of, in round numbers, one hundred millions of acres of land-an area about four times larger than the arable and pasture land of England, (which does not exceed twenty-five million acres) and as nearly as possible equal in extent to the area of the kingdom of France. Yet this supply of fuel, even if it existed in the form of wood, would be practically useless as a substitute for coal; the labouring population of the kingdom would be unable to cut and convertit, the whole of our railways and canals would not suffice to transport it, while the cost of these operations, if no other obstacle intervened, would prevent them from being carried on beneficially, The development of coal then, is mainly the cause of the increase of wealth, but if railways had not proved reproductive investments, this mineral would have added little more to the wealth of Great Britain than it did in 1815.

The serious question as to the permanence of this fuel, on which the wealth of the nation so much depends, has been prominently raised.

Since the great discovery of Murchison, that coal underlies, and may be found with reasonable certainty under the lower new red sandstone and permian formations, which extend over millions of acres of Great Britain; and if beneath them at greater depths, under all the measures which overlie the permian, and which, together, comprise upwards of one half the area of Great Britain, we may consider our coal-mines to be practically inexhaustible, and that we have not to fear any deficiency in quantity, arising from the exhaustion of the mineral, but rather the practical difficulty of obtaining it from a great depth below the surface, in consequence of the central heat of our globe, which, it is alleged, will ultimately and within a defined and not distant period, reduce the production to a limited supply.

Much may be said in support of the theory of central heat, but I think undue importance has been given to it, as a difficulty in mining operations. A comparatively thin coating of clay, or fire-bricks, surrounding a blast furnace filled with molten iron, affords such protection that the hand may be placed without inconvenience on the outer surface of the brick-work, and it is difficult to understand how any internal heat can penetrate through the crust of the earth-estimated to be thirty-four miles in thickness-so as to interfere with the temperature at the comparatively small depth from the surface at which mining operations are carried on. I am of opinion that the heat, which undoubtedly exists in some mines, arises, not from central heat, but from superincumbent pressure, and defective ven-tilation. The gases in the coal are highly compressed, and, when liberated by mining operations, are at a high temperature; but we know that with large shafts, air may be conveyed to any depth that has yet been reached in mining operations, without in the slightest degree altering its temperature; and that by a proper enlargement of the air passages, air descending the shaft may be distributed through the workings, so as to lessen the liability of accident from explosion, or serious inconvenience from heat, at any depth to which shafts can be sunk. The system of sending compressed air down the shaft by means of water is found to abate inconvenience in deep mines owing to an excess of temperature.

I therefore think that the time when we shall experience a want of coal, arising from exhaustion, or from difficulties occasioned by the depth of the mines, or an excess of temperature, need not at present in any way influence our conduct in the development and use of that important mineral; especially as the power (which is the substitute for labour) derived from coal is so cheap, that we are enabled to consume daily for our domestic comforts, for machinery in the conversion of minerals, and for other manufacturing processes, and for export, a power equal to twelve millions of horses, at a cost, at the mine, of not more than one penny per. horse-power, working ten hours a day, and no saving in consumption of this enormous quantity of coal can be made, except by employing more expensive labour as a substitute.

With this power at our command the cost of sinking to and of raising minerals from the greatest depths, is inappreciable; while the intrinsic value of coal, when compared with any other fuel, is so great that it may be drawn profitably from almost any depth—the only limit being the strength of the machinery and materials required to raise it.

The next mineral in importance is ironstone.

In the year 1862 the production of ironstone and iron ore in the United Kingdom, amounted to 7,586,956 tons, which, by the operation of five hundred and sixty-two blast furnaces, was conver ted into 3,943,469 tons of pig iron.

The importance of the iron and coal trade as a source of wealth is proved by the fact, that the declared value of the iron and coal exported from this country during 1862, either in a raw, or a manufactured, or a partially manufactured state, was nearly £25,000,000, due altogether to the development of our natural resources; and this sum represents the cost price only, and is exclusive of carriage, or freight and profits of trade, which may fairly be taken to represent one half more.

In 1862 our other mines produced the following quantities of minerals, viz. :--

Tin ore	14,127	tons
Copper ore	224,171	44
Lead ore	95,311	66
Zinc (blende)	7,497	66
Pyrites (sulphur)	98,433	44
Salt	981,598	"
Fire-clay, china-clay, and		
porcelain stone	853,803	46

These minerals, and the metals produced from them by means of coal, have enabled us, with the assistance of the shipping interest, to obviate to a great extent, the effects of the failure in the supply of cotton; for, notwithstanding the great decrease of the export of cotton goods (to the extent of £10,000,000 in the year 1862), the total amount of exports during the financial year just ended (1863) has been £124,137,812, exclusive of carriage and freight, and we have thus been enabled to pay for all imports, and partially to alleviate the distress among the cotton operatives in Lancashire.

I will not occupy your time in detailing all the various profitable employments which result from mining and manufacturing operations, but will only refer to, perhaps, the most remarkable of them ship-building.

The Government returns for 1861 show, that in