

Conservation

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Canada's Fire Waste

**Spring Cleaning Time Should
be Used to Remedy Dangerous
Conditions**

Canada continues her enormous fire losses, notwithstanding the efforts of many interests to reduce this drain upon her resources. During March approximately \$1,400,500 worth of created resources was consumed. The usual causes, namely, overheated and defective stoves, furnaces, pipes and chimneys, defective wiring, dropped cigars and cigarettes, and children with matches, were responsible for a large share of the loss.

The use of stoves and furnaces for heating will soon be discontinued. These should then be carefully examined for defects. Chimneys and stove pipes should be thoroughly cleaned. Stove-pipes found corroded and dangerous should be at once replaced. Too much care cannot be taken to guard against fire. It destroys both life and property. Last year 141 persons lost their lives in Canada by fire. Ordinary care only is required to prevent this loss, and it is hard to realize that Canadians are so blind to their own interests as not to appreciate this condition and give more attention to fire prevention.

The growing of even a few vegetables by twice as many people as have vegetable gardens at present would enormously simplify some of our economic problems, and give to so many more thousands of families fresher and more healthful vegetable food. Considered in relation to a few families, this may seem of small interest, but the cumulative result throughout the Dominion would be of great national importance.

I have seen several town-planned cities in England, and I have been greatly struck with the extraordinary common-sense manner in which those cities have been built. They have been built in a practical way, they have been built in an artistic way, and they are most comfortable to live in. There is a very healthy tone throughout the people who are living in those places.—H.R.H. the Duke of Connaught.

The Home Garden



Cut 127 A backyard scene which is anything but attractive and homelike.



Cut 128 Surroundings like these lend enchantment to the home and encourage industry.

Within the next few weeks, the time will be opportune for making home gardens out of even the most neglected areas. With no other incentive than the material, a garden should be a feature of every home. The supply of fresh vegetables for the table adds much to the health and income.

The appearance of his surroundings is usually an index to a man's character. The planting and care of a garden has also an influence for good, as well as a sentimental effect in the home, which cannot be measured by material results. This value is illustrated by the experience of a workman and his wife at a garden village in Hull, England. A house was rented to them at \$1.80 per week. They had formerly lived in a poorer

district and paid only \$1.20 per week. Explaining how they could afford to pay the increased rental, the workman said that, while paying 60 cents per week additional rental, he was actually saving 12 cents. The old house had cost \$1.20 for rent and 96 cents for his beer, or \$2.16 in all, whereas in the new house, the rent was \$1.80 and beer 24 cents, or a total of \$2.04. The difference could be accounted for by the added attractions of pleasant home surroundings. The work of the garden created an interest in the home, and an influence for good in the lives of those directly responsible as well as those of the neighborhood.

Horticultural societies and other local organizations can do no

Save the Potato Crop

**Neglect of Treatment Causes
Heavy Annual Loss**

From 1905 to 1915 the average annual yield of potatoes in Canada was 78,405,000 bushels, constituting one of our important field crops. The annual yield, however, is greatly lessened by the ravages of diseases and insects. The season of 1915 was admittedly one of the worst in years for late blight, and the Botanical Division of the Central Experimental Farm observes that, in one small province of Canada, the loss from this disease amounted to about 2,000,000 bushels, not including loss in storage.

Potato diseases may be controlled in different ways; some by spraying, some by seed treatment and some by seed selection. For early and late blight and for flea beetles, Bordeaux mixture is very effective. By adding poison to this mixture the Colorado potato beetle is also kept in check. Numerous experiments have been made which demonstrate clearly the practical value of spraying with Bordeaux mixture. At the Vermont Agriculture Experiment Station experiments have been conducted for many years. Over a period of eighteen years the yield on the sprayed area averaged 271 bushels per acre, while the unsprayed gave only 159 bushels per acre for the same period. The lowest gain from spraying was 26 per cent, while the average was 92 per cent. This evidence should be sufficient to convince every farmer that it pays to spray. It does not cost much and is not so troublesome as many imagine. If you have not full directions at hand, write now to the nearest Experimental Farm or the Central Farm at Ottawa and you will receive complete instructions regarding making and applying Bordeaux mixture.—F.C.N.

better work than encourage the cultivation of the home garden. It not only adds to the beauty of the home, but the cumulative effect upon a municipality spans the chasm between civic pride and civic neglect.

