

Conservation

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Effect of War on Mining Industry

Some Depression in Mineral Production will be Inevitable

Modern transportation facilities have knit together by ties of commerce the most widely separated countries. All nations, therefore, whether participating in the present European war or not, will be affected by it.

For example, the mining industry in Canada is financed largely by capital supplied from Europe and it is evident that during the war, little or no money will be forthcoming for new mining developments.

In the case of the metals, the Canadian production in 1912 amounted to about \$61,175,000.00, practically this entire output was reported for refining purposes, chiefly to the United States.

One of the first effects of the war was the closing of the London and New York stock exchanges. In the United States, selling agents report no market for copper, and, as there are no transactions, there are no quotations. As Canadian copper is exported to the United States for refining, and, as the American market is now extremely dull, the copper mines of Canada will be affected.

As regards silver, New York is but the shadow of the London market and silver mines throughout the world are rendered idle by the lack of demand for their product. In the Cobalt camp, the complete or partial closing of a number of the principal mines has resulted already in throwing a great number of men out of work. However, as Great Britain maintains the mastery of the sea, the business in silver with India and China will probably be resumed.

As the lead production of Canada is refined at home, with Montreal as the principal market, this industry will not be seriously injured. In the case of iron and steel, it is reported, though not confirmed, that, owing to the unprecedented financial situation created by the war, the Nova Scotia Steel and Iron Company has decided to close its iron ore mines at Sydney Mines, and the blast and open hearth furnaces at Sydney Mines.—W. J. D.

Economy of Wide Roads

English Town-Planning Expert Shows how Wide Streets may be Actually Cheaper than Narrow Ones

The following article on a subject of considerable interest to Canadians, is from the pen of Mr. Thomas Adams, senior advisor to the Local Government Board of Great Britain.—Editor.

The advantage of wide roads is sometimes questioned. Where they are made in advance of requirements they may impose an extra burden on the existing ratepayers, for the benefit of posterity. This burden may be too great, even having regard to the ultimate benefit which may be derived, but of course this entirely depends on the degree of width and the extent of cost incurred. No definite standard of width can be satisfactory for adoption under all circumstances.

The ultimate economic gain to the community is one factor, but it is only one factor, in giving the matter consideration. The local circumstances may make it necessary for each road to be considered on its merits. The cost of expropriating land, the existence of buildings, the physical character of the site, the immediate gain as distinct from the prospective gain to the community must all be considered. There are, however, some general principles which afford us guidance in regard to these matters; for instance, where it is definitely known that a road will be required for use as a surface railway or tramway the width of the road should of course be greater than where such use is not contemplated.

There is no necessity for a road to be actually constructed in advance of traffic requirements. On that point there need be no difference of opinion. The sole question is whether the land should be acquired or earmarked for the road in advance of the full width being required. The investment made by the community to-day for the benefit of the future citizens may therefore be limited to the acquisition of the extra land. The construction can be spread over as long a period as may be desirable, but if the land is not purchased at the outset it may be assigned to private uses, such as the erection of expensive buildings, which would make it prohibitive to carry out the widening when

actually needed. These possible losses and hindrances to the future development of a town must of course be considered, as well as the question of immediate gain, but the immediate gain, or rather absence of loss, probably makes the wider appeal to the ratepayers.

It is therefore of interest to have an example such as that afforded by the illustrations and figures I am about to give with regard to the construction of a wide road at Liverpool, England. The city engineer of Liverpool has made extensive experiments in the making of wide roads round the suburbs of the city. He is probably the ablest city engineer in the mother country. Recently he demonstrated to his council that it was cheaper to make a road 120 feet wide than 80 feet wide.

The cost of the two roads, 80 feet and 120 feet wide respectively, is given by the city engineer as follows:

CITY OF LIVERPOOL CITY ENGINEER'S DEPARTMENT	
Comparative cost of widening a 40-foot road to 80 feet (tramways paved) and with widening to 120 feet. (tramways in grass).	
WIDENING TO 80 FEET	
Cost of land, 13½ yds. @ 5s.	£3. 6. 8
Street works per yard lineal	£7. 2. 6
Tramways (including paving), 1 yard @ £6. 15. 0	£6. 15. 0
	£17. 4. 2
= £30. 286 per mile	
The above estimate includes for the reconstruction of the old road to suit new levels.	
WIDENING TO 120 FEET	
Land for new road, 13½ yds. at 5s	£3. 6. 8
Street works per yard lineal	£4. 13. 7
Tramways (in grass) including land, 1yd @ £6. 16. 8	£6. 16. 8
	£14. 16. 11
= £26. 128 per mile	
This estimate does not include for any alteration to the old 40-foot road.	

