

Conservation

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Effect of Fires on Hardwood

Surface fires open the way for worms and rot—Consequent deterioration is source of great loss

A recent investigation by the United States Forest Service shows that, contrary to the popular supposition, surface fires in hardwood timber cause very material damage and loss. This takes place in three ways: (a) By producing fire scars through which worms enter; (b) by opening a passage through the bark and sapwood for rots to reach the heartwood; and (c) by weakening trees with hollow butts till they either burn down, die from fire girdling, or are blown over by strong winds.

Every fire, therefore, only increases the damage by making possible a new crop of worms in the trees and by giving another chance for rots to enter through the new fire scars, thus increasing the quantity of unsearchable material and decreasing the amount of money received for the timber. This deterioration in the standing timber is the source of a tremendous loss to the entire community. It can be avoided to a very considerable extent by the exercise of proper care to prevent the occurrence of such fires. This situation is particularly applicable to farmers woodlots.—C. L.

Milk Will Keep Sweet Longer in Bottles Made of Red Glass

That light is detrimental to the conservation of milk is well known; lately, however, it has been discovered that the violet rays are the most detrimental, while the red rays are beneficial. Sterilized and unsterilized milk, if in plain glass bottles, "turn" equally quickly when exposed to sunlight.

The claim that the use of red glass or red paper wrappings is of advantage in conserving milk, could

PUBLIC SWIMMING BATHS

Canadian Municipalities should offer their citizens free bathing privileges

It is an admitted fact that in Canadian cities and towns civic money is often expended in ways which bring in no adequate return for the expenditure. A very small portion of the money thus spent would serve to establish public swimming baths. The advantage and popularity of such baths are undoubted and, where they have been established in Canadian cities, they have almost invariably been successful. In many places where

there are no civic baths, the Y. M. C. A.'s throw their tanks open for free public use during the hot months of summer, and every week hundreds of people take advantage of the opportunity thus afforded. Surely the citizens of Canadian cities should not be forced to depend upon the charity of the Y. M. C. A., particularly as the establishment of public swimming baths is such a simple matter.—W.L.C.

Aluminum Cooking Vessels are Safe

An investigation has been carried on by the laboratory of the London *Lancet* into the extent and way in which various aluminum cooking vessels were affected by the usual articles of food and flavoring materials used in cooking. The only case in which a derogatory result worthy of consideration was obtained was in the use of baking soda, and this should therefore be avoided. However, a warning to this effect is frequently issued when aluminum cooking vessels are sold. It appears therefore that the use of pure aluminum cooking vessels need occasion no misgiving as to possible evil effects.—W.L.C.

Fire Protection in Minnesota

Previous to the organization of the State Forest Service of Minnesota in 1911, the timber destroyed by fire each year exceeded the annual cut; this risk has now been reduced about 40 per cent. In addition to the system of special patrols maintained by the State, the lumber companies have, in accordance with law, expended \$300,000 during the winter of 1911-12 in disposing of the slash resulting from their logging. The expenditure during the winter of 1912-13 on this account has been still greater. Minnesota has 28 million acres of forested land and there are millions of acres of young growth which, if protected, will provide a vast revenue in the future.—C. L.

Train Accidents From Carelessness

Railway brotherhoods should further the Safety First movement

Train accidents are practically the only accidents brought to the attention of the public at large. Although only 15 per cent. of the railway employees killed and 5 per cent. of the employees injured suffer from this cause, yet these accidents are blazoned forth on the pages of the public press and attract attention which they scarcely merit, when compared with those other accidents to which the great loss of life and efficiency is due.

Carelessness on the part of employees is, in almost every case, responsible for the train accidents as well as for a large percentage of the other accidents incident to railway operation, but it is difficult to point to any manner in which such carelessness can be done away with by regulation alone. The railroad brotherhoods should realize their responsibility in this matter. It is incumbent upon them to make "safety first" a cardinal principle of their doctrines.—W.L.C.

Eighty thousand acres in North Central Wisconsin have been purchased by a Minneapolis capitalist, who will spend \$5,000,000 in the establishment of an agricultural community, with the chief object of helping young Scotchmen to independence.

Badly Ventilated Nests Prove to be a Drawback to Fur-Farming in the East

The increase in the number of black foxes this year in the Maritime Provinces has been somewhat of a disappointment. A radical defect in ranching practice has been the use of improperly ventilated nests, and as a result of this a hot wave in the spring killed a number of young pups, the number

dying from this cause in Prince Edward Island being estimated at 150. In spite of this, however, a majority of the fox companies have earned a substantial dividend on the capital invested, although there are some companies that have lost money.—M.J.P.

THE OLD STORY

Zarco and Vas, the Portuguese mariners, who, early in the fifteenth century, discovered the island of Madeira (wood) gave it that name on account of the forests with which the island was covered.

When they first began to clear the land for colonization and cul-

tivation, they started a forest fire, which, so the old chroniclers assert, they tried for seven years to extinguish, but without success. At the end of that period the island became noted for, and was handicapped by, the very lack of that commodity from which it derived its name. This is an early illustration of the old proverb that prevention is better than cure.

