

Conservation

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Curtailling Waste in Water Supply

Meter Systems Eliminate Carelessness and Compel Attention to Leaks

Much evidence is manifest throughout Canada of the necessity of immediate action to curtail waste in water supply systems. In some cases the consumption is almost double the amount of water actually required. The effect of the waste is realized by the officers in charge when the limit for which the system was designed has been reached. Costly extensions are then necessitated to supply the wasted water and the rates for water must be readjusted upward. These high rates must be applied indiscriminately both to the careful and the careless user.

One of the larger cities in British Columbia recently narrowly averted a water famine caused by excessive waste during a dry period and steps have now to be taken to provide an additional supply at considerable expense. In another city, in Alberta, the cost of carrying each flat-rate consumer has been noted to increase by \$1.20 during the past year. The City Commissioner, urging the installation of service meters to remedy conditions, officially reports that "there are many hundreds of houses where water is being supplied at flat rates which are less than cost, and, on the other hand, there are many flat-rate payers paying considerably more than the cost of the water which they are using."

Mr. G. A. Johnson, Consulting Engineer, New York City, asserts that, as an integral part of the program of conservation, water waste prevention is of cardinal importance. The saving that can be effected by intelligent and persistent effort in this direction is not sufficiently appreciated.

Hazen, in his book "Meter Rates for Water Works," says in part: "When a water-works system is first installed all the plumbing fixtures in houses are new and they are in general reasonably tight; people will ordinarily draw only the amounts of water that they need, and waste is comparatively small in amount. As time goes on, rust, corrosion, the hardening of rubber valves, and other changes result in leakage from plumbing fixtures. Small leaks running constantly make little impression on people who do not

realize their significance. Yet a leaky water closet may waste without attracting attention as much water as would supply twenty families.

"As time goes on people become accustomed to the waste of water in their houses and indifferent to it; and it is the experience of American cities where the meter system has not been used that the consumption always increases more rapidly than the population. It may be a long time before the output becomes double the legit-

Positive Action in Game Conservation

Mere Restrictions are Not of Themselves Adequate to Preserve Wild Life

The aim of game conservation may be said to be the perpetuation, in adequate numbers, of every valuable species of wild life. To achieve this result, it is not sufficient that our policy be simply negative, as, for instance, in imposing bag limits, restrictions on

nesting places will invariably attract birds. The provision of safety requires protection from enemies, including the gunner and his dog. In this case, the Ontario government assisted the owners by putting up notices, in the autumn of 1917, forbidding all shooting on the property. The place is ideal for grouse and ducks, and shore birds congregate in a sheltered bay on the lake front. Nest-boxes have been put out for smaller birds and as much protection as possible given against birds and beasts of prey.

On the now well-known farm of Jack Miner, wayside hospitality has been provided for the wild geese and ducks during their northward and southward migrations. The sagacious Canada goose has come to know the place, and now thousands of these birds stop at Mr. Miner's place every season.

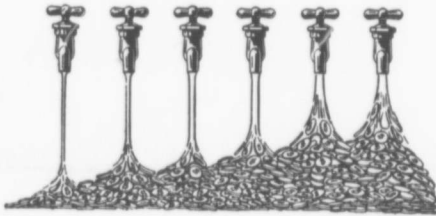
These are examples of the constructive effort in wild life conservation which is becoming increasingly necessary as our country becomes more densely settled year by year.

NATIONAL EXHIBITION OF FUR-BEARING ANIMALS

An exhibition of fur-bearing animals that are being "farmed" in Canada will be held in Montreal on the 24th, 25th and 26th of November. This project is an outcome of the conference of fur farmers held in Montreal last winter, under the auspices of the Commission of Conservation. Widespread interest is being shown by fur farmers in different portions of Canada, notably in Prince Edward Island, where the industry is mainly centred. It will be the first national exhibition of its kind to be held in Canada, and it is confidently expected that, at least, it will equal in quality and extent of exhibits the similar exhibition held last year in the United States.