It will be observed that in order to make the 80-foot road it is necessary to reconstruct the old road to suit the new levels, but that no such reconstruction is necessary in the case of the wider road. It is also important to note that the

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The Unemployed In War Times

Organized Action Necessary to Prevent Suffering.

In an emergency such as faces the country this year, "the problem of the unemployed" will be one of the most serious that will have to be met. Indications are many, and need not be here enumerated, that the number of unemployed will be largely increased during the coming winter. The result, unless comprehensive preventive measures are adopted, will be great suffering and serious economic waste.

Methods for meeting such situations have been in practice for many years in Germany and have accomplished great things in checking the evils of unemployment. The outstanding feature of the German plan is the free labour registries. These are organized by the municipalities and have the advice and, where needed, the financial assistance of the provincial and national governments. In many instances both the trade unions and the employers of labour have co-operated with the registries, which are managed by committees composed of employers and employed. Where possible, such registries have buildings devoted entirely to their own purposes. Men and women desiring work register their names and are brought into touch with employers of labour. Semi-weekly returns of unemployed are exchanged between the registries of neighbouring communities, and frequently labourers obtain work by this means. In such cases, arrangements are made with the railways for cheap transportation.

Other features of these registries that are especially worthy of note at the present juncture in Canada, are the arrangements that are made for the accommodation of the unemployed. For this purpose, assembly halls, where work-seekers may assemble during the day, and reading rooms, supplied with books and newspapers, are provided, as well as lunch rooms and work rooms for tailors, cobblers, and others, where food may be obtained and repairs to clothing made at the lowest possible cost. Lavatories, and, in some cases, bath rooms are provided, and, in addition to such accommodation, sleeping quarters are found, where those deserving it can obtain lodgings at nominal cost.

In times of exceptional unemployment, however, such as are

caused by war, labour registries cannot hope to provide employment for all who want work, for the simple reason that many industries find it necessary to curtail and, in some cases, to cease operations entirely. Under such circumstances "distress works" might be put in operation during the winter months. Even in the severe Canadian climate there are numerous municipal and national public works that could be carried on during the winter. Such work should be undertaken, in large part, by the provincial and the federal governments, as it is scarcely just to require the municipalities to bear all the burden resulting from unemployment. Moreover, the central authority, whether provincial or federal, is in a better position to check the inrush of unemployed to the towns. It is an axiom everywhere, that industrial workers and labourers usually prefer to remain on the verge of starvation in the cities, rather than tide themselves over a period of unemployment by seeking for work in the country. Again, the central governments are able to encourage industries to keep their plants in operation, either in the manufacture of their regular lines of goods or of some others which were hitherto imported.

At the same time, the financial burdens imposed by the war and the difficulties certain to be encountered in raising loans will make it impossible to carry out all works advocated by philanthropic organizations and individuals.—A. D.

Drought Tests Forest Fire Protection Plans

The efficiency and resources of all forest-protective organizations in Canada have been put to a severe test this year by the prolonged drought which prevailed throughout the greater portion of Canada during the early part of August. It seems probable that 1914 will be recorded as the worst fire year since 1910. The situation in southern British Columbia has been very serious, and great areas have been burned over in Alberta, on the east slope of the Rocky mountains. Northern Ontario also has suffered severely.

The railways are no longer the chief source of forest fires, and the necessity for a stricter control of the setting of fires by settlers for clearing land, is becoming increasingly apparent. Also, in many sections, especially on cut-over lands, where most of the fires originate, the establishment of a more adequate patrol system is essential to protect young growth and prevent the spread of fires into old timber. The extension of the merit system in the appointment of fire rangers in the services of both the Dominion and Provincial governments is necessary if the best results in fire protection are to be secured.—C. L.

