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CONTROL EXPORT OF HIDES, SKIN AND LEATHER

Owing to Abnormal Situation in Market Government, After Trade Conference Puts Restriction on Export

SITUATION EXPLAINED

The Minister of Trade and Commerce has given publicity to the following communication:—

Owing to the abnormal situation of the hide and leather markets, which vitally affects the interests of both consumers and producers of boots and shoes in Canada, the Government has called a conference of the various interests concerned to consider and advise as to the best course to be pursued in the premises. In the meantime, it is deemed wise as a preliminary measure to place the export of hides, skins and leather under control. An Order in Council has therefore been passed and is now operative to the effect that, pending consideration of other necessary action, the exportation from Canada of raw hides, skins and leather for the manufacture of boots and shoes shall be prohibited, except under license from the Canadian Trade Commission. The main features of the situation above mentioned are as follows:—

1. A great advance in prices of hides, followed by a consequential advance in cost of leather and of boots and shoes made therefrom. In June, 1918, heavy upper leather sold from 46 to 48 cents, based upon hides costing from 24 to 26 cents. On July 1, 1919, similar leather sold at 84 to 86 cents, based on hides at 60 cents. That is, the price of leather has advanced about 82 per cent whilst in this same period, the price of hides has advanced 140 per cent.

2. These prices are greatly in excess of English prices, owing to the fact that English buyers purchased heavily in foreign markets before the advance in prices caused by the stringency thus created. There is an embargo on the export of hides from the United Kingdom and British producers of boots and shoes are thus enabled to manufacture at prices which inure to the advantage alike of British consumers and of the export trade of Great Britain.

3. Under these conditions, the boot and shoe industry of Canada is faced with a lack of supply of leather for their productive output for export purposes and with necessity of producing even that supply at a cost which will be reflected heavily in the cost to the consumer in Canada. In the meantime, Canadian hides and leather are being exported in large quantities. The main problem is how to secure the necessary

TRADE COMMISSION IS ALLOWED TO ASSESS FOR PERCENTAGE.

The volume of trade which has passed through the hands of the Canadian Trade Commission has become so large that an Order in Council has been passed allowing the Commission to assess Canadian vendors one per cent on the orders obtained through the Commission. The order, passed on August 2, is as follows:—

The Committee of the Privy Council, on the recommendation of the Minister of Trade and Commerce, advise that in order to provide a fund out of which shall be defrayed the expenses of the Canadian Trade Mission in London and the Canadian Trade Commission, incurred by them in performing the services imposed by Orders in Council dated respectively, 7th November, 1918, and 6th December, 1918, and by any subsequent Orders in Council amending the same, the Canadian Trade Commission be authorized to assess upon the vendors of Canadian products receiving and executing orders or contracts obtained through the above mentioned organizations, one per cent of the face value of such orders to be paid into the credit of the Canadian Trade Commission in a chartered Bank of Canada.

The expenses of the Canadian Trade Mission in London and the Canadian Trade Commission will be a legitimate charge upon this fund and will be paid by cheque, signed by officers properly authorized therefor by the Canadian Trade Commission. This fund and all receipts into and expenditures therefrom will be subject to the audit of the Auditor General of the Dominion of Canada.

RODOLPHE BOUDREAU,
Clerk of the Privy Council.

supply of leather at reasonable cost, first, to meet the demands of Canadian consumption, and secondly, to enable the industry to participate in the export markets of the world.

The Order in Council in full is as follows:—

Whereas His Excellency the Governor General in Council has had under consideration a recommendation from the Minister of Trade and Commerce, in which he calls attention to a report from the Cost of Living Commissioner to the Minister of Labour respecting the increasing price of hides and leather and the consequent increase in the cost of boots and shoes.

Therefore His Excellency the Governor General in Council is pleased to order and it is hereby ordered that, pending the consideration of other necessary action in the premises, the exportation from Canada of raw hides, skins and leathers for boot and shoe purposes, shall be and the same is hereby prohibited except under license from the Canadian Trade Commission.

EFFECTIVE WORK DONE IN VARIETY OF RESEARCHES

Investigations Included Reduction of Low Grade Iron Ores, Wheat Genetics, Discoloration of Canned Lobster, Fish Curing and Industrial Alcohol

In his annual report of the work of the Honorary Advisory Council for Scientific and Industrial Research for the year ending March 31, 1919, Dr. A. B. Macallum, administrative chairman, sets forth the various activities of the Council during this period.

In the chapter on the "General Account of the Work of the Council," he observes that its activities have been greatly affected by war conditions, the absence of Drs. Adams and McLennan overseas and the resignation of Professor Kirkpatrick having thrown much extra work on the other members. The operations of the Military Service Act were reflected in the restricting of the number of researchers, students for studentships and fellowships, so that of the twenty-five such studentships and fellowships only seven were awarded during the year.

REDUCTION OF LOW-GRADE IRON ORES.

Discussing the various investigations conducted, Dr. Macallum says: "In spite of the handicap experienced in the lack of researchers, some effective work was done. The investigation of the reduction of low-grade iron ores under the supervision of Professor Stansfield, of McGill University, has advanced to a stage which promises important results bearing on the utilization of ores of this character so abundant in Canada. There is but a

small supply of high-grade iron ore in the Dominion, which is emphasized by the fact that 96 per cent of all the iron ore smelted in Canada is imported, this importation including, of course, that obtained from Belle Isle, Newfoundland. The total quantity of high-grade ore of the globe available is, through its use for producing iron and steel, diminishing at a rate which makes its exhaustion a not far-distant event, and in consequence it will eventually be necessary to turn to those of lower grades for the supply of ore for the industry. If the smelting could be effected on an industrial scale at a reduction in the cost which would offset the disadvantages at present attendant on the utilization of these lower grade ores it would make available, immediately or in the very near future, the immense quantities of such ores in Canada. The Research Council regards the solution of this problem as of very great importance to Canadian industry and as justifying a protracted experimental investigation carried on on a large scale."

WHEAT GENETICS.

The subject of wheat genetics is discussed as follows: "The investigation on wheat genetics, carried on for the past two years and for which the Research Council made last year a substantial grant, has already given very interesting results. It may be explained that the risks to which wheat growing in the three western provinces is exposed are early frost and the rust fungus. The Marquis wheat, the origin of which is a very noteworthy achievement resulting from the experiments in wheat breeding on the part of Dr. Charles E. Saunders, of the Experi-

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CONTRACTS AWARDED BY ORDERS IN COUNCIL

Breakwater at Souris, P.E.I., Heating Tunnel, and Wharf Repairs Let

The Department of Public Works has awarded the following contracts under Order in Council:—

Quebec, P.Q., King's wharf—Repairs to Marine Storage Building. Contractor, L. H. Peters, Ltd., of Quebec, P.Q., at \$9,060. Order in Council dated July 23, 1919.

Three Rivers, P.Q.—Concrete sidewalks, grading and seeding in connection with new public building. Contractors, A. Heon & Cie, of Three Rivers, P.Q., at \$13,808. Order in Council dated July 23, 1919.

Thessalon, Ont.—Reconstruction of wharf. Contractor, A. G. Tweedie, of Sault Ste. Marie, Ont., at \$9,428.75. Order in Council July 25, 1919.

Comox, B.C.—Repairs to wharf. Contractors, Fraser River Pile Driving Co., Ltd., of New Westminster, B.C., at \$17,358.04. Order in Council July 25, 1919.

Souris, P.E.I.—Delivery and placing of stone on portions of seaward side of breakwater. Contractors, Phillips & Mutch, of Charlottetown, P.E.I., at \$53,750. Order in Council July 26, 1919.

Ottawa—Heating tunnel on Wellington street. Contractors, Doran & Devlin, of Ottawa, at \$14,640. Order in Council July 26, 1919.

East St. John, N.B.—Roadways and grading in connection with County Hospital. Contractors, Lewis Stephen (per Thomas Stephen, attorney), of St. John, N.B., at \$5,500. Order in Council July 25, 1919.

Trade of Britain.

The total exports of Great Britain for June were 76,526,425 pounds against imports 122,945,655 pounds an excess of imports of 46,419,230 pounds.

SOLDIERS' PROPERTY IS GIVEN EXEMPTION FROM SOME RATES

Regulations are Passed Under
Dominion Forest Reserves
and Parks Act Allowing
Privileges to Returned Men

TERMS ARE DEFINED

In an Order in Council passed on July 29 the Minister of the Interior reports that in Dominion Parks certain rentals and water and sewer rates are collected by the Dominion Government.

Therefore His Excellency the Governor General in Council, under the authority of the Dominion Forest Reserves and Parks Act, is pleased to make the following regulations exempting the home property of soldiers from the payment of those rates, and the said regulations to govern in such cases, are hereby made and established accordingly:—

1. In these regulations, unless the context otherwise requires:

1. The term "Soldier" shall mean any person having on or after the first day of August, 1914, his or her permanent residence in a Dominion Park, and who is or has been—

(a) A member of and on actual service in the active military forces raised by the Government of Canada for the express purpose of serving outside Canada in the present war;

(b) A member of and on actual service in the naval forces of Canada in the present war;

(c) A member of and on actual service in the present war in the military or naval forces of His Majesty, raised otherwise than by the Government of Canada;

(d) A member of and on actual service in the military forces of any of the Allies of His Majesty in the present war;

(e) Any woman who has volunteered her services for work overseas connected with the present war and whose services have been accepted by the Government of Canada or of Great Britain and Ireland or of their Allies and who is or has been actually serving in such capacity overseas.

The term "Soldier" shall not include:

(a) Any person belonging to or enrolled in the Militia of Canada or in forces raised for the protection of Canada, within the boundaries of Canada, unless such person is or has been actually serving in His Majesty's forces outside of Canada.

(b) Any person called up under the Military Service Act, being chapter 19 of the Statutes of the Dominion of Canada, 1917, or any amendments thereto or any Act passed in substitution thereof, unless such person so called up has been actually enrolled in the military forces of Canada and has served overseas.

2. "Rates" means any rental, water or sewer rates imposed by the Dominion Government or any part of such rates.

3. "Home property" is land which fulfils the following conditions:

(a) It must be land which was occupied by a soldier or his wife or any of his ascendants or descendants dependent upon him for support at the time such soldier became a soldier within the meaning of these regulations.

(b) It must consist of not more than four lots according to a plan of subdivision if situate in a city, town or village, and such lots must be contiguous; or of not more than 320 acres of land if situate outside a city, town or village, and if composed of more than one parcel of land, such parcels must be situate within a circle of nine miles radius.

(c) It must be listed on a home property register kept by the Super-

intendent of the Dominion Park in which it is situated in accordance with the provisions of these regulations.

2. No soldier shall become at any time liable in respect of home property to the payment of any rates which, when they first fall due, fall due or would but for these regulations fall due (a) after December 31, 1917, and before the expiry of one year after the declaration of peace by Great Britain; (b) from himself, while a soldier.

3. Where any soldier cannot claim as home property any land or lands to the full extent allowed by these regulations, then he may claim as home property land with respect to which his wife, if she were a soldier, could claim exemption, but so that exemption shall only be claimed in all with respect to four contiguous lots, or 320 acres, as the case may be.

4. Each superintendent of a Dominion Park shall keep a register of home properties.

2. Any soldier may apply to a superintendent of a Dominion Park to have home property listed upon the register.

3. Such application shall be accompanied with such evidence as to the land affected thereby being home property as the superintendent may demand.

4. Any superintendent shall, upon being satisfied that any land is home property, list the same upon the register, whether any formal application has been made with respect thereto or not, but if no application has been made with respect thereto the superintendent shall be in no way liable for not listing any land.

5. Each superintendent shall from time to time forward to the Minister of the Interior a copy of his register, if so directed by him.

5. Where any land would be home property but for the fact that it has not been listed in accordance with the provisions of these regulations, and a soldier has become liable to rates in respect thereof, such rates shall be remitted or paid back.

6. Where any application, claim or notification may be made by a soldier and he does not make the same within a reasonable time, then such application, claim or notification may be made by his wife, or any of his ascendants or descendants dependent upon him for support, or his agent or solicitor.

7. Any person who has been a soldier shall for one year from date of his discharge or one year after the declaration of peace by Great Britain, whichever first happens, continue to be exempt from the rates from which he would have been exempt if he had continued to be a soldier.

2. If any person being a soldier has died since the beginning of the war, but before the coming into force of these regulations, or if any soldier dies while personally entitled to such exemption, his legal representatives and his estate shall, in favour of his widow or in favour of any of his ascendants or descendants then dependent upon him for support, have the same exemption from rates until the expiry of one year after the declaration of peace by Great Britain as such soldier would have had if he had continued to live.

8. If any dispute or difficulty arises as to whether any land is exempted land, or as to whether any person is or was a soldier, or as to whether any person has been discharged, or as to whether any person is or was dependent upon a soldier for support, the Minister of the Interior shall decide thereon, and his decision when reduced to writing shall be conclusive proof of the points decided therein.

Industrial Value of Elm.