The exhibition is being arranged under the direction of the Commission of Conservation with the co-operation and support of the Federal Department of Agriculture and of the Provincial Governments. The fur-producing and marketing interests also are lending their active and enthusiastic support.

The monetary value of the mineral output of British Columbia for 1919 was \$33,296,313, as compared with \$41,732,474 in 1918. There was a decrease in quantity in the minerals, but, owing to the high prices of silver, that metal showed a monetary increase.



UNDER AVERAGE WATER RATES AND PRESSURES THIS IS THE WAY LEAKS RUN INTO MONEY

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|---|-----------------------|
| Each 1-44 inch leak wastes 2 gallons per hour and costs..... | \$6. per day |
| Each 1-32 inch leak wastes 3 gallons per hour and costs..... | 9. per day |
| Each 1-16 inch leak wastes 34 gallons per hour and costs..... | 26. per day |
| Each 1-8 inch leak wastes 372 gallons per hour and costs..... | 216. per day |
| Each 1-4 inch leak wastes 314 gallons per hour and costs..... | 186. per day |
| Each 1-2 inch leak wastes 2,057 gallons per hour and costs..... | \$12.84 per day |

imate use; but after that point is reached, the rate goes on with greater acceleration until three-quarters of all the water that is furnished is wasted.

"The only limit to the increase is that a time comes when the new works required to supply the ever-increasing waste become so large and cost so much to build, that the burden cannot be further borne."

It does not require 100 gallons of water daily to cleanse the person and surroundings of the average citizen, carry away his sewage, cook his food and provide him with drink, or to furnish his share toward the water needs of the industries in his community. The New York water authorities seem to think that 80 gallons per capita is enough water for all the domestic, municipal and industrial needs of that city. There seems to be no good reason why one city should have an actual water consumption record of 70 or 80 gallons per capita daily, and another of approximately the same size and industrial activity show a water consumption of three times that amount. And yet such occurrences are not uncommon.—L. G. Denis.

methods of killing, close seasons, etc. We need also to do something positive in the way of directly encouraging the propagation of game.

The wild life sanctuaries now established here and there are steps in this direction. The buffalo and the prong-horn antelope, to mention only two species, have been rescued from extinction by the Dominion parks. But we need many more such sanctuaries and we need to have them much more widely distributed.

A sanctuary need not always be of large area, like the big National parks in Alberta. Nor is it necessary that it be maintained by any government, either Federal or Provincial. Some private sanctuaries are already in existence, as the Peasemars Farm in Grey county, Ont., and Jack Miner's farm near Kingsville, Ont. Governments can do much, and at very little expense to the public, to assist in the propagation of valuable wild life, simply by giving proper encouragement to private owners who desire to protect the game and the insectivorous birds on their own property.

At Peasemars, it has been found that safety and suitable

New Sources of Paper Manufacture

Inventive Genius Stimulated by Present Scarcity of Wood Pulp and Heavy Demand

The comparative scarcity of pulp for paper-making and the consequent high prices for newsprint are reflected in the stimulus given to research all over the world in an endeavour to widen the field of raw material for paper manufacture. A brief review of some of the possible competitors with Canadian spruce and balsam may be interesting.

Esparto is a grass-like plant found in Spain, Algeria, and Tripoli. It was used for paper-making in Great Britain as early as 1857. During the war, the scarcity of other sources of pulp gave it greater prominence. The fibres are short and weak, and the pulp is best used for filling and is employed largely in mixtures with longer and stronger fibres. In papers in which considerable strength is needed, not more than 20 per cent of esparto can be used.

Zacaton is a plant belonging to an American genus of the same family as esparto. It is principally found in Mexico, where it grows profusely in certain regions. Experiments with this material, conducted by the Bureau of Plant Industry of the U. S. Department of Agriculture, showed that a satisfactory paper could be made from it by means of the soda process. Indeed, the report of the investigation was published on paper made from zacaton. The experiments were not, however, conducted on a scale sufficient to make any estimate of the cost of manufacture. At present, zacaton is a waste product and flourishes in a region remote from paper-manufacturing sections.

