

Thus, in addition to strictly empirical writings, there grew up an independent speculative literature in which the names of Whiston, Burnet, and Woodward are prominent.

Towards the end of the eighteenth century, in 1789, John Williams, director of mines, published a *Natural History of the Mineral Kingdom*, with a description of the coal-beds and their occurrence in Great Britain, which was remarkably complete. Williams was a violent opponent of Hutton, whom he blamed for disbelief in the Deity.

The hazy suggestions of Robert Hooke and others, that fossils might perhaps be of use in identifying the chronological order of the rocks, had remained unheeded for more than a century. The greatest stratigraphers on the Continent, Lehmann, Füchsel, Arduino, had directed their attention far more to the constitution of the rocks than to any benefit that might be derived from a study of fossils. Giraud Soulavie and Buffon had conceived some idea of the floras, but had not ascertained any sure method of applying such variations to problems of historical geology and stratigraphy.

William Smith,¹ an English engineer, was the first to recognise the importance of fossils in their full significance as a means of determining the relative age of strata. Born in a county that was unusually rich in fossil remains, he had in his boyhood abundant opportunity of observing and collecting. As assistant to a land-surveyor he became intimately acquainted with the counties of Oxfordshire and Hampshire, and with the surroundings of Salisbury and Bath.

¹ William Smith, born on the 23rd March 1769, at Churchill in Oxfordshire, son of a farmer, received a scanty elementary education at the village school; managed, however, to train himself to some extent in geometrical studies, and entered at the age of eighteen as an assistant in a land-surveyor's office. He was afterwards employed as engineer in the construction of a canal in Somersetshire, and practised independently as land-surveyor and civil engineer. He lived in London from 1801 to 1819; in 1828 he became factor for the estates of Sir John Johnstone. After the Geological Society was founded, William Smith was in 1831 the first recipient of the Wollaston medal; in 1835 the University of Dublin made him an honorary Doctor of Laws; and in 1838 he was a member of the commission for the building material of the Houses of Parliament. During the later years of his life he was in poor circumstances; a small pension was granted to him by the Government, and he died unmarried at Northampton in 1839. (Biography of William Smith in Sedgwick's Presidential Address, *Proc. Geol. Soc. London*, 1831, p. 279; John Phillips, *Memoirs of William Smith*, 1844.)