Depletion of Fisheries

Artificial Culture must be Continuous to Maintain Production

Reference is frequently made to the extent, variety and value of Canada's fisheries, but it is rarely pointed out that fishing grounds are a very readily exhaustible form of natural resource. To a great degree fish is a crop, requiring considerable cultivation; a large annual output of commercial fish can be maintained only through careful husbandry. In 1914-15 the Dominion Fisheries Branch spent \$370,000—the largest single item in its expenditure—upon fish culture. Although artificial breeding of fish has been carried on by the Dominion Government for nearly 50 years, the great growth and development of this branch of fisheries administration has been accomplished in the last decade. During the latest year for which statistics are available, 64 hatcheries were conducted and the aggregate of fry and fingerlings distributed reached 1,640,000,000 in round numbers.

The Dominion Fisheries Branch is concerned chiefly with the production of commercial species, leaving the propagation of game fish largely in the hands of the provincial authorities. While lobsters and whitefish are distributed in much the largest numbers, considerable attention is paid also to Pacific and Atlantic salmon, salmon trout, pickerel and other fish.

Except with regard to such marine species as the cod and mackerel, extensive artificial culture and strict regulation of fishing operations are necessary to ensure fisheries against depletion. The history of the whitefish production of the Great Lakes furnishes the best example in Canadian experience of the manner in which a valuable fishery can be either depleted in a very short time or maintained at a high level of production accordingly as artificial culture is neglected or efficiently prosecuted. Smaller fisheries, such as the oyster, shad and sturgeon, are to-day in a depleted state, while the two most valuable fisheries of the Dominion, the lobster and Pacific salmon, will require continuous breeding operations on a very extensive scale to maintain their maximum productivity.

Housing the Birds

Competitions Among Boys Interest them in Bird Protection

As the result of a bird home contest inaugurated recently in Manitoba, fully 2,000 bird houses were made by the boys attending

manual training classes in Winnipeg. An exhibition will be held and prizes awarded before the houses are placed in the trees throughout the city. By those familiar with the strong attraction of such homes for wild birds, the great value of this unique contest will be fully appreciated. In addition to testing the mechanical skill of the boys, it directs their energies to a splendid practical purpose, at the same time inevitably impressing upon them the importance of protecting and fostering bird life.

A competition of a similar nature is being conducted at Brockville, Ont., having been inaugurated, following an address on the subject, by Dr. Gordon Hewitt, Dominion entomologist.

Dangerous Smokers

Many Serious Fires Directly Traceable to this Cause

Smokers are responsible for many fires. Along any street, cigar and cigarette stubs, and partly burned matches may be seen almost everywhere, carelessly thrown aside by smokers. Similar carelessness occurs in public and office buildings, business places and factories. Men enter office buildings where smoking is not allowed, drop their cigars on the stairs, on the floors of the corridor or possibly in the elevator, where they may roll to the bottom of an elevator shaft, into a possible accumulation of waste paper, and cause a fire. Others carelessly throw their cigar or cigarette stubs and matches into the waste-paper basket. If the basket is of combustible material the smoldering stub will eventually burst into flame.

Factory smoking is another serious hazard. While most factories have strict rules against smoking, it is a common practice for employees to "light up" before leaving, and drop their lighted matches; these, falling among inflammable materials, later break into flame. Many evening fires in factories and business places may be traced to this cause.

Open gratings and broken prisms in sidewalk lights are other common receptacles for these dangerous fire-starters, pedestrians dropping stubs and matches regardless of results.

Since the fire which destroyed the Parliament buildings at Ottawa the Dominion Government has issued an order prohibiting smoking in any building occupied by the public service.

Do not throw burning matches, cigar and cigarette butts, or live ashes of pipes where they are likely to come into contact with any combustible material.

Oyster Farming

Basis for an Important Industry Awaits Development

The depleted oyster beds of New Brunswick, Nova Scotia and Prince Edward Island offer an excellent field for oyster culture—an industry which has proved very remunerative in several Atlantic states, notably Rhode Island. For years Canada has been importing more oysters than she has been producing, measured in dollars and cents, and there is little doubt that a reduction in price would greatly increase the consumption. During the five years, 1910-1914, the value of oysters imported into Canada averaged nearly \$390,000 per annum, while the value of the Canadian production averaged less than \$196,000. In view of the market advantages, coupled with the large areas available for culture and the superior flavour of the oyster grown in northern waters, oyster-farming in Eastern Canada holds out every inducement to capital and enterprise.