Rock elm is the strongest and most valuable of the elms cut in Canada, as stated in a report on the Forest Products of Canada, issued by the Forestry Branch, Department of the Interior. Red elm is at the opposite extreme, while white elm, the most abundant of the three species, has qualities between the other two. Most of the elm cut is used in the slack coeprage industry. It is also used in the manufacture of agricultural implements, boats, and vehicles, and for building purposes.

War Savings Stamps pay 4½% compounded half-yearly.

ONTARIO'S OUTPUT OF FLAX FOR FIBRE

Production During 1918 as Furnished by Department of Agriculture

There were 20,000 acres grown for fibre production in Ontario last year, giving an average of 310 pounds of pure line fibre per acre, valued at 55 to 70 cents per pound, according to grade. The fibre was of fair quality, but short and not quite so uniform as the 1917 crop. There were 900 tons of tow, which was graded at prices ranging from 8 to 20 cents per pound. Under an Order in Council dated October 23, 1918, all Canadian seed of fibre variety, amounting to 110,000 bushels, was commandeered and shipped to Ireland, the price realized being \$27.50 per sack of 182 pounds.

The following is an approximate estimate of the area, production, and value of flax grown for fibre in Ontario for each of the four years 1915-18:—

Description.	1915.	1916.	1917.	1918.
Area.....acres	4,000	5,200	8,000	20,000
Yield of fibre per acre.....lb.	200	57	350	310
Total yield of fibre.....tons.	800	300	1,400	3,100
Total yield of tow....."	80	175	—	900
Yield of seed per acre.....bush.	12	48	9	8 ¹
Total yield of seed....."	48,000	25,000	72,000	110,000
Value of fibre per ton.....\$	400	600	1,100	350
Total value of fibre.....\$	320,000	180,000	1,540,000	1,085,000
Total value of tow.....\$	2,800	5,000	—	270,000
Value of seed per bush.....\$	1.60	3	5.50	8.50 ¹
Total value of seed.....\$	76,800	75,000	396,000	930,769 ¹

¹ Seed of fibre quality shipped to Ireland.

In 1916 there were, in addition, about 800 tons of flax straw, valued at \$15 per ton, or \$12,000. The total value of the products for 1918 is about \$2,285,750, exclusive of the value of seed not of fibre quality, as stated in the July number of the *Agricultural Gazette*, issued by the Department of Agriculture.

EMPLOYMENT REPORT FOR MIDDLE JULY

Steady Improvement in Employment Conditions is Noted by Department

Weekly reports from employers in Ontario and Quebec to the Employment Service of the Department of Labour continue to show steady and fairly rapid improvement in employment conditions.

Final returns for the week ending July 12, showed that 2,669 Ontario and Quebec firms with a pay-roll of 364,432 persons had increased their staffs by 3,596 persons or 1 per cent and anticipated making a further net addition of 2,172 persons or .6 per cent during the following week.

Returns for the week ending July 19, show that this anticipated increase was realized. The 2,409 firms whose reports have been compiled had a pay-roll on July 19 of 337,038, an actual increase during the week of 1,048 persons or .3 per cent. Those identical establishments, moreover, during the week ending July 26 expected to make a further net addition to their staffs of 1,041 persons or .3 per cent.

During the week ending July 19 the plus industries (those that registered a net increase in number of employees) were: clay, glass and stone products; commercial and mercantile occupations; food products; leather and leather goods; metals; pulp, paper and printing; textiles; woodworking and furniture; railway construction; railway operation; miscellaneous occupations. In the commercial and mercantile group the anticipated increase for July 19 was .3 per cent and the actual increase .3 per cent. For the other groups corresponding figures were: clay, glass and

stone products 1 per cent and 1.8 per cent; food products .6 and .8 per cent; leather and leather goods .8 and 2.5 per cent; metals, .2 and .4 per cent; pulp, paper and printing .4 and .4 per cent; textiles 1.4 and .7 per cent; woodworking and furniture .9 and 1 per cent; railway construction 5.4 and 3.9; railway operation .1 and .1 per cent; miscellaneous occupations .6 and .1 per cent. A decline of .3 per cent was anticipated in the vehicle group. The actual decline, however, was 1 per cent. The decline here took place in the car building and shipbuilding industries. The above groups, with the exception of clay, glass and stone products and railway operation, expected to add to their staffs during the week ending July 26.

The only minus industries reported during the week ending July 19 were: building and construction, lumber, chemicals, vehicles, quarrying and mining. All five groups, however, expected to make nominal additions to their staffs during the week ending July 26.

For the whole Dominion 3,242 firms reported to the Employment Service of the Department of Labour for the week ending July 12. Of these 206 were

in the Maritime Provinces, 838 in Quebec, 1,831 in Ontario, 366 in the West. On July 12 these firms had 455,937 persons on their pay-roll compared with 455,915 the previous week, an increase of 22 persons or 1.22 per cent. Moreover, these same firms for the week ending July 19 expected to make a further net addition of 2,368 persons or .5 per cent. The largest single decline during the week ending July 12 was in the vehicle group. Declines were registered also in quarrying and mining and clay, glass and stone products.

During the week ending July 19 the only anticipated decline was in the vehicle industry. All other groups registered net anticipated increases.

In the Maritime Provinces as a whole there was an actual decrease of 2 per cent during the week ending July 12 and a further anticipated decrease of .9 per cent for the week of the 19th. The decline in the Maritime Provinces occurred largely in metals and vehicles. In Quebec there was an actual increase for the week ending July 12 of 1 per cent with a further anticipated increase of 3 per cent. In Ontario there was an actual increase of 1 per cent with a further anticipated increase of .8 per cent. Employers in the four western provinces report an actual increase of 3.5 per cent during the week of the 12th followed by a further anticipated increase of .7 per cent in the week ending July 19. This increase was shared by all groups but particularly by the lumber and vehicle industries.

Paper Exports Gain.

The exports of printing paper from Canada during the years ending June, 1917, 1918 and 1919 had a value of \$26,722,692, \$35,828,459, and \$42,086,343, respectively, as stated in a report on the trade of the Dominion for the above years, compiled by the Dominion Bureau of Statistics.

Beech is Cheapest Hardwood.

Beech is one of Ontario's cheapest hardwoods, probably the cheapest used as lumber, according to a bulletin on the wood-using industries of Ontario, issued by the Forestry Branch, Department of the Interior.

IMPROVEMENT IN SITUATION DURING JUNE

*Reduction in Unemployment
in Spite of Labour Unrest
and Return of Large Num-
ber of Soldiers*

INDUSTRIES ACTIVE

During June the labour market was very much disturbed by the great amount of industrial unrest that prevailed throughout the country. Disregarding this, however, there was a considerable reduction in the amount of unemployment, which reduction would have been greater but for the numbers of soldiers that returned from overseas during the month, it is stated in a general review of the conditions prevailing during the month in the July issue of the *Labour Gazette*, published by the Department of Labour.

INDUSTRIAL SITUATION.

In metals and machinery there was a slight decline in employment in the Maritime Provinces and in the West, but a slight increase in Ontario and Quebec. In conveyances there was a fairly considerable decline in the Maritime Provinces and a lesser decline throughout the rest of the country. In foods, tobaccos, and liquors there was a considerable increase in employment, the increase being more marked in the East than in the West. The fruit and vegetable canneries and soft drink establishments experienced the usual seasonable activity. In textiles, clothing, and laundering the activity of the previous month was well maintained and there was a good demand for female help. In the pulp and paper and printing groups there was a further slight increase in employment during the month. In woodworking and furniture the activity of the previous month was well maintained. In the boot and shoe factories of Ontario the demand for help continued, and in the rubber factories employment was very good. In the clay, glass, and stone group there was a decided improvement in all parts of the country when contrasted with the dullness of previous months. Normal conditions prevailed in the paint, oils, chemicals, and explosives group. In steam and electric railway operation conditions varied somewhat, but generally there was a slight increase in employment. Garages were active. Navigation and longshore work was held up on the West coast by strikes. In quarrying there was an increase in employment. The metal mining industry in the Cobalt district was considerably affected by strikes, but otherwise, in the industry as a whole, there was slightly increased activity. In coal mining the depression of the previous month was further increased by strikes in the Lethbridge district. In the building trades employment varied, though generally there was a slight increase over the previous month. In railway construction also there was some increase. The lumber industry continued to be active, operations being transferred from the rivers to the mills. The total amount of employment in the industry was about the same as in the previous month.

STRIKES.

The loss of time on account of industrial disputes during June was very much in excess of that of either May, 1919, or June, 1918. There were in existence at some time or other during the month 80 strikes, involving about 87,917 workpeople and resulting in a loss of about 1,445,021 working days, as compared with 84 strikes, 77,688 workpeople, and 893,816 working days in May, 1919, and 32 strikes, 11,888 workpeople, and 46,941 working days in June, 1918. On June 1 there were on record 48 strikes affecting 65,129 workpeople. Thirty-two strikes were reported as having commenced during June, com-

SUMMARY OF THE TRADE OF CANADA

	Twelve Months Ending June.		
	1917.	1918.	1919.
IMPORTS FOR CONSUMPTION.			
Dutiable goods.....	\$ 509,201,674	\$ 526,012,577	\$ 521,375,227
Free goods.....	442,940,959	396,169,034	348,122,276
Total imports, mdse.....	952,142,633	922,181,611	869,497,503
Duty collected.....	158,918,514	157,551,535	154,696,691
EXPORTS.			
Canadian.....	1,236,483,259	1,468,212,741	1,193,037,125
Foreign.....	32,115,204	43,041,534	57,701,852
Total exports, mdse.....	1,268,598,463	1,511,254,275	1,250,738,977
IMPORTS BY COUNTRIES.			
United Kingdom.....	104,202,775	72,230,167	75,114,350
Australia.....	775,522	2,324,028	4,954,257
British East Indies.....	7,148,869	17,707,736	14,044,645
British Guiana.....	7,613,149	6,201,416	7,335,218
British South Africa.....	229,336	982,121	898,330
British West Indies.....	13,938,449	9,730,489	8,336,966
Hong Kong.....	1,303,826	2,301,274	1,814,207
Newfoundland.....	2,171,031	3,010,716	2,940,892
New Zealand.....	2,170,383	4,025,592	7,868,841
Other British Empire.....	1,719,002	1,884,093	482,606
Argentine Republic.....	2,365,729	1,061,847	1,043,988
Brazil.....	1,023,556	811,717	1,240,325
China.....	1,250,658	1,789,502	1,340,244
Cuba.....	912,397	1,499,267	4,378,918
France.....	5,945,603	4,683,253	4,135,663
Italy.....	1,141,693	709,906	467,887
Japan.....	8,919,824	13,174,373	13,013,382
Netherlands.....	1,216,547	929,690	644,548
United States.....	771,754,748	760,479,788	696,806,809
Other Foreign Countries.....	16,339,536	16,644,636	22,635,427
EXPORTS BY COUNTRIES.			
United Kingdom.....	735,363,244	806,005,743	535,751,834
Australia.....	5,581,155	10,754,786	13,355,398
British East Indies.....	1,795,244	3,701,167	4,579,613
British Guiana.....	1,655,292	2,331,999	2,361,871
British South Africa.....	3,988,550	7,016,224	10,492,188
British West Indies.....	5,333,193	8,040,533	9,648,933
Hong Kong.....	757,325	792,769	962,892
Newfoundland.....	6,515,280	10,744,286	11,859,105
New Zealand.....	3,093,563	4,832,145	5,698,570
Other British Empire.....	2,637,511	2,069,520	3,491,065
Argentine Republic.....	1,624,966	1,312,462	5,492,102
Brazil.....	892,152	1,164,498	4,241,624
China.....	381,432	2,200,587	2,926,839
Cuba.....	3,353,063	3,859,004	5,799,777
France.....	102,403,474	175,454,375	82,284,878
Italy.....	6,029,372	5,481,287	15,047,828
Japan.....	1,227,434	6,115,093	11,916,035
Netherlands.....	1,403,911	2,233,638	1,877,289
United States.....	340,425,768	403,687,886	440,033,496
Other Foreign Countries.....	12,020,830	10,414,739	25,215,788

pared with 69 in May. Twenty-nine of the strikes commenced prior to June and fourteen of those commencing during June were reported terminated, leaving 37 strikes affecting approximately 23,755 workpeople on record at the end of June.

Tender for Kingston.

Sealed tenders addressed to the undersigned and endorsed "Tender for Grading and Road Work, Sydenham Military Hospital, Kingston, Ont.," will be received until 12 o'clock noon, Monday, August 11, 1919, for grading and road work to be done at Sydenham Military Hospital, Kingston, Ont.

Plans and specification can be seen and forms of tender obtained at the offices of the Chief Architect, Department of Public Works, Ottawa, the Superintendent of Construction, 258 Bagot street, Kingston, and the Superintendent of Dominion Buildings, Postal Station "F," Toronto, Ont.

Tenders will not be considered unless made on forms supplied by the Department and in accordance with the conditions set forth therein.

Each tender must be accompanied by an accepted cheque on a chartered bank, payable to the order of the Minister of Public Works, equal to 10 p.c. of the amount of the tender. War Loan Bonds of the Dominion will also be accepted as security, or war bonds and cheques if required to make up an odd amount.