TO NEWSPAPERMEN

Conservation is published for newspapers and periodicals to clip from and it is a matter of indifference whether credit is given for the articles or not. The cuts used in this publication will be gladly loaned to Canadian newspapers. Requests for the use of these cuts should mention the numbers of the cuts desired.

Utilization of Labour



Conditions similar to the above are frequently met with in Quebec and in other eastern parts of Canada, yet the cry is loud and long regarding the scarcity of help on the farm. More horse power and wider implements would help in solving the labour problem. Cut No. 1.



One man is here shown operating an outfit capable of doing twice the amount of work being done by the outfit shown in the preceding photo, where twice the man power is being employed. Cut No. 2.

Wasting Fertility



A common western method of disposing of stable manure. This method will not maintain soil fertility nor increase posterity's regard for those who practice it. Cut No. 4.

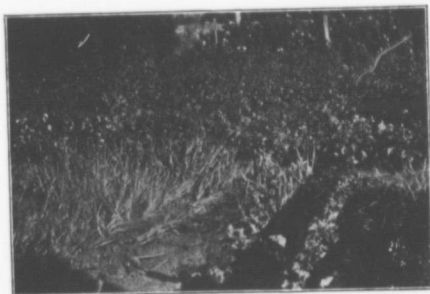


Stable manure from an Ontario city being hauled out and piled ready for burning. This loss should be prevented by arranging in some way to have this manure applied to the land. Cut No. 3.

Vacant Lots as Gardens



A vacant lot in Ottawa. Note the weeds! Cut No. 5.



Every foot of space on a vacant lot utilized for vegetables. Cut No. 6.

Attention has from time to time been called to the neglected condition of the vacant lots in our Canadian cities and towns. These weed-polluted vacant places are a menace and a detriment to the well-kept lawns and gardens in the vicinity. Why should these lots produce nothing more than unearned increment for the speculators who own them? They could be cultivated and made to produce fresh vegetables by those who now can ill afford to buy them. In the city of Philadelphia there is an organization known as the Vacant Lot Cultivation Association that has, for fifteen years, been giving this much needed opportunity to families to work the vacant lots. In these picturesque gardens,

in various parts of the city, corn, roots, beans, potatoes, etc., take the place of bill-boards, cobblestones and rank weeds. Why not an organization of this kind in Canadian cities? There is need for it. It would mean a chance for many children to learn the fundamentals of gardening, and to obtain lessons in thrift and industry. It would give practical aid to the unemployed, aged, crippled and invalid by offering opportunity for self-help, and no doubt would have a wide influence in starting backward gardens. It would not be a charity tending to pauperize and degrade; instead it would be a work making for better and more useful citizenship.—F.O.N.

Henri Bourassa on Single Cropping

Folly of this method pointed out—
comments on farming in the West

"In the neighbourhood of Regina people have proudly pointed out to me fields sown with wheat for twenty years running. Truly, the deep soil of Manitoba and Saskatchewan are marvellously fertile; but the richest land in the world cannot stand this treatment. Those interested in farming affairs, who have watched the gradual decline in the production, first of wheat, then of peas, then of hay, in the St. Lawrence basin and the Richelieu valley, know the inevitable result of such abusive tillage.

"The slow exhaustion of the soil is not the only consequence of this method, or rather of this want of method. If we examine the returns in good, bad, and middling years, we can estimate that, on an average, every western farmer loses one crop in three.* For the man who cultivates only cereals, this represents a loss of revenue of about 30 per cent. If the loss comes all in one year and he has no reserve from the year before, he is ruined.

"On the whole, the climate of these prairie provinces is more agreeable and more healthy than ours in Quebec. There are not, for farming, more middling and bad years than here. But because of the conditions that I have noted, when a bad year does come, the wheat-grower finds himself in the situation in which the habitant of Quebec would be who sowed only potatoes in a rainy year, or who counted entirely on the hay-crop after a spring of hard frosts, followed by a summer of severe drought; he would scarcely ever recover."—From "Le Devoir," 15 July, 1913.

*It would be interesting to know precisely by what process of calculation Mr. Bourassa arrives at this conclusion.—Ed.

THE FRIGORIE

The development of refrigerating industries has been so vast and so rapid of late years that it has been found necessary to define new units of measurement and terms of appellation. The most essential of these is the *frigorie*. This is the exact opposite of the heat unit, the *caloric*, which represents the amount of heat required to raise 1 kilogramme of water through 1 degree centigrade, except at the boiling and freezing points. The *frigorie* is the amount of cold required to lower 1 kilogramme of water through 1 degree centigrade. It requires 80 calories to raise 1 kilogramme of water from 0 degrees to 1 degree centigrade, and a kilogramme of ice at 0° centigrade will, therefore, furnish 80 frigories in melting, or, in other words, it will abstract 80 calories from the atmosphere.—W.L.C.

