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Introduction
Statistical Summary
New Brunswick
Quebec
Ontario
Manitoba
British Columbia

THE PEAT MOSS INDUSTRY IN CANADA

by

A. A. Swinnerton

Fuels Division

Fig. 1. Sketch showing peat moss operations in Quebec and New Brunswick.
Fig. 2. Sketch map showing peat moss in the vicinity of Vancouver.
Fig. 3. Sketch showing peat moss operations on Pacific coast.
Fig. 4. Diagrammatic sketch of layout for mechanical excavation and drying of peat moss.

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THE PEAT MOSS INDUSTRY IN CANADA

by

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INTRODUCTION

This report is a revision of Memorandum Series No. 90, February 1946, and describes operations at the various properties that are producing peat moss in Canada. It also supplements an earlier report¹ which listed and described the deposits of peat moss that have been found in Canada.

Peat moss is the name used in the trade for dead sphagnum moss that has been excavated from peat bogs, dried, shredded, and pressed into bales or smaller packages. Peat moss is fibrous, elastic, light in colour, and possesses the valuable property of being able to absorb and hold up to 25 times its own weight of liquids and gases. Its main uses are for stable bedding and poultry litter, for soil conditioning, and as a filler for commercial fertilizers. It is also used as an insulating and packing material.

The value of peat moss has long been recognized in Europe where it is widely used. Relatively little is used in Canada, however, in spite of the occurrence of deposits comparable in size and quality with many of those in Europe. Most of the Canadian output is exported to United States. With the improvement in the labour and supply situation producers should be able to retain their American markets. British Columbia is the leading producer of peat moss in Canada.

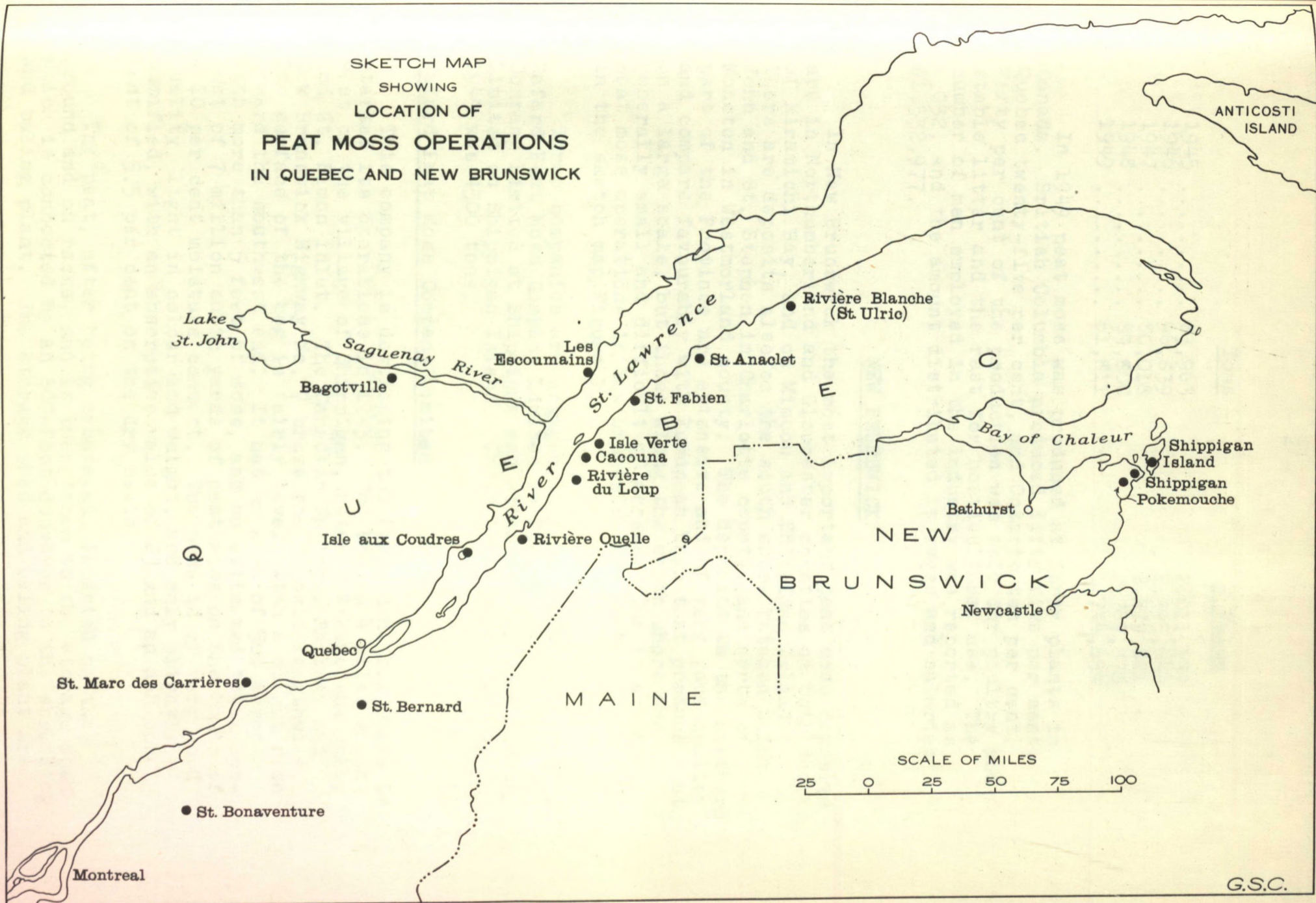
STATISTICAL SUMMARY

Prior to the war the annual production of peat moss in Canada amounted to only a few thousand tons. The rapid increase in production since the commencement of the war is shown in the table below. It should be noted that the decline in 1949 output was due mainly to the floods in British Columbia in 1948.