By order,

R. C. DESROCHERS,
Secretary.

Department of Public Works,
Ottawa, July 30, 1919.

Sale of Contractor's Plant.

Sealed tenders addressed to the undersigned, and endorsed "Tender for purchase of Plant," will be received at this office until 12 o'clock noon, Monday, August 18, 1919, for the purchase of contractor's plant.

Forms containing description of the plant and conditions of sale may be seen and tender forms obtained at the following places: District Engineers' Offices, Equity Building, Toronto, Ont.; Shaughnessy Building, Montreal; Post Office Building, Quebec; Custom House, Halifax, N.S.; Resident Engineer's Office,

Old Post Office, St. John, N.B.; and at the Department of Public Works, Ottawa.

The plant may be visited in the River St. Charles, and in the sheds in the vicinity of the C.N.R. Bridge over the St. Charles River, at Quebec.

Tenders will not be considered unless made on forms supplied by the Department, and in accordance with conditions contained therein.

Each tender must be accompanied by an accepted cheque on a chartered bank, payable to the order of the Minister of Public Works, equal to 10 p.c. of the amount of the tender, which will be forfeited if the person tendering declines to carry out his bid.

An upset sale price has been set upon this plant.

By order,

R. C. DESROCHERS,
Secretary.

Department of Public Works,
Ottawa, July 31, 1919.

War Savings Stamps pay 4½%
compounded half-yearly.

PROGRESS OF WORK ON TRENT CANAL SUBJECT OF REPORT

Approximately 300 Miles of Canal in Operation; Work Remainder Well Advanced

UNIQUE WATERWAY

The route of the Trent canal as now in operation and under construction lies between Trenton, on the bay of Quinté, where direct connection is made with lake Ontario, and Honey Harbour, on Georgian bay, from which port the water of the upper great lakes are at once accessible. The portion of the canal now under construction lies between lake Couchiching and Georgian bay.

CANAL IN OPERATION.

That portion of the canal which lies between Trenton and Rice lake is now practically completed; the extent of the canal now in operation or ready for operation may therefore be stated as about 200 miles, or between Trenton and Washago. In addition to this, other channels maintained would approximate a total of 90 miles.

On those portions of the canal which have been under regular operation various improvements and repairs have been made, as stated in the current report of the Department of Railways and Canals.

CANAL UNDER CONSTRUCTION.

Ontario-Rice Lake Division.—Under this division is included the portion of the canal which lies between Trenton and the easterly end of Rice Lake, a total distance of 56½ miles. As already noted, this section of the canal is now practically completed, and will be opened for traffic early next season. A detailed description of the various works comprised in its construction and other matters of general interest will be found in last year's report, and also in the reports of several preceding years. The entire work when fully completed will have cost slightly over five million dollars.

Severn Division.—Under this division is included the portion of the canal between lake Couchiching and Port Severn, on Georgian Bay, a total distance of 43 miles. In this distance there will be included 4 miles of canal, 5½ miles of subaqueous channel, and 33½ miles of deep-river and lake navigation. The rise of about 139 feet between the level of Lake Huron and that of Lake Couchiching will be overcome by five locks. For the regulation of the river levels, fifteen dams will be required. The route of the canal will be crossed by eight steel bridges, five for highway and three for railway traffic. Five of these bridges will be fixed spans, and the remainder swing spans. For construction purposes this division has been subdivided into four sections or contracts known as sections 1, 2, and 3, and the Port Severn section. Section 1 is not yet under contract, and it is not likely that tenders on it will be called for until after the close of the war. The work to be undertaken will include the construction of three locks and two regulating dams, and will extend from deep water in Georgian Bay, near Island No. 181, 17 miles easterly, to a point a little above the Big Chute near the mouth of the Severn River. Section 2, now under contract, extends from the Big Chute to a point above McDonald's Rapids, a distance of 11½ miles. The work included in the contract comprises principally the construction of a dam at Pretty Channel, a dam, lock, and power-house at Swift Rapids, and the reconstruction of the Canadian Northern Railway bridge at

ACREAGE IN CEREALS FOR THIS CROP YEAR

The following table shows the acreage of cereals, 1918-19, as published by the *Agricultural Gazette of Canada*, Department of Agriculture:—

Countries.	1919.	1918.	Five years' average 1913 to 1917.	1919 compared with 1918.	1919 compared with 5 years' average.
	Acres.	Acres.	Acres.	%	%
WHEAT—					
Alsace-Lorraine.....	167,000	141,000	322,000	88.8	51.7
Denmark.....	125,000	141,000	143,000	88.8	87.6
Spain.....	11,317,000	10,230,000	9,970,000	110.6	113.5
France.....	11,087,000	11,360,000	13,251,000	97.6	83.7
England and Wales.....	2,400,000	2,537,000	1,902,000	96.0	128.0
Scotland.....	70,000	79,000	63,000	88.5	110.8
Greece.....	937,000	.....	.....	.....	.....
Italy.....	10,502,000	10,798,000	11,625,000	97.3	90.3
Canada.....	17,959,000	17,354,000	13,309,000	97.7	127.4
United States.....	71,526,000	59,110,000	52,490,000	121.0	136.3
India.....	23,415,000	35,497,000	30,851,000	66.0	75.9
Japan.....	1,362,000	1,458,000	1,287,000	93.4	105.8
Totals less Alsace-Lorraine and Greece.....	148,763,000	148,564,000	134,891,000	100.1	110.3
BARLEY—					
Alsace-Lorraine.....	139,000	.....	130,000	.....	.....
Denmark.....	555,000	537,000	531,000	103.3	104.5
Spain.....	2,493,000	1,818,000	1,855,000	137.1	134.4
France.....	1,814,000	1,955,000	2,322,900	92.8	78.1
England and Wales.....	98,000	103,000	52,000	95.0	189.0
Greece.....	59,000	.....	.....	.....	.....
Italy.....	272,000	272,000	292,000	93.1	93.1
Canada.....	576,000	555,000	143,000	103.8	402.8
United States.....	6,484,000	6,185,000	3,108,000	104.8	208.6
Totals, less Alsace-Lorraine and Greece.....	12,292,000	11,425,000	8,303,000	107.6	148.0
OATS—					
Spain.....	5,728,000	4,210,000	3,791,000	136.1	151.1
France.....	256,000	249,000	322,000	102.7	79.4
Greece.....	299,000	.....	.....	.....	.....
Italy.....	469,000	494,000	580,000	95.0	80.9
Canada.....	3,036,000	3,154,000	1,804,000	96.3	168.3
United States.....	8,899,000	8,679,000	7,761,000	91.9	114.7
Japan.....	2,931,000	2,721,000	3,046,000	107.7	96.2
Totals less Greece.....	21,319,000	20,507,000	17,304,000	104.0	123.2
OATS—					
France.....	1,652,000	1,711,000	1,831,000	96.6	90.2
Greece.....	156,000	.....	.....	.....	.....
Italy.....	1,112,000	1,211,000	1,173,000	91.8	94.8
Canada.....	14,654,000	14,790,000	11,272,000	99.1	130.0
United States.....	42,365,000	44,400,000	40,587,000	95.4	101.4
Totals less Greece.....	59,783,000	62,112,000	54,863,000	96.3	109.0
FLAX-SEED—					
Italy.....	45,000	42,000	44,000	105.9	101.2
India.....	1,841,000	2,932,000	3,462,000	62.8	53.2

Ragged Rapids. The dam at Pretty Channel was completed towards the close of 1915. The dam at Swift Rapids was completed near the close of navigation last season. Since the completion of this dam, the elevation of the water in the river between Swift Rapids and Ragged Rapids has been raised 47½ feet. The power-house at this point has been completed and all machinery installed, and it is expected that the plant will be in operation within a few days. Work on the lock has been proceeding satisfactorily. The excavation for the lock pit is about completed. The concrete work of the lock and the entrance piers is now about two-thirds completed. The upper entrance piers, breast wall and gate recess walls have been finished, and work on the side walls is well advanced. The swing span of the bridge at Washago for the crossing of the Canadian Northern Railway was completed during the year. The girder approach at the west end has not yet been erected, and the completion of the railway diversion on either side of the bridge has been delayed for want of rails. No further work was done on the substructure of the Ragged Rapids bridge. Section 3, which is about 15½ miles in length, extends from the easterly end of section 2 to deep water in Lake Couchiching. The contract for

the work to be undertaken includes the construction of a lock just north of Lake Couchiching, two highway swing bridges, one railway swing bridge, and several small dams near Washago, as well as a large amount of rock and earth excavation. Owing to the conditions resulting from the European War, a surrender of the contract was effected. Of the total amount of work to be performed under the contract, a little more than half has now been completed. Of the work thus far carried out, the following items are among the more important: The excavation for the Couchiching lock is practically completed, and the concrete work on the upper entrance piers, breast, and recess gate walls is well advanced. The dredging of the channel in Lake Couchiching is nearly completed. The canal cut across country, from the Muskoka Road bridge to the river, is well advanced. The highway bridge at Muskoka Road is completed and now in use. The construction of the pivot pier only at the Hamlet Highway crossing of the canal has thus far been carried out. The swing bridge for the crossing of the Canadian Northern Railway is complete, except for the erection of the fixed spans at the west end.

Buy War Savings Stamps.

DAIRY COMMISSIONER ISSUES A STATEMENT ON CHEESE SITUATION

No "Fixing" of Price and Dairy Produce Commission Will Not be Revived, he Declares

CANADIAN CHEESE PURCHASE

Mr. J. A. Ruddick, Dairy and Cold Storage Commissioner, Department of Agriculture, has issued the following statement in respect to the purchase of Canadian cheese, to the amount of 20,000 tons, by the British Butter and Cheese Import Committee:—

Following the recent collapse of the cheese market a representative of the British Ministry of Food (Mr. F. Warren) and the Chairman of the Butter and Cheese Import Committee (Sir Thomas Clement) associated with the Ministry of Food, London, England, were in Canada last week for the purpose of arranging for the purchase of 20,000 tons of Canadian cheese. They met the producers at Brockville on Thursday and offered 25 cents per pound delivered at Montreal. Sir Thomas Clement announced that a local committee to represent the British Butter and Cheese Import Committee would be formed in Montreal to arrange for the export of the cheese. The Canadian merchants who handle the cheese are to be paid a commission of 1½ per cent plus ¼ cent per pound to cover handling charges.

Mr. Warren was asked for a statement as to the reasons for the purchase and why they are unable to pay more than 25 cents per pound. His answer was as follows:—

"The maximum retail price of cheese in Great Britain, including the home production, has been fixed by the Ministry of Food at one shilling and sixpence (36 cents) per pound, and there are sufficient reasons why the maximum cannot be raised.

"The cost of handling the cheese from the time it is delivered by the Canadian producer at Montreal until it reaches the consumer in Great Britain at the present time amounts to 10.95 cents per pound, made up of the following items:—

	Cents per Lb.
British retailers' profit (which includes loss in weight in cutting up).....	5.0
Commission paid to British wholesalers and British importers (average).....	1.5
Inland transport in Great Britain.....	0.5
Storage and handling in Great Britain.....	0.5
Interest in carrying stock.....	0.5
Loss in weight.....	0.33
Ocean freight and landing charges.....	1.75
Discount.....	0.25
Commission paid Montreal exporters.....	0.37
Montreal handling charges.....	0.25
Total.....	10.95

"In addition to these charges the British Committee will have to bear the loss on account of the low rate of exchange, which at the present time is equivalent to about 2 cents per pound.

"The British Committee will lose on the Canadian cheese purchased at 25 cents, and this loss will have to be met from the profits on purchases in other countries, or become a charge on the British treasury."

The foregoing figures are confirmed by Dr. James W. Robertson, who has just returned from England.

There is no "fixing" of price, and the Dairy Produce Commission will not be revived. Producers are free to dispose of their cheese through any other channels and at a higher price if that should be possible.

CANADIAN WHEAT BOARD TO PURCHASE ALL CROP

Will Fix Price and Control Movement, Purchase, Store and Market All Wheat Grown in Canada in 1919 and Other Wheat Undelivered on August 15

The Minister of Trade and Commerce reports as follows with reference to the present extraordinary conditions affecting the moving and disposal of the Canadian wheat crop.

For some time, owing to the war, overseas purchases have been conducted largely, and for two seasons wholly, through Government organizations, and by reason of such conditions the crop of Canada for the past two seasons has been placed under the control of the Board of Grain Supervisors of Canada, which body has been invested with and has exercised powers conferred upon it by the Order in Council of 11th June, 1917, and by subsequent Orders. The said Board of Grain Supervisors are still exercising and purpose to continue exercising their powers with relation to the crop of 1918, to the extent delivered up to and inclusive of the 15th day of August, 1919, and provision is adequate for the final disposition of same.

As regards the crop of 1919, and any other wheat undelivered on the 15th day of August, 1919, it does not appear that there will exist in importing countries likely to require or purchase same any organized buying at fixed prices such as prevailed in recent years, nor any open and stable market of the character that obtained prior to the war.