Ploughing Now a Neglected Art

Advantages of Taking Special Care with Fundamental Farming Operation

The art of ploughing, if not lost, has certainly been much neglected during recent years and very few of the younger generation of farmers have really acquired it. In travelling through the country one sees repeated evidences of the lack of interest in this very important branch of tillage operations. Ploughing, as the first and heaviest operation in preparing the soil to receive the seed, should receive particular attention.



GOOD PLOUGHING



GOOD PLOUGHING PACKED AND WELL WORKED



GOOD PLOUGHING WORKED DOWN BUT UNPACKED



POOR PLOUGHING

Can No. 72

Many attribute the present-day lack of interest in ploughing to the advent of the two-furrow and machine plough. In using two-furrow or machine ploughs, it is necessary first to acquaint oneself with the workings and mechanism of the plough, to be thoroughly familiar with it when in operation; little or no difficulty will then be experienced in obtaining satisfactory results. A plough suitable to the soil should be chosen. If the soil is loamy, and requires to be turned flat, choose a plough with sufficient width of share, a board with ample turning capacity, a beam high enough to permit the use of the jointer when turning under green or coarse manure, and sufficient length of handles to enable the ploughman to control it with ease. If the soil is heavy and inclined to cement, use a narrow plough—one that will set the soil up, give a good harrow edge, and have sufficient press to the board to place the furrow over so that it will not fall back. In using either a single or two-furrow plough, care should be taken to turn over the whole furrow and to leave no part unploughed. Get away from the cut-and-cover plan. Teach the boys that anything worth doing is worth doing well, especially ploughing. The old adage that more grain grows on crooked furrows than on straight ones is a poor incentive, and is not helpful in

building up a reputation as a model farmer. Plough the back field as carefully as the field adjoining the road, and see that all fields are ploughed in such a way as to attract attention by their neatness. It is cheap and efficient advertising. Good ploughing pays; if a fair crop can be grown on a field which has been poorly ploughed, a better crop can be grown on a well ploughed field.—F. C. N.

Reclamation of Alkali Lands

Nature of the "Alkali" which is found in some parts of Western Canada

In some semi-arid regions in Western Canada, tracts are found where the soil is rendered barren by being impregnated with an excess of certain alkaline salts. These "alkali lands" are more particularly situated in parts of British Columbia and in south-western Alberta, but patches are found also in Saskatchewan and in Manitoba. With the increase in land values in the grain-growing prairie regions and in the fruit-raising valleys of British Columbia, the problem of the reclamation of these lands assumes a more pressing and practical aspect. That they can be reclaimed is, in most cases, tolerably certain, but reclamation is improbable where the expense involved would exceed the value of ordinarily good land.

Besides the alkali lands which naturally occur, others are liable to be formed through the injudicious use of water in irrigated districts, and it is very important to take precautions in order that these otherwise highly fertile lands may not be ruined. The so-called "alkali" consists of various salts, chiefly the sulphates and chlorides of sodium and magnesium, forming what is commonly known as "white alkali," and carbonate of sodium, which forms "black alkali" and is much more injurious to plant life.

Soils containing these salts are frequently met with everywhere, but do not tend to accumulate near the surface, except in dry regions, where, after being dissolved in the soil water and brought up by capillary attraction, they remain after the evaporation of the water. The salts, except the carbonate, are injurious only when present in excessive quantities. In humid regions, where drainage, rather than evaporation, is the principal factor in removing surplus soil water, no dangerous accumulation of these salts takes place. Moreover, there is more water in the soil, and consequently even though there be an equal quantity of salts, the strength of the solution is weaker and plant life is not injuriously affected.

Underdrainage and Cultivation

In dry areas, even where irriga-

tion is practised, it is impracticable to keep the soil any moister than is required for the successful growth of vegetable life. But, by a system of tile underdrainage, it is possible to cause the water to carry the excess of salts into the deeper layers of the soil, and thus overcome the dangerous accumulation near the surface, which seeds must germinate. This is especially important in some irrigated districts where alkali is making its appearance on lands that were formerly free from it, as in the Yellowstone Valley, e.g. near Billings, Mont., the lowest irrigated land is being ruined in this way due to seepage probably being injudiciously irrigated lands impinge up. An efficient system of underdrainage to carry off the surplus water is urgently needed.