Health, Hygiene, and the High Cost of Living

Application of Teachings of Preventive Medicine an Important Factor in Increasing the Efficiency of Industrial Populations

The subject of the cost of living has been considered from many different points of view, and with regard to the industrial class of the population, it may be said that the term expresses the relation between the cost of food, shelter and clothing, and the wages received. It follows, that anything which increases the efficiency of the people as a whole or the personal efficiency of the individual, tends to lower the ratio of expense to income, and hence affects the cost of living.

The prevention of disease, therefore, is necessarily a factor of the utmost importance in connection with the cost of living. Testimony of a reliable nature can be adduced to show that 42.3 per cent. of the deaths each year might be postponed, that 50 per cent. of the cases of serious illness might be prevented, and that 12.3 years might be added to the length of the average human life. If, therefore, the present waste of health were conserved, innumerable invalids would become wage earners; instead of being a burden upon others, they would be self-supporting, and, as a result, the average income would be increased. Continued ill-health of even a trivial nature undoubtedly decreases the efficiency and consequently the earning power of the individual. Preventive medicine has already done much and can still do far more in this respect. The physicians can point the way, education can fit society to cope with the diseases and a union of the two will result in a further conservation of health.

Preventable accidents, preventable illness and preventable deaths are great unnecessary wastes of human efficiency. In regard to the first of these, workmen's compensation laws and humanitarian principles are already inducing the manufacturer to equip his plant with safety devices. Furthermore, defective hearing, defective eye-

sight and fatigue are, in addition to ignorance, three great factors in promoting industrial accidents, and factors which can be easily dealt with. The greater number of accidents occur at a time of the day when fatigue is most commonly experienced by the workers. By proper measures the evil results of fatigue can be almost entirely done away with.

With regard to preventable illness the matter of occupational diseases is of primary importance. Certain forms of disease are closely associated with certain trades, and preventive medicine has pointed out measures by which the dangers in connection with these trades may be obviated. General diseases can also be prevented. It is only necessary to mention that dread foe of the industrial classes, tuberculosis, to illustrate the value of prevention. There are also many other forms of disease which can be dealt with to advantage.

The first and most striking instance of preventable deaths is found in the figures of infant mortality. That this mortality can be largely reduced is an admitted fact. A better milk supply will undoubtedly help, but intelligent motherhood, a result of education, will do more to reduce the infant death rate than anything else. Observation and experience show that children who are breast-fed by their own mothers have a far better chance of living than those fed on cow's milk or artificial food.

Conservation of health is perfectly feasible and would have a marked effect upon the efficiency of the population. Prevention of disease would mean increased per capita wage earnings, and hence, a reduction of that ratio known as the cost of living. Preventive medicine assures greater power, greater health and increased wage-earning ability to the individual who follows its teachings, and, at the same time, increases his moral, mental and physical efficiency.—W.L.C.

THE MINER'S INCH

On the Pacific coast, the unit for measuring water in mining is known as the miner's inch. This varies greatly in different localities and is now generally defined by legislative enactment. The statute inch of Colorado, for example, is defined as "an inch square orifice, which shall be under a five-inch pressure measured from the top of the orifice to the surface of the water, in a box set in the banks of the ditch. This orifice shall in all cases be six inches perpendicular inside measurement, and all slides closing the same shall move horizontally,

while from the water in the ditch the box shall have a descent greater than one eighth of an inch to the foot."

In British Columbia under the Water Classes Consolidation Act, 1897, Section 143, a miner's inch is declared to be a flow of water equal to 1.68 cubic feet per minute. Therefore, a miner's inch is equal to .328 cubic feet per second, and 1 cubic foot per second is equal to 35.71 miner's inches, approximately. One cubic foot per second would be equal to 35.4 Colorado miner's inches.—A.V.W.

Forest Growth in British Columbia

Nature's reproductive processes need no artificial stimulation by forest planting

It is estimated that British Columbia contains over one hundred million acres of wood land, of which upwards of sixty-five million acres may be regarded as actually or potentially capable of producing merchantable timber, though, outside of this, the land is not of value. On this area Nature has been busy for a great many years storing up what is today one of the greatest of the few extensive reserves of commercial timber left in the world. It is estimated that this area contains over three hundred billion feet board measure of timber, comprising over half the standing timber of Canada. When the question of forest planting is linked with such a resource, it becomes of interest, even though the importance of planting to the perpetuity of the resource yet remains to be seen.

The matter of reforestation has been considered in connection with British Columbia from three points of view:—

- 1—Silvicultural.
- 2—Financial.
- 3—Economic.

Owing to a very favourable combination of soil and climate, nowhere, at least in the temperate zone, do trees grow more rapidly and persistently than on the Pacific slope of North America; nowhere is natural reproduction more prolific and vigorous. In fact, this very readiness of Nature to undertake the work renders discussion almost superfluous.