Hemp hurds have also been investigated by the Bureau of Plant Industry. After several trials, under conditions of treatment and manufacture regarded as favourable in comparison with those used for pulp-wood, paper was produced which received very favourable comment both from investigators and from the trade, and which, according to official tests, would be classed as No. 1 machine-finish printing paper. The quantity available is not great, however.

Flax straw and tow may replace imported flax-waste in the manufacture of wrapping and writing paper. If this can be done, a market would be furnished to Canadian farmers for disposing of what is now a waste product.

Bamboo is coming to the fore in India and Burmah. Mr. William Raitt, consulting cellulose expert to the Indian Government, states that there remain no practical difficulties in transforming bamboo into pulp. Bamboo has the great advantage that it renews itself annually, whereas pulpwod takes half a century to grow.

Tropical reeds and grasses found in the Nile "sudd" of the Bah-

al-Ghazal province of the Sudan have been experimented with for paper-making, and, while complete success has not been attained, it is quite possible that the difficulties will be eventually overcome. The supply is unlimited.

Anhinga, a plant growing along the banks of the sluggish rivers of the state of Para, Brazil, is stated to be an excellent paper-making material, but the great profits to be obtained in the rubber industry have hitherto hindered its exploitation. Mills are now, however, being put in operation for the utilization of this fibre.

Ajimo is a seaweed found in Japan. It reproduces itself in less than six months. It is said that paper can be produced from it at much less cost than from wood, and a Japanese company has been formed for the purpose of turning out ajimo paper.

Jack-pine is a promising material in the paper-making field. As jack-pine is very common in Canada's northern hinterland, the commercial exploitation of this species would prove very valuable to supplement our dwindling stocks of spruce and balsam.

In the manufacture of newsprint wood-pulp still dominates the field, but one dare not predict that this will always, or even will long, be so. In the temperate zones, however—and proximity to the world's industrial centres is an important factor—there appear at present no serious rivals to our great pulpwod forest species.

Gasolene Extracted from Natural Gas

Its Removal is a Benefit rather than otherwise to the Gas

It has been assumed by many people that taking the gasolene out of natural gas impoverishes the gas and thus reduces its heating value. Recent investigations by the U. S. Bureau of Mines, however, have demonstrated that this assumption is without any foundation and that, on the whole, its removal is beneficial rather than detrimental.

One gallon of gasolene in the natural gas burned by the domestic consumer as gas is worth to him about one and three-quarters cents in heat value, while this same gallon of gasolene to the automobile user is worth about 35 cents.

Taking the gasolene out of the gas, one gallon will equal 45 cubic feet of gas, but this is not taken from the consumer, because his gas is measured at his home meter and he obtains 1,000 cubic feet of gas irrespective of whether the gasolene is removed or not. The loss to the consumer is therefore the difference between one and three-quarters cents and the cost of 35 cubic feet of gas, which at 35 cents per 1,000 is one cent. The net loss in heating value, therefore, is less than one cent per 1,000 cubic feet.

On the other hand, the removal of the gasolene is a positive benefit

to the consumer. Until the gasolene removal plants were installed, the gasolene and water condensed in the pipe-lines, thus disintegrating the rubber gaskets in the couplings, which, in turn, permitted a large leakage of gas, with consequent lowering of the pressure. Such losses aggregate much more than the insignificant heat loss referred to in the preceding paragraph.

Furthermore, the gasolene would be practically wasted if not removed from the gas. The gasolene thus obtained has what is known as a low boiling point; that is, it vaporizes easily, a quality which makes it valuable in starting automobiles, particularly in cold weather. So valuable is it that natural-gas gasolene is blended with straight-run gasolene with a higher boiling point, thus producing a gasolene that automobiles can use without difficulty. If refiners were deprived of the natural-gas gasolene, the automobiles of Canada would have more difficulty in using the gasolene that is being produced from petroleum.

Cockroaches Convey Cancer among Rats

Discovery of Danish Scientist Opens up Speculation on Cause of Human Cancer

Recently Prof. Febejer, Copenhagen, Denmark, discovered that the rats caught in a certain manufacturing plant had cancer of the stomach. Later, this plant was found to be infested with cockroaches.

