province of 150 million posts. These posts are cut from poplar, willow, tamarack, cedar and other woods. Poplar and willow are used more than any others and of these two, willow is the most popular as it lasts longer. In the parklands, where willow is available, it is generally used, but where the supply of willow is depleted many farmers are using poplar, while a few are using other kinds.

Chemical treatment of poplar fenceposts has not been properly tested; however, from tests that have been carried out it was found that the life of the post was extended three or four years. Various chemicals have been used to preserve the posts but the most satisfactory are coal tar, creosote, copper sulphate and zinc chloride.

The estimate of the cost for chemical treatment of a post ranges from 3¢ to 20¢ for the chemical, depending on the process and 5¢ to 10¢ a post for labor. This gives a total cost range for chemical treatment from 8¢ to 30¢.<sup>(1)</sup> To this cost must be added the purchase price of the post or the labor cost of the post incurred by the farmer if he cuts his own. Thus, the total cost of a poplar post may not be very much less than that of a tamarack or like post and the product not as good with respect to length of life, resistance to splitting by sledge hammer blows, and to staple holding. Nevertheless where other posts are not available then chemical treatment of poplar should be considered. As more processing is done new techniques may be developed that will result in a satisfactory product.

#### Fuel.

Poplar is shipped to the prairies as fuel. Lumber yards, grain companies and private dealers all act as distributors. They get their supplies from various parts of the Province. Some comes from around Hoadley and Winfield and from west of Edmonton. Generally the wood is cut by homesteaders when clearing the land and it is sold directly to a large distributor or it may be shipped by a local man in the area.

If seasoned properly poplar makes a good fuel and when green the wood splits easily and dries in about a season. However, the dealers are not anxious to handle poplar. They maintain that the product is either green or else dry

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(1) Report on the Chemical Treatment of Fenceposts. J. Oberholtzer and A. Bradshaw.

and "spongy or punky" and they would much prefer to sell spruce, pine or tamarack.  
Pulp.

According to information from the Forestry Branch, a small amount of poplar is shipped out of the Province to the U.S.A. and to eastern Canada for pulp for newsprint and building board. Canada exports the greater portion of newsprint to the U.S.A. In 1946 the home consumption of newsprint for Canada was approximately 300,000 tons. On a per capita basis (1941 Census) this would be approximately 20,000 tons for Alberta, an amount equal to an output of 70 tons a day for 300 days of operation. This is a small output, but if an export market could be secured a much greater tonnage could be expected. However, before poplar can be used extensively the pulping process must be improved or the competing species become more scarce. The semi-chemical pulping process appears to be the most promising, although the pulp obtained from this process is not at present suitable for either newsprint or wallboard.

#### IV. TRADE REPORTS: SURVEY OF FIRMS USING POPLAR OUTSIDE ALBERTA.

Letters were sent to more than 200 firms outside of Alberta, listed in the Canada Trade Index as producers of wood products, under 51 product classifications. Replies were received from 117 firms. Many of these firms produce more than one product, and it was not possible to retain the original product classification.

##### Excelsior. (6 firms).

Four firms located in Manitoba, (2), New Brunswick, and Ontario, reported using poplar; two British Columbia firms reported using cottonwood.

Among the firms using poplar, white poplar was preferred. Black was stated to be inferior because of higher moisture content, black heart and black streaks.

The British Columbia firms stated they preferred cottonwood because it was softer and the trees were larger. One firm expressed the opinion that

altitude influenced the hardness of the wood. This firm was producing 2,200 lb. of excelsior per cord of cottonwood.

The importance of proper seasoning was emphasized in connection with moisture content. The general view appeared to be that poplar (or cottonwood) was the best available wood for the purpose; although one firm (New Brunswick) stated that the principal advantage was cheapness, that the wood was light and therefore the yield of excelsior was low, that there was considerable waste owing to decayed centres, and that decayed centres resulted in an undesirable amount of dust in the product.

Two firms indicated that they expected to increase their use of poplar.

Boxes, Baskets, Pails, Barrels. (12 firms).

All 12 firms reported using poplar.

The majority indicated that they distinguished between white and black poplar. There appeared to be a marked preference for white poplar; and several firms stated that they used only white. Black poplar was reported to be knotty, with black heart; and some of the general disadvantages of poplar, e.g., colour and odor when wet, might apply particularly to black poplar.