In dry farming districts, manure can be done to reclaim alkali lands by extra deep ploughing, and by thorough cultivation to form a mulch on the surface and reduce evaporation. The application of manure is also very beneficial, because it gives the young plants a ready supply of available material, improves the texture of the soil, and acts as a mulch to check loss of water through drainage.

ECONOMY OF WIDE ROADS

(Continued from Page 37)

estimate for the 120-foot road includes the cost of the extra 40 feet of land used for tramway purposes. These circumstances are a course special to a certain extent. Instances might occur where the reconstruction of the old road would be necessary in either case. But even then the only extra cost per yard in making the wider road would be one-eighth the difference between £615 and £6168, or cost per yard of the tramway.

In this case the important point is that it is much cheaper for the Liverpool corporation to make a road 120 feet wide than 80 feet wide. All the ultimate advantage to the city are therefore added to the immediate gain. The latter, however, is not limited to the saving of cost. In Liverpool they are finding out that these wide planted roads are having the effect of keeping the homes of well-to-do citizens within the boundaries. Those who will erect large houses in narrow interesting tramway routes are building them on the space highways which Mr. Brodie is constructing. Liverpool has a long time suffered from the migration of its large ratepayers into outside districts. This only increases the rates all round in consequence of lowered rate value, but removes from the city those who, while in residence subscribe to its charities and interest in its social life. The policy of making wide roads with grass margins is helping to retain these well-to-do inhabitants within the city limits in one of the indirect advantages which Liverpool claims.—T. A.

Commission of Conservation

CANADA

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CONSERVATION is published about the first of each month. Its object is the dissemination of information relative to the natural resources of Canada, their development and the proper conservation of same, together with timely articles covering town-planning and public health.

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CONSERVATION is mailed free to those interested in the subjects covered by the work of the Commission.

OTTAWA, SEPTEMBER, 1914

A city should be not only a place of residence, but an inspiration to its inhabitants and a worthy object of civic pride.

City planning is not wholly a question of architecture and engineering. It goes more deeply into the lives of the citizens, affecting them in numerous ways and to an extent that can be realized only by those who have made a study of the subject.

The supervised playground is not merely an amusement centre. It ensures our young folks breathing fresh air, exercising their muscles, acquiring healthy appetites, and developing quickness of eye, sureness of hand, and steadiness of brain. It is the most efficient corrective available to counteract the evil influences of urban congestion.

Ellwood, the American sociologist, has declared that "the doubling of the price of bread in any civilized country would be a far greater calamity than a great war."

Even a slight rise in the price of foodstuffs brings large numbers in the great industrial nations to the verge of famine. The world is now in the throes of the one calamity—war; it is devoutly to be hoped that the second—the doubling of the price of bread, may be avoided. Conservation of the world's food supplies is now more than ever an absolute necessity. And again let it be said that conservation means a careful utilization, not merely selfish hoarding. It stands for principles which are the antithesis of those that are usually adhered to during a state of war.

Interprovincial Water Rights Law

American Engineers Studying a Problem which may be of Interest to Canada

The American Society of Civil Engineers has recently appointed a special committee, composed of eminent engineers, to ascertain the need for a national water law in the United States to protect existing rights and future engineering developments from interstate difficulties.

The enumeration of possible difficulties, as prepared by this committee, is of interest in Canada, where some of them may exist as interprovincial difficulties. Some of the interstate difficulties may be caused as follows:

1. From taking water across state lines;
2. From the use of water in an upper state which may jeopardize the quantity and quality for use in a lower state;
3. From appropriations on border streams where the controlling works are in two states;
4. From the storage of water in an upper state for transit in stream channels through several states and use for navigation, power, etc., at the lower end of the stream;
5. Because of judicial decisions in one state prohibiting the diversion of water from one drainage basin into another, or across state lines;
6. From the construction of unsafe works in one state which menace lives and property in adjoining states;
7. From the drainage of swamps or lakes in one state which removes the natural regulation of flow and which may cause destructive floods in adjoining states;
8. From the pollution of water in one state to the detriment of lower states;
9. Because of international treaties and controversies where state or federal jurisdiction is questionable.