	<u>Tons</u>	<u>\$ Value</u>
1940	17,186	282,543
1941	27,803	644,253
1942	53,506	1,069,372
1943	63,506	1,461,422
1944	63,149	1,554,606

¹ Report No. 817. (1946) Peat Moss Deposits in Canada, by H.A. Leverin

SKETCH MAP
SHOWING
LOCATION OF
PEAT MOSS OPERATIONS
IN QUEBEC AND NEW BRUNSWICK



	<u>Tons</u>	<u>\$ Value</u>
1945	83,963	2,011,139
1946	96,839	2,395,649
1947	80,018	2,279,821
1948	89,800	2,767,878
1949	61,811	1,744,654

In 1949 peat moss was produced at forty plants in Canada. British Columbia produced fifty-five per cent, Quebec twenty-five per cent, and Ontario ten per cent. Fifty per cent of the production was sold for poultry and stable litter and the rest for horticultural use. The number of men employed in the industry was reported as 1,032, and the amount distributed in wages and salaries \$1,532,977.

NEW BRUNSWICK

In New Brunswick the most important peat moss deposits are in Northumberland and Gloucester counties on both shores of Miramichi Bay, and on Miscou and Shippigan Islands. There are deposits also on the south shore between Saint John and St. Stephen in Charlotte county, and north of Moncton in Westmorland county. The deposits in the northern part of the Province are extensive and of very good quality and compare favourably with European bogs that produce peat on a large scale, but those along the south shore are generally small and difficult of access. The locations of peat moss operations in New Brunswick and Quebec are shown in the sketch map, Figure.1.

Three companies are engaged in peat production, namely, Fafard Peat Moss Company Limited at Pokemouche, Western Peat Company Limited at Shippigan and Atlantic Peat Moss Company Limited on Shippigan Island. Their total production in 1949 was 4500 tons.

Fafard Peat Moss Company Limited

This company is developing the Pokemouche bog where it started its operations in 1943. The bog is 4 miles southwest of the village of Shippigan, between Pokemouche gully and St. Simon inlet. The Canadian National Railway and New Brunswick Highway No. 7 cross the deposit lengthwise. The surface of the bog is fairly level, with a slight rise toward the southwest end. It has an area of 500 acres with more than 5 feet of moss, and an estimated total content of 7 million cubic yards of peat moss on the basis of a 20 per cent moisture content. The moss is of very good quality, light in colour and weight, and only slightly humified, with an absorptive value of 23 and an ash content of 5.5 per cent on the dry basis.

The peat, after being excavated, is dried on the ground and on racks, and is then taken to the storage shed which is connected by an 300-foot conveyor to the shredding and baling plant. The storage shed and baling plant are

separated because of fire risk. The baling mill is equipped with electrically operated presses, and the moss is packed in cardboard containers, or bales with slats and wire according to market requirements. When the storage shed has been filled the dried peat moss is stored in large stacks on the field. Thus there is always a year or more supply of peat in reserve.

Western Peat Company Limited

This company is developing the Shippigan peat moss bog at the northeasterly point of land of Gloucester county, about one-half mile from Shippigan station on the Canadian National Railway. The bog is of the high moor type of wide expanse, free from obstructions, lakes, or spruce growth, and rises towards the centre to a large dome having moss 20 feet in depth. The peat moss is of exceptionally good quality, being almost pure sphagnum with hardly any admixture of other plant remains. It is light in colour and weight, with an absorptive factor of 25 and an ash content of 3.6 per cent on the dry basis. The area of workable peat moss 5 feet or more in depth, is about 1300 acres, and the amount of moss is estimated to be 20 million cubic yards or $1\frac{1}{2}$ million tons on a 20 per cent moisture basis.

Operations were started in 1944. About 70 miles of drainage ditches have been dug as well as a main roadway 6700 feet long and two lateral roads 5000 feet long. This bog is worked on the same system as that developed by the company on its properties in the Fraser Valley near Vancouver. A permanent conveyor 6900 feet long runs from the bog to the mill. It is composed of ten sections each driven by a gasoline engine and it is fed by two portable conveyors and loaders. This method is described in more detail in the section dealing with operations in British Columbia. The storage shed is 300 feet long and holds the equivalent of about 50,000 bales. The mill is equipped with two mechanically operated presses with a total output of 1000 bales per 8-hour day.

The company has developed a mechanical peat cutter consisting of a converted Bren-gun carrier with three chain-saws mounted at the rear. These cut the peat into strips 12 inches wide and this preliminary cutting greatly increases the output of the hand diggers. The bog is well protected against possible outbreaks of fire. Water mains, hose, and fire pumps are laid out close to the workings and in addition on bright days a fire-tower is manned continuously to detect any signs of fire on the bog.