There has been a recent increase in the use of poplar by these firms; poplar being substituted for spruce, pine and basswood. This increase is attributable mainly to the shortage and high price of the alternative woods; and, apart from price, does not reflect an increased preference for poplar. However, a number of firms indicated they expected to use more poplar in the future.

The replies indicated a problem of grading, and assurance of uniform quality. In general the wood appears satisfactory if a selected grade is supplied. Objections to the wood included the small size of log, knottiness and tendency to toughen and warp. Advantages included the white colour and the ability to hold nails and to take nails without splitting.

Particular products made included wooden pails, basket bottoms, slack barrel heading and barrel staves, fish boxes, canned goods boxes, veneer for berry boxes, and cleats for apple boxes. Only one firm referred to butter and cheese boxes, and stated that poplar could not be used because of a tendency to taint.

Plywoods and Veneers. (16 firms).

Four firms were using poplar or cottonwood.

One Ontario firm, with a plant in West Virginia, imports yellow poplar logs (liriodendron tuliper or whitewood). This firm uses the poplar veneer for crossbanding laminated panels.

A Quebec firm uses eastern cottonwood (p. deltdides). The poplar veneer is incorporated in inner plies or occasionally as the back ply but never as face ply. It is not considered a choice wood and is used only as a substitute for better species.

A Vancouver firm uses cottonwood. This firm finds the advantages of cottonwood to include good peeling qualities, peels a high percentage of clear stock, free of resin and pitch and therefore good for gluing and finishing. Disadvantages are said to include a tendency to knots, and to form ring shapes in the logs.

A Nova Scotia firm reported using local white poplar veneer for berry boxes.

A fifth firm (British Columbia), not now using poplar, reported having used the wood and found that it was excellent for peeling but lacked size. Another firm (Winnipeg) stated they could use poplar veneer if available.

Most of the firms not using poplar stated that local supplies were inadequate or defective, the main defects being small size and too many knots.

Lumber - Sawmills, Planing Mills, Merchants. (20 firms).

Ten firms handled poplar. The view that it was an inferior wood was generally expressed. Any increase in recent quantities used was attributed to

scarcity of other woods, and there was little evidence of anticipated increase. There was also little tendency to distinguish between varieties.

A number of firms referred to the use of the wood for crating. There appeared to be a general feeling that poplar was not suitable for construction work; although a few firms suggested that good grade clear stock could be used for interior trim.

One of the two eastern firms referred to increased use of poplar as pulpwood. A New Brunswick firm stated that some poplar was being disposed of for this purpose, but that spruce and fir were preferred, poplar stock being difficult to clear. An Ontario firm reported that newsprint companies were taking up to 10% poplar owing to the shortage of other species.

Turned Goods, Wood Specialties, Wood Novelties. (31 firms).

Only 4 firms are now using poplar. Two of these firms used poplar from the United States in preference to eastern Canadian poplar. At least 5 other firms had previously tried poplar but had found it unsatisfactory and had discontinued its use. On the other hand, a few firms were willing to test poplar.

Five firms referred to the different varieties of poplar, suggesting that they did not believe there was any significant difference for their purposes. In a few cases a preference for white poplar was indicated. It was stated that poplar from the United States, particularly Tennessee and West Virginia, was preferred because of size and soft texture. Eastern Canadian poplar was said to be too small, and too tough for turning. One firm expressed the opinion that the best Canadian poplar was "June poplar" (*P. Grandidentate*) from New Brunswick; and that white poplar (*P. Trematoides*) was inferior because of size, knots and streaks. This same firm reported considerable variation in the texture of wood of the same species; differences which they said could not be distinguished by the eye.

The general view was that poplar was an inferior wood for turning, and that it was difficult to get a uniformly smooth finish.

Beekeepers' Supplies. (5 firms).

None of the 5 firms uses poplar. Four firms indicated they had tried poplar but found it unsatisfactory and had discontinued its use.

One firm objected to the colour (yellow, greenish) which suggests decay, and stated that they believed white coloured poplar wood, if procurable, could be used.

The general objection was the tendency to warp.

Implements. (7 firms).

Only 3 firms reported using poplar in the manufacture of their products, and then only for minor parts, e.g., packing wheel rims of wooden pulleys, spinning wheel rims, and automobile check blocks.

All firms used poplar for crating.

The main objection to poplar appeared to be poor bending qualities.