However, it has been demonstrated that reforestation is practicable in British Columbia. Not only would it be possible to reproduce those trees which are indigenous to the soil, but also other exotic trees such as the hardwoods. But, in a province which is cutting as yet only one-fifth of the annual growth of its forests, it is naturally hardly necessary for man to undertake to facilitate the reproductive processes of Nature.

It may be concluded, then, that artificial reforestation is neither necessary nor, relatively speaking, desirable, over the major part of British Columbia today. With regard to the three considerations mentioned above in this article the following conclusions have been arrived at:—

First, forest planting in British Columbia is silviculturally possible. Hardwoods may be grown as well as softwoods;

Second, forest regeneration in British Columbia is financially practicable, as also is forest planting;

Third, forest planting is not now, in general, necessary, nor is it the most profitable way to spend time, energy, or money in British Columbia.—W. L. C.



GOOD FORESTRY PRACTICE

This picture shows the application of lopping and piling methods, where trees have been cut in a lumbering operation. This is one method of doing away with the slash menace. At a suitable time of the year the piles are burnt. Another method of reducing the danger from fires is by lopping and scattering; that is to say by trimming the tree tops left by the loggers and thus bringing the brush close to the ground where it will rapidly decay. Cut No. 7.



FOOD FOR THE FLAMES

An example of a lumbering slash where the tops have not been lopped. A fire would spread with tremendous rapidity in such a slashing and would be exceedingly difficult to fight. Good forestry practice obviates danger of this nature. Cut No. 8.

The Lesson of a Metered Supply

Figures of costs to consumers of water in Milwaukee are instructive

The subject of a metered water supply is one of great interest, not only in connection with economy of distribution but also in regard to the fairness of the method of taxation as compared with the flat rate assessment. The waste of water is also greatly reduced by the metered system with resultant economy to the taxpayer.

There is a metered service in operation in Milwaukee, and the figures accompanying this article were compiled by the city engineer of that place. The average daily consumption of water in Milwaukee in 1912 was 47,556,000 gals., or 113 gals. per capita per day, but eliminating the 100 largest consumers, it was only 75 gals. as compared with nearly 200 in Ottawa. The actual cost per thousand gals., including sinking fund charges, depreciation, taxes, and 4 per cent. interest on net invested capital was 5.733c; the revenue based on total pumpage was 4.676c per 1,000 gals., and, based on the total for which the city actually received payment, 6.257c per 1,000 gals.

Classification of Water Consumers, Milwaukee, Wis.

1,185 pay less than \$0.50 per year	2.10%
6,347 pay between \$0.50 and \$1.00 per year	11.00%
15,182 pay between \$1.00 and \$2.00 per year	26.33%
10,656 pay between \$2.00 and \$3.00 per year	18.48%
7,157 pay between \$3.00 and \$4.00 per year	12.41%
4,809 pay between \$4.00 and \$5.00 per year	8.50%
8,017 pay between \$5.00 and \$10 per year	3.86%
598 pay between \$20.00 and \$30 per year	1.00%
271 pay between \$30.00 and \$40 per year	0.47%
167 pay between \$40.00 and \$50 per year	0.29%
376 pay between \$50.00 and \$100 per year	0.65%
428 pay between \$100 and \$500 per year	0.76%
66 pay between \$500 and \$1000 per year	0.11%
80 pay between \$1000 and over	0.14%
57,657	100.00%

The advantages of a metered supply should be obvious. Wilful waste is done away with and the charges for water can be equitably adjusted. In the case of Milwaukee one hundred of the largest consumers paid \$402,563, or nearly 50% of the entire revenue of the water department during 1912. Of the water consumers of Milwaukee, 58% paid less than \$3.00 per year and 70%—over two-thirds—paid less than \$4.00. Can any eastern Canadian city make anything like as good a showing?

A Small Farm Tractor Would Have Wide Application

Such a machine would assist in the solution of the labour problem on farms

The horse is the most versatile form of power on the farm to-day, and the tractor cannot compete with him in much of the necessary small work. A farmer may profitably supplant his horses with a tractor for heavy work, such as plowing, harrowing or seeding on a large scale. Then, too, the weight and cost of materials for a given horse-power are smaller in the large tractor than in the small one. This makes the unit cost of labour less in the large machine, but if suitable and satisfactory machines were manufactured and put upon the market the cost of manufacture and distribution would be lessened through the greater number of buyers of small tractors. The worth of a machine cannot be decreased as fast as its power, but if a machine could be made to haul a one or two furrow plow, run the harrows, cultivate corn or roots, cut hay or grain, pump water, grind grain, or do work for the housewife on wash day, it would find immediate favour among thousands of farmers and help to solve the labour problem on the smaller farms.

Much attention has been paid in Europe and the United States and Canada to the problem of the tractor for the small farm, and though no great commercial success has as yet been achieved, this should not be discouraging. It is possible that the work on the farm will have to be divided into classes and specially adapted machines provided for each class of work. The market for a successful small tractor is beyond comprehension, and as the first profit would be to the manufacturer, it would seem reasonable to expect more attention to be paid to this matter by the larger companies who have built up reputations on large tractors, but who are slow to risk them when it comes to solving the problem of the smaller machine.—F.C.N.