The United States Government has through a constituted agency undertaken many months ago, and during the continuance of active hostilities in the present war, the purchase at a fixed price of the crop of that country for the year 1919, and the marketing of same at home and abroad.

Under these abnormal conditions, resulting in uncertainty of price and instability of market, it would appear that in order to secure that early movement of the Canadian crop which is so essential, and that fair distribution among our wheat producers of the actual value of their product, as determined by the world demand for same throughout the entire season of marketing, which is equally desirable, action should be taken by the Government, looking to the purchase, storage, movement, financing and marketing of the wheat grown in Canada in 1919, and other wheat undelivered in Canada on the 15th of August, 1919;

Therefore His Excellency the Governor General in Council, under and in virtue of the provisions of the War Measures Act, is pleased to make the following orders and the same are hereby made and enacted accordingly:—

1. The Governor in Council may appoint a Board to be designated "The Canadian Wheat Board," hereinafter called "The Board." Such Board shall consist of not more than ten members, one of whom shall be named as chairman, who shall be chief executive officer, and another assistant chairman, who shall have the powers and duties of the chairman in the absence of the chairman.

2. The chairman and assistant chair-

man shall be paid such salaries as the Governor in Council may direct, and the other members of the Board shall be paid travelling and living expenses and such per diem allowance while actually engaged in the duties of the Board as the Governor in Council may direct, but otherwise shall receive no remuneration.

3. The Board shall make such enquiries and investigations as it deems necessary to ascertain what supplies of wheat are, or may be available from time to time, the location and ownership of same, the transportation and elevator facilities available in connection therewith, as well as all conditions connected with the marketing and market price that can be obtained for same. For the purpose of any enquiry or investigation held by the Board, the Board and the several members thereof, shall have all the powers of a Commissioner acting under Part 1 of the Enquiries Act.

4. The Board shall have power from time to time,

(a) To take delivery of wheat in Canada at any point.

(b) To pay, by way of advance, to the producers or other persons delivering wheat to the Board, such price per bushel according to grade or quality and place of delivery for price purposes as shall be set out in a schedule to be prepared by the Board and approved by the Governor in Council, and to provide for the issue of participation certificates to persons entitled thereto.

(c) To sell wheat so delivered to millers in Canada for milling purposes at such prices and subject to such conditions as the Board sees fit, the price of sale to millers being governed as nearly as may be by the price obtainable at the same time in the world's markets for wheat of equal value, regard being had to the cost of transport, handling and storage.

(d) To store and transport such wheat with a view to the marketing of same.

(e) To sell wheat so delivered in excess of domestic requirements to purchasers Overseas or in other countries, for such prices as may be obtainable.

(f) In co-operation with the Seed Purchasing Commission of the Department of Agriculture, and by sale to such commission or otherwise, to provide for the retention or distribution in various parts of Canada, of such wheat as may be necessary for seed in 1920.

(g) To fix maximum prices or margins of profit at which flour and other

products made from wheat delivered to millers, may be sold, and to fix standards of quality of such flour.

(h) To purchase flour from millers at prices to be fixed by the Board and to sell same in Canada or in other countries.

(i) To take possession of and to sell and deliver to millers, or to purchasers in other countries, wheat stored in any elevator, warehouse, or on railway cars or Canadian boats and to deal with the same as to payment of advance and otherwise in the same way as if it had been otherwise delivered to the Board, and to move grain into and out of or through any elevator and to or from any car or boat.

(j) To control by licenses or otherwise, the export and sale of flour out of Canada.

(k) For the purpose of performing its duties under this order to allocate Canadian lake tonnage and to distribute cars for rail shipments.

(l) To pay necessary expenses incident to the operations of the Board.

5. Deliveries of wheat may be taken from, through or by the use of such agents or grain companies or organizations as the Board may see fit, and may be at such points in Canada, at the seaboard or otherwise, as the Board may direct, and the Board may pay to such agents or grain companies or organizations handling wheat, or delivering wheat to the Board, such commissions, storage and other charges as the Board with the approval of the Governor in Council may deem proper.

6. The Board may make payment by authorization to a chartered bank or to chartered banks to pay under such conditions and on production of such vouchers as the Board may by regulation provide, and the Governor in Council guarantees re-payment of any moneys so paid by a bank or banks, with interest at a rate not exceeding six per cent of which guarantee the evidence shall be this order.

7. As soon as the Board has received payment in full for all wheat delivered to the Board, there shall be deducted from same all moneys disbursed by or on behalf of the Board for expenses or otherwise connected with or incident to the operations of the Board, and the balance shall be distributed pro rata among all producers and others holding participation certificates.

8. Notwithstanding anything in the Grain Act or in the Railway Act, the Board of Railway Commissioners for Canada shall have power to order any railway company to provide cars and other transportation facilities for handling grain, and to transport as directed wheat delivered to or by the Board, or in which the Board is interested, and at the request of the Board to withhold transport of other wheat or grains for a fixed time.

9. Every person shall truthfully and promptly answer any inquiry made by the Board or by any person duly authorized on its behalf about any matter within its powers or duties, whether such inquiry is made verbally, in writ-

ing, by telegraph or any other way.

10. In this Order,
(a) Elevator means and includes any terminal, country, private, public and hospital elevator, and any elevator licensed by the Board of Grain Commissioners for Canada.

(b) Wheat in clauses four, five, seven, and eleven means wheat harvested in 1919, or other wheat delivered to the Board after 15th August, 1919.

11. The Board with the approval of the Governor in Council may make such regulations as it deems necessary for the purpose of fully and effectively carrying out the objects and provisions of this order, and in particular, but without limiting in any way the generality of the foregoing, may make regulations,—

(a) For appointing representatives in different parts in Canada, or Overseas, for assisting the work of the Board, and for reporting to the Board any violations of any order issued by the Board, or any regulations made hereunder.

(b) To authorize the engaging of clerks, employees and assistants and paying their salaries.

(c) Providing for the forms and contents of participation certificates, vouchers or documents of title to be held by producers and others delivering wheat to the Board, for the conditions of negotiability of same, for the substitution of same for other vouchers, and generally establishing such system as may in the judgment of the Board be necessary for the security and equitable treatment of all persons concerned in the delivery and sale of wheat and in the carrying out of this order.

(d) Fixing dates up to which and not beyond, the Board is prepared to take deliveries at different places in Canada.

(e) Determining what constitutes delivery to the Board.

12. The Board may from time to time appoint an executive committee of not less than three of its members, of whom the chairman shall be one, and may assign to such executive committee any duties or powers within the competence of the Board.

13. There shall not be provided on any grain exchange or elsewhere, facilities for trading in wheat futures during the time this order is in force, except by permission in writing of the Board.

14. Notwithstanding any Order in Council heretofore passed, the Board of Grain Supervisors of Canada shall hereafter exercise no powers inconsistent with the powers vested in the Canadian Wheat Board by this order.

RUDOLPHE BOUDREAU,
Clerk of the Privy Council.

WILL ACCEPT PRIOR INVESTMENTS

In order to meet the wishes of persons desiring to make investments in the coming loan to be issued by the Government, and who wish to make a temporary investment pending the issue of the loan, the Finance Minister, on his recommendation, has been authorized to accept sums of this character to an amount not exceeding \$15,000,000, by an Order in Council passed July 17, 1919, as follows:—

The Committee of the Privy Council have had before them a report, dated 14th July, 1919, from the Minister of Finance representing that from time to time offers are made to the Department of Finance of funds by persons who are desirous of investing in the coming loan to be issued by the Government and who desire a temporary investment pending the issue of such loan.

The Minister recommends that to meet the situation and to assist in providing for the requirements of the Dominion he be authorized to accept sums of this character to an amount not exceeding \$15,000,000 on the security of Treasury bills with interest at the rate of 5½ per cent per annum.

The Committee concur in the above recommendation and submit the same for approval.

IMPORTS AND EXPORTS OF WHEAT AND FLOUR

The following summary, taken from the *Agricultural Gazette*, indicates the imports and exports of wheat and flour, with flour expressed in equivalent quantities of wheat (thousands of bushels):—

Countries.	Imports.				Exports.			
	March.		First 3 months (Jan. 1 to Mar. 31)		March.		First 3 months (Jan. 1 to Mar. 31)	
	1919.	1918.	1919.	1918.	1919.	1918.	1919.	1918.
Great Britain and Ireland.	5,765	10,314	30,591	30,527	54	31	115	98
Italy.....	5,221	5,914	17,931	13,477	148	31	311	59
Sweden.....			726				55	
Canada.....	5	10	13	16	6,766	13,500	21,078	31,566
United States.....	3	419	1,231	8,536	11,219	12,208	49,164	35,144
India.....	2,061		2,061		153		447	
Japan.....	143	19	437	34		442		1,660
Tunis.....	1		4		431	13	493	41

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EXTRACT FROM ORDER IN COUNCIL No. 2206.
 "The Committee of the Privy Council further observes that as this war is being waged by the whole people of Canada, it is desirable that the whole people should be kept as fully informed as possible as to the acts of the Government which are concerned with the conduct of the war, as well as with the solution of our domestic problems; and for this purpose an Official Record should be instituted to be issued weekly for the purpose of conveying information as to all Government measures in connection with the war and as to the national war activities generally."

PROPER TOPPING OF TOBACCO IMPORTANT

Early Topped Plants Average Best Says Experimental Farms Note.

The proper topping of tobacco is of first importance in securing maturity, yield, quality, and colour. These are four very important considerations in growing a crop of tobacco says an Experimental Farms note just issued by the Department of Agriculture.

During the past two seasons an experiment on the proper topping of White Burley and flue-cured tobacco has been conducted. Plots of tobacco of each variety were topped just as soon as the small seed head or "button" was formed. The desired number of leaves were left on each plant. On another series of plots of equal size the plants were allowed to grow higher, and the seed heads allowed to develop much longer as is too often the practice in the tobacco district, and then topped. In the fall these plots were harvested, cured, and the yield and other qualities from each plot noted. The early topped plants averaged decidedly better on all four points yielding and maturing better, and producing better colour and quality, and, of course, proving more profitable and satisfactory at marketing time. The later topped plants produced one to three leaves more at the top of the plant than the early topped plants, but these were small and green and of a very nondescript type. The leaves from late topping were light bodied as a whole. The proportion of stalk to leaf was higher for late topping. It is plain from this that early topping is the best method of securing the maximum amount of leaf to every stalk of tobacco, while late topping secures the maximum amount of stalk at the expense of the leaf. Also earlier maturity and better colour and quality result from early topping.

As a rule, in some sections, proper topping seems to be less understood, or less considered than most any other operation connected with the culture of the tobacco crop. More close study on this subject would amply reward every grower. Any grower can carry out a simple experiment as the one already mentioned and can convince himself if there is any doubt.

The proper time to top tobacco is just as soon as the "button" or young seed head forms. Topping is performed by

TENDERS ASKED FOR BY THE DOMINION GOVERNMENT

Firms desirous of tendering for any Government Supplies should apply to the War Purchasing Commission, Booth Building, Ottawa, giving particulars of the business in which they are engaged and a list of the articles which they wish to supply.

Tenders are constantly being invited by the different departments of the Government, tender forms and specifications being distributed by mail to all individuals or firms concerned, known to the Commission.

The War Purchasing Commission keeps a register of the different firms and lines of business which they are interested in, and it is, therefore, advisable that those wishing to have tender forms sent them should register their names, addresses, catalogues, etc., with the War Purchasing Commission, which co-operates with all other departments.

Tenders have been invited by the different departments of the Dominion Government between July 26 and August 1, as follows:—

SOLDIERS' CIVIL RE-ESTABLISHMENT—

Lathe.	Ottawa.	August 12
Chucks.	"	" 12
Turning chisels and saws.	"	" 12
Rugs.	"	" 13
Wheel stretcher.	Guelph.	" 13

JUSTICE (PENITENTIARIES BRANCH)—

Flour.	St. Vincent de Paul.	August 5
Coal.	Winnipeg.	" 7
Lumber.	Kingston.	" 10

POST OFFICE—

Round brass gromets.	Ottawa.	August 5
Oilskin caps.	"	" 4

JUSTICE (INTERMENT OPERATIONS)—

Motor.	Montreal.	July 29
Surgical supplies and equipment.	Sydney.	Aug. 12
Beef and Bacon.	Charlottetown.	" 8
Fish.	"	" 8
Butter.	"	" 8
Eggs.	"	" 8
Milk.	"	" 8
Canned fruits and vegetables.	Toronto.	" 8

PUBLIC PRINTING AND STATIONERY (STATIONERY BRANCH)—

White wove envelopes 15x9 1/2 plain.	Ottawa.	Aug. 5
White wove envelopes, 0-4 plain.	"	" 5
Sealing wax.	"	" 5

RAILWAYS AND CANALS—

Electric material.	Lachine.	Aug. 2
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INTERIOR (DOMINION PARKS BRANCH)—

Road oil.	Banff.	Aug. 2
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MILITIA AND DEFENCE—

Surgical supplies.	Montreal.	Aug. 1
Drugs.	Ottawa.	" 5
Silver nucleinate.	"	" 5
Surgical supplies.	Toronto.	" 5
Irrigators.	Ottawa.	" 8
Champagne.	"	" 6
Ethyl alcohol.	"	" 5
Arm badges.	Toronto.	" 2
Science apparatus.	Kingston.	" 11
Coal.	Hamilton.	" 1
Coal.	Edmonton.	" 8
Oatmeal, currants, prunes, raisins.	"	" 2
Coal.	Calgary.	" 8
Coal.	Quebec.	" 8
Coal.	Little River.	" 8
Cartage coal.	Ottawa.	July 31

SURPLUS STORES—

Willow baskets.	Due Aug. 15
Lanterns.	" " 15
Dry measures.	" " 15
Butcher saws.	" " 15
Lantern globes.	" " 15
Rolling pins.	" " 15
Picketing pegs.	" " 15

pinching out the terminal buds or seed heads leaving as a rule ten to twelve leaves on flue-cured tobacco, and 14 to 16 leaves on White Burley. The grower must use his judgment in the number of leaves left by the date of topping and the size of the plant. In pinching out the bud one should be very careful not to injure the tender top leaves. By proper topping the grower has the best means of making the crop mature evenly and uniformly.

