

the Mississippi and Missouri, are inundated, by the melting of the snow near their sources, they pour down immense floods, which fill their banks, and absolutely choke up the mouths of the large secondary rivers that enter them, and throw their waters back for many miles, charged with the mud of the great descending waters. The waters of these secondary rivers in their backward course, overflow their banks, and spread over the lower parts of the level plain, forming lakes of twenty miles or more in length: after some time these lakes are gradually drained by the subsidence of the rivers. The inundations are, however, prolonged by another circumstance. The Missouri and Mississippi rise in different latitudes, and their periodical inundations do not take place at the same time. When one of these mighty streams is inundated, it blocks up the passage of the other, and this reacts on the secondary streams, and prolongs the time of periodical inundation. Thus in these temporary lakes of fresh water, we have the conditions required for the formation of future coal fields—swamps promoting the rapid development and decomposition of vegetables—and periodical inundations of water, charged with sand and mud, to cover the vegetable beds with earthy strata. It is further deserving notice, that over a large part of the plain of the Mississippi, the rapid annual growth of grasses and thistles, exceeds any thing of which this part of Europe affords an example: this enormous mass of vegetation perishes every winter.

In the account of the probable duration of the coal of Durham and Northumberland (page 124.), first published in the third edition, I have stated the period of exhaustion to be about 350 years from the present time. In evidence on the subject, given before the House of Commons, the period has been extended to 1727 years; a difference so great as to require some animadversion. In the first place, all evidence given before Parliament, by commercial or public bodies, who have a particular object to establish, must be received with considerable caution. The coal owners in the north were alarmed, lest some restriction should be laid on the unlimited export of coal, if it were known that the coal fields of Northumberland and Durham could afford a regular supply of fuel only for a very limited number of years. It was stated before the House of Commons, that there are 837 square miles of coal strata in Northumberland and Durham, and that only 105 square miles have been worked out. It was assumed, that each workable bed of coal spreads under the whole extent of the coal fields, but this is very far from being the fact. Many of the best and thickest coal beds crop out long before reaching the western termination of the coal field, or are cut off by faults or denudations. The thickness of the beds was also overstated. Professor Buckland estimated the duration of the Northumberland and Durham coal, according to the present rate of consumption, at 400 years, which agrees very nearly with the period of exhaustion I had assigned.