Atlantic Peat Moss Company, Limited

This company started to develop the Lamak bog on Shippigan Island in 1946. This bog is one of the largest deposits of high grade moss in Eastern Canada, having an

area of 3000 acres of moss more than 5 feet thick. It is at the south end of the island and a main road runs through it. The plant consists of the usual storage shed and a mill equipped with two hydraulic presses with a capacity of 700 bales per day. Tractors and wagons are being used to bring the peat to the plant but the company intends to build a permanent field conveyor. It has a small mill for making veneer slabs for the bales and supplies veneer also to Western Peat Company on the mainland. The bales are shipped by truck and ferry to Shippigan station on the C.N.R.

QUEBEC

Before the late war some peat was obtained from bogs near Riviere Ouelle, Isle Verte, and Waterville, but as a result of the demand for peat moss in the United States considerable development has taken place in Quebec, chiefly in the Lower St. Lawrence region. In 1949 about 15,000 tons were produced by sixteen operators. Most of the production, however, came from Premier Peat Moss, Limited, Riviere du Loup, Cacouna, and Isle Verts, and Canada Peat Limited, Riviere du Loup.

Louis Roy, Riviere Blanche

Louis Roy and his son started to develop the peat bog at Riviere Blanche in 1944. Production is relatively small. The bog, which consists of high quality moss, is half a mile south of the village of St. Ulric (also known as Riviere Blanche), and is circular in shape, with an area of about 600 acres. It is of the high moor type, free of obstruction, and rises gradually to the east where the peat moss is reported to be nearly thirty feet thick. The peat is built into small stacks and when dry is hauled to a loading platform at the edge of the bog. It is then transferred to trucks for haulage to the mill in the village of St. Ulric. The bales are made in hand-presses and are done up in veneer slabs held together by wire.

La Tourbiere de Pointe-au-Pere

This company is developing the St. Anaclet peat bog one mile south of Father Point near the village of St. Anaclet. The bog is large, with a length of over 7 miles and consists of two lobes connected by a long narrow strip of bog. The western lobe has an area of about 1 square mile and is estimated to contain about 325,000 tons of high grade moss. Samples taken in 1941 showed that the moss had an absorptive value of approximately 25 and an average ash content of about 4 per cent.

A storage shed and baling plant were built in 1943 and drainage work is still underway. The peat is hand dug and dried on chimneys and small stacks and taken to a storage shed in sleds drawn by a tractor. The present capacity of the mill with two hand presses is about one car

a day but this could be doubled if more labour were available for cutting and stacking. Veneer is being used for baling materials owing to a shortage of fibre board cartons.

The company has experimented with a mechanical peat moss cutter. It consists of a series of knives mounted below the body of a small tractor and has been used successfully for removing top moss and brush.

La Tourbiere de St. Fabien, Incorporated.

This company's bog is two miles west of the village of St. Fabien and has an area of about 500 acres of good quality peat moss (absorption factor 15-18). Operations were started in 1946 when some ditching and drainage work was done and the mill was completed the following year. The main highway runs along one side of the bog so that it is well situated for shipping the peat by truck. The mill is equipped with compressed air balers and the bales are made of slats and wire.

Premier Peat Moss, Limited

This company operates the Isle Verte peat bog and produces poultry and horticultural litter. The bog was worked for peat moss for several years prior to 1939, producing insulating material and horticultural moss, but early in the last war it was purchased by Premier Peat Moss Limited which has developed it until it is now one of the largest producers in the province of Quebec.

The bog is on a river terrace one mile east of Isle Verte station on the Canadian National Railway. About one-third of its area of about 500 acres is workable for peat moss. The upper bed of the bog is sphagnum moss of very good quality, but light in colour, and is only slightly humified. The moss has an absorptive value of about 23 on the dry basis, and an ash content of 3 per cent. The workings are well planned and well laid out. The dried moss is stored in open sheds and in stacks on the field and is transported to the main storage shed and baling mill by light railway in the summer and by tractor-drawn sleds in the winter when the snow is too deep for the railway to operate. The original hand-operated balers have been replaced by hydraulically operated ones and the output of the plant is about 100,000 bales a year. This was the first large scale plant to be operated in Quebec and is still one of the largest.

Allied Peat Moss Corporation, Limited

The Cacouna peat bog which was acquired by Premier Peat Moss, Limited, is operated under the name of the above company. It is two miles south of the village of Cacouna and consists of 800 acres of high grade light coloured moss. The main line of the Canadian National Railway passes through the bog, with Cacouna station at its western edge. The plant started to operate in October 1945. Digging is done by the usual manual method on a piece-rate

basis and the dried peat is stored on the bog in large stacks. The original installation of hand baling machines has been replaced by hydraulically operated equipment, which has an output of one carload per day. This appears to be the first successful attempt to develop the bog.

Canada Peat Limited
Perfect Peat Products, Limited

These companies are working on the Riviere du Loup bog, one of the largest in Quebec. It is two miles south of the city of Riviere du Loup and is crossed by the main highway from Quebec to New Brunswick. The area containing peat moss is about 1,700 acres. The sphagnum peat has a fairly thick cover of low bush and is about 6 feet thick. Below this level it becomes more humified and runs into fuel peat. In the upper levels it is light and of fair quality, with an absorptive value of about 15 on the dry basis.