Further investigation showed that these insects were hosts of a worm hitherto unknown to science. A series of experiments demonstrated that the worm lays its eggs in the body of the rat. These are passed out and eaten by cockroaches. In the cockroaches the eggs hatch and the young worms remain dormant until the cockroach is eaten by a rat. They then begin an active life in the rat's stomach, and appear to have the power of setting up cancerous tumours.

As this is the first time any one has been able to start a cancer *de novo*, the value of this investigation is enormous. Though there would seem to be no doubt that this worm is not the cause of human cancer, it is by no means certain that other types may not exist, having life cycles of a similar kind. Thus a factory infested with cockroaches may conceivably be a great danger, especially if food is handled therein.

All new buildings should be rendered vermin proof, and, wherever possible, existing buildings should also be made safe in this respect. Concrete floors and smooth walls prevent the intrusion of cockroaches, and an absence of unprotected foodstuffs deprives them of any inducement to stay. (Adapted from the London Times.)

Pulverized Lignite for Power Purposes

Australian Company Formed to Utilize Low-Grade Coals

The efficient utilization of lignite coals is a problem not peculiar to our western provinces; indeed, it is a live subject wherever such coal is found. One of the most promising solutions so far as the use of lignite for industry and transportation is concerned, is pulverization.

In Australia a syndicate has been formed "to mine, process and deliver" lignite throughout the Commonwealth. Mining operations are well under way, and the company has erected a pulverization plant in a suburb of Melbourne.

The process employed is briefly described as follows:

"The lignite is mined in either shafts or open cuts, the coal crushed on the spot to egg size, then hoisted to the air-drying tipples at the surface by bucket conveyors. After drying about seven days the coal is relieved of practically half of its moisture content and is ready for final treatment. This final process, which should be undertaken near the place where the fuel is to be used, consists of again crushing the coal—to about half-inch mesh—after which it is passed through a rotary drier, where the moisture content is reduced to about 10 per cent. The fuel is then pulverized, separated by air, and stored in bunkers.

"To use it is blown through pipes, where it is mixed with air in quantity 10 per cent in excess of requirements and ignited at the tip of an adjustable burner, which enables the length and width of the flame zone to be most accurately gauged. Boiler tubes and baffles are kept clear of ash by soot blowers and suction conveyors carry off the ash to any desired place of disposal. Three per cent of the power generated is required to operate the plant, and one experienced man can fire a whole battery of boilers or kilns.

"Under test the boiler efficiency was 80 per cent, the furnace efficiency 78 per cent."

The utilization of pulverized fuel, in relation to Canadian conditions, is treated of in two bulletins published by the Commission of Conservation, entitled *Pulverized Fuel, its Use and Possibilities*, by W. J. Dick, and *Fuels of Western Canada*, by James White. These are available for distribution gratis to interested parties on application to the Commission.

Metallic arsenic, running \$200 in value to the ton, has been discovered on the Queen Charlotte islands.

An ex-Canadian officer, with Prince Edward Island experience, is establishing a fur-farming industry in Scotland. Lynx, beaver and silver foxes will be raised.

Commission of Conservation CANADA

Hon. W. C. EDWARDS
Acting Chairman
James WATSON
Assistant to Chairman and Deputy
Head

CONSERVATION is published monthly. Its object is the dissemination of information relative to the natural resources of Canada, their development and proper conservation, and the publication of timely articles on housing and townplanning.

The newspaper edition is printed on one side of the paper only, for convenience in clipping for reproduction.