Since 1912, when the jurisdictional dispute respecting the right to grant leases to oyster-bearing areas was settled, the industry has made considerable progress. Prince Edward Island has leased about 5,000 acres and, during the last two years, more than 6,000 barrels of seed oysters have been planted. The Shemogue Oyster Co., formed in 1913 and operating in New Brunswick and Nova Scotia, is a pioneer in the field. In the selection and planting of areas it has employed a Rhode Island expert, familiar with the methods found most successful in oyster culture in that state. This company hopes to be in a position within five years to command half of the trade now in the hands of United States producers.

Serious difficulties have arisen from lack of capital and adequate protection, as well as from the depredations of sea-pests. These obstacles are not insuperable and, considering the productivity of the beds, the quality of the product and the excellent market, the ultimate development of a large and profitable industry seems assured.

Spring Floods

Their Causes and Methods for Their Prevention

The advent of spring at once brings to mind the subject of floods, their causes and prevention, particularly in communities bordering streams whose upper basins have been wantonly depleted of forest cover either through

unchecked forest fires or injudicious cutting. In many districts in Canada this year, excessive floods have been feared, but fortunately, were largely prevented by favourable weather conditions. These conditions will not always obtain, and the greatest fears may be realized in the near future. The least we can do is to prevent the repetition of causes which are known to have greatly increased floods on the streams of our older districts.

Five general agencies affect floods: climate, comprising precipitation and temperature, topography, geology, artificial storage and drainage, and finally, and possibly most important, surface vegetation, including forest cover and cultivated land. The fourth and fifth agencies enumerated are within human control and steps should be taken either to improve natural conditions or at least to prevent making them worse. When the physical conditions on the drainage areas of rivers, where floods have increased, are summed up, the one great change in the vegetative conditions is the reduction of forest area. On some watersheds it has occurred by slow progression and on others more rapidly. It is certain that in some areas forest cutting has caused barren conditions, because the land was of such a character that, after it was deprived of forest protection, it eroded easily and its productive portion was swept into water-courses.

The great value of storage reservoirs need no comment. The question of cost alone prevents their more general use. Their construction, however, is becoming indispensable in connection with regulating the flow for water-power purposes and when their utility in this connection is being considered, the benefits arising from their additional importance in preventing excessive floods should be borne in mind.

Land reclamation by swamp drainage is of great value, but any project covering fairly extensive areas should be most judiciously dealt with, particularly from the viewpoint of accentuating flood conditions. It is not sufficient to dig ditches through a large area, discharging the water into streams incapable of carrying the increased rate of flow, and thus contribute to disastrous floods. In this connection it may be stated that floods on the Grand River in Ontario are partly attributed to this cause; thus, in a recent report it is stated that: "By the drainage of swamps, the water is carried off in a few hours which used to take weeks; in fact this has occurred in many swamps which formerly remained full of water during the whole year." The value of the land to be thus reclaimed should be established beyond doubt, after careful consideration of the inherent loss in water regulation and flood prevention.—L.G.D.

Commission of Conservation

CANADA

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CONSERVATION is published 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 the same, together with timely articles covering town-planning and public health.

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OTTAWA, MAY, 1916

THE HOUSE FLY DANGER

House flies are now recognized as most dangerous carriers of the germs of such diseases as typhoid fever, infantile diarrhoea, tuberculosis, etc. From filth and decaying materials, they carry infection to the home and to the food which we eat.

The best method to exterminate flies is to prevent their breeding. House-flies breed in decaying or decomposing vegetable and animal matter and in excrement. Stable refuse is especially attractive to them. In cities this should be stored in dark fly-proof receptacles and should be regularly removed within six days in summer. Farm manure should also be removed within the same time and either spread on the fields or stored at a distance of not less than a quarter mile from a house or dwelling. Manure piles may be treated with borax, using three-fifths of a pound to every ten cubic feet of manure. Scatter the dry borax principally around the sides and edges of the pile and wash in with water.

Kitchen refuse is a favourite breeding place for flies, and great care should be taken to keep garbage cans tightly covered. The contents should be buried or burnt at once, if possible. No refuse should be left exposed. If it cannot be disposed of at once it should be sprinkled with borax, as described above, or with chloride of lime.