Buy War Savings Stamps.

Flax Seed Order Rescinded.
 The Order in Council of October 23, 1918, commandeering fibre flax seed in Canada for shipment to Ireland, is rescinded by an order passed recently, as the purposes for which it was passed have been accomplished. All surplus fibre flax seed has already been shipped to Ireland to be grown for fibre for the manufacture of aeroplane cloth, as stated in the July issue of the *Agricultural Gazette*, published by the Department of Agriculture.

FUEL FROM WASTE PULP EFFLUENTS

Possible Production From Sulphite Liquor Now Unused.

The production of fuel from the effluents from sulphite-pulp mills is referred to as follows in the bulletin entitled "Utilization of Waste Sulphite Liquor," prepared by the Forest Laboratories of Canada, and issued by the Forestry Branch, Department of the Interior (price 50 cents per copy).

The calorific value of wood varies with the different species within wide limits and for spruce is found to be about 8,325 B.T.U. A high-grade sulphite pulp develops about 7,740 B.T.U. Assuming the sulphite pulp to represent 50 per cent of the wood, the solid substance of sulphite liquor from one ton of pulp would theoretically represent about 19,820,000 B.T.U. or about 1,375 pounds of coal of 14,400 B.T.U. In order to be able to utilize these substances for fuel it is necessary to separate them from the liquor, and this can be done in one of two ways, either by evaporation of the water or by precipitation of the solid substances. The waste liquor from one ton of pulp represents 2,000 gallons, and if all this liquor could be separated from the pulp a considerable quantity of coal would be required for the evaporation of the liquor to dryness. In the manufacture of cell-pitch it was found that one ton of coal was required per ton of cell-pitch of 10 per cent moisture-content. But the cell-pitch having a calorific power of only about 6,300 B.T.U. as against 12,600-14,400 B.T.U. for coal the scheme of direct evaporation would mean a considerable loss in fuel value. If modern multiple effect evaporators could be used for sulphite liquors, a surplus in fuel corresponding to about 500 pounds coal might possibly be obtained if all the liquor were recovered. But this is impossible. Assuming a maximum of 1,000 gallons of liquor per ton of pulp an amount of fuel corresponding only to 250 pounds of coal could be obtained per ton of pulp. This figure might possibly be increased considerably by employing evaporators of high efficiency utilizing the vapours from the evaporating liquor.

LAST RESTRICTION ON NEWFOUNDLAND IMPORTS

All Applications for Flour to Island Dominion Now Allowed

The last restriction on imports into Newfoundland from Canada has been removed by the restoration of flour to pre-war conditions. The Canadian Trade Commission has been informed of the change, and will, henceforth, license freely all applications for flour for the Island Dominion. It has been necessary hitherto to await the shipper's receipt of import license before an export license from Canada could be granted. Large quantities of Canadian flour are needed by the cod fishing industries, for which the purchases are usually begun in August.

For Training of Soldier.

Arrangements have been made between the Soldiers' Settlement Board and the Ontario Department of Agriculture whereby agricultural representatives will assist in placing soldier settlers with farmers for training and also in assisting in the supervision of settlers after they are established on their own farms, as stated in the July number of the *Labour Gazette*, issued by the Department of Labour.

Buy Thrift Stamps for children.

WOOD ALCOHOL FROM SULPHITE PULP LIQUOR

Possible Production of Commercial Spirit Out of What is Now Industrial Waste is Referred to in Bulletin Issued by Forestry Branch.

The manufacture of alcohol from waste liquor given off in the sulphite process of pulp production, at present one of the chief industrial wastes, composes an important section in the bulletin on the subject of the economic utilization of sulphite liquor prepared by the Forest Products Laboratories, and issued by the Forestry Branch, Department of the Interior. The following on the subject of the recovery of alcohol from the waste liquor is taken from the bulletin:—

The amount of fermentable sugar in the waste sulphite liquor ordinarily varies according to the published data, between 1.5 and 2 per cent, but may in some cases be as high as 2.4 per cent. (Canadian sulphite liquor will vary from 0.5 to 1.75 per cent of fermentable sugars). As the lower carbohydrates of the wood must be considered as the chief source of the fermentable sugar, the amount of sugar in the liquor may vary to some extent with the wood material, but no doubt the greatest factor in these variations is to be found in the method of cooking. Hagglund, who has published a very instructive work on the present stage of alcohol production from waste sulphite liquor, calls attention to this fact and shows how the formation of sugar depends upon the strength of the liquor as well as upon the temperature. He also shows how the fermentable sugars are partially destroyed at the high temperature prevailing in the digester at the end of the "cook." It is also interesting to note that only very little sugar is formed from the cellulose in the cooking process. The idea of manufacturing alcohol from the waste liquor dates back to the early years of the sulphite pulp industry but not until recent years had this resulted in commercial processes of any importance. Wallin's and Ekstrom's processes are now in operation on a commercial scale in Sweden and the United States and, presumably, to a great extent in Germany; in Norway, Landmark's process has been in operation for some time, and a plant is also established in Sweden for the operation of the same process. Marchand's process has been tried out in an experimental plant in the United States with satisfactory results. The principle is the same in all these processes. The free sulphurous acid must be removed as far as possible from the liquor and recovered, which in some cases is partly effected by concentration of the liquor. The liquor is then neutralized to a certain point of acidity. A suitable yeast is then added and the liquor fermented and distilled. The yield of alcohol depends of course, in the first place, upon the amount of fermentable sugar in the liquor, but the neutralization as well as the fermentation are both processes which require the closest control if the highest possible yield is to be obtained. Although a yield as high as 1.4 per cent by volume has in some cases been obtained Hagglund gives 1.0 per cent (100 per cent alcohol) as a good average. Landmark claims a higher yield, namely 1.2 per cent, with his process and an average of 1.1 per cent, and Marchand's process is said to yield 1—1.25 per cent, 180 proof alcohol.

FERMENTATION SOLUTION.

With regard to the neutralization of the liquor (which usually is previously or simultaneously effectively aerated in order to oxidize certain reducing organic substances) it is not advisable to use lime alone, as in this case a large excess is required, causing an appreciable amount of sugar to be destroyed. Another objection is that it is difficult to obtain a clear solution which is necessary for the fermentation. According to Hagglund, by using a smaller quantity of lime and employing calcium car-

bonate for the final neutralization these troubles are eliminated. In the Marchand process barium carbonate is employed for neutralization whereas Landmark uses calcium carbonate in his process.

Nitrogen and phosphates are not present in the liquor in the quantity required for a normal fermentation, and must be added to the neutralized liquor. Certain available yeast extracts contain the necessary amount of these substances but if other extracts are used the nutriment must be added in a suitable form. In Landmark's process milk or whey is heated with acid, the precipitate of "lignocasein" is filtered off, and the filtrate added to the sulphite liquor which can then be fermented directly with ordinary brewers' yeast. Ekstrom's process requires a "tempered" yeast which is prepared to meet the special conditions of the sulphite liquor. With regard to the details of the processes of fermentation and distillation reference may be made to Hagglund's publication "Die Sulfitablaue und ihre Verarbeitung auf Alkohol." In this same publication the manufacturing cost of a 100 per cent spirit is calculated, assuming a recovery of 3.7 cub. m. (816 gallons) of liquor per metric ton (2204 lb.) of air-dry pulp [4.1 cub. m. (904 gallons) per metric ton (2204 lb.) of bone-dry pulp] as follows:—

MANUFACTURING COST for 1 cubic metre (220 gallons) of distilled mash.

Cost Items.	SIZE OF MILL.					
	33,075 short tons.		22,050 short tons.		11,025 short tons.	
	Marks.	\$	Marks.	\$	Marks.	\$
Steam.....	0.422	0.1000	0.422	0.1000	0.422	0.1000
Nutriments.....	0.083	0.0197	0.083	0.0197	0.083	0.0197
Neutralization.....	0.167	0.0397	0.167	0.0397	0.167	0.0397
Materials.....	0.022	0.0052	0.028	0.0066	0.040	0.0095
Repairs.....	0.055	0.0131	0.078	0.0186	0.117	0.0279
Labour.....	0.165	0.0393	0.225	0.0535	0.335	0.0796
Salaries.....	0.070	0.0163	0.090	0.0214	0.123	0.0292
Miscellaneous.....	0.056	0.0133	0.067	0.0159	0.073	0.0174
	1.040	0.247	1.060	0.276	0.360	0.324

These figures are based upon prices in Scandinavia, and would have to be changed to suit American conditions. Assuming a 50 per cent increase in salaries, labour, and repair costs the manufacturing cost would be \$0.282, \$0.323, and \$0.392. The yield of 100 per cent spirit being on an average 1 per cent by volume, and calculating the cost of an alcohol plant in America as being 50 per cent higher than in Scandinavia, and further allowing for 15 per cent depreciation and interest the total cost and selling price of one litre 100 per cent spirit is given in the following table:—

Size of Pulp-mill Short Tons.	Cost of alcohol Plant.	15 per cent Amortization and interest of plant.	Spirit Produced.	Amortization and interest per litre spirit.	Manufacturing cost.	Selling price.
	\$	\$	Litres.	\$	\$	\$
33,075	150,000	22,500	1,110,000	0.0202	0.0282	0.0484
22,050	112,500	16,900	740,000	0.0229	0.0323	0.0552
11,025	75,000	11,250	370,000	0.0315	0.0392	0.0707

The corresponding prices of an imperial gallon are \$0.220, \$0.251, and \$0.320 and of a United States gallon \$0.183, \$0.209, and \$0.268.

Landmark claims a higher yield of alcohol, namely an average 1.1 per cent, and a lower cost of production, namely \$0.0254 per litre, depreciation and in-

terest and cost of handling included. This corresponds to a price of \$0.115 per imperial gallon or \$0.096 per United States gallon manufactured in Scandinavia. A direct comparison of the two processes on the basis of the published figures is not possible, as the operating cost varies considerably with the size of the plant and with the yield of alcohol. Landmark has based his calculations on a recovery of 6.5 cub. m. (1,430 gallons) liquor per metric ton (2,204 lb.) of pulp and upon plant connected with a 15,000 metric tons (17,000 short tons) pulp-mill. This would mean a yearly production of 1,072,500 litres (236,000 gallons) of alcohol and would require an alcohol plant of the same size as the 30,000 metric ton (33,075 short tons) pulp-mill in the previous example. The chief difference of the two processes is in the neutralization and fermentation, but even if the cost of nutriment, neutralization, and material is subtracted the manufacturing price would still be as high as \$0.186 for an imperial gallon or \$0.158 for a United States gallon of 100 per cent spirit, which is appreciably higher than the cost calculated by Landmark. The value of the "lignocasein" recovered in this process is said to cover very nearly the cost of the milk or whey employed.

As the fermentable sugars represent only 15-20 per cent of the total organic substances in the liquor, the residual liquor from the distillation process should be further utilized. Fuel may be recovered according to Strehlenert's process, but it has been pointed out that an unfavourable precipitate is obtained in cases where much lime has been used for neutralization. Valuable products may also be obtained by destructive distillation of the dry substance.

In the cooking process 7 kilogrammes (14 lb.) methyl alcohol are formed per

GOVERNMENT POLICY REGARDING DROUGHT IN PRAIRIE WEST

Arrangements in Respect to Transportation of Hay and Livestock to and From the Dry Areas

SHIPMENTS OVER RAILWAYS

The following article, prepared by the Department of Agriculture, outlines the policy of the Government in respect to the transportation of hay, hay-making machinery, and live stock to and from the areas visited by drought in the Prairie Provinces:—

In view of the serious situation with respect to feed for live stock that has arisen in certain parts of the Western Provinces owing to the drought, it has been found necessary for the Government to give some assistance to farmers and stockmen in the dry area in order to carry their cattle over winter.

The dry area may be defined as all that part of the Provinces of Alberta, Saskatchewan and Manitoba lying roughly south and west of a line drawn from Wetaskiwin to Camrose, north to Chipman, east to Lloydminster, south to Chauvin, then to Elbow, Moosejaw, Weyburn, Virden, Souris and south to the international boundary.