WOODPULP IMPORTS

The importance of Manchester as a centre for imports of woodpulp will be easily understood, when the arrivals during one month are taken into consideration. During the month of May, 1913, the arrivals of woodpulp included several full cargoes aggregating 100,000 bales and weighing 18,000 tons, by steamers from Norwegian, Swedish and Baltic ports, besides parcels by regular steamers.

During last winter, over sixteen thousand bales were imported from Canada by Manchester liners, whereas, during the winter season of 1911-12, there was no imports from this source.

Observations of Interest in a Farming District

Facts and figures relating to an agricultural community in Minnesota

Although women's work on the farm has been eased by running water and by washing machines, an investigation recently conducted by Mr. T. P. Warber in a section of Southern Minnesota brought to light the facts that, in this section, in 29 per cent. of the homes the women kept the front yard trimmed; in 32 per cent. of the families the women helped with the milking and the barn-yard chores, and in 16 per cent. they assisted in the field work at rush seasons. In practically all the homes in the community the women worked from five o'clock in the morning until nine or later at night.

In the area referred to above it was discovered that, in spite of the fact that co-operative enterprises had generally succeeded, many of the farmers—even those who belonged to successful associations—doubted the capacity of their class to co-operate. Although farm journals were kept in 84 per cent. of the homes, only 47 per cent. of the farmers read them, and a majority of the farmers were prejudiced against scientific methods of farming. Only two schools were well enough equipped to get first class state aid, and teachers' salaries varied from \$30 to \$50 a month. The farmers generally believed that the high schools in the nearby towns tended to lower the moral standard of the children.

That church membership, and attendance at church have fallen off, that social distinctions have grown up between the country folk and the town people, and that the girls are leaving the farms in larger numbers than the boys, are among many other interesting conclusions that Mr. Warber arrived at in his study of this particular farming community.

THE COUNTRY PREACHER'S TRAINING

"For the best work in the country ministry to-day you need to become as skilled as the schools can make you in the principles of sociology, in knowledge of the industrial order, in the agencies of social service as well as in the problems of the rural community."

These words are from an admirable little book, *Rural Life in Canada*, by Rev. John MacDougall, just published by the Board of Social Service and Evangelism of the Presbyterian Church, Confederation Life Bldg., Toronto. It is a keenly analytical yet sympathetic treatment of a pressing national problem. Students of social problems, especially the rural minister, would do well to peruse it.

Pure Water in Saskatchewan

Pollution of the streams prevented by the treatment of sewage

The Bureau of Public Health of the Province of Saskatchewan is striving to reduce the typhoid death rate in that province by preventing the pollution of streams. The Bureau impresses upon the municipalities of the province the necessity of establishing sewage-treating systems which will render the effluent innocuous and incapable of supporting disease germs. The Bureau also points out the lessons to be learned from the unfortunate experience of older municipalities elsewhere on the continent.

The engineering officials of the Bureau systematically supervise and inspect the existing sewage disposal works and offer suggestions with a view to increasing their efficiency. By the close of the present year the sewage from all the cities and from thirteen towns in the province representing one-third of the population, will be rendered practically harmless before being discharged into the waterways. In 1912 there were only five sewage disposal plants in operation, capable of treating sewage from a population of 16,500 people, and the remarkable increase bears witness to the willingness of the municipalities to co-operate with the Bureau of Health in the improvement of the condition of the provincial waterways.

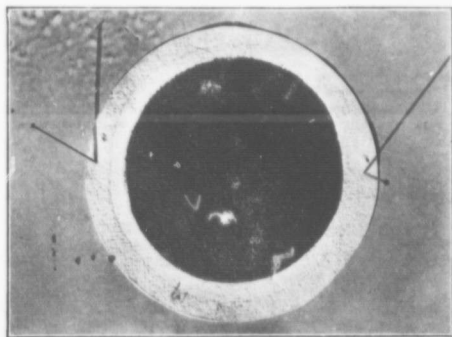
Surface water supplies are, however, subject to pollution, not only from municipalities, but also from the large section of the population that lives in isolated houses, camps and villages along the banks of the streams; a portion of the population which all too frequently uses the waterways as common sewers. Pollution from such sources is often responsible for outbreaks of typhoid in the province, and the Bureau now intends to turn its attention to this matter.

The typhoid death rate in Canada is 35.5 per 100,000 of the population. In Norway, Sweden, Holland, Germany, Switzerland and Great Britain, the death rates vary from 6.2 to 12.8 per 100,000. Up to the present, Canada has been notably backward along the lines of water purification and the prevention of pollution, but these questions are now being forced into prominence, and it appears that the work, so efficiently conducted in Saskatchewan will be duplicated in the country at large in the future.—W.L.C.

A good goat will yield from one to two quarts of milk daily, and costs from \$2 to \$20; and, according to Dr. Sheldon W. Bull of Buffalo, the goat is the only dairy animal immune from tuberculosis. Furthermore, goat's milk is richer, more nutritious, and more easily digested than cow's milk.—Why not get a goat?