Windows and doors should be screened to keep flies out of the house. Milk and other foods should be covered with muslin or other netting. It is especially important to keep flies out of sick rooms and to prevent the spread of disease by this means.

Unsafe ladders have many permanent disabilities to their credit.

CONSERVATION

A factory for extracting oil from herring waste and making dried fish scrap from the residue has commenced operations at Lubec, Maine. It expects to produce 750 barrels of oil and 300 tons of fish scrap this year. The supply of raw material will be secured chiefly from the St. Stephen district of New Brunswick. The utilization of this waste will still further increase the value of the smoked herring industry of that port.

A paper mill at Appleton, Wis., is installing a plant for the manufacture of wood alcohol from digester liquor, a waste product in the manufacture of chemical woodpulp. From a liquor waste of 250,000 gallons daily, it is expected to secure 3,000 gallons of wood alcohol, if the process should prove the success claimed for it by its inventor. The present cost of producing wood-alcohol by the distilling process is approximately 27 cents per gallon, but, by the new process, it is claimed that the cost will not exceed 14 cents.

Summer Kitchens

Danger from Stoves Without Safe and Proper Chimneys

A sequence of the annual spring housecleaning period in the home is the exodus of cooking stoves and ranges to the summer kitchens. This removal involves a considerable fire risk. The summer kitchen naturally suggests a building of more or less flimsy construction, usually a frame lean-to without a proper chimney. Too often a stovepipe through wall or roof serves as a smoke outlet, without even protection of the surrounding woodwork.

The same care should be exercised with stoves and ranges in summer as in winter. Woodwork should be protected by sheet metal, with at least two inches of air space between the metal and woodwork. Sheet metal should also be placed under the stove, projecting sufficiently to overcome the danger from live coals falling upon the floor.

Proper and safe chimneys should be provided, and, where necessary (or pipes to go through frame partitions metal thimbles, provided with ventilated air spaces, should be used.

Insurance companies will not knowingly accept as a risk any building in which stove-pipes issue through roof or sidewalls. Should such a condition be established and a fire occur from this cause, the companies are not called upon to pay the loss, the policy being void. It is therefore of the utmost importance to provide safe equipment for stoves in summer kitchens.

TO KILL FLIES IN HOUSES

Mix two tablespoonfuls (one ounce) of 40 per cent formalin with one pint (16 ounces) of equal parts of milk and water. This mixture should be exposed in shallow plates, with a piece of bread placed in the centre on which the flies alight and feed.

By an early and active campaign of fly destruction, great inroads may be made upon this pest, and many valuable lives may be saved.

Collecting Waste Paper

Co-operation Necessary for Successful Results

The article in "Conservation" for March on "Saving Waste Paper" has aroused considerable interest throughout Canada. Many letters have been received asking for information as to methods of collection and disposal.

Waste paper is a commodity of very low value, and collecting and shipping charges reduce very materially the final returns from same. To reduce the expense of gathering to the minimum, the paper should be collected through co-operation of those interested or by local philanthropic or charitable organizations. A headquarters should be established, or collection boxes distributed, where the paper may be left. For shipping, the paper should be put into bales, for which a baling press is necessary. There are many types of press on the market, several at moderate prices.

To secure minimum shipping charges it is essential that shipments be made in car lots, as the less than car lot rate is much higher. Usually the paper must be shipped to considerable distances to the mill or dealer and adjoining municipalities might, if necessary, co-operate in making up car lots.

Apart from the monetary return for saving this wasted material, there is the further incentive of assisting to reduce the demand upon the forests of Canada to supply new material for the ever increasing requirements of the paper-making industry.

Care of Shade Trees

A Careful Examination may Disclose many Handicaps to Successful Growth

Mr. Carl Bannwart, of the Newark Shade Tree Commission, admirably presents the main points regarding care and condition of

trees in the form of a series of questions. He says in part:—

"Examine your tree for points every month and see what percentage it will have out of a possible one hundred. Each of the following questions, if answered unequivocally, 'Yes,' gives your tree 8 1-3 per cent toward the one hundred. These questions are put in the order of their importance.

1. Is the opening around your tree of standard size? Standard size is: 4 feet square for a tree of 6 inches (or less) diameter; for every 1 inch increase of such (6-inch) diameter, an increase of 1 square foot in area of opening.

