Scheme to Utilize Coal-mine Refuse

England's Fuel Problem Stimulates Economic Use of Material Formerly Wasted

A company has been formed in the Nottingham, Eng., district for the purpose of promoting a scheme for the utilization of refuse from coal mines. It is believed that, when the project is fully established, it will attract other industries to the city and district.

Plans have already been drawn for the erection of a super-power station, briquetting plant, coal-washing plant, concrete-products works, low-temperature distillation plant, and a light railway. Land has been allocated for the construction of the light railway and low-temperature distillation plant. It is intended that the waste from the distillation plant be used in the super-power station. The briquetting plant is expected to use up the inferior waste from the super-power station and, in conjunction with this, there will be a coal-washing apparatus. The coal-washing plant will deal with the refuse from pits within a radius of 16 miles, and the good coal will be mixed with the refuse from the low-temperature distillation plant and "cemented" with pitch, producing a compound of high commercial value. The concrete-products works is expected to play an important part locally, particularly in view of the extensive amount of construction work to be carried out in the Nottingham district in the immediate future.

The fuel problem in Canada is no less important than in England. Canada should not only watch developments in coal conservation in the Old Country, but, it is to be hoped, will not always wait for a lead.

Quebec Takes Lead in Garden Suburbs

Provincial Government will Spend Federal Grant in Promoting Building along Modern Lines

The declared housing policy of the Quebec Government is to spend its apportionment of the Federal loan in the promotion of garden suburb and garden village development, which indicates that Quebec will lead the way in Canada in this important social movement. By this method of procedure, large blocks of suburban and country land can be bought at low figures and thus the greatest obstacle to cheap and better housing is removed.

The Sherbrooke Housing Company has acquired a beautiful site of 51 acres, with about 1,500 feet frontage on the Magog river for the sum of $51,000. The movement illustrates a fine spirit of co-operation among government authorities, manufacturers and citizens. The Connecticut Cotton Mills Co., situated at Sherbrooke, have already experimented at their home plant, at Danielson, Conn., in garden village housing and have been so satisfied with the results that they have offered to extend their plant at Sherbrooke at a cost of $2,000,000 on condition that the city of Sherbrooke will co-operate with them in the model housing of the workers. Sherbrooke has responded. The Quebec Government, on the advice of Dr. Nadeau, Housing Director, can e forward with a loan of $500,000 and Mr. F. G. Todd, their town planning adviser, has laid out the site on modern lines. Ten houses have already been completed and the return of the building season will witness great activity at the garden suburb of Sherbrooke.

Other garden suburb projects in the province of Quebec include a scheme for the workers of the Riordon Pulp and Paper Co. at Kipawa, the town plan of which has been prepared by Mr. Thomas Adams and where 46 houses have already been completed, a small model development at Ste. Anne de Bellevue, for the employees of the Garden City Press Co., a garden suburb intended to house about 200 families in the vicinity of Hull and a project for a Confederation Garden Suburb for Quebec city that will involve the expenditure of $1,275,000 and will house 500 families.—*Alfred Buckley.*

Farmers Neglect Profit in Sheep

Feed now Wasted may be Turned into Mutton and Wool—Small Flocks are Paying Side Line

Sheep should form a part of the live stock carried on the average farm just as well as cattle, horses or swine. Enough unused pasture and roughage go to waste and weeds go to seed every year in Canada to produce hundreds of thousands of dollars' worth of mutton and wool. In 1871, there were 3,155,509 sheep in Canada and in 1911 according to the last census figures there were 2,174,300. This is an enormous decline in the industry, when it is realized that the lesser number in Canada in 1911 were scattered over a much larger area, due to the opening up of the West.

An experiment conducted recently by the Live Stock Branch, Ontario Department of Agriculture, demonstrated that it is profitable to keep sheep on the average farm and under ordinary conditions. Nine small flocks of from 10 to 12 ewes per flock were stationed in different parts of the province and, for two years, an accurate account was kept of feed and other expenses, allowance being made for interest on capital invested. Each flock showed a profit each year, averaging about $38 per flock, or an average profit of between $3 and $4 per head.

It would seem that, if increased production of wool and mutton is to be brought about, it can best be done by the keeping of more small flocks on the average-sized farms of Canada.

There are a number of important points in favour of keeping sheep that will bear emphasizing.