Problems Canadian Municipalities Must Cope With

THE SMOKE NUISANCE



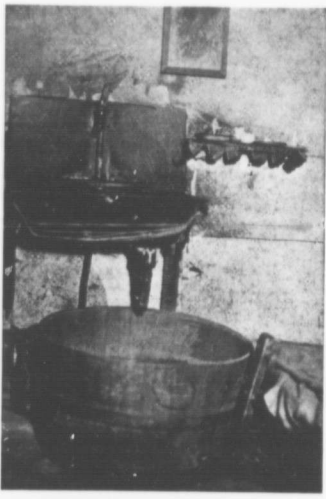
A piece of filter paper through which an amount of air equal to that breathed by a man in 24 hours has been filtered. This picture shows the amount of smoke taken into the lungs in a day in Pittsburgh. Cut No. 9.



Smoke from the factories in Pittsburgh. This state of affairs is not by any means confined solely to cities in the United States. Montreal is a good example of a smoky city on the Canadian side of the border. Cut No. 10.



Rear view of unsanitary dwellings in a Canadian city. Cut No. 11.



View of plumbing in the living room of a house. The tub was used to collect slops from the sink. Cut No. 12.



A corner of a courtyard in which over forty people dwell. Note the outside privies! Cut No. 13.

THE SLUMS

Speaking of the inhabitants of the slum, Hollis Godfrey in his "Health of Cities" says:

" . . . Let them escape or not, one and all suffer equally in their lack of resistance to disease. Malnutrition, bad air, and overcrowding swell the columns which tell of tuberculosis, pneumonia and every kindred disease. The slum is the great culture medium of civilization, wherein huge cultures of disease are growing, ready when ripe to sweep the city streets."

Fur Farming



Usual type of kennel. Cut No. 14.



Detail of fence construction. Many breeders prefer an alley surrounding each pen. Cut No. 15.

Water Waste in New York City

During 1911 and 1912, on account of a threatened shortage in the supply, a vigorous campaign to prevent water waste was carried on in New York city. The methods generally employed were as follows:—

- (1) The attention of consumers was called to the necessity for checking waste.
- (2) A house to house inspection was carried on in order to detect and repair leaks.
- (3) An examination was carried on with the object of locating and repairing underground leaks.
- (4) Connections were metered where the cost of metering and the existing conditions of the supply warranted this measure.

The results obtained were noteworthy in many respects. The estimated daily reduction in consumption in Manhattan and the Bronx reached a maximum of 71 million gallons in August, 1911, averaged 65 million gallons for the last six

months of 1911, and almost 50 million gallons for the year 1912. The aggregate value of the water thus saved, if figured at meter rates, \$133 per million gallons, would be nearly \$6,500,000 while the total cost of the work was only \$167,000.—W.L.C.

Our Fourth Annual Report

To realize the broad field covered by the activities of the Commission of Conservation one cannot do better than peruse the pages of the Fourth Annual Report just published.

Broadly speaking, conservation has two large phases.—the economic utilization of natural resources, and the upbuilding and maintaining of public health, i.e., of human resources. The function of the Commission is to collect and disseminate information on these subjects.

The Report contains an account of the work done last year by the various committees — on Lands, Minerals, Fisheries, Forests, Water-Powers and Public Health. Some interesting addresses on

Publications of the Commission of Conservation

1912

- Third Annual Report, 154 pp.
Sea Fisheries of Eastern Canada, 212 pp.
Supplement to 'Animal Sanctuaries in Labrador,' 38 pp.—J. L. Col. Wm. Wood.
Instructions Relating to the Gathering of Certain Preliminary Information Respecting Water Powers, 41 pp.—A. V. White.
The Prevention of the Pollution of Canadian Surface Waters, 24 pp.—T. Aird Murray.
Agricultural Conditions in Canada, 1911, 41 pp.—J. W. Robertson and F. C. Nunnick.
Mine Rescue Work in Canada, 50 pp.—W. J. Dick.
Forest Conditions in Nova Scotia, 28 pp.—B. E. Fernow, C. D. Howe and J. H. White.
Papers Relating to the Diversion of Water from Lake Michigan by the Sanitary District of Chicago, 7 pp.
The Epidemics of Typhoid Fever in the City of Ottawa, 11 pp.—Chas. N. B. Cannon.

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- Fourth Annual Report, 238 pp.
Agricultural Survey, 1912, 22 pp.—F. C. Nunnick.
Conditions in the Clay Belt of New Ontario, 36 pp.—B. E. Fernow.
Fur-Farming in Canada, 166 pp.—J. Walter Jones.
Refuse Collection and Disposal, 12 pp.—C. A. Hodgetts.
Water-Works of Canada, 108 pp.—Leo. G. Denis.
Insect Food of Freshwater Fishes—C. Gordon Hewitt.
Biological Board of Canada—E. E. Prince.
Oyster Fisheries of Prince Edward Island—M. J. Patton.
Salmon Fisheries of British Columbia—J. P. McMurrich.

