

miles in length and covering 10,000 acres. It extends from the Gap to the Cascade Mountains and includes some twelve or fourteen seams of anthracite and about twenty-eight seams of the Canmore steam coal." It has been examined by such coal experts as Roland C. Luther, general manager of the Philadelphia and Reading Coal Company; John R. Hoffman, mining engineer, one of the highest authorities on coal mining in the United States, and Ralph C. Moore, of Glasgow, Scotland, who was for long years inspector of coal mines for the British Government in England, Scotland and Wales. These gentlemen made independent reports testifying to the great value of the property, Mr. Moore placing the extent of the deposit at 150,000,000 tons. It is agreeable to learn that the best and most modern plans are being adopted to develop this great element of economic wealth.

FREEZING CARCASSES WITH SKINS ON.

AN Australian journal, the *Rockhampton Bulletin*, in a recent issue stated that a meat-shipping concern, the Lake's Creek Company, was experimenting as to whether meat turns out best if skinned before freezing or after, and had sent one quarter of a bullock to London, another to Melbourne, and a third to Mr. Spafford, a local butcher, retaining the other at the works. A sheep had also been forwarded to each place, and one kept at the company's own establishment. The *Bulletin* of a later date adds: "With reference to the paragraph concerning the experiment now being tried by the Lake Creek Meat Company, one difficulty experienced by all engaged in the export of frozen meat has been in thawing the carcasses after they have reached the old country. Directly the meat is exposed to the open air the condensation of moisture ensues, and this, running down the meat, gives it a washed appearance, and detracts from its commercial value. Some time ago the idea was conceived that if cattle could be frozen with the hides on, and the sheep with the skins, it would be possible to thaw without in any way injuring the meat, and so far the experiment in that direction has been successful. A few days ago two sheep carcasses were placed in the freezing-room at the works, one with the skin attached and the other dressed. Each was subjected to the same treatment, and when they had been thoroughly frozen they were taken out and allowed to thaw. That which had been dressed was fit for cutting up in twelve hours. The other could not be touched for thirty-six hours, and might have been left another four or five hours. When the skin was taken off the latter the flesh had all the appearance of having been freshly killed, while the flesh of the former looked as if it had been washed. The management have every reason to believe the experiment with the meat will be equally satisfactory. If carcasses can be sent to London in this way one great difficulty in the way of the successful conduct of the frozen-meat trade will be overcome; but the hides and skins will have to be shipped as frozen meat as well as the beef and mutton, and freight paid on them at the same rate, thus increasing greatly the cost of transmission to market."

PETROLEUM AS FUEL IN LOWELL.

ACCOUNTS from Lowell state that the Tremont and Suffolk mills, Lowell, Mass., have made a practical success in using petroleum as fuel, and the estimate is made that a pound of the petroleum is equal to eighteen pounds of coal. The mill uses the petroleum in the form of gas. The plant includes two tanks, which are buried in the ground about thirty feet from the furnaces, thus insuring safety from fire. A smaller tank is located above the larger ones and the contents of the latter are pumped into it. This small tank contains the supply for immediate consumption. A series of pipes runs from here to the boilers, which are situated on a lower level.

The arrangement of the oil reservoir in relation to the boilers is perfectly safe. The level of the two larger tanks is below that of the boilers, so in case the regulators fail to act and cause the tanks to burst, no serious results would follow so far as fire is concerned. The upper tank is so small that its contents would soak into the ground before they reached the boilers.

The oil flows from this reservoir through the pipes to the burners under the boilers. These devices consume the oil in the form of spray mixed with steam. Perfect combustion is produced and no soot or smoke is caused, yet volumes of black smoke pour out of the chimneys surrounding the Tremont and Suffolk mills, while not the slightest trace of smoke can be seen issuing from its own. The fire is regulated by simply turning a valve, thus it is under the immediate control of the firemen, and it is an easy matter to keep the

steam at a uniform point. The mills used eight boilers before they introduced petroleum. To-day they are using but six, and yet the speed of the two powerful engines is the same, and have just as much work to do as before. The neatness of the fire-room in consequence of there being no coal or ashes is an important point. The experiment has not been under way long enough to permit an estimation of the difference between the cost of oil and coal as fuel, but it is supposed the difference is small. The oil is brought to the mills in tank cars containing from 3,500 to 6,000 gallons each.—*Heat, Light and Power.*

ORE IN NEW BRUNSWICK.

PROF. L. W. BAILEY, of the Geological Survey of Canada, states that all the usual ores of iron occur to some extent in New Brunswick, including hematite, limonite, siderite or spathic iron, and magnetite, though none are now employed as a source of the metal. By far the largest deposits are those of hematite, or mixed hematite and limonite, which form extensive beds near Jackstown, north of Woodstock, in Carleton county. They may be traced across the greater part of this county in parallel and closely associated bands, and vary from two or three to fifteen feet in thickness. Somewhat extensive operations were at one time (1848-1865) carried on near Woodstock in the smelting of ore, and a charcoal iron manufactured, which, for certain purposes, was highly esteemed. This was no doubt due to the fact of the ore naturally containing a considerable percentage (1.6 per cent.) of manganese, there by adding materially to its tensile strength. It was, however, on the other hand, also contaminated with a considerable amount of phosphorus (one analysis yielding 1.298 per cent. of phosphoric acid), and, therefore, apt to be cold short in a high degree.

NEW ENGLAND'S COAL SUPPLY.

THE price of coal is a serious question to New England manufacturers. These states consume annually about 11,000,000 tons, of which only a very small fraction is produced in New England. Massachusetts and Rhode Island contain a few small deposits, but the heavy cost of obtaining it places it beyond the reach of consumers. The census of Massachusetts shows that the cost of fuel used in her manufacturing is equal to 2 per cent. of the total cost of all the material used in the woolen manufacture, to 1.7 per cent. of the total cost in the worsted manufacture, to 3.2 per cent. of the total cost in the cotton manufacture, and to 1½ per cent. of the total cost in all industries.

This coal is chiefly supplied by the mines in this country and in Nova Scotia and New Brunswick. The larger part is American coal, and but a small per cent. Canadian. The following were the imports of Nova Scotia and New Brunswick coal for six years:

	Tons.	Value.
1885.....	61,505	\$61,258
1886.....	76,575	96,900
1887.....	45,935	44,235
1888.....	65,368	73,825
1889.....	28,510	21,810
1890.....	36,317	34,405

There has always been a duty on bituminous coal, but the duty on anthracite coal was removed in 1870. Between 1846 and 1861 the duties were *ad valorem*. Now they are in part specific and in part *ad valorem*. The present duty on bituminous coal and shale is 75 cents per ton on screenings, slack and culm 30 cents per ton, and on coke 20 per cent. *ad valorem*. These rates are the same as those of the tariff of 1883 and of the Mills Bill. They are lower than the duties imposed previous to 1883, with the exception of the tariff of 1846.

The coal area of this country is estimated at 192,000 square miles, of which 120,000 square miles can be profitably worked at present. Nova Scotia has a coal area of 18,000 square miles, Great Britain 11,900 square miles, and Russia 30,000 square miles. Our coal area is over three times larger than the rest of the world combined. It is said that West Virginia alone contains more coal than all the English mines combined. The anthracite coal area is confined mainly to the Wyoming, Lehigh and Schuylkill regions of Pennsylvania, though it is found in a limited extent in Virginia. About eight-ninths of our imports of coal are brought from British Columbia and Australia, but the rapid development of our western mines is steadily reducing the necessity for these imports. The following