First: Sheep destroy weeds and consume food that would otherwise be wasted. They eat most of the common weeds and, in eating them, grind the seeds so thoroughly that they will not grow.

Second: Economy of housing and management. Cheap buildings are satisfactory as shelters. Sheep require no protection except from snow, rain and wind. In Canada, they are subject to few diseases and require but little attention except at lambing time, which makes the labour problem in this enterprise a minor consideration.

Third: A small investment only is necessary to get a start in the sheep business. Good vigorous grade ewes should be obtained and a pure-bred ram used. The ram need not be a show animal but should be of good size, strong and vigorous.—*F. C. Nunnick*

Economy of Central Heating in Canada

Long Winters would Reduce Overhead Charges, Making Operation Cheaper than in U.S.

Two of the principal items to be considered in connection with central heating are the cost and the overhead charges involved in the external piping or distribution system. Where the system is only in use for a short period of each year, as in some localities in the United States, these charges are comparatively high, but in Canada, where they would be spread over more than half the year, the financial burden is decreased.

The advantages of central heating plants over individual systems for each house or building are numerous. In an individual system, as a rule, the plant is not large enough to warrant careful operation and the coal is fired in large quantities and at long intervals. To obviate the difficulties of combustion, high-priced coal is burned. It is evident that, if a central station containing a power-plant boiler of standard size, utilizing cheap fuel and operated intelligently, be substituted for the heating plants of several buildings, much of the inefficiency, nuisance and discomfort from the small plants would be overcome.

In central heating plants where each building has to be charged its exact proportion for service, the question of rate must be carefully considered. Payment for the use of steam should be at a meter rate based on 1,000 pounds of condensed steam.

An investigation of a large number of plants in the United States in pre-war times disclosed that the average rate was 50 cents per 1,000 pounds of condensed steam. Prices would now probably be from 50 to 75 per cent higher or, say, 75 to 87 cents.

Respecting the economy: If we assume that 1 pound of steam contains 1,000 heat units and 1 pound of coal contains 13,000 heat units and allow an efficiency of 50 per cent for the coal, then we find that, theoretically, coal at $13 per ton, if burned in a house furnace, would be equivalent to steam at $1 per 1,000 pounds, as compared with 75 to 87 cents for a central plant.—*L. G. Denis.*

Financial Pitfalls in Hydro Projects

How Money can be Lost in Water-Power Development by Lack of Foresight—Some Essential Factors to Consider

In the twelve years preceding 1915, seventeen large hydro-electric plants in the United States and some miscellaneous minor developments, totalling over 600,000 horse-power and involving an investment of $125,000,000, proved financially unprofitable. Much of the failure in connection with such projects has resulted from the "honest mistakes" of engineers and was due to misestimates of the quantity of water available, running all the way from 30 to 200 per cent. There were also serious misestimates of cost which resulted, not infrequently, in the projects costing nearly double the estimates.

Twenty years ago, when improvements in electrical transmission resulted in extensive hydro-electric developments, there was more excuse for errors in engineering and other estimates than now. No such wealth of stream-flow and other hydrometric data as exists to-day was then available.

With all the data now available respecting hydrological conditions, cost of construction and market possibilities, it is clearly incumbent upon those interested in financing proposed developments, to exercise the utmost care in the examination of this information. Great caution must be displayed in using information in reports the character of which is not fully defined. Little confidence can be placed in any reports not based on actual measurements for, without these, the best judgment of explorers and even of engineers as to heights of falls and volumes of stream-flow is frequently very wide of the truth.

Large lakes do not necessarily mean large water-power possibilities. Water is not water-power. Again, it is unsafe to predict power resources upon the total descents of rivers. This is well illustrated by a comparison between the water-power possibilities of two of the larger streams of Vancouver island, Campbell river and Nimpkish river. These drain approximately equal areas and have similar total descents in the main portions of the river. The power possibilities of the Campbell, however, with its concentrated possible developments, may be estimated at about 100,000 horse-power as contrasted with some 15,000 horse-power for the Nimpkish.

Development should not be contemplated without reckoning with power from coal, chiefly from two standpoints: First, regarding steam-power as a direct competitor; second, considering steam-power to be used as an auxiliary source to augment the supply of power during periods of low water. During recent years, great advances have been made in developing power from coal and the cost of power from this source has been very materially cheapened.—Adapted from "*Water-powers of British Columbia*," by A. V. White.