OTTAWA, OCTOBER, 1920

Fire Prevention

Lessons for Children

In the publication, *Safeguarding America Against Fire*, Vol. III, No. 9, issued by the National Board of Fire Underwriters, 70 William St., New York, there is a book trial arranged for acting by school children, in which eleven of the major causes of fire are the defendants. The part of each is taken by a pupil, characteristically garbed. Their names are: Kerosene, Cigarette, Electricity, Match, Rubbish, Gas, Defective Chimney, Gasoline, Lightning, Bonfire, and Spontaneous Combustion. The judgment of the court, however, is that all these only act according to their nature and that most of them, rightly used, are valuable servants of man. The case against them is dismissed, and the arch criminal, Carelessness, is brought into court. He has nothing to say, except that he is "an ingrained habit of the American people." He is found guilty and sentenced to be banished from America forever.

School teachers in this country might well adopt this idea to inculcate greater care among the younger generation of Canadians. Our fire waste, *per capita*, is even more appalling than that of the United States, and "taking a chance" is just as much our established habit. It is a moral trait that has its good features, but taking foolish chances with fire is not one of them. Moreover, ignorance is a great cause of fires, and the dispelling of ignorance is the school teacher's prime duty.

Canadian Parks

Canada's magnificent scenery comprises one of her proudest possessions. While such a possession should not be appraised purely from a commercial standpoint, it is, nevertheless, a conservation policy of the most practical character to take steps to assure that this natural resource be administered as an economic asset. In so doing, the Dominion Parks Branch merits recognition as a very substantial factor assisting to maintain the solidity of Canada's financial standing. It is, in addition, a foremost agency in providing sanctuaries, in administering game laws and in otherwise contributing to the practical programme essential to prevent the depletion of our wild life resources.

Fur Seals Rescued from Extinction

Skins of Old Males, Once Least
Valued, now the Most
Expensive

The most valuable herd of wild animals in the world is the fur seal herd of the Pribiloff islands, in Alaska. According to Dr. H. M. Smith, of the U. S. Bureau of Fisheries, this herd could be capitalized at \$75,000,000 and would pay a handsome profit on that capitalization. Yet ten years ago this herd was in danger of utter extinction owing to the practice of slaughtering the seals on the high seas, a procedure which brought on an acute international controversy. In 1911 a convention was agreed to by the United States, Britain, Japan and Russia, whereby pelagic sealing was stopped, in return for a stipulated share in the proceeds of the land killing. Since then the herd has so tremendously increased that, as the *New York Times* remarks, "The value of conservation has never been more swiftly or more decisively illustrated." In 1873 the herd consisted of not less than 2,500,000 individuals; in 1911 it had been reduced to 125,000; now it numbers well over 500,000, and it is fully expected that it will ultimately attain its original size.

Following the conclusion of the treaty in 1911, the U. S. Congress imposed a close season of five years. This effectively protected the herd, but it resulted in a surplus of male seals and much fighting on the breeding grounds. Of recent years killing has been resumed under the direction of the U. S. Government. Only male seals are taken, whose skins realize a handsome profit, while at the same time their killing is an actual benefit to the herd. The skins thus taken since 1917 will realize over \$7,000,000, in which sum British interests will share to the extent of 15 per cent of the net proceeds. It is probable that, in the not distant future, 100,000 surplus males may be taken annually and that Britain's share will amount to \$1,000,000 a year.

A most important recent development in the fur seal industry is the discovery of a method to utilize the "wigs" or skins of the old males. Years ago, in the London market these were very lightly valued. They sold for as low as \$3 apiece and were mostly sent to Russia, where they were used for lining peasants' houses. Recently, in St. Louis, skins of this class, properly treated, fetched as high as \$175 each, and they are now considered the best seal skins on the market.

The name "wig" was applied on account of the coarseness of the guard hairs, particularly on the back of the neck. The great weight of the "wigs" was another serious objection, some of them turning the scales at 100 pounds. Now these skins are ground thin on an emery wheel, the fur is plucked, machined and dyed, and the whole

skin made so beautifully soft that, large as it is, it can be pulled between the finger and thumb. Here we have a notable achievement in the utilization of a waste product.

The United States Government plans, however, to use every scrap of the carcasses, and a reduction plant is being erected on the Pribiloff islands. It has been proved that excellent oil can be obtained, which is especially valuable for waterproofing automobile tops. Two gallons can be obtained, on an average, from every carcass, and the oil will sell for \$1.50 per gallon. Hence, when 100,000 seals are taken yearly, it is expected that \$300,000 will be realized from the oil alone.

