

The percentage of ash (column 3) in E is taken as a standard of comparison, and the determined ash in B is shown to be 1.21 per cent. higher. Each 1 per cent. of ash difference from the contract standard is so rated as to make 2 cents difference in the price per ton; 1.21 per cent. of ash is valued at  $\$0.02 \times 1.21$ , or  $\$0.0242$ ; bid B is therefore increased to  $\$4.3242$  per ton (column 5). The two bids are then on an equivalent basis, so far as ash is concerned.

The heating values being different, it is desirable to compute the calorific cost by the formula:

$$\frac{1,000,000 \times \text{price per ton}}{2,240 \times \text{B. t. u.}} = \text{cost per 1,000,000 B. t. u.}$$

This computation shows the cost of 1,000,000 B. t. u. to be—

$$\begin{array}{l} \text{In the case of E—} \\ \frac{1,000,000 \times \$4.19}{2,240 \times 14,327} = \$0.13056. \end{array}$$

$$\begin{array}{l} \text{In the case of B—} \\ \frac{1,000,000 \times 4.3242}{2,240 \times 14,200} = \$0.13595. \end{array}$$

In like manner the cost of 1,000,000 British thermal units is calculated for each bid received under the proposal, and the results are entered for ready comparison in column 6 of the table.

The necessity for having such a basis of comparison will be readily seen when a number of tenders are at hand.

#### Coal Industry in Canada.

It is gratifying in no small measure to observe the steady increase of this industry in our own Dominion. There appears to be a lack of knowledge on the part of our citizens regarding this important question, notwithstanding our vast deposits of this valuable asset. The chief coal deposits are situated in the extreme east and west, the central provinces being without coal deposits so far as is known at present. The provinces of Ontario and Quebec in the year 1909 consumed the major portion of 43.4% of 18,625,202 tons, this being the total consumption; this was mostly imported from the United States, and from this it is gratifying to know that 56.4% of Canada's estimated coal consumption for the year 1909 was of domestic origin. Deposits of lignite have been uncovered by prospectors at various sections throughout Northern Ontario, but these have little commercial value. Quebec is a fairly large consumer of Nova Scotia coal, but it is to be regretted that anthracite varieties are not found in Eastern Canada. The production of coal in Western Canada yield the supply for an increasing ore smelting industry and, in addition, exports largely to the United States.

Coal of the bituminous variety forms by far the largest proportion of Canadian coals, but anthracite is found and mined at Bankhead, near Banff, Alberta. Table 3 shows the coal actually sold from Canadian mines during the year 1909:—

Table 3.

	Tons (2,000 lbs.)	Value.
Nova Scotia .....	5,652,089	\$11,354,643
British Columbia .....	2,606,127	8,144,147
Alberta .....	1,994,741	4,838,109
Saskatchewan .....	192,125	296,339
New Brunswick .....	49,029	98,496
Yukon Territory .....	7,364	49,502
Total .....	\$10,501,475	\$24,781,236

## THE IMPORTANCE OF PURE WATER SUPPLIES.\*

By Dr. Meredith Young, D.P.H., &c.

Quite apart from the commercial point of view of the enormous invested capital, both public and private, in water-works undertakings (the loans sanctioned by the Local Government Board for water supply purposes on the application of urban and rural district councils in England and Wales during the ten years 1900 to 1909 amounted to no less than £6,394,212), there is the great importance of such undertakings to the public health. Whilst a marked lowering of the general death-rate has almost universally followed in the wake of an improved water supply, there are instances enough of considerable outbreaks of enteric fever during the past few years which have been unquestionably caused by sewage-polluted water supplies. To quote only some of the more serious recent epidemics, the Tees Valley underwent one of enteric fever due to this cause in 1890 and 1891 in which 1,463 cases came under notice, Paisley in 1893 suffered under an outbreak involving about 800 cases, and again in 1898 from one in which about 280 cases occurred, Maidstone in 1897 had no fewer than 1,786 cases, Worthing 1,261 cases in 1893, Philadelphia 1,927 cases in 1897-8, and Lincoln in 1905 had close upon 1,000 cases.

This is by no means the whole tale, however, for it is beyond doubt that many isolated cases of enteric fever and many outbreaks too small to attract public attention have occurred and are likely to go on occurring which owe their origin to a contaminated water supply. Enteric fever, of course, is not the only illness which is thus engendered by a polluted or vitiated water supply, but the case based on enteric fever is so clear and specific that it affords the best argument for the necessity of measures of precaution. That a water supply should be under all circumstances preserved from pollution has been for years accepted on all hands as the merest truism, but in spite of this thousands of cases of typhoid fever are seen to have occurred within the past twenty years amongst enlightened communities caused by more or less gross pollution. Although water has been primarily responsible for the more serious epidemics, several cases which have been before the courts recently have demonstrated that its potentiality for mischief does not end amongst the direct consumers, but may manifest itself in other quarters owing to contamination of milk, and possibly other food products, such as water-cress, shell-fish, &c. River supplies, of which we have many in Cheshire, have been chief amongst the water causing these outbreaks, and pollution of rivers, directly or indirectly (particularly the latter) in such a way as to endanger water supplies, though not in such a way as to render successful action possible under the Rivers Pollution Prevention Acts, is one of the most difficult matters with which one has to deal. This has been borne in on me by a considerable number of inspections made recently in connection with your council's opposition to the Chester Water Bill. Quite a large number of cases came to light during this inspection in which sewage pollution from houses, or small groups of houses, was taking place on tributaries or sub-tributaries of the river Dee, or ditches communicating often very indirectly, and after considerable windings and wanderings through fields with this river. In a considerable number of these cases no one could with any show of reason attempt proceedings for breach of the Rivers Pollution Acts, but considered as possible sources of specific contamination of a public water supply, the case assumes a very different aspect indeed. The public are well

\*Abstract from Annual Report of Cheshire County Medical Officer.