2. Is the ground in this opening well-loosened to admit air and water?

3. If the tree is surrounded by grass, is the sod open around the trunk?

4. Does the tree get a good proportion of the rain which falls on the sidewalk, or does the water run over the curb into the gutter?

5. Is the tree protected with a tree-guard? Guard must be six feet high and not too tight. Tree must be protected from chafing by guard.

6. Is the tree free from borers? Borers can be detected by sawdust coming out of holes in the trunk. Watch for the borers from April to November.

7. Are the trunk and the branches cleared of all cocoons, egg-masses, larvae, caterpillars, beetles, scale?

8. (a) Is the head free from all deadwood, has it been pruned by an expert, and how do you know he is an expert? Find out how a tree should be pruned. Are all the cuts painted? (b) Does the tree stand perpendicular and is its present place intended to be its permanent home?

9. Have the scars from horse bites or other injuries been cleaned out and painted to prevent harbouring insects and to stop decay? If there are large cavities these should be filled with cement.

10. Does the tree remain green and in full leaf to the middle of October?

11. Have you put as much nourishment into the soil as the tree needs for the year? Give it a treat; dig in wood ashes, ground bone or well-rotted manure.

12. Are any wires interfering with your tree either by swaying or by electric current? Are there any gas leaks?

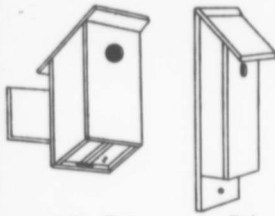
"Here are twelve points of a good street tree. The total percentage if below par reflects on the man, not on the tree. The tree always does its best. Man forgets that he has taken it out of the God-made forest where it could and did care for itself, and has placed it in a man-made city where it is dependent on man's care for thrifty growth."

Safety first is the protection of human life: the conservation of the human factors of production.

Welcoming the Birds

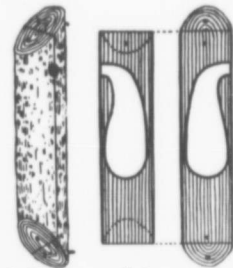
Supplying Nesting Boxes and Fresh Water Induces their Return

Birds about the home add a touch of nature that can only be appreciated by those who have succeeded in attracting them. They may be gathered about in all seasons of the year with ease and certainly merely by offering what they desire. In summer they do not require to be fed, but they do appreciate fresh water for bathing and drinking. A shallow pool, of varying depth, if only a foot across, becomes on hot days a centre of attraction. A pan, with stones in it, set in the ground and kept filled with water, will provide this attraction for the birds.



Cut 120 Fig. 1

Fig. 2



Cut 130

Fig. 3

Birds are desirable not only on account of their beauty and song, but because of their economic worth. They are especially useful as insect destroyers during the breeding period, when they have to work early and late to obtain sufficient food for their nestlings, and their movements at this season are particularly interesting. For this reason it is especially desirable to provide them with nesting facilities. They will make use of bits of wool or twine, or feathers, in making their nests.

Nesting boxes also furnish an inducement for the birds to visit us. Many species of birds now accept the hospitality of these boxes for the safe rearing of their young, and will occupy them year after year.

Simple forms of nesting boxes are shown herewith. Figures 1

and 2 show boxes constructed of boards, while that in figure 3 is made from a log about 6 inches thick, split in half, and gouged out to form a cavity. The two pieces are then screwed together. It is necessary to have either top or bottom removable for cleaning out old nests. The boxes should always be placed with the front protected from prevailing winds, and the opening should be about 1 1/8 inches for the chickadee, 1 1/2 inches for the swallow or wren, 2 inches for the woodpecker, fly-catcher or flicker, and 3 inches for the screech owl; in each case the opening should be near the top.

Much pleasure may be secured and greater interest in nature study created by such little encouragements to the wild birds.

prevent decay as well as fire.—*Sterling.*

Bird Protection

Canadian Organization doing Good Work in the Schools

The Canadian Society for the Protection of Birds, founded about a year and a half ago, is actively engaged in the promotion of bird protection throughout Canada. While national interest is naturally concentrated on patriotic endeavours along other lines, much has been done through lectures, addresses and social meetings to enlist public sympathy on behalf of the society's work. Thousands of copies of a very valuable report, "The Value of Birds to Man,"

Children's Playgrounds

In recent years, the playground movement has secured a very strong hold upon the public in most of our cities, and no doubt others will be taking up the work during the coming season. The movement has not, however, reached the height to which it should aspire. While the play feature of the ground has been fairly well provided for, as a rule, the playgrounds are bare of trees, foliage or flowers. Little effort has been made to encourage the children to improve or beautify their grounds, or make their surroundings more attractive.