The Treaty of 1911 expires in 1926. It is extremely unlikely that any of the high contracting parties will wish to return to the old order of things. Had pelagic sealing continued, the herd would now have been wiped out. The practice was perfectly legal, under international law, but certainly unwise. Under the present arrangement, all the interested nations are benefited, and permanently.

This satisfactory state of affairs is a striking testimony, not only to the value of conservation, but to the superiority of common sense and arbitration over the stupid futility of an appeal to war, which always raises more questions than it settles. Again, the value of the Pribiloff seal herd may be and may become, it is not worth one day's disagreement between two great nations.

Helium Production from Canadian Gas

War-time Experiments showed Can-
ada can supply Non-inflammable
Gas for Balloons

Prof. J. C. McLennan, University of Toronto, recently addressed the Chemical Society of Great Britain on "Helium, its Production and Uses."

In the autumn of 1915 the Board of Invention and Research requested Prof. McLennan to undertake a survey of the helium resources of Canada and of the Empire and to investigate their production.

In Ontario, Prof. McLennan found the percentage of helium in natural gas to increase from 0.15 to 0.33 of one per cent as he went further west. He estimated the whole available supply at 2,000,000 cubic feet per year. In the Bow Island gas-field in southern Alberta the percentage is 0.36 and the possible annual supply over 1,000,000 cubic feet.

Following the erection of a small experimental plant at Hamilton, Ont., in 1917, new works were established at Calgary, Alta., in 1918, in the buildings of the Western Canada Natural Gas Co. A run of three days produced, in the second stage, 700 cubic feet of helium of 90 per cent purity. The

purity was finally raised to 97 per cent, 90 per cent being attainable. Prof. McLennan states that a plant could be established at Calgary which would yield 10,500,000 cubic feet of helium of a purity of 97 per cent per year at a cost of \$750,000.

During the war, the uninflam- mable nature of helium would have made it invaluable for charging airships, but, in times of peace, the small available supply will prevent its use for such purposes. When helium is liquefied, it brings us down to 271 or 272 deg. C. below zero, or within one or two degrees of absolute zero.

At the low temperatures obtainable by liquid oxygen, nitrogen and hydrogen, the heat conductivity, magnetic and other properties of substances are either stimulated to an extraordinary degree or are practically destroyed. With liquid helium available, important scientific results will undoubtedly be obtained.—Bulletin No. 31, Mines Branch.

Artificial Rearing of Young Oysters

Discovery of American Biologist
May Revolutionize
Oyster Industry

A discovery of great importance to the oyster industry is reported by the New York State Conservation Commission. Mr. W. F. Wells, biologist, has succeeded in the artificial propagation of young oysters. The eggs are obtained from the oysters and fertilized in much the same way as is done with the spawn of fish in hatcheries, and the young oysters, which are free-swimming during the earliest stage of their life history, are reared in tanks until they "set," that is, attach themselves to shells and other objects. As the great difficulty of oystermen during recent years has been to secure a good set of oysters by natural means, the importance of Mr. Wells' discovery may be readily appreciated.

Young oysters, before "setting," are very minute, and it has hitherto been found impossible to change the water in the rearing tanks without losing them. This has now been overcome by a centrifugal machine which concentrates millions of the tiny creatures from a large volume of water into a small bowl. They can then be transferred to a tank in which the water has been renewed. Though very delicate animals, their shells enable them to undergo this process without harm. About one month after hatching, the young oysters attach themselves and their free-swimming existence is over.

These experiments are important from a scientific, as well as from a commercial, viewpoint, as they provide material for the study of the life history of shell-fish, which has in the past been very incomplete.