Conferences have been held between representatives of the railways, Provincial governments and the Federal government, and a scheme of assistance practically agreed upon.

HAY CARRIED FREE.

Hay brought into the dry area over the C.P.R., the C.N.R. or the G.T.P., will be carried at no cost to the purchaser, as this will be met by the railways, the Provincial government and the Federal government paying equal shares. The same arrangement applies to the transportation of hay-making machinery from points in the dry area to northern districts where hay can be cut, and back to the point of origin.

As to live stock, assistance will be given to owners of less than one hundred head of cattle or three hundred sheep, and assisted shipments will be limited to two car-loads for each owner. The exact amount of assistance has not yet been decided upon, but if the railways and the Provincial government are prepared to do likewise, the Dominion Government will pay one-third of the cost of transportation of cattle and sheep to some feeding ground and back to the dry area next summer. In the event of this not being agreed to, it is proposed that the railways should pay one-half of the return transportation only, leaving one-quarter of the return freight to be paid by the Provincial government and the remaining one-quarter by the Federal government. This latter arrangement will mean that the owner must ship the cattle and sheep out at his own expense, and if they are returned before August 1, 1920, and the other conditions are fulfilled, they will be returned to him without charge.

WILL BE PUT IN FORCE AT ONCE.

The above arrangements only apply to shipments over the C.P.R., the C.N.R. and the G.T.P. As the railways in Northern Alberta, the Edmonton, Dunvegan and British Columbia and the Alberta and Great Waterways Railways are unwilling to make any freight concessions, the Provincial and Federal governments will each pay one half of the cost of transportation on hay-making machinery and live stock moved over these two lines, under the same conditions as above.

The Order in Council authorizing the Dominion Government's share in the above arrangement has now been passed, and it is hoped that it will be possible to put the scheme into operation at an early date, so that the serious feed situation in the Prairie Provinces may be somewhat relieved.

ton (short) of pulp of which 4.4 lb. can be recovered from the relief gases. One part of this alcohol is lost during the various operations, so that the crude ethyl alcohol contains about 3.2 per cent methyl alcohol. The two alcohols can be separated but of course this is not necessary when the spirit is to be used for industrial purposes.

Earnings of National Railways.

The passenger, freight, mails, express, and ocean traffic, less hire of

equipment, amounted, on government-owned lines, in 1916-17 to \$23,468,998.99, and in 1917-18 to \$27,176,513.58, an increase of \$3,707,519.59, as stated in the annual report of the Department of Railways and Canals.

Buy Thrift Stamps for children.

WORK OF COUNCIL FOR SCIENTIFIC RESEARCH

EFFECTIVE WORK DONE IN VARIETY OF RESEARCHES

Investigations Included Reduction of Low Grade Iron Ores, Wheat Genetics, Discoloration of Canned Lobster, Fish Curing and Industrial Alcohol

[Continued from Page 1].

mental Farm, Ottawa, is the staple wheat of the West and is rapidly becoming the staple wheat of the North-western States. It gives a large yield, it has good milling and baking qualities, which are exceedingly valuable factors in making it acceptable as a wheat suitable for cultivation in the West. It ripens earlier than the other varieties, which it has almost wholly displaced, but not so early as to escape the incidence of an early frost. Further, it has a comparatively low power of resistance to rust, which in some districts takes a heavy toll on the crop. Professor Thompson in his investigations is attempting to breed a variety of wheat which will ripen early, be wholly rust-resistant, and have good milling and baking qualities. He has succeeded in producing a variety which ripens nearly two weeks earlier than the Marquis and also varieties some of which are wholly rust-resistant, others less so. He is now endeavouring to produce a hybrid of these which will ripen early, be completely rust-resistant, give a good yield per acre, and have the right milling and baking qualities. The achievement of this object is fraught with consequences of vast importance to agriculture in Western Canada, as it will eliminate all the ordinary risks, except one—namely, deficiency of rainfall—to which wheat growing there is subject, and the Research Council, recognizing what is involved and the agricultural interest concerned, is prepared to support financially this investigation till the object of it is attained, even if it takes a number of years to achieve it. It has already made a very substantial grant to continue the work during the season of 1919.

DISCOLORATION OF CANNED LOBSTER.

Dr. Macallum reports as follows on the investigation into the discoloration of canned lobster: "A grant of \$2,000 was made to provide for an investigation on the causation of the discoloration of canned lobster. Of the annual output of lobster canneries of the Maritime Provinces, a large proportion of the cans are found immediately or ultimately with the contents darkened or blackened and the inner surface of the tin in such cans is covered wholly or in part with a rustlike deposit. This results in an annual loss to the industry of many thousands of dollars. To what this discoloration is due has been variously explained and almost wholly as of purely chemical origin, but the explanations advanced have not in the slightest degree assisted in suggesting measures that prevent the discoloration. Recently it has been found by Miss J. MacFarlane, M.A., who, under the auspices of the Biological Board, worked in the summer of 1918 at the Biological Station at St. Andrews, N.B., and during the last winter in the Botanical Department of the University of Toronto, that the affected cans examined by her had, in every instance, a bacterial flora which the unaffected cans did not have. Whether a generalization as to the causation of the discoloration may be drawn from these results must be determined only after further extended investigation. If the causation should definitely prove to be bacterial in character the measures to be taken to counteract it would be comparatively simple and would involve only thorough sterilization of the cans after they are hermetically sealed.

"That there are other factors involved is not yet wholly excluded. The discoloration of the contents of the cans is accompanied, though not always, by a discoloration or rustlike incrustation of the internal surface of the

cans. As this discoloration of the tin, so far as present observations go, never appears without a discoloration of the contents, it would appear as if it were due to the effect on the tin of products of the action of bacteria on the contents; but the fact that in some of the spoiled tins there is no incrustation indicates either that the bacteria concerned are not all of the same species or that the surface of the tin plate used in making the case varies greatly in its capacity to resist chemical action. That there is a variety in this respect in the tin plate used seems to be indicated by the results of investigations carried on by the staff of the research laboratory of the American Canner's Association, but whether this generalization can be applied to the tin plate used in the canning of lobsters can only be determined by special investigation.

As the lobster canning industry is one of considerable importance to Canada and as its success depends on a high grade of product, a thorough and prolonged research on the problems affecting the industry should be systematically planned and carried out. The grant made for this investigation is for preliminary investigations. It is expected that when the Fish Canner's Guild for Research is fully organized it will undertake to continue and support this investigation. The Guild, the formation of which was agreed upon at a meeting, held in Amherst in December, of a large number of those engaged in the industry, will include not only such but also a number of those who are concerned in the fish industry."

CURING OF FISH.

On investigations into the curing of fish the report says: "A grant of \$7,000 was made to the Biological Board of Canada to provide for researches on the chemistry and bacteriology of fish curing and its products. The value of these products in Canada is about six millions of dollars and accordingly but a fraction of the total annual yield of the fisheries. It would be much greater were it of a character which would encourage the consumption of the product. A portion of it is excellent in quality, but the remainder of it is by no means up to the standard of the British, Norwegian, Danish, or Dutch products. This is due to the use of methods which have had a vogue in the trade for a century and therefore of a purely empirical character; but carried out with a lack of care as to essentials that makes the product an inferior or less desirable one. Some of the methods also are quite repulsive in character although the product may pass muster as to appearance, and in some cases perhaps, as to taste.

"It is urgent that all these methods should be either wholly discarded and replaced by others or greatly improved in order that the production and consumption of cured fish should be increased beyond that which obtains today in Canada. To replace some of the methods or improve others it is necessary to know more about the chemistry and bacteriology of the cured product than is now known. Little work has been done in a systematic way in research in this line. A careful study of the bacterial flora of fish and cured fish has yet to be made and the effects of the various agents, creosote and other compounds in smoke and the salt, used in pickling for example, on fish muscle are only imperfectly understood. The bactericidal action of creosote on fish muscle and its capacity to penetrate in order to exert this action adequately are as little known. Further, the possibility of substitute methods and of other agents which may be more effectively used should be investigated. These are amongst the problems which

must be solved before the industry can be placed on basis which will promote a greater development of the fish-curing industry of Canada. The Biological Board will, it is understood, arrange for two series of investigations, one along chemical, the other along bacteriological lines, each to be placed in charge of investigators specially qualified for this work."

UTILIZATION OF LIGNITES.

The utilization of the low-grade lignites of the prairie provinces as domestic coal has received the following consideration: "In the report of the Administrative Chairman for 1917-18 a full account was given of the question of utilizing the low-grade lignites of Saskatchewan to provide a domestic fuel to replace the anthracite which was, in the previous years, imported into Western Canada from Pennsylvania to the extent of over half a million tons annually. The Research Council recommended that the Government of the Dominion make an appropriation of \$400,000 to erect a carbonising-briquetting plant capable of turning out 30,000 tons of briquettes practically equivalent in thermal value, pound for pound, to anthracites, the sum asked for to provide also for the operation of the plant for a year. After an extended consideration of the proposal, the Government in co-operation with the Governments of the Provinces of Manitoba and Saskatchewan agreed to make the appropriation required and decided to put the conduct and control of the experiment in charge of a Board appointed on the 22nd of August, 1918. This Board known as 'The Lignite Utilization Board' is composed of three members who give their services without remuneration and who are Mr. R. A. Ross, of Montreal, as chairman; Mr. J. M. Leamy, of Winnipeg, and Mr. J. A. Sheppard, of Moosejaw. This Board met in Montreal on September 16, 1918, and organized to undertake a thorough and comprehensive attack of the problem of utilizing these lignites. It is expected that the preliminary tests will be completed in October or November of 1919, and, if the results prove satisfactory, the erection of a commercial plant to carbonize and briquette the lignites will be undertaken before the spring of 1920.

An interesting account of the work done by the Lignite Utilization Board up to the end of March, 1919 is to be found in Appendix "E," the author of which is Mr. Leslie R. Thomson, the secretary of the Board.

INDUSTRIAL ALCOHOL.

The subject of industrial alcohol is treated very fully, this form of alcohol being described as being "very largely ethyl or grain alcohol mixed with some substance which will render it unpotable, but not unfit for the use to which it may be put industrially." After pointing out that cheap alcohol is a necessity for a large number of lines of industry and that the extent of its consumption in a country is an index of that country's development, especially of its chemical industries, the report sets forth that the Research Council made the following recommendations to the subcommittee of the Privy Council:—

"1. That the production of denatured ordinary alcohol, such as methylated spirits, be carried out at any distillery licensed to that end and under such regulations as the Minister of Customs and Inland Revenue may prescribe and that the denatured alcohol so manufactured be sold, duty-free, delivered and transported without restriction to dealers, manufacturers, and other persons.

"2. That the manufacture of specially alcohol—that is, alcohol which is to be used for the production of some chemicals, ether, chloroform, etc., and for which a special denaturant is required—be permitted under regulations prescribed by the Minister of Customs and Inland Revenue in distilleries licensed thereto and sold duty-free to the manufacturers of such chemical preparation.

"3. That pure ethyl alcohol without admixture with any denaturant shall be

sold duty-free for use in the manufacture of such products as require the use of such alcohol as a solvent, precipitant or agent, under regulations to be prescribed by the Minister of Customs and Inland Revenue.

"4. That pure ethyl alcohol be sold duty-free, under such regulations as the Minister of Customs and Inland Revenue may prescribe, to incorporated hospitals, to universities, and to scientific and research laboratories.

"5. That the recovery of alcohol by distillation after it is used be allowed in the plant in which it was used, under such regulations as may be prescribed by the Minister."

UTILIZATION OF FISH WASTE.

The utilization of fish waste in the Dominion is treated very thoroughly, as follows: "The question of the utilization of fish waste has been under the consideration of the Research Council for the last eighteen months. The annual amount of this waste in Canada for both the Atlantic and the Pacific coasts was estimated to be about 300,000 tons by Mr. J. B. Fielding, who was employed by the Council to make a survey of the both coasts, to report on the subject. Only at several points was any attempt made to dispose usefully of it, and to a very limited extent. A firm at Canso converts the waste derived from the operations of the Maritime Fisheries Corporation plant there into a brand of glue. From the salmon canneries at New Westminster, B.C., and the immediate the fish offal is transported to Seattle, Wash., for reduction there into animal food, oil, and a fertilizer.

"In Norway and Sweden and in Germany before 1914, and in the United States, fish waste was systematically utilized and the product figured considerably as a source of revenue in the fish industry. In Germany a select portion of it was made to serve as a source of food for human consumption, but the greater part of the products consisted of oil and a residue employed to mix with other material (hay, milling offal, etc.) to furnish animal food. In Gloucester, Mass., and at points on the Pacific coast of the United States, are plants which convert the product into food for hogs, cattle, and poultry, the oil derived therefrom going on the market chiefly to serve for the manufacture of soap.

"The value of the fish waste in Canada, if utilized as it is elsewhere, would be very great. The quantity of solids in the three hundred thousand tons annually thrown away, and comprising chiefly fats and proteins is at least one-fourth of that amount, and, if subjected to appropriate treatment, it ought, at the prices which prevail, and have prevailed for the last four years, to be worth \$10,000,000, or about one-fourth of the annual yield from the fisheries of Canada. The oil contained in this waste should, if separated and purified, be worth on the market as much as \$4,000,000.