Forest Fires and Soil Fertility

Destruction of the Timber Only Part of the Immense Damage Done

Experts state that forest soils have lost and are losing much fertility owing to forest fires which, doing apparently little immediate damage, rob the soil of accumulations of humus. In many sections land is being cleared for farming, and, where such forest land has not been burned, there is a large percentage of vegetable matter which provides considerable fertility and a good texture. Moreover, as this soil has a greater capacity to absorb and retain moisture, it is less likely to be washed and gullied under heavy rains.

Advanced Methods of Fire Protection

One Railway Finds its Interest Furthered by Co-operation With Neighbouring Farmers

One of the most progressive railways in matters of fire protection is the Boston & Maine, which operates in both Canada and the United States. This company is putting into effect the slogan of "Safety First" in respect to fire protection, it believes in the old saying that "an ounce of prevention is better than a pound of cure." Besides following the general practice of railways, in burning off the right-of-way each year, to reduce grass fires, the Boston & Maine has adopted the policy of cooperating with land-owners along their lines, in disposing of the inflammable debris on a narrow strip adjacent to the right-of-way. It is recognized that, in some cases, sparks from locomotives will fall outside the right of way, which usually extends for 50 feet on each side of the centre of the track. Fires are likely to start in this way and very often cause serious damage before they can be extinguished. Similarly, the danger from small grass fires starting within the right-of-way is greatly increased by the presence of inflammable debris, such as old slashings, immediately adjacent to the right-of-way fence. So far as possible the Boston & Maine railroad secures the active co-operation of owners of such lands in burning the debris at a safe time. Where this is impractical, for any reason, the company does the work at its own expense, unless the land-owner objects. The company reports that, on 75 places last year, the fire hazard was materially reduced in this way. This is good business policy, from the point of view of the railway, since the elimination of forest fires means, in the long run, not only decreased damage claims but, also, increased freight and passenger revenues. The company states that the adoption of the above policy entails very little extra expense, since the section men handle the work on rainy days, when no track work can be done and when the burning of debris can be carried on with a minimum of danger.—C. L.

Big Waste of Fuel on Railway Engines

Saving of Fuel by Locomotives Making Longer Runs

Investigation, says the *Railway Gazette*, shows that from 15 to 25 per cent of the coal used by locomotives is consumed in running sheds and elsewhere while the engines are not actually performing service. Tests have shown that

from 20 to 35 per cent of all fuel used on locomotives is burnt while the engines are stationary or not actually engaged in hauling trains. In a few cases the absolute waste of fuel is as high as 50 per cent and examination of the ash pits has proved that from 35 to 50 per cent of fixed carbon exists in the ash deposited there. This matter was discussed at some length at a recent meeting of an engineering society, which was attended by a number of railway locomotive men. In the course of the discussion, it was pointed out that, if the necessity for cleaning fires so frequently were removed, the result would be given in fuel. An instance was given in which a saving of £205 had been effected by running the same engine through, over a distance of 240 miles, instead of changing en route. The question of firing-up was also discussed, and special attention was called to the necessity of leaving ashpans open when fires were being built up, so that the coal dropping through the grate would fall into the pit and not clinker up the ashpan opening.

Inefficient Use of Horse Labour

Better Organization of Farm Work would Avoid Waste of Energy

Articles are frequently published, not only in technical journals, but also in papers intended for the general public, pointing out the great loss of energy suffered through the inefficient use of coal in steam engines. Very little notice, however, is taken of the equally uneconomical use of horse labour, particularly on farms. For example, many owners of western grain farms keep a large stock of work-horses to handle the rush of work during the summer, and have these horses standing idle in the stable during the greater part of the winter. Investigations carried on by the United States Department of Agriculture show that, in the northern States, taking the entire year, each farm horse works on an average only 34 hours a day. This low figure represents a considerable loss of useful energy, for which the remedy must be sought in one of two ways. Either farm operations must be more diversified, so as to spread the work more equally over the year and make it possible to reduce the stock of working horses, or machinery must be substituted for horse power to a much greater extent than at present. Every horse-owner is entitled to expect, and to strive to attain, a satisfactory return from his investment in horse flesh. The right way to do this is not to overwork the horses, but to put more brains into his business, so that, as far as possible, no horse may be idle for any lengthy period, nor yet have to work overtime during rush seasons.