Canada Peat Limited, one of the largest producers in Quebec, operates on that part of the bog east of the main highway, and Perfect Peat Products on the western part. The general method of operation is the same. The excavated blocks are placed on racks as drying the ground in piles or chimneys has not proved satisfactory owing to the shorter drying season in this area. The dried moss is taken by light railway to the mill storage shed. It is shredded first and then goes to storage and is carried by means of an air conveyor to the screens which separate it into the desired sizes. The fines are removed by a cyclone dust collector and are added to the horticultural moss.

Trump Peat Products Limited

In the fall of 1945 Premier Peat Moss Limited started to develop its part of the Riviere du Loup peat bog under the name of Trump Peat Products Limited. This section of the bog has an area of 1000 acres. It is on the west side of the main highway to Edmunston and abuts on the property of Perfect Peat Products. The peat after preliminary drying is stored in large stacks on the drying fields and taken to the mill by tractor-drawn wagons. Here as at some of the other bogs it is necessary to bring the workers to the bog by bus from the nearby villages. The mill is equipped with hydraulically operated baling machines similar to those at Isle Verte and Cacouna and has an output of about one carload per day.

Excel Peat Limited

This company, which started operations in 1942, was developing the peat bog at Isle aux Coudres, an island in the St. Lawrence River about 60 miles below Quebec City. It produced chicken litter and horticultural peat. The property consists of approximately 600 acres of good quality moss varying from 5 to 10 feet thick. The excavated peat was dried in piles and transported to the mill by "snowmobiles" and trucks provided with caterpillar treads.

The peat had to be taken to the mainland by truck and ferry or by schooners to Baie St. Paul and rehandled there, which increased the transportation costs. In the summer of 1949 a fire destroyed all the peat drying on the bog and on the racks so that operations are now at a stand still.

Tourbieres Riviere-Ouelle

The bog at Riviere Ouelle was one of the first to be developed in Quebec. Following two fires which destroyed the mill and storage shed, a new mill and storage shed of reinforced concrete have been built. The two-storey storage shed is 90 feet by 120 feet and 40 feet in height, and the mill is 90 feet by 60 feet, 45 feet high. The peat is dried on racks and in chimneys and hauled to the mill by tractor-drawn wagons.

Les Escoumains Peat Bog

This bog is on the north shore of the St. Lawrence, 25 miles below Tadousac in Saguenay county. It has an area of nearly three square miles and is of the high moor type, with a thickness of about 15 feet of medium grade moss. It was surveyed and sampled by the Quebec Department of Mines in 1946, and development was started in 1948 by Mr. O. Dubois. The drainage was completed in 1949. The operators expect to start the erection of a baling mill in 1950. Although the bog is readily accessible as the main highway skirts its southern edge, it is on the north shore and all shipments would have to be made by water. Moreover, the wharf at Baie des Escoumains is ice bound at the very season when most of the shipments of peat moss to the American market take place.

Saguenay Peat Moss Company Limited

This company operates on the Chicoutimi bog which has an estimated area of 2,600 acres, and is 4 miles northwest of Bagotville on the Bagotville-Chicoutimi highway.

In 1945 a deposit of peat moss 200 acres in extent was discovered in the centre of the bog and a plant was built for processing the moss. This plant started to operate in 1946.

Beausejour Peat Moss

Near St. Bernard about 20 miles south of Quebec city, F.R. Murphy operates a peat moss property for the production of floral and horticultural moss. The loose surface moss is raked by hand and then dried on racks made of ordinary chicken wire. When dry the moss is compressed in a hand baling machine in the storage shed and packed in seven-ply paper bags holding about 30 pounds of moss.

Bourque et Fils

Clovis Bourque operates a peat moss property at St. Marc des Carrieres for the production of floral moss. The moss is dried on the ground and on racks, and the product is baled in hand-operated hay balers.

Quebec Peat Moss Company Limited

This company produces peat moss from the bog at St. Bonaventure. The deposit is somewhat unusual as humified peat overlies the moss. This humified layer was used for the production of peat fuel which was sold in the neighbouring villages. The peat is being dried in piles and on racks and the fines from the dried peat are disposed of as garden mull for which there is quite a demand.

ONTARIO

In 1949 four companies in Ontario produced 6428 tons of peat moss, the largest producer being Atkins & Durbrow (Erie) Limited, Port Colborne.

Atkins & Durbrow (Erie) Limited

This company, formerly known as Erie Peat Limited operates on the Welland bog in Wainfleet and Humberstone townships, about 5 miles west of Port Colborne. Poultry and horticultural litter are produced. The bog has an area of 3,500 acres, 2,700 of which are owned by Atkins and Durbrow (Erie) Limited. Of this 2,700 acres 800 contain peat moss varying in thickness from 3 to 7 feet. This is mainly sphagnum, with an admixture of eriophorum and other grasses, is fairly light in colour, and resembles the deposit at Alfred, Ontario.