"This fish offal is produced at a great number of points along the both coasts, but more abundantly on the Eastern coast, where the quantity, according to Mr. Fielding's estimate, reaches 240,000 tons. The remoteness of many of these points and the consequent difficulty and cost of collection at central reduction plants of the offal in time to prevent deterioration, are serious handicaps in a commercial utilization of the material. Another factor is the shortness of the season during which the offal is produced. On the Pacific coast it is approximately six weeks, while on the Atlantic it does not exceed seven months, and consequently reduction plants would have to be idle during a considerable portion of each year.

EXPERIMENTAL STAGES.

There are other difficulties attendant upon the utilization of the offal. The processes employed hitherto are of the experimental stage, and the results have not been always satisfactory. The separation of the fat or oil is carried on by the action of hot water and steam on the minced or ground-up material, the oil collecting on the water as it leaves the mass. This does not by any

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Buy Thrift Stamps for children.

WORK OF COUNCIL FOR SCIENTIFIC RESEARCH

EFFECTIVE WORK DONE IN VARIETY OF RESEARCHES

Investigations Included Reduction of Low Grade Iron Ores, Wheat Genetics, Discoloration of Canned Lobster, Fish Curing and Industrial Alcohol

[Continued from page 9.]

means remove all the fat, and, therefore, the residue which should consist mainly of proteins is fat-containing and to a considerable extent. This difficulty intruded itself in the operation of the dog-fish reduction plants at Canso and Clark's Harbour, N.S. To utilize dog-fish for the production of oil fertilizer these plants were operated under the auspices of the Department of the Naval Service, but are now closed owing to the failure to make them pay. The residue could not be directly used as a fertilizer because the oil contained therein on decomposition in the soil "sour" it and rendered it more or less unproductive. To dry it, the residue was roasted which caused, however, a loss of a considerable part of its fixed nitrogen, and it was thereby, and proportionately to the degree to which the roasting has been carried out, less valuable as a fertilizer. For the preparation of a good animal food also, the separation of the greater part of the oil is necessary, as the presence of it to any considerable extent in the food tends to give a "fishy" taste to the flesh of the animal fed on it.

"The more or less imperfect character of these and other methods of the treatment of fish waste had deterred ventures into this line of industry, and, in consequence, the fundamental work on which success in it must be based is still to be done.

"The utilization, however, of this waste will be of imperative urgency in the very near future. Even now there is a very serious deficiency in the world's supply of food, including specially fats. It will take twenty years at least to restore the annual supply to what it was before 1914 and, therefore, any source of protein and fat at present untapped should, if it is at all industrially feasible, be made to contribute its quota of these indispensable nutrient compounds. The proteins so obtained would, mixed with other foods less nourishing, give a product which, as stock food, would enhance the supply of meat of various kinds, beef and pork, while the fat could be employed to the extent of its supply in the production of the cheaper and commoner kinds of soap for which so much of more valuable fat is used to-day. The consideration of the question of taking measures which might lead to the utilization of fish offal for this purpose ought not to be postponed if there is at all a possibility of employing the waste economically.

"The Council on the recommendation of Professor R. P. Ruttan, Chairman of its Associate Committee on Chemistry, gave full consideration to this question. It collected data on the subject and appointed Mr. J. B. Fielding, who had in 1915, under the auspices of the Conservative Commission, carried out demonstrational work in this line in a provisional plant at Port Stanley, to make a tour of a number of centres in the United States for the purpose of gathering information regarding the utilization of fish waste elsewhere. The Council ultimately came to the conclusion that a project for the utilization of the offal could be successfully carried out, and that the results would blaze the way to the development of a new line of industry in Canada which would ultimately involve an output of several millions of dollars annually.

"There are centres along the Atlantic coast where the quantity of fish offal readily collectible at comparatively low cost, from nearby points, is very considerable and where consequently it is possible on an adequate scale to test the commercial feasibility of a selected process for the treatment of the offal. Such a centre in Canso, N.S., where the quantity of offal accessible during the season is at least thirty tons and may be increased, at need, to double or

treble that amount. If it was decided to erect a plant for this purpose it was clear that Canso would be the most suitable location for it.

"A consideration of all the facts and the information which the Council on the subject led it to consider that the utilization of fish waste was an industry which could be made to give profitable returns and that it was necessary only to demonstrate this on a modest scale by the installation of a plant and the operation of it for a year or so, in order to induce private companies or firms organized for that purpose to undertake this utilization. To provide this demonstration it recommended to the sub-committee of the Privy Council for Scientific and Industrial Research that an appropriation of \$50,000 should be made to carry on this demonstration for one year under a commission which would control the equipment of the necessary plant and its operation for that period. It was recommended that the equipment be installed in the disused lobster hatchery at Canso, which could be granted for this purpose, and further that one of the steam trawlers at the disposal of the Government and for part of the year not on duty in the fishery service, be available for the collection of the fish waste in the locality and even for catching by trawling of such kinds of fish of the vicinity, skate for example, as are not at present used for food.

PRACTICAL EXPERIMENT.

"These recommendations were also advanced to the Reconstruction and Development Committee of the Privy Council and were under consideration by that Committee when it developed that the project might be undertaken and carried on by private enterprise. Eventually, Mr. J. S. Myers, President of the Peerless Cereal Milling Company, of Woodstock, Ontario, organized a company with a considerable amount of capital, which purchased the lobster hatchery from the Department of Fisheries and is now installing in it the necessary machinery and equipment. One of the Government trawlers or drifters is, it is understood, to be placed at the service of the company for a limited period in order to provide for the collection of the fish waste and the catching of fish, of the class not used as food. Mr. Myers proposes to use the plant for the production not only of fish oil, but also for the preparation of protein material suitable for mixture with the offal of cereal mills to make special cattle food.

"The results of this undertaking will, it is hoped, serve to encourage other ventures of a like character elsewhere, eventually leading to a complete utilization of a very large part of the present amount of fish waste.

"The Research Council proposes to give further attention to the utilization of fish waste, because it considers that the last word has not been said either in regard to the processes now followed in this utilization or to the character of the product. The processes involve biochemical problems of a highly intricate nature, and the solution of these must greatly enhance the success of the utilization. It may be pointed out, incidentally, that in this utilization cheap industrial alcohol must prove a very valuable factor."

The report deals as follows with the subject of a National Research Institute:—

"The Research Council early in 1918, as shown in the last report of the Administrative Chairman, after full consideration of the question of the right organization to provide for systematic research on the natural resources of Canada and on the problems which concern the development of Canadian industries, came to the conclusion that this organization should be that of a National Research Institute, constituted

to deal with standards of all kinds, like the Bureau of Standards at Washington, and to have also the function of providing facilities for research on and maintained by Associations or Guilds for Research formed in the various lines of industry.

INSTITUTE RECOMMENDED.

"Since then the Council has placed before the Sub-Committee of the Privy Council for Scientific and Industrial Research, and the Reconstruction and Development Committee of the Government, a report recommending the establishment at the earliest possible date of such an Institute and that an appropriation of \$500,000 be made for a building, of the laboratory type, for such institute to be erected on a fifty-acre site near Ottawa and further that \$100,000 for its scientific equipment and \$100,000 for salaries of the staff during the first year be also provided. The memorandum embodying this report is reproduced in Appendix 'J.' The report has been accepted by the two committees, but has not as yet been approved by the Government. The subject is now under consideration by a special committee of the House of Commons appointed 'to consider' the matter of the development in Canada of Scientific Research, with power to call for persons, papers and records, to examine witnesses under oath and to report from time to time."

The question of establishing such a National Research Institute is discussed in Section 11.

"The Council has given consideration to the question of the control of this Institute which, it holds should be vested in the Research Council and subject to approval and supervision of the Sub-Committee of the Privy Council for Scientific and Industrial Research. In support of that may be adduced the results of past experience in the matter of direct Government control of scientific organizations and the precedents created elsewhere in the case of National Research Institutes, as, for example, the National Physical Laboratory of Great Britain, the National Research Institute of Japan and the proposed Institute of Science and Industry for Australia, a Bill to establish which is now before the Parliament of the Commonwealth (Appendix 'Q'). The control of the National Physical Laboratory of Great Britain was vested in the Royal Society which appointed a Board of which the President of the Society was the chairman and the executive committee of which constituted the real governing body of the laboratory. Under the new provisions for the future control of the laboratory this control is still to be exercised by the President and Council of the Royal Society as indicated in the appendix to the report of the executive committee for 1918, and reproduced as Appendix 'R.' The budget of expenditure of the laboratory will be met, as for the last three years by grants from the Government Department of Scientific and Industrial Research.

"To indicate, in as concrete a form as possible, the views of the Research Council as to the provisions it recommends for the control of the proposed National Physical Laboratory a draft of a Bill to establish this institute, to be offered for the consideration of the Government is reproduced in Appendix 'K.' This draft is the result of a long and careful consideration by the Research Council.

FORESTRY STUDIES.

On the subject of "Forestry Studies," the following observations are made: "The work undertaken in 1917, by the Forestry Branch of the Department of the Interior with the object of obtaining data regarding the rates of growth in volume of our more important timber trees notably the white pine and spruce and the possibilities and successful methods of securing their reproduction, and to which extended reference is made in the Administrative Chairman's report for the year ending March 31, 1918, was continued on the cutover area of the Petawawa Reserve last season and a large number of data were obtained which are of great value in determining the lines along which these forestry studies are to be conducted in the future."

"The results already obtained from

this survey have enabled the Forestry Branch to elaborate a system of forest organization which is specially adapted to the conditions which in Eastern Canada and which permit the inauguration of the best silvicultural practice to provide efficiently for reforestation.

"In the comprehensive report of the work carried on for the last season prepared by the Forestry Branch of the Department of the Interior, a summary of which is given in Appendix 'M,' it is pointed out that if the organization of the Petawawa Military Reservation is completed and the tract placed under permanent management a concrete example of the value of intensive organization in forestry conservation will be continually available for Canadian lumbermen. It is also urged in that report that if the Government can develop such a system and make it a financial success lumbermen should not hesitate to adopt in the management of their own areas a similar system of intensive organization for conservation of their lumber supplies.

"The expenses involved in these investigations under the control of the Forestry Branch were met by a grant from the Research Council amounting to \$6,214.57. A grant has been made to cover the expenses of the investigation for the season of 1919.

"The Research Council regards these investigations as of fundamental importance in determining the data which must be ascertained regarding the rates of growth in volume and the possible quantity of reproduction of our more valuable timber trees, in order that a comprehensive and successful attack on the problem of reforestation in Eastern Canada be undertaken. Without such data it will be impossible to take any effective measures to prevent the exhaustion of our lumber supplies especially of white pine and spruce."

BURSARIES FOR STUDENTS.

The establishment of Bursaries and the provision for training research students in Canada is treated as follows: "Early in 1917, the Council recognized the limited number of highly trained researchers in Canada and that it was necessary to increase the supply of such if the application of research to Canadian industrial problems is to be successfully fostered. To accomplish this object more quickly it established twenty studentships and five fellowships, with the understanding that the numbers of both should be increased when the supply of candidates for them should be sufficient to justify this action.

"The cardinal qualification of a candidate for studentship is the possession of initiative and independent action in prosecuting research on some special scientific problem, a qualification the possession of which he can demonstrate only by having carried on to a successful termination a research of some distinction. He must indeed, have also other qualifications. He must for example, be a university or college graduate, with a special knowledge of the science to research in which he is to devote himself and have a good general knowledge of the cognate science. These are, however, not in themselves enough for without the initiative and the capacity for independent thought no student may ever become a purchaser.

"The fellowships are awarded to those who are holders of studentships for one or two years, or independently, have shown in a high degree capacity for research.

"Now the demonstration on the part of any candidate for a studentship of his capacity for research implies a year or so spent in post graduate study during which he must attempt some research work. As a rule there are few of those who have just graduated in a position to afford the additional expense and consequently they may be unable to qualify for studentships. The Council decided to institute Bursaries, ten in number, for such to be awarded for 1919-20 to as many graduates whose attainments in science and whose expressed aims are such as to justify their being awarded such bursaries. A Bursary which is \$500 in amount is tenable only for a year and if the holder of one during that time demonstrates the possession of a capacity for research be awarded a studentship for the following year.

SLIGHT DECLINE IN FISHERY CATCHES

Department Report for June Shows Value Over Three Million

The weather was favourable on the Atlantic coast during the month of June, except on parts that are exposed to northeast winds which at times were boisterous enough to interfere with operations and caused some damage to fishing gear. The results for the month, however, were not so good as those for June last year. Cod, haddock, hake and pollock in the aggregate fell short by over 50,000 cwts.; the quantities being 413,000 cwts. this year against 468,000 cwts. last year. The decrease is mainly due to diminished landings by the Lunenburg fleet in June of the present year. The herring catch also fell short by over 60,000 cwts. The catch of sardines amounted to 16,170 barrels against 21,625 barrels last year. This decrease is no doubt attributable to much lower prices and the consequent lack of incentive to land the fish in great quantities. The catch of mackerel was greater this year by over 23,000 cwts. In the whole of Eastern Canada salmon fishing, for some reason, was poor during the month. The catch did not amount to half the amount taken in the month of June last year. The lobster fishery on the other hand gave quite satisfactory results. The catch for the month amounted to 90,000 cwts. against 86,000 cwts. for the same month last year. Since the beginning of the canning season on March 1 to the end of June 111,942 cases have been packed. Notwithstanding that canning commenced two and one-half months earlier last year the pack, up to the end of June, did not exceed 91,686 cases.