Wood using Trades and Raw Material

Serious Situation in United States Due to Depletion of Eastern Forests

A report recently issued by the United States Forest Service shows that over two-thirds of the original forest area of that country has been culled, cut-over or burned. There are left to-day about 137,000,000 acres of virgin timber, 112,000,000 acres of culled and second-growth timber large enough for sawing, 133,000,000 acres partially stocked with smaller growth, and 81,000,000 acres of forest land of all sorts, which contains about 2,214 billion feet of timber of merchantable sizes. Three-fifths of the timber originally in the United States is gone. Cutting is taking place each year at more than four times the rate of the annual growth. Even the trees too small for the sawmill, but upon which the future lumber supplies depend, are being cut three and a half times as fast as they are being produced.

The report shows that the use of wood cannot be appreciably reduced without serious injury to the agriculture, the home building and the manufactures of the United States. The *per capita* use of lumber cannot be reduced to one-half or one-third the present amount if the resources of the country are to be developed and its industries maintained. The great bulk of the wood required must be grown at home, since large increases in lumber imports are not possible at reasonable prices.

The original pine forests of the Lake States, estimated at 350 billion feet, are now reduced to less than 8 billion feet. The output of sawmills in the region bordering the Great Lakes has, since 1892, been reduced from 9 billion board feet of lumber to one billion.

The virgin pine forests of the Southern States have been depleted from a stand of 650 billion feet of timber to 139 billion feet.

One-half of the timber remaining in the continental United States is in Washington, Oregon and California, and 61 per cent of it lies west of the Great Plains. It is estimated that, within the next decade, the shortage of nearer timber will compel the Eastern and Central States to increase their annual consumption of western lumber by 11½ billion board feet.

The depletion of timber in the United States has not resulted primarily from the use of the forests, but from their devastation. This is the result of forest fires and of methods of cutting which destroy or prevent new timber growth.

To remedy this situation, the Forest Service is advocating concerted action by the Federal and State governments and by the land owners. The prevention of further devastation of the forests, through protection from fire and insects and by regulation of the methods

of cutting, is strongly advocated. The responsibility of the land owner is emphasized, in addition to the undoubted responsibilities of the various governments. The policy advocated aims toward timber production on somewhat the same footing as in France and Scandinavia, as an established national practice. This calls for a core of public forests, governmental instruction and example, as well as encouragement in methods of production and taxation, and a responsibility recognized by forest owners to keep their lands productive.

This programme is meeting with a rapidly increasing measure of support on the part of the many large industries dependent upon the forest for their raw material, as well as from public-spirited organizations and individuals throughout the country.

The forests of Canada have, for the most part, not yet suffered so severely from devastation as those in the United States, but losses from fire have, nevertheless, been severe, and the productivity of the land is being constantly decreased through lack of regulation of cutting methods calculated to perpetuate the forest through wise use.—*Clyde Leavitt.*

GASOLENE IS DANGEROUS

Gasolene fumes came in contact with a lighted lantern. Ten buildings destroyed, loss, \$250,000.

Gasolene is dangerous. It is one of the most rapidly volatilizing liquids. One pint of gasolene will impregnate 200 feet of air and make it explosive.

Many serious fires have been started from the careless use of gasolene.

Gasolene should only be used in the open air, and clothes, after being cleaned with it, should be hung outside to allow it to evaporate. It should always be kept in tightly closed metal cans, never in glass bottles or jars. The latter are liable to breakage and the consequent freeing of the dangerous fumes when open flame may ignite them and cause a serious fire.

TAKE CARE OF ITS TREES

The Hydro-Electric Commission and the Parks Department of the City of St. Thomas have placed the trimming of the trees on the streets where hydro wires are strung under the superintendence of the Horticultural Society. The St. Thomas Horticultural Society have as their chief plantsman, Mr. R. V. Smith, formerly superintendent of Parks of London, who is an expert along this line. The trimming is being done in a sane manner. That part of the work on the tree that it is necessary to remove to protect the wires is paid for by the Hydro Commission, and the balance of the work to make the tree symmetrical is paid for by the City Council. The spirit exhibited by these two municipal bodies is commendable.