The developed area is divided into 80-acre drying fields, separated by drains 2 to 4 feet deep.

The peat is excavated with a power digger and stacked on the side of the ditch in small piles. It is then cut up manually with a spade and allowed to dry in the usual way and then hauled to the mill or storage stacks by field railway, according to operating requirements. On arrival at the mill it is elevated to the shredders, then passed over the screens and dropped into bins above the presses. These presses are hydraulically operated and compress a load of 23 cubic feet into bales which are covered either with veneer sheets or burlap, according to the customers' requirements.

Canadian Humar Corporation, Limited

This company operates the Westover bog in Beverly township, Wentworth county, 17 miles from Hamilton and produces the soil conditioner known as Hu-Mar. The surface

of the bog is covered with low scrub and bushes and the deposit itself 4 to 5 feet thick, overlies a bed of limy marl 3 to 4 feet thick. This peat would have very little value under ordinary conditions, but mixed with the right proportion of limy marl it makes a soil conditioner with an appropriate mixture of humus and alkaline earths. The deposit was originally owned by Beverley Holdings Corporation.

The mixture of peat and underlying marl is excavated by steam shovel, loaded onto dump cars, and hauled by light railway to the drying fields where it weathers during the winter, and is then spread out for drying. It is cultivated and harrowed to mix the material thoroughly, then screened and bagged, and trucked to the storage warehouse at Dundas, Ontario.

Arctic Peat Moss Corporation, Limited.

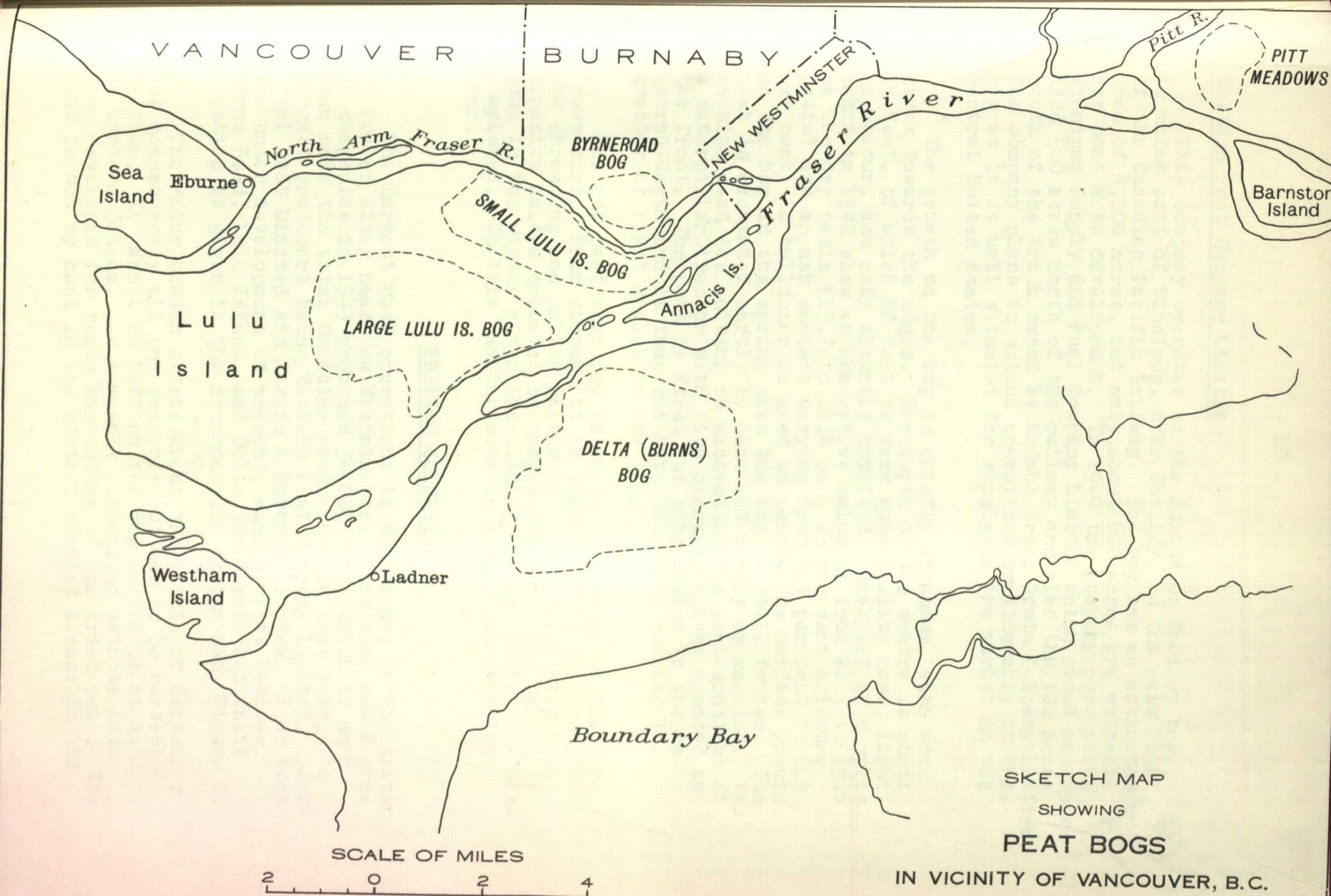
This company operates on the Arctic bog (also known as the Crozier bog), 9 miles southwest of Fort Frances. At present production is chiefly horticultural moss for shipment to Texas and the central States. The bog has an area of about 600 acres and is accessible by a good road. It has been under development for several years and production was started in 1942. The peat moss stratum has a thickness of about 4 feet and is composed of sphagnum with a certain admixture of carex and aquatic plant residues. Analyses of samples taken in 1942 show an absorptive value varying from 12.2 to 14.2 (8.9 to 10.4 on the 25 per cent moisture basis) and an ash content from 5.0 to 6.1 per cent. The peat is dug in the usual way, dried on the field and on racks, and taken to the storage shed by a field railway. The baling shed was burned in 1945 with the destruction of all the equipment, but two hand-baling presses were installed temporarily to maintain output which is now back to normal.