On the Pacific coast wet and somewhat stormy weather adversely affected salmon fishing, and resulted in the catch being slightly less than that for June last year. The quantity of halibut landed amounted to 11,707 cwts. against 26,289 cwts. last year. The smaller quantity landed was due to strikes and the lack of transportation which caused a large number of the halibut boats to land their catches at Ketchikan, Alaska.

The total value of sea fish at the point of landing, on both coasts, was \$3,018,748 against \$3,763,427 for the same month last year, a decrease of \$744,679. The decreased total value is not altogether due to lessened production. The prices paid for some of the chief kinds even rather lower this year. For example: salmon realized \$11.26 against \$11.69; cod \$2.81 against \$3.42; haddock, \$1.78 against \$2.76; halibut, \$11.42 against \$13.72 per hundredweight, and sardines \$2 against \$5 per barrel, says a report given out by the Department of the Naval Service.

PENSIONS STILL WAITING

There are many additional names of soldiers by whom pensions might be claimed. The numbers given with each name should be quoted in replying to the Board of Pensions Commissioners at Ottawa. The Board has issued the following list of last known addresses of claimants who cannot be traced:—

- 793193 Pte. Thos. W. Astles, No. 7 D.D.
- 109227 Pte. Henry R. Bolton, 4th C.M.R.
- 103,000 Cpl. John Burns, 67 (form. 1st Res.)
- 464,590 Pte. M. H. Brownlee 62nd Battalion.
- 1051142 Spr. Jesse Bryan, 10 Forestry and Railway Construction Battalion.
- 669745 Pte. Harry A. Bibby, 166th (134th) Battalion.
- 760967 Pte. Harry Baker, 121st Battalion.
- 213169 Cpl. Louis E. Cook, late 99th Battalion.

3032145 Pte. Leroy Carpentier, 1st C.O.R.

426257 Pte. John Carvell, 46th Battalion.

Lieut. F. G. Dyke, 58th Battalion. 427506 Pte. Henry Eccles, 13th Battalion, form. 46th.

190135 Pte. Alfred R. Gill, 3rd Battalion, C.M.G. Corps.

841954 Pte. John Thomas Glover, 148th Battalion.

182 Pte. John L. Gleason, 3rd Battalion.

6629 Pte. James E. Guilfoyle, 1st C.G.P., form. C.A.M.C.

3031003 Pte. G. M. Hopson, 102nd Battalion.

258711 Pte. Albert P. M. Jackson, 211th Battalion.

901391 Pte. Peter Johnson, 6th C.G.R.

696992 Pte. J. Krozer, 175th Battalion.

249776 Pte. Mike Jacob Kroszewsky, 208th Battalion C.E.F.

833357 Pte. Peter Kerr, 187th Battalion.

760044 Pte. Thomas Lennon, 121st form. 16th C.R.B.

103242 Sgt. George Leslie, 67th Battalion.

712493 Pte. Daniel McLean, 105th and 13th Battalions.

97803 Gnr. Mark Mummert, 1st C.S.B.

430321 Cpl. George S. Macdonald, 48th Battalion.

672820 Pte. James McGlinchey, 167th Battalion.

121546 Pte. Adelard Massie, 69th Q.R.D.

528191 Pte. Chas. North, C.A.M.C., T.D. No. 2.

439654 Pte. C. O'Brien, 52nd Battalion.

49049 Tpr. James C. O'Connor, C.A.V.C.

690149 Pte. D. O. Price, 173rd Battalion.

138655 Pte. Hugh Norman, No. 2 Canadian General Hospital.

1009638 Pte. A. Metz, 229th Battalion.

491657 Pte. Kristian Junkum, Jewish Reinforcement Co.

830270 Pte. Frank Kerntoph, C.F.C. (form. 144th Battalion).

61930 Pte. René Dubois, 22nd Battalion.

793727 Pte. A. Carrière, 132nd Battalion.

919943 Pte. Dan M. Morrison, 199th Battalion.

2355700 Pte. William Hallow, 44th Battalion, form. 1st Dpo. Wor.

913654 Pte. Jas. W. Lane, 14th Battalion.

7940 Pte. Jas. W. Ryan, 2nd Battalion.

41476 Pte. J. F. O. Butler, "B" Unit M.H.C., C. & C.F.A.

2193349 Pte. John Lee, 196th Battalion.

443710 Lc. Cpl. Joseph Hill, 54th Battalion and No. 2 D.D.

144136 Pte. Alex. Stoen, No. 3 D.D.

799641 Pte. Fred Barney, 1st C.O.R.O.

520071 Pte. Alfred Pitre, 6th General Hospital C.A.M.C.

889971 Pte. Arthur Rioux, 17 Reserve Battalion.

3025029 Pte. J. M. Roach, C.M.G.D.

550463 Pte. S. Stalman, R.C.D.

2611834 Pte. Robt. W. Stewart, C.R.T.

2627208 Spr. Lewis H. Scott, No. D.D.

12728 Pte. Robert Simpson, 7th Battalion C.O.E.F.

907175 Pte. Adam Smith, 195th Battalion.

745531 Pte. Lee Williams, 156th Battalion.

21438 Pte. Donald Walters, 11th Battalion.

2334396 Pte. Thos. Welch, No. 1 D.D.

124569 Mrs. Theresa Zaker, widow of Dvr. R. A. Kimberley, 2nd Tunnelling Co.

Black Cherry Valuable Wood.

Black cherry is the only species of cherry wood used commercially. It is heavy, hard and strong with a fine straight grain and close texture. It takes a fine polish and keeps its shape well. There is still a limited quantity of black cherry standing in Ontario. The car manufacturers favour this material above all others for the interior work of the better class of coaches. It is also used for office desks and furniture. Only 44 1/2 per cent of the black cherry used in the wood-using industries of Ontario, is purchased outside the province, as stated in a bulletin issued by the Forestry Branch, Department of Interior.

SOFT FRUIT CROP ESTIMATES VARY

Generally Below Average According to Latest Reports

In the Fruit and Vegetable Crop Report, issued monthly by the Fruit Commissioner's Branch, Department of Agriculture, there is the following on the subject of the tender fruit crop:

There has been no improvement in the Niagara Peninsula since our last report was published. Plums are unusually light, estimates varying from 10 to 30 per cent. The average is about 25 per cent. Recent dry weather has caused some dropping. Bradshaw, Yellow Egg and Lombard are showing a fair crop in some orchards. Pears are generally light, with the exception of Bartletts, which are showing up remarkably well and with favourable weather will yield 75 per cent or better. Peaches are a light crop in orchards east of Beamsville, and the average yield in that district will not exceed 30 per cent. Between Stoney Creek and Beamsville, and in a few orchards east of Beamsville, there is promise of a good crop. The total yield for the Peninsula will be about 50 per cent of an average crop or slightly less. Cherries are about finished and were a medium crop. Several cars were shipped to canning factories in the United States owing to shortage of the crop in Western New York. Grapes give by far the best promise of any of the tender fruits and with favourable weather should produce a record crop.

FALL PLOUGHING IN DRY BELT

Advantages are Shown in Note Issued by Experimental Farms Branch

The following are some of the advantages of Fall Ploughing in the Dry Belt, as given in an Experimental Farms note issued by the Department of Agriculture.

In ploughing under sod or cover crops early ploughing is to be preferred, especially if the land can be irrigated before ploughing, as this tends to rot the sod or cover crop and absorb any rains that may fall and allow the moisture to penetrate to a greater depth than on unploughed land. On most farms the manure output is greater during the winter months, and manure put on fall ploughing will work into the soil much better before re-ploughing in the spring for roots or corn. On fairly level land fall ploughing may be disced and harrowed to avoid loss of moisture during the fall. On steeper land, plough along the slope if possible and allow the land to lie fairly rough. One harrowing would be enough. This obviates any tendency to wash when a quick run-off of rain or snow occurs and the furrow lines act as a check to running water and allow it to percolate to a greater depth quickly.

Putting the water content, manure and cover crops out of the question, fall ploughing puts soils (which are apt to pack badly) in much better condition to be weathered, thus allowing moisture and air to break down plant food for the coming crop. We are fortunate in having long, open falls, and each acre ploughed is an acre caught up in spring work when everything is rushing. And where spring ploughing is advisable this is helped considerably by shallow ploughing in the fall, a more uniform seed bed being obtainable, the soil not being so hard packed on the surface.

Ploughing is the beginning of the crop. The first operation should be done well; good ploughing makes good cultivation easy. The cut-and-cover method is a set-back that it is hard to overcome with the best cultivation.

Fish for New Zealand.

Canada in 1918 exported preserved fish to the value of 98,535 pounds to New Zealand, according to a report from Canadian Trade Commissioner Beddoe.

ALFALFA WILL GROW IN DRY DISTRICTS

Experimental Farm Note Gives Details of Tests at Scott Station

The necessity of increasing the acreage of forage crops in the Prairie Provinces is only now being fully realized. At the present time many farmers are without sufficient feed for their stock and unable to purchase, says a report issued by the Experimental Farms Branch, Department of Agriculture. Of the many crops tested on the Scott Experimental Station, alfalfa has been found to give fair returns in the dry seasons providing it is sown in rows at least twenty-four inches apart. In 1919 alfalfa in rows thirty inches apart yielded at the rate of two tons of cured hay per acre. It is not recommended that large areas be planted to alfalfa, yet it is urged that every farmer who has young animals grow sufficient to carry the calves, colts and pigs through the first winter and to furnish part of the pasture for the swine during the summer months. Young animals fed alfalfa hay develop more rapidly than those fed on prairie wool hay, since the alfalfa contains an unusually large quantity of protein, the muscle-forming element in the food. When prairie wool is worth \$10 per ton the alfalfa may be reckoned to be worth at least \$20 per ton.

There is usually little difficulty in securing a catch of alfalfa providing the seed is drilled into moist land; clean summer-fallow is preferable, with the rows thirty inches apart. Three pounds of seed per acre is sufficient, and this will only mean a cost of \$1.80 per acre, and this cost divided over four years will amount to 45 cents per acre per year. Before sowing, the seed should be treated with nitro culture. This can be secured free with directions how to apply from the Division of Botany, Central Experimental Farm, Ottawa. The seed should not be sown to a greater depth than two inches and the seed bed should be made fairly firm. Sowing alone early in May with the grain drill will usually insure a catch.

No crop can be expected the first year, but if weeds grow up they can be trimmed off with the mower so as to prevent their going to seed. Once the crop is established the cultivation can be done with the ordinary tooth cultivator with dull, narrow blades. If the land is reasonably free from weeds, the cultivator can be run over the land early in the growing season and then again after the crop is taken off. The alfalfa is so deeply rooted and the roots are so vigorous that the cultivator does little injury and the shallow rooted weeds are destroyed.

As a pasture crop alfalfa is satisfactory, particularly for swine, as it starts away in good time in the spring and provides pasture at a season when annual crops are only commencing to grow. It has the advantages of being more permanent than sweet clover, higher in feeding value than many of the grasses and of being hardy, providing it is not cut too late in the season or pastured too closely in the fall.

Communication with Germany.

The following cablegram has been received from the Chief Censor, London:—

In consequence of raising blockade inhabitants United Kingdom now allowed to trade and have commercial financial relation with Germany, German-Austria, and telegrams regarding such matters will be passed if otherwise unobjectionable. Exchange of telegrams on private affairs with occupied or unoccupied Germany still unauthorized.

Growth of Fish Exports.

The exports of fish from Canada, for the year ending June, 1917, were valued at \$23,658,894; for the twelve months ending June, 1918, at \$32,931,749, and for the same period ending June, 1919, at \$39,495,492, as stated in a report on the trade of Canada for these periods, compiled by the Dominion Bureau of Statistics.

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HOW CLIMATE AFFECTS THE WEIGHTS OF GRAIN

The table below shows the influence of climate on the weight of different classes of grain growing in continental as compared with insular and coast climates. It is taken from the *Agricultural Gazette of Canada* issued by the Department of Agriculture:—

Countries.	Average weight in grams of 10,000 grains.				
	Wheat.	Barley.	Oats.	Rye.	Average
Russia	244	333	245	178	250
U. S. A	346	347	253	194	285
Germany	353	399	302	231	321
Denmark, Norway, Sweden	354	410	322	244	332
Great Britain, Holland, Belgium	405	440	311	296	355
Italy, Spain, France	468	465	329	295	389
Average for continental climates	314	360	267	201	—
Average for insular and coast climates	409	433	321	268	—