## Advantages of Use of Pulverized Fuel

**New Bulletin Issued by Commission of Conservation Gives Valuable Information for Consumers**

The Commission of Conservation has just issued a report on *Pulverized Fuel: its Use and Possibilities*, by W. J. Dick, M.Sc., which may be had on request by those interested in economy of fuel for power and large heating plants.

One of the pressing problems of industry in Canada is that of fuel supply. This is especially the case in manufacturing processes requiring heat. The rising costs of coal and the difficulty of transportation have proved handicaps of considerable importance, and are rapidly becoming accentuated. This situation demands that all the available heat contained in the coal be made use of. In the utilization of run-of-mine coal a large proportion is lost in the form of cinders and clinkers. To overcome this waste, a process for using coal in pulverized form is now in successful use.

Under this process, the coal is first dried, to reduce the moisture content to approximately 1 per cent. It must then be thoroughly ground, until 95 per cent will pass through a 100-mesh screen and 85 per cent through a 200-mesh screen. The coal is then transferred, usually by screw conveyors, to the furnace supply, whence it is blown into the fire-box by means of compressed air. Consumed in this way the coal burns like a gas and the flame has the characteristics and appearance of a gas flame. Results of tests have shown that there is no formation of slag in the furnace or on the tubes, there is no shower of cinders or ashes emitted from the smoke-stack and there is no damage done the boilers from heavy overload conditions.

Canada is particularly interested in the use of pulverized coal. At the pit-head and underground, at the mines in Nova Scotia and British Columbia, are great piles of unmarketable coal dust and slack, while, in Alberta and Saskatchewan, there are immense reserves of lignite, which is high in moisture content. This lignite rapidly disintegrates on evaporation of the moisture and, consequently, will not stand transportation. It is also unsuitable for locomotive fuel on account of its liability to start fires from excessive sparking. But these coals, by drying and pulverizing, make excellent fuels for either heating or power-development purposes. They are lower in price, less expensive to handle and give greater heating value. The Dominion Coal Co., New Waterford, N.S., the International Nickel Co., at Copper Cliff, Ont., the British Columbia Sugar Refining Co., at Vancouver, and with one exception, all the cement companies are using pulverized coal with very satisfactory results.

## Preventing Damage to Logs in Storage

**Various Methods Recommended for Minimizing Loss through Deterioration**

Logs stored on skidways or left in the woods during the summer months may be damaged in a number of ways, principally through sap-staining, insect attack, decay, and checking. Certain species of wood are more susceptible to injury than others, and the extent of the injury is also dependent upon the time of cutting, the climate, and the storage conditions. The possible financial loss and amount which can profitably be expended to prevent it will be influenced by the value of the logs, the purposes for which they are to be used, and the probable extent of the injury. Where conditions permit, one or more of the following methods may be found useful in minimizing the loss.

Storing under water will prevent "blue stain," checking, insect attack, and decay, except that logs in sea-water, where marine borers are active, would be subject to attack by these pests. Wood of any species completely submerged in water will resist decay indefinitely. Alternate wetting and drying, however, favour decay.

Storing on skids in such a way that the air can circulate freely around each log will prevent the accumulation of moisture and thus retard decay. Such storing, however, is liable to increase checking and, unless the bark is removed, will have little effect in preventing insect attack. The skids should be located where there is good air circulation, and they should be raised off the ground. Weeds and brush should be cut down.

Peeling the bark completely from the logs will do much to eliminate insect attack and retard decay, by removing the protection required by many insects, and by allowing the logs to dry more rapidly. It will favour checking, however.

Painting the ends of the logs with paints of the proper kind will very materially retard the loss of moisture and thus retard end checking. If the logs are peeled and properly piled on skids, painting should not increase the danger from decay or sap stain. A yellow ochre or barn paint will do fairly well for this purpose.

Painting the peeled surfaces with coal-tar creosote will be useful in preventing sap decay, and if applied soon enough may be effective in retarding sap stain. Any grade of creosote in common use for wood preservation is suitable, and expensive oils are unnecessary.