Pinewood Peat Industries

This company (formerly Polar Bear Peat Moss Products) previously operated the Polar Bear bog near Pinewood about 12 miles east of Rainy River. Following the destruction of its mill at Pinewood in 1945, it transferred operations to the Emo bog about 20 miles west of Fort Frances. The dried peat is stacked at the road that skirts the bog and is then trucked to the mill at Barwick about 14 miles from the bog. The bales are made of veneer and slats in a hand baler which it is hoped to mechanise when the Hydro power line is extended to Barwick. This is a relatively small producer and it is handicapped by having the mill so far from the bog.

MANITOBA

The 1367 tons produced in 1949 came from the Julius or Shelley bog east of Winnipeg. In previous years a small amount was produced from bogs near Lac du Bonnet.



VANCOUVER

BURNABY

NEW WESTMINSTER

PITT MEADOWS

North Arm Fraser R.

BYRNEROAD BOG

Fraser River

Pitt R.

Barnston Island

Sea Island

Eburne

SMALL LULU IS. BOG

Annacis Is.

Lulu Island

LARGE LULU IS. BOG

DELTA (BURNS) BOG

Westham Island

Ladner

Boundary Bay

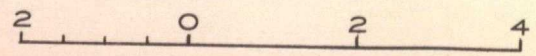
SKETCH MAP

SHOWING

PEAT BOGS

IN VICINITY OF VANCOUVER, B.C.

SCALE OF MILES



Western Peat Company Limited

This company operates on the Julius or Shelley bog, 60 miles east of Winnipeg, near Shelley, on the main line of the Canadian Pacific Railway. The bog has an estimated area of 4,000 acres, but only about 600 acres are suitable for peat moss development. In 1949 the company purchased Winnipeg Supply and Fuel Company Limited which owned and operated 500 acres north of the railway and also the 100 acres south of the track owned by McCabe Bros. Grain Company Limited. The company plans to extend operations considerably at this bog as it is well situated for supplying the market in the central United States.

*The bog + the plant
to handling peat
primarily from
the bog*

The growth on the bog is chiefly sphagnum, with some carex towards the edges. The depth at the centre is about 15 feet, of which 10 feet is very good quality moss, light in colour, and only slightly humified. Analyses of samples taken in 1942 show an absorptive value of from 21.3 to 15.6 on the dry basis (15.7 to 11.4 on a 25 per cent moisture basis) and an ash content varying from 4.9 per cent to 6.9 per cent. A bulldozer is used to remove the surface growth on the bog in the spring when the bog is still frozen. The peat is excavated partly by hand and partly by machine. The machine used for cutting or excavating the peat consists of a caterpillar tractor with five circular knives mounted at the front. The peat is first cut into strips to the required depth and is then cut into blocks by running the tractor at right angles to the original cut.