Forestry Conference at London, England

Delegates from all parts of Empire Discuss Utilization of Resources

The holding of the Imperial Forestry Conference at London, England, from July 7th to 26th, will constitute a landmark in the development of forestry throughout the British Empire. Strong delegations were present from the United Kingdom and from the various colonies, dependencies and dominions, including Canada. The discussions were held strictly to the subject in hand and were based upon reports carefully prepared in advance showing, for each portion of the Empire, the extent and character of forest resources, their relation to the rate of exploitation, present and prospective, and the status of the administration and of the policy and procedure governing the utilization of these resources.

Between sessions of the conference, tours were arranged to representative forests in England, Scotland, and Wales, both natural and planted, in order that the delegates might become familiar with what has been done in the past and what is under way for the future, along forestry lines.

The report of the United Kingdom, presented at the Conference, bears out the general assertion that democracies are notoriously backward with regard to forestry practice, at least until the pinch of necessity becomes sufficiently felt to stimulate the adoption of adequate measures looking to the re-establishment of a forest cover on lands chiefly valuable for that purpose.

While the British Isles were formerly heavily forested, clearing has progressed until it is estimated that to-day there is in all England, Scotland and Ireland only 5,180 square miles of forest, or 4.3 per cent of the land area. In England the percentage of forest to the total land area is 5.1, in Scotland 6.0, and in Ireland 1.5.

Approximately 470 square miles of timber land was cut over during the war, this comprising a large proportion of the mature coniferous timber in Great Britain.

As a consequence of this depletion, the United Kingdom has had to rely to a very large extent for its timber supplies upon imports from other countries. The shortage of shipping during the war, however, demonstrated conclusively the extreme undesirability of having to rely so completely upon foreign supplies.

As a result of careful consideration by the British Government, measures are now under way which will in the course of time, restore the United Kingdom to a more self-respecting position with regard to forestry. Under the Forestry Act of 1919, a Forestry Commission has been appointed for the United Kingdom, and an appropriation has been granted of £3,500,000 for its operations for a period of ten years. This money

is to be used primarily for the purchase or leasing of land for afforestation, though other aspects of forestry work will receive attention. Large forest nurseries have been established, land is being acquired, and the programme is already well under way.

Resolutions were adopted by the Imperial Forestry Conference which should result in much more attention being given the vitally important matter of perpetuating the forests by wise use, in all parts of the Empire. It is expected that the next session of the Conference will be held in Canada in 1923.—*Clyde Leavitt.*

Metal Mines Need Better Ventilation

Many Fatalities Occur from Miner's Consumption—Necessity of Fire Control

That miner's consumption kills at least 1,000 metal miners annually in the United States and causes a loss of time aggregating millions of dollars, as well as suffering to miners and their families which cannot be estimated, and that this disease is in large measure preventable by proper ventilation, is the conclusion of Mr. D. Harrington, mining engineer, in a paper recently issued by the United States Bureau of Mines. It is generally accepted that coal miners are healthier than metal miners; this fact is due to the greater attention paid to ventilation in coal mines.

Coal mine operators have seen the need of installing proper ventilation systems on account of the presence of explosive gases. In metal mines, ventilation has not been so seriously regarded till the shortage of labour and the operation of the workmen's compensation acts directed attention thereto.

The removal of the dusts injurious to health as well as of noxious gases and the fumes of explosives, and the reduction of high temperatures and humidity are the principal reasons for efficient ventilation of metal mines. Miner's consumption is largely caused by the presence of exceedingly fine siliceous dust. The hard, sharp, insoluble particles cut and injure the lung tissue and render it more or less inelastic. Heat prostration has also brought about fatalities in metal mines, which could have been avoided by proper air circulation. Inert gases, such as nitrogen and carbon dioxide, will sometimes accumulate, and it is impossible to remove these without fans. Methane, or fire-damp, while not common, is not unknown in metal mines, and explosions of this gas have sometimes occurred.

A further reason for a proper ventilation system is the need of fire control. All metal mines having timber underground should be equipped with fans so arranged that the air current can be reversed at will and all shafts carrying air should have doors so placed at intersecting levels that any shaft can be quickly isolated.