In Course of Publication

- Long Sault Rapids, St. Lawrence River—A. V. White.
Coal Conservation in Canada—W. J. Dick.
Forest Protection in Canada—Clyde Leavitt.
The Canadian Oyster, its Development, Environment and Culture—Jos. Stafford.
Trent Watershed Survey—B. E. Fernow, C. D. Howe and J. H. White.
Public Revenues and Canadian Forests—Allen Donnell.

Facts for Fillers

Forest fire fighting is being carried on along scientific lines on the American continent. In many forests a signal system is installed, and, in connection with this system, mounted rangers are located at convenient points throughout the forest. The horse carries tanks of fire extinguisher, and the ranger is equipped with an asbestos shield which protects the upper part of his body. Armed in this manner he is well equipped to fight the flames.

SAWDUST FOR FLOORING

Artificial floorings are now being made out of sawdust concrete. The cement used consists of a solution of magnesium chloride to which pulverized magnesia is added. The sawdust is then used in any desired quantity. Floors manufactured in this way are more resilient than concrete, and are not good conductors of heat. They wear well, and do not burn, charring under the fire test.

special subjects were also given, viz., *Work of the Dominion Forestry Branch*, by R. H. Campbell; *Smoke Prevention*, by R. C. Benner; *Salmon Fisheries of B. C.*, by J. P. McMurrich; *Oyster Farming in P.E.I.*, by M. J. Patton; *Biological Board of Canada*, by E. E. Prince; *Insect Food of Freshwater Fishes*, by C. G. Hewitt; and *The Clay Belt of New Ontario*, by B. E. Fernow. All but the first two of these have been also published in separate pamphlets (see list of recent publications printed in this issue.)

CANADIAN FLOUR IN FIJI

Flour, hitherto chiefly imported from New South Wales, Victoria and New Zealand, is being imported in increasing quantities from Canada. Biscuits, which are imported principally for use as food for labourers and for consumption by the Fijian population, are manufactured in, and imported almost exclusively from Victoria and New South Wales. Meats consist almost exclusively of tinned beef for the use of labourers and Fijians, and are imported from New Zealand, New South Wales and Victoria.—*Board of Trade Journal*.

Forest Preservation and Watershed Protection

Forest preservation is often of the greatest importance and value on account of considerations which are sometimes not apparent at first sight. It is not only the direct financial side of the matter which merits attention, for it must not be forgotten that forest cover on a watershed helps to regulate the run-off and to prevent floods.

Engineers have sometimes thought that reservoirs alone will effect the satisfactory regulation of the waterflow, but it is now being recognized, that, for the best service, reservoirs need the assistance which forest cover on the watershed furnishes. Especially for city water supplies the practice of reforestation of the watershed has now been generally recognized as essential, mainly for the reason that erosion and the silting up of water reservoirs is prevented thereby.—W. L. C.

Protection of Children in Canada

The test of a country's civilization is to be found in the treatment accorded its children. Judged by this standard Canada, and the Province of Ontario, in particular, ranks high. Over twenty years ago the Ontario Legislature enacted a Children's Charter that has since been copied by all the other Provinces, by many of the adjoining States and in some of its important features by Great Britain and foreign countries. In fact it paved the way for the large and ever-increasing interest now being taken in social and child-welfare.

There is a head office in the Parliament Buildings under the direction of Mr. J. J. Kelsa, which furnishes information and encouragement to the Children's Aid Societies organized in the various cities and counties. Over ten thousand children have been placed in foster homes in the past twenty years, and in addition to the direct benefit conferred on the children, the public funds have been saved to the extent of at least one million dollars in the lessened expense for the maintenance of this class.

The following are the chief objects of the Society:—

- 1—The betterment of children in their own homes.
- 2—Their removal when necessary to ensure a chance of becoming good citizens.
- 3—The endeavour to assist every child to find fair treatment, wholesome surroundings, and good moral influences.
- 4—The finding of eligible foster homes for all children made wards of the society.
- 5—Careful supervision without undue interference after being placed in foster homes.
- 6—Receiving and inquiring into complaints of neglect or ill treatment of children.—J. J. K.

Concerning Creosote

The last few years have seen a rapid development of the wood preserving industry on the North American continent, largely owing to the increasing scarcity and cost of good tie timber. At the present time there are two standard preservatives in use, zinc chloride and creosote. As zinc chloride is a mineral salt it is possible to manufacture it to meet specifications. Creosote, however, is a by-product of a by-product, and hence it is very difficult to obtain a desired specified quality. As a result, it has been found necessary to base the specifications on the kind of oil available.

As creosote is used to preserve about 70 per cent. of the lumber treated, and as it appears probable that a shortage will occur in the near future and that high prices will prevail, the problem of increasing the supply is an important one. Creosote is produced in by-product coke ovens and the threatened shortage should further their increasing adoption as there is enough creosote wasted every year in the beehive coke ovens in Canada and the United States to supply all reasonable demands for years to come.—W.L.C.