No Variation in Stored Grain

Experiments Show Farmers may Hold Wheat Without Loss through Shrinkage

In handling grain the question of an increase or decrease in weight after threshing is often before the farmer and the dealer. Many farmers believe that there is a decided loss during storage, and are willing to sell at a lower price at harvest time than later, even though storage cost them nothing. To secure information along this line, an experiment has been conducted at the Utah Agricultural College Experiment Station. While the results obtained may not hold good for all conditions, they can be used as an indication of what will probably take place under conditions somewhat similar.

No.	Grain	Moisture, 1911	Moisture, 1913	Gain
		Percent	Percent	Percent
1	Wheat	6.51	9.25	2.74
2	Wheat	6.48	9.23	2.75
3	Wheat	6.98	9.30	2.32
4	Wheat	7.33	9.31	1.98
5	Oats	6.25	8.57	2.32
6	Oats	6.12	8.24	2.12
7	Wheat	8.67	9.28	0.61
8	Wheat	7.34	8.99	1.65
9	Wheat	6.72	8.95	2.23

Wheat and oats were used in the experiment. They were taken directly from the threshing machine and placed in sacks, holding a little over two bushels. The bags of grain were stored in the college barn, on a platform, around which air could circulate freely. The experiment was begun on August 17, 1911, and continued for two years. The bags were weighed once a month and the same scales were used throughout. Contrary to expectations, there was a gain in weight instead of a loss. A gradual increase in weight occurred during the fall and winter until a gain of from three to five per cent had been made. A decrease in weight, never amounting to more than two per cent, commenced in spring and continued into the autumn, when the weight began to increase again. During the second winter the grain was even heavier than during the first, while in the second spring there was a falling off again, as in the previous year.

The results of the experiment do not show any consistent difference due to method of harvesting or of agriculture—whether by irrigation or by dry-farming. The stages of maturity and dryness are probably the chief factors in determining changes in weight. In every case there was a gain in weight during the winter, and a loss during the summer, but the grain weighed less at thrashing than at any later period. The above table shows the actual weights at the beginning and at the conclusion of the experiment.—F.C.N.

Cultivation to Kill the Weeds

Extra Work Pays for Itself in Larger and Cleaner Crops

One of the best methods of eradicating weeds—a source of enormous loss to farmers—is as follows: Immediately after the hay or grain harvest, plough the land very shallowly with a gang plough, turning a furrow two or three inches deep. Then put on a heavy land roller which will pack the soil and thereby hasten its decay; next use the disk and follow with the smoothing harrows. Should any weed growth appear, keep the disk and harrows going at short intervals until the soil is well decayed. A cultivator with broad points may then be used. The object is to destroy all weed growth until autumn, when the soil should be ploughed thoroughly and well set up to the winter's frost. On such land it is not so slow some kind of hoed crop, such as roots, corn or potatoes, that requires constant hoeing and cultivating during the growing season. If this method of cultivation is adhered to closely, it will be found to be one of the best means of eradicating noxious weeds and also of preparing the soil for future crops.

Actual experiments have demonstrated that a much greater yield may be expected from land cultivated in the foregoing manner, as compared with that secured from fields which have been left in soil and ploughed in late autumn. In one instance two four-acre plots were cropped with oats for purposes of comparison, and the plot which had been thoroughly cultivated during the autumn yielded 60 bushels more than was secured from the land not so cultivated. The net increase in revenue, after making due allowance for cost of cultivation, amounted to \$14.00.

A similar experiment was conducted with sugar beets on two plots—one cultivated after harvest, the other spring-ploughed. In this case the difference in yield was even more noticeable than with oats. It was found that the land cultivated occasionally during the autumn produced beets at the rate of 114 tons per acre, while the yield from spring-ploughed land was only 84 tons per acre. Stated in dollars and cents, this difference is very convincing; figured at the prevailing price for beets, it showed a greater revenue from cultivated land of \$16.03 per acre.—J. F.

Notable Progress in Wood Treatment

Increasing Use of Impregnated Ties and Poles in Canada and U. S.