The children frequenting the playgrounds are usually from homes with little space for either garden or grass. They have no opportunity to cultivate or become interested in plant growth or flowers. The playground should endeavour to furnish what is lacking in this respect at home. Space should be devoted to flowers and plants; beds should be laid out and borders planted by the children under supervision, a short time each day being devoted to it. This would go far toward making the playground more attractive, and would constitute a training which the children would not forget when they reached maturer years and had homes of their own. There is no reason why these grounds should be absolutely bare, and it is hoped that the promoters of this laudable movement will extend the scope of the work to beautifying the areas devoted to play.

Fire Retardants

Experiments being Conducted to Obtain Effective Process

Closely related to preservative treatment against decay is the development of fire retardant materials and processes, particularly for shingles. While only 27 per cent of all fires spread to adjoining buildings, and individual carelessness and character of contents, rather than the building material, are responsible for most fires, it is an additional measure of safety to have fire retardant shingle roofs. Dr. Herman von Schrenk, who has for several years been testing all available materials, recently announced that the long search for a satisfactory fire retardant was practically ended. Materials have now been found which effectively protect shingle roofs from sparks and brands, and prevent the spread of a fire on such fire-proofed wood. Almost simultaneously the Forest Service announced the development of a fire-proofing chemical. These materials, in most cases, act to

by James Buckland, are being distributed; also posters warning the public of the penalty attached to the destruction of insectivorous and other birds.



Cut 131

A further important feature of the movement is the manufacture of nesting boxes. Through the efforts of Mr. J. A. Harvey, a well-known Toronto architect, Berlebach boxes of solid timber, hollowed out, which when imported cost three dollars each, have been made for the society at a cost of fifty-five cents each.

Local branches of the association will be formed in any part of the Dominion, special attention being given to arousing the interest of school children. The accompanying illustration is a reproduction of the official crest taken from the junior pin to be issued by the society to Canadian children at a cost of a few cents.

Metallic Magnesium

Many uses for this Product— Found in Several Provinces

Magnesium is one of the several metals which the present war has proved to be of great value. As with numerous other products, before the war, France, Great Britain and the United States were dependent on Germany for their supplies of this material. The price was steady at about \$1.45 per lb. but rose from \$2.50 shortly after the beginning of the war, to as high as \$7.50 per lb. The price now is about \$5.50 per lb.

The chief uses of magnesium are: Scavenging alloys making denser, cleaner, stronger and more homogeneous alloys. Illumination, as in military uses for shrapnel trailers, star bombs, flare lights, etc., and in photography for flash lights.

In aluminum castings 2 per cent of magnesium cleans up the aluminum, almost doubling its tensile strength, quadrupling its resistance to shock or jar and reducing the cost of machining by more than 50 per cent. This is of great importance in connection with the construction of aeroplanes and dirigible motors, high-speed engines of every type and in all machinery or structures where strength, with a minimum of weight, is required.

Metallic magnesium is usually recovered by the reduction of the chloride but it can also be obtained from the reduction of the oxide or carbonate. The common magnesium carbonate rock is known as magnesite. Deposits of this material occur in a limited area in the township of Greenville, Quebec. The production in 1915 (including some calcined), amounted to 14,779 tons, valued at \$126,535, in striking contrast with a yearly average production from 1908 to 1914 inclusive, of 621 1/2 tons. While the known deposits are limited in area there is every possibility that the district contains other workable deposits. Float magnesite has been found over a wide area. Magnesite is also found in Yukon and in the Cariboo district, British Columbia.

The highly refractory quality of magnesite and its ability to form a hard vitreous body when combined with magnesium chloride has led to its adoption for a number of purposes. The largest consumption is in the manufacture of magnesite firebrick, crucibles and in bedding steel furnaces. It is mixed with sand, sawdust, ground quartz, talc and other substances in the manufacture of tile, flooring, roofing, artificial marble, wainscoting, etc. Magnesium bisulphide, is used in digesting and whitening wood pulp in paper mills.—W.J.D.