free from all danger of explosion even when carelessly used. This recommendation alone, in a humanitarian point of view, must strongly commend it to public favor. During the experiments, its steam-making qualities were favourably noticed, and such boilers in actual use as your Committee have had an opportunity to examine, seem to give satisfaction in point of economy; but in the absence of all experiments in this direction, conducted under their immediate supervision, they do not feel qualified to report in figures as to its steam-making efficiency.

"Comparing cast-iron plates with wrought-iron ones of the same thickness, the transmission of heat is known to be in favour of the former; hence the material, if in a safe form, is better adapted to economical steam-making than wrought iron. Ordinary boiler-plate is seldom less thon one-fourth of an inch thick, and more commonly three-eighths, particularly for high-pressure. The castings used in the experiments for safety, were not over three-eighths of an inch thick, and in one boiler set up in a form adapting it to marine purposes, some of the units were only three-sixteenths of an inch thick, and were worked successfully at one hundred pounds pressure, driving all the machinery in Mr. Harrison's factory in an efficient manner. The principle of enlargement of the boiler by addition of units, and the fact that it can be constructed in any shape or style, just as various kinds of buildings are constructed of ordinary bricks, places it in the power of the engineer to adapt it in its form to the requirements of each particular case; so that with the known advantage of the use of cast iron, and the unlimited scope in the arrangement of heat absorbing surface, coupled with the demonstrated fact of safety, your Committee unhesitatingly approved and heartily recommend it to public favour."

We would here ask our boiler-makers and steam engineers, if this form of boiler, so highly recommended by good authorities, both in Britain and the United States, is not worthy of their best consideration and investigation?

PEAT, IN THE MANUFACTURE OF IRON, AND AS STEAM FUEL.

In the last number of the Journal, we briefly alluded to the immense Peat bogs of Canada, and the possibility of utilizing them for fuel in manufacturing and domestic purposes. We also referred particularly to the patented process lately put in operation by Mr. Hodges, at Arthabaska, for the cutting and preparation of Peat; and noticed experiments recently made with it in the manufacture of iron, promising in this issue to give the report thereon, and also the results of other experiments.

The report referred to was made by Mr. Campbell, Manager of Messrs. Morland, Watson and Co's. Puddling and Rolling Mills, Montreal, to his employers, and published in the Montreal *Gazette* of December 1st., 1866. He says:—

"The peat fuel was tested in an ordinary puddling furnace, and no alteration or adaptation was made, although this might have been done, and a large saving of fuel effected.

The pig iron used was Dallmellington brand A, a strong iron, soft and very tough. The quantity of peat fuel consumed was nearly double the weight of coal used on ordinary occasions.

In my opinion, and with the present furnaces, by mixing peat with Pictou coal, we could produce iron equal to the best charcoal iron, and at no more expense than the present cost of our iron, the quality of which is equal to the best refined English iron.

With the furnaces as at present constructed we could not use peat alone. The combustion of the gas given out not being sufficiently perfect to produce the heat required for puddling to advantage, resulting in waste of fuel and additional labour to the men.

If we could get the extra price for the quality of iron turned out, there would be no doubt about the result, but, I fear this could not be obtained, as almost any description of iron seems to suit this market, so long as it can be sold cheap.

I send you samples of the iron made at the trial, which I consider equal in quality to BEST CHARCOAL IRON, and superior almost to any description of iron imported."

In a paper read by D. K. Clarke, of London, before the British Association, on a new preparation of Peat, at the Horwich Works, and to which the name of "Torbite," from the Latin *torbo* (peat), is given, says:—

"The charcoal made from torbite is extremely dense and pure; its heating and resisting powers have been amply and severely tested, and with the most satisfactory results. At the Horwich works pig-iron has been readily melted in a cupola. About 80 tons of superior iron have been made with it in a small blast furnace measuring only 6 feet in the boshes, and about 26 feet high. The ore smelted was partly red hematite and partly Staffordshire, and the quantity of charcoal consumed was 1 ton 11 cwt. to the ton of iron made, but in a larger and better constructed furnace considerably less charcoal will be required. It has also been tried in puddling and air furnaces with equally good results, considerably improving the quality of the iron melted. For this purpose the fuel was only partially charred, in order not to deprive it of its flame, which is considerably longer than that from coal. Some of the pig-iron made at Horwich was then converted into bars, which were afterwards bent completely double without exhibiting a single flaw. Messrs. Browne & Lennox, in testing this iron for chain cables, have reported that its strength was proved to be considerably above the average strength of the best brands.

"In Germany peat mixed with wood charcoal is very extensively used in the production of iron, the peat as prepared there not being sufficiently solid to do the work alone, but it is found that the greater the proportion of peat that can be used, the better is the quality of the iron produced. The gas delivered from the high furnaces has also been satisfactorily employed in the refining of iron and