MOSQUITO EXTERMINATION

During the last two decades a variety of methods have been tried with a view to exterminating the mosquito in various parts of the United States. In addition to being a source of irritation and discomfort the insect is also a menace to health as it spreads malaria. The pest has always been particularly bad along the New Jersey coast, as it breeds by millions in the salt marshes adjacent to the sea.

The first method which offered any prospect of success was the application of oil to all stagnant bodies of water. This, however, was found to be very expensive, and succeeded in effecting only a partial relief. The secret of the only permanent remedy has been found to lie in the draining of the marshes. This has been carried on at Staten Island under the direction of competent engineers, and, as a result, the mosquitoes have been almost exterminated.

In the case of stagnant inland waters, oil can be used to good effect or the depressions can be filled in. Before this method of fighting the mosquito was adopted the cases of malaria in one year on Staten Island numbered 120. Subsequent to the draining of the marshes the number of cases reported was 2. The figures speak for themselves.—W.L.C.

Mink breeding is making considerable progress in Prince Edward Island. Two pairs were recently sold there at \$200 a pair.

Tanning Materials

The figures of the United States Forestry Service show that there are some \$22,000,000 worth of vegetable tanning materials used every year in the United States. The chief source of tannin is hemlock bark, but the quantity used is steadily decreasing owing to the exhaustion of the forests. The amount of bark utilized in the United States in 1906 was 930,000 tons; in 1907, 816,000 tons; in 1908, 810,000 tons; and in 1909, 698,000 tons.

There are, in all, six sources of tannin: (1) gall nuts; (2) fruits of certain plants; (3) leaves of some trees and shrubs; (4) wood of such trees as chestnut and quebracho; (5) bark of many trees and shrubs; (6) roots of certain plants. The decrease in the amount derived from these usual sources of vegetable tannin is being met by introducing new materials and chemical substitutes. There appears to be a limit, however, to which substitution can be successfully carried, and the question of a future supply of vegetable tannins is becoming a matter for serious consideration.—W.L.C.

Time-keeping Systems of Advantage in Mines

A check kept on the men below ground is of value

A system of time-keeping and a check on the men working in the mine will do much to assure the safety of the workers. At a very small expense a system can be installed whereby a gate-keeper will issue checks to the men as they enter the workings, the men returning them when they leave. A glance at the check board will then show whether all the men on a given shift have left the mine. If the board shows that one man is still in the mine, an investigating party can be sent to look for him. A system of fines for failure to return checks will force the men to follow any regulations laid down in this connection. Besides the checks, lists should also be kept showing in what part of the mine each man is working.—W.L.C.

ADVANTAGE OF SHADE

The deleterious effects of sunlight are all too often lost sight of, and it is a common occurrence in a Canadian city to see eggs, meat and other comestibles exposed in store windows to the rays of the sun. Eggs in particular will often deteriorate very rapidly in quality when exposed to the sunlight, although the same thing holds good of canned goods, meats and ripe fruits.

In spite of the fact that the advantages of shade have frequently been clearly pointed out and are generally recognized, many shopkeepers do not seem to consider this

Merits and Demerits of Slash Burning

In connection with the work of forest preservation in the United States, it is interesting to note the respective merits and demerits of spring and fall slash burning, as pointed out in a statement by a forestry official in the district of Oregon and Washington. Particular reference is made to the importance of felling all snags on the cut-over area prior to the spring burning, as if this is not done, the snags are apt to smoulder for a long time and may prove to be a constant source of danger in the dry season of mid-summer, when a strong wind may fan the smouldering sparks into flames. A smouldering snag, which was ignited during a fire on July 4, was noticed to be still burning during the second week of the following November.

The drawbacks to fall burning are largely due to the difficulty of choosing the right time to start the fires. If started at the right time, however, fall slash burning is more thorough because the slash is drier than in the spring. In addition to this, burning in the fall will ensure the extinguishment of whatever snags may be smouldering, before the next dry season comes around.—W. L. C.

Distribution Costs

In the search for the causes of the high cost of living one important fact should never be lost sight of. More than 50 per cent. of the amount realized for our annual crops is spent in handling the same after they leave the farm. In retail purchasing the disparity between the price paid by the consumer is often five and ten times that received by the producer. All intelligent efforts that may be made to remedy these conditions are to be commended. The proposal of Secretary Houston to put the bureau of markets in the Department of Agriculture to work on the problem of the distribution of farm products; the inquiry into the rural credit systems of Europe and other farmers' beneficial organizations—all these may answer good purposes. As the means of obtaining immediate results, however, nothing more promising has been suggested than the establishment of a postal express with C. O. D. privileges without weight limit. The encouragement to direct dealings between producer and consumer which this plan would give, places it in the forefront of remedial measures.—Philadelphia Record.

matter worthy of attention. The erection of an awning is a simple matter, and one which is in the highest degree advantageous where food stuffs are concerned.—W.L.C.