The most notable progress yet recorded in the chemical treatment of timber to prevent decay was made during the last year. In the United States, 93 wood-preserving plants consumed in 1913 over 108,000,000 gallons of creosote oil, 26,000,000 pounds of zinc chloride, and nearly 4,000,000 gallons of other liquid preservatives. This material was used to treat over 153,000,000 cubic feet of timber, or about 23 per cent more than in 1912.

Impregnation of wood with oils and chemicals to increase its resistance to decay and insect attack is an industry which has become important on this continent only in recent years. In Great Britain and most of the European countries practically every wooden cross-tie and telephone or telegraph pole receives preservative treatment. In the United States, of the 135,000,000 cross-ties annually consumed, less than 30 per cent are treated, and the proper treatment of an annual consumption of 4,000,000 poles is scarcely commenced.

In Canada the practice of using preservative treatment for ties is of very recent origin. The first important plant was built by the Dominion Tar & Chemical Company at North Transcona, about five miles east of Winnipeg, Manitoba. This plant is operated under a contract with the Canadian Pacific Railway Co.

In 1910, practically no treated ties were used by Canadian railways, whereas in 1911 about 206,700 ties received chemical treatment before being placed in the roadbed. This number, while forming only 1.4 per cent of the total number of ties used, was nevertheless, an indication of the increase in this particular form of conservation. In 1912, a total of 1,818,189 ties were chemically treated, forming 8.5 per cent of the total number of ties purchased. Steam railways used 1,798,189 of these treated ties and electric roads used 20,000.

The slow growth of the idea of timber preservation has been due to the large supply of cheap and durable timbers and the general disregard shown toward economy in the use of natural resources. These conditions, however, are changing rapidly, and a steady increase in the use of wood preservatives is to be anticipated.

Forest Protection on Lower Ottawa

Large Increase in Area and in Number of Fire Fighters

The Lower Ottawa Forest Protective Association, which was organized last spring, has had a very active season, due to the periods of May, July and August. The association employs 49 permanent rangers, four inspectors and as many temporary labourers as may be required for the control of individual fires. During the dry spell in May, more than 500 extra fire fighters were on duty at one time in the employ of the association. Since the organization of the association the area protected by it has been increased by 2,000 square miles, through the accession of new members. The total area now guarded is 11,812 square miles, or upwards of 7,500,000 acres. The association has recently secured convictions against 40 settlers in the Ste. Agathe, Mont Laurier, and Maniwaki districts for setting fires without permits and it is expected that these convictions will result in greater care with such fires in the future. In all probability, the excellent results secured by the Lower Ottawa and St. Maurice associations will lead to the formation of similar associations in other sections of the country.—C. L.

Use of Spraying to Destroy Dandelions

The Ontario Agricultural College has been conducting investigations for several years with the object of discovering some less laborious method of eradicating dandelions than spudding them out. Very encouraging results have been achieved by spraying with iron sulphate. A 20 per cent solution is used and it has been found that six sprayings during the season will kill over 90 per cent of the weeds. In spraying lawns, the solution may be applied with a hand sprayer or a watering can with a very fine rose, so that all dandelions will be thoroughly drenched. About 48 hours after application, the dandelion leaves will be found to be blackened and burned. These can be raked up and the plot left for about two weeks till new leaves appear, when another spraying may be given. No permanent injury is done to the grass, but white Dutch clover is almost entirely killed. The process has the further merit of being inexpensive.

It should be mentioned that other experimenters, both in the United States and Canada, have not found iron sulphate satisfactory for the destruction of dandelions, but the results obtained at the O. A. C. warrant giving it a trial on badly-infested lawns.

TO NEWSPAPERMEN

To further public interest in conservation subjects, the Commission will lend to Canadian journals the cuts used in this bulletin. As there are only a limited number of these cuts, delays are sometimes unavoidable, but orders will always be filled as soon as possible after receipt of application. It is requested that cuts be made use of at the earliest possible date, and returned promptly, enclosing note showing by whom sent. We shall be pleased to receive copy of publication in which the illustration appears. As the Post Office Department will no longer permit the franking of cuts, the Commission of Conservation will pay the postage on out-going packages on the understanding that publications requesting the use of cuts prepay return postage.