Handles. (6 firms).

None of the 6 firms uses poplar. One firm expressed a willingness to make tests.

The general opinion appeared to be that poplar was too light and contained too many knots.

Labels or Tags. (2 firms).

Neither firm uses poplar. No reasons were given.

Bake and Bread Boards. (2 firms).

One firm used poplar; the others had used poplar at one time but had discontinued its use.

The firm using poplar found advantages in the softness, toughness and lightness of the wood.

The other firm had found its supplies badly sorted and dried, and not big enough. This Winnipeg firm stated they had bought 9,000 Bd. Ft. of poplar



from the U.S.A.

Kitchen Furniture. (6 firms).

Two firms reported using white poplar for manufacture of their products, or parts of them; and two other firms use poplar for crating. Among the products for which poplar was used were drawer bottoms and backs, mirror backs, table tops, cookeases, verandah chairs, and veneer covered furniture.

Manufacturers using poplar stated that it was easily worked and took a nice finish; but they emphasized that it had to be carefully selected.

Costumers. (3firms).

None used poplar. One firm stated that poplar was too spongy and hard to finish.

Clothespins (Spring). (1 firm).

This firm does not use poplar. The wood is considered too soft.

Sawdust. (1 firm).

This British Columbia firm considers Douglas Fir best for sawdust, the product having low moisture content, slow burning qualities, and high B.T.U. value. They believed that poplar could be used.

Pencils and Penholders. (1 firm).

Uses California incense cedar and red cedar for pencils; and bass or birchwood for penholders.

Matches. (3 firms).

None of the 3 firms replying uses poplar and no information was provided.

Since the enquiry in 1946, it has been learned that two cars of poplar matchwood bolts have been exported from Alberta; one car to Eastern Canada and the other to the United States. The Canadian firm replied that it expected to continue using poplar, but that the existing freight rates made the use of Alberta poplar impossible.

The desirable properties for match stock are light weight, straight grain, strength across the grain, and ease in peeling and splitting.

V. CONCLUSIONS.

(1) Tests of poplar, and the technical literature respecting its use, support the view that poplar is capable of being used for a variety of purposes.

(2) Alberta poplar is now being used in the manufacture of a number of products, there being a noticeable expansion during the war years when other woods became relatively scarce. However, excluding the considerable amount of poplar used as fuel in rural homes in the parkland region of the Province, the amount of poplar entering into commercial uses is relatively small.

(3) Trade opinions indicate a general preference for other woods.

- (a) Many wood-using firms have had no experience with poplar. This is probably accounted for by the general view that poplar is an inferior wood.
- (b) In a number of cases conflicting opinions were expressed by firms which had used poplar to make similar products. There may be a number of reasons for this, including differences in the quality of the product desired; differences in the handling of the wood; differences in the type or grade of poplar used.
- (c) In a few cases, the same firm reported varying experiences. This clearly reflects a lack of standardization in the material obtained.

(4) The possibility of expansion in the use of poplar appears to vary with the extent of the handling and processing required in producing the final product.

- (a) Unless, and until, other woods become appreciably more scarce there appears to be little prospect of expansion in the use of finished poplar lumber. Greater standardization, through a modified grading system, might contribute to a wider market; but it is doubtful if the additional cost, including the cost of a larger proportion of waste, would be justified. A certain amount of poplar will continue to be used in the production of cheap furniture.

- (b) Rough poplar lumber from the saw mills may find expanding use for some purposes, for example, grain elevator bins, and crates. A substantial amount of poplar will continue to be used for coal car doors.
- (c) The uses offering the greatest possibilities appear to be those in which the log or bolt can be transported for processing, for example, pulp, plywood, matches, and excelsior.

Poplar is particularly suitable for excelsior, but the market is small, and is likely to remain so.

The use of Alberta poplar in the manufacture of plywood seems capable of expansion.

Alberta poplar might find an outlet for matchwood, if freight rates to eastern Canada were lower.

The best long-run prospect for bulk use of Alberta poplar is as pulp. To be economical pulp operations must be conducted on a large scale. Expansion in the use of poplar generally is dependent on technical processes. Expansion in the use of Alberta poplar is dependent on markets for newsprint outside Alberta. It appears only a matter of time until a favourable conjuncture of circumstances will induce the investment of the large amount of capital required to establish pulp production in Northern Alberta.