All the methods described, except water storage, may be employed at the same time and to good advantage if circumstances justify the expense.—*U.S. Forest Service.*

## Rat Extermination is Serious Problem

**Concerted Crusade should be Undertaken to Reduce Ravages of Prolific Pest**

The rat is always a pest and often a disease carrier. We know he is the cause of the spread of bubonic plague and possibly of other diseases.

The damage done by this rodent is enormous. As to the extent, we have no definite information, but certainly it amounts to hundreds of thousands of dollars! The progeny of one pair of rats in a season is estimated at 880, and, allowing for the death of at least one-half of the young, the number killed each year does not by any means offset the normal increase of the rat population.

The Medical Officer of Health for Liverpool, Eng., reports that 13,868 rats were caught in that city during the year 1914, while it is estimated that the number of rats there is at least 1,000,000.

But this pest does not confine its ravages to the city; every farmer throughout this country suffers annually considerable loss. The damage in England is estimated at $200,000,000. One authority estimates the loss to farmers alone in that country at $75,000 per day. In the United States, the total damage has been estimated at $180,000,000 annually.

To destroy this pest, various methods are in use and even official rat catchers are employed, but, so far, the rodent continues to work destruction in increasing proportions.

It should be the endeavour of each householder to remove all the accumulations of *débris* both without and within his premises and, at the same time, to rat-proof the buildings—the house, the barn, the warehouse and granaries—thereby making it impossible for the rat to obtain food. Then, having excluded him, he may be attacked in the open.

Another danger point is the entrance from sewers. Therefore cover all cellar drain pipes by which rats can gain access to the house.

The following rules to reduce the number of rats can be followed out by every householder:

1. All food receptacles should be rat-proof. Use covered metal garbage cans only.

2. Do away with the breeding places by abolishing plank yards and passageways and stables, which are excellent runways.

3. Keep rats out of the house and buildings and stables by rat-proof construction and well-screened basement openings.

4. Kill the rat at every opportunity.

5. Demand that local health authorities adopt local by-laws which will prevent your careless neighbour continuing to feed and help the pest to breed.—*C. A. H.*

## Widening the Radius for Electric Power

**Transmission over Distances Exceeding 200 Miles is Possible at High Potentials**

Recent achievements are increasing the distances of economical transmission of electric energy. In long distance transmission of electricity, high pressures or voltages are required—the higher the voltage, the lower the losses. For several years after long-distance transmission had been introduced, it was the practice to allow a pressure of approximately 1,000 volts per mile. It was found, however, particularly with distances of over 100 miles, that the distance allowed could be increased to as much as two miles per 1,000 volts. In other words, lines operating at about 100,000 volts pressure have been transmitting energy over distances exceeding 200 miles. More recently, lines operating at 150,000 volts have demonstrated their practicability; one of these has been in successful operation for over five years.

Now, electrical engineers are of the opinion that pressures of 220,000 volts are quite feasible and it is stated that "the handling of electrical potentials of 220,000 volts does not appear to involve any disturbing complications or uncertainties. In fact, the manufacturers do not recognize that any serious problem exists. Current design principles and materials now in ordinary use will be employed, the principal difference from present high voltage equipment being the greater amounts of insulation and the larger clearances required. The step to 220,000 is relatively no greater than that previously taken from 66,000 volts to 110,000 volts or from 110,000 volts to 150,000 volts. Certain of the manufacturers have already developed designs, and assert readiness to undertake the commercial production of 220,000 volt equipment on short notice."

The advantages of long distance transmission are of particular interest to Canada, where much of our water-power is found in large units and, to reach many consumers, it may be necessary to transmit the energy for a considerable distance. It is perhaps of greatest interest in connection with our abundant water-powers in the river St. Lawrence and in the area lying to the north of the settled regions of the Prairie Provinces. It brings us closer to the possibility of making these vast stores of energy available within the settled portions.

In Saskatchewan, for instance, the power sites of the Churchill river are only some 250 miles from Saskatoon and 350 miles from Regina. The transmission of energy over these distances would be quite feasible at 220,000 volts and economically possible when the demand of the entire district reaches a high enough figure.