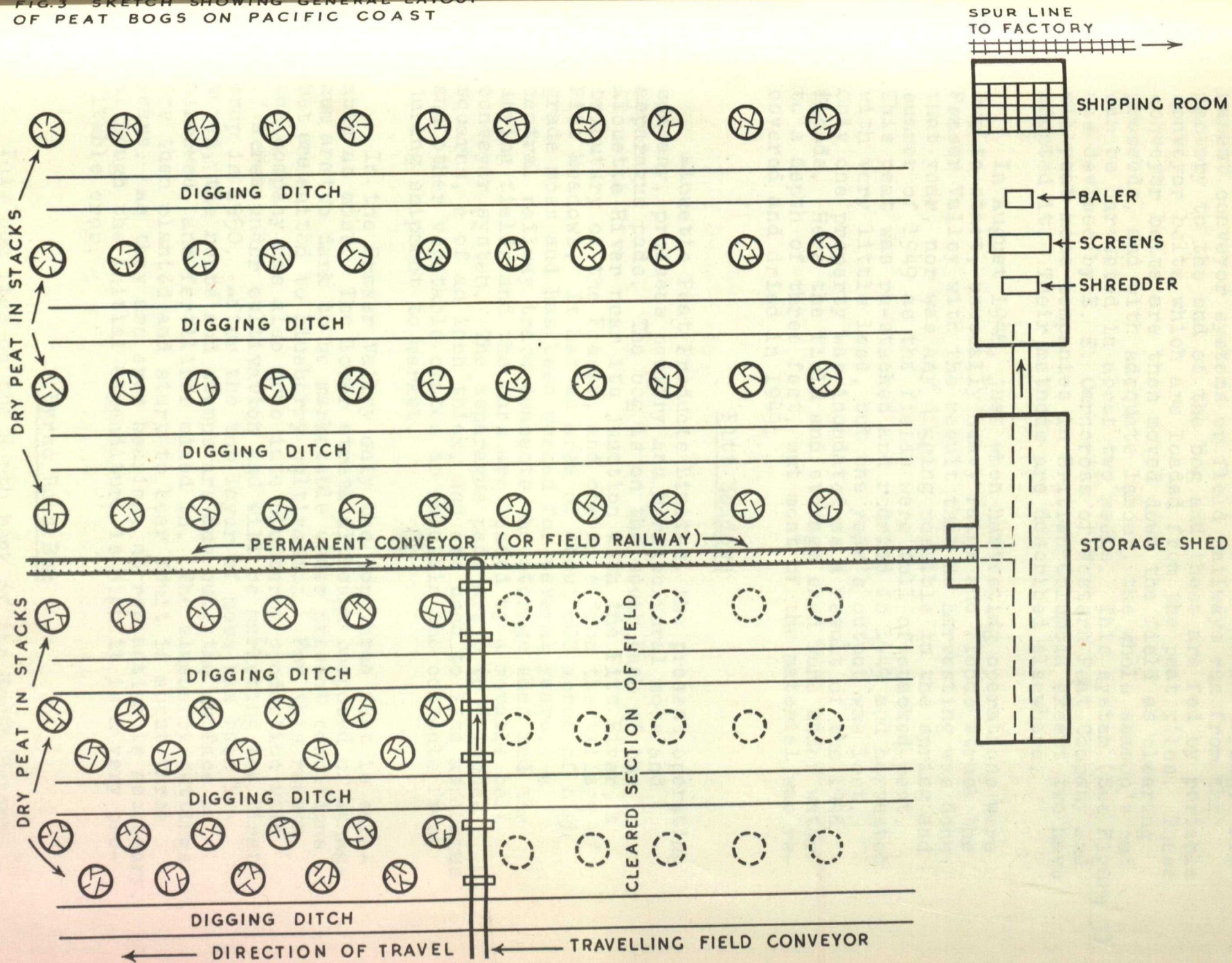
The cut peat when dry is taken to storage on tractor-drawn cars. From storage it is taken by belt conveyor to the shredding and baling mill which is equipped with high capacity balers operated by compressed air. The baling is done in the winter after the cutting and harvesting has been completed. In this way the work is spread out over the year.

BRITISH COLUMBIA

The largest peat operations in Canada are in the delta of Fraser River near New Westminster. From this small area 16 companies in 1949 produced 34,000 tons, which is more than half the total Canadian production in that year, the largest producers being Western Peat Company Limited, Industrial Peat Limited and Atkins & Durbrow Limited. Four bogs are under development at present, namely, Pitt Meadows, Byrne Road, Lulu Island, and Delta (or Burns) and their location is given in the accompanying sketch map, Figure 2.

The rainy season starts about the middle of September and consequently all the season's cut has to be harvested by then. It cannot be left on the bog to freeze as is done in eastern Canada. As a result mechanized methods have been developed for rapid harvesting of the dried peat. The peat is cut by hand in the winter, stacked alongside the

FIG. 3 SKETCH SHOWING GENERAL LAYOUT OF PEAT BOGS ON PACIFIC COAST



ditches, and later built into piles to finish drying. Permanent conveyor systems or field railways run from the factory to the end of the bog and these are fed by portable conveyor belts which are loaded from the peat piles. These conveyor belts are then moved down the field as clearing proceeds, and with adequate labour, the whole season's cut can be harvested in about two weeks. This system (See Figure 3) was devised by E. E. Carncross of Western Peat Company and all peat moss companies in British Columbia except two have adopted it. Their methods are described elsewhere.

In August 1948, just when harvesting operations were due to start, unusually heavy rains and floods struck the Fraser Valley with the result that no harvesting was done that year, nor was any digging possible in the spring and summer of 1949 as the fields were full of stacked peat. This peat was re-stacked and redried in 1949 and harvested with very little loss, but one year's output was lost. Only one property was inundated as a result of the 1948 floods. Here the field and storage shed were under water to a depth of three feet, but most of the material was recovered and dried in 1949.

Pitt Meadows

Alouette Peat Products Limited, the present operating company, produces poultry and horticultural moss and asparagus pads. The bog is on the south bank of the Alouette River near its junction with the Pitt River, a tributary of the Fraser, and one mile from the village of Pitt Meadows. It has an area of about 600 acres of high grade moss and has been worked for several years. A central railway track connects the storage shed and the drying fields and the cars are loaded by a movable belt conveyor system. The asparagus pads are 6 to 8 inches squares, $\frac{1}{4}$ of an inch thick, and are used to line asparagus and other vegetable crates to maintain the contents fresh during shipment to market.

In the Fraser Valley only the top three feet is saleable as moss. The lower strata although composed of sphagnum are too dark to be marketable under present conditions but are suited to blueberry cultivation. For this reason, the company has also gone into blueberry production with 17 acres under cultivation and will be marketing the first crop in 1950. After the top layer of moss has been removed, the roots and stumps are dug out, the surface is harrowed, and fertilizer mixed in. The blueberry cuttings are then planted and start to bear fruit in about three years. As they are ever bearing, no replanting is necessary. Although the initial expenditure is high it is a very profitable crop.

Byrne Road Bog

This bog lies on the north bank of the North Branch of Fraser River, close to New Westminster. It has an estimated area of 700 acres of high grade moss. Four com-

panies are operating on the deposit, namely, Excelsior Peat Limited, Northern Peat Moss Company Limited, Coast Peat Company Limited and Byrneroad Peat Farm.

The first three companies operate by the standard method, but Byrneroad Peat Farm has a 24-acre property which it works by harrowing the peat with spring toothed cultivators to a depth of three inches. After drying for three or four days, according to the weather, this material is raked into winrows. A self-propelled machine lifts the peat from the winrows by suction into a hammer-mill. This shreds the peat and delivers it into a hopper wagon which follows behind the machine. When full, the wagon goes to the baling shed. This sized material is sold as horticultural moss. For chicken litter the peat is not ground but is lifted by a travelling elevator into an accompanying wagon and then hauled to the baling shed. No large amount of working capital is tied up in stacks of drying material, and a steady production during the summer is maintained. However this system of operating does not seem to be popular for large scale operations.

Small Lulu Island Bog

This bog is at the eastern end of Lulu Island and borders the north arm of Fraser River. At present only the extreme eastern part and strips along the northern and southern margins are being operated. Drillings indicate a thickness of peat from 2 to 20 feet. The upper layers consist of high grade moss (absorption factor 18 to 20), but the lower sections are too highly humified to be suitable for peat moss manufacture. Three companies are operating on the northern section and two on the southern section.

Northern Section

Pacific Peat Products Limited, Northern Peat Moss Company Limited and Lulu Island Peat Company Limited, the three companies, operate on the "Carncross" system. At Pacific Peat Products' plant the amount of peat fed to the baling machine is automatically controlled so that each bale is of uniform weight. Northern Peat Moss Company operates for the most part by the usual system, but has devised a "combine" machine, which harrows the peat, raises it by suction to a shredder, and delivers it into paper bags, all on the one machine. These bags hold 25 to 50-lb. of loose peat which is sold locally for horticultural and insulating purposes.

Southern Section

Three plants are operating on the southern margin. Western Peat Company, Limited, with two plants, is the largest producer in the district, the other operator, which is relatively small, being Columbia Products Limited. Western Peat Company has been operating for several years and produces horticultural litter and asparagus pads for the American market. It owns 800 acres, of which 600 are

utilized for the production of moss. The bog has a cover of moss 6 feet thick. The upper 3 feet contains moss of good quality, but below this there is a general increase in humification. Harvesting is done with three large stationary conveyors having a total length of $3\frac{1}{2}$ miles that are fed by five portable conveyor belts, each 1,200 feet long. The harvested moss is stored in large sheds, with conveyors running lengthwise along the middle of the floor for bringing the moss to the baling factory. This company also has 60 acres under blueberry cultivation in the section of the bog that has been wholly excavated.

A new development by this company is the production of peat moss briquettes, made by forcing air-dried peat through dies $\frac{3}{4}$ inch in diameter. The resulting cylindrical briquettes are about an inch long. They are twice as heavy as ordinary baled peat, which means that double the ordinary quantity can be packed in a car. They are intended chiefly for the retail trade and are done up in 25 to 50-pound bags. They are clean and dustless and when placed in water they swell up and disintegrate and are ready for use.

Large Lulu Island Bog

Development of the eastern end of the large Lulu Island bog has been started and three relatively small plants are in operation, Richmond Peat Products Limited, Acme Peat Products Limited, and Blundell Peat Company Limited.

Delta Bog

This is the largest bog in the Fraser River delta. Two companies operate on it, namely, Industrial Peat Limited which owns or controls 4,000 acres, and Atkins and Durbrow Limited with 1,000 acres. The bog lies south of Fraser River and is almost encircled by good roads. The main line of the Great Northern Railway skirts its eastern boundary. The present area is about 5,000 acres. The quality of the moss is very high in the upper stratum with an absorption factor of about 25, but there is a marked decrease in quality below the three-foot level.

Industrial Peat Limited

This company was organized in 1942 to produce the peat moss required by Basic Magnesium Limited for that company's plant at Las Vegas Nevada, and was by far the largest producer in Canada. About 2,000 acres were cleared and drained; drying fields were laid out; miles of field railways were built; an efficient fire protection system was installed; a large labour force was trained; and a quantity of peat equivalent to about 500,000 bales was cut.

Late in 1943 Basic Magnesium Limited discontinued the use of peat moss in its process, and the stock of peat on the bog was sold for poultry and horticultural litter. In 1945 the plant was bought by Western Peat Company Limited and is now operated as one of its units.

FIG. 4 DIAGRAMATIC SKETCH OF LAYOUT FOR MECHANICAL EXCAVATION AND DRYING OF PEAT MOSS

