British geologist noted for establishing uniformitarianism, the principle that features of the earth's surface were produced by natural forces operating for extremely long times. Prior to Lyell, most scientists supported catastrophism, the idea that these features were due to specific shorter-term events.

Scottish geologist who succeeded in turning the opinion of his time away from the theory that the Earth was produced literally along the lines expounded in the Old Testament book of Genesis towards the principle of an unlimited, gradual effect of natural forces. His beliefs became known in geology as 'uniformitarianism'.

Lyell was born in Kinnordy, Forfarshire, Scotland, on 14 November 1797, the son of a lawyer and amateur botanist. When he was still a child the family moved to Hampshire. Lyell always had an interest in natural history; he was a keen lepidopterist, and his interest in geology was stimulated by Bakewell's book on the subject. Lyell went to Oxford University to study classics, but also attended lectures given by William Buckland, the professor of geology. Buckland was of the opinion that the different strata in rocks result from silt being laid down under water over a long period of time: he was a 'neptunist'. Lyell made his first tentative geological observations during family holidays in Britain and from 1818 on the Continent, and he began to believe more fully in the principles of uniformitarianism. (In fact the geologist James Hutton had postulated similar theories 50 years earlier, but Lyell formed his conclusions independently; it was only when he later read Hutton's work that he realized that their views were similar.)

Lyell continued his education by studying law, was called to the Bar in 1822, and started to practise in 1825. In 1823 he became involved in the running of the Geological Society as its secretary and later as foreign secretary; he was twice its president some 15 years later. He also set up the finance for the Lyell Medal and the Lyell Fund. He made a trip to Paris in 1823 and met Georges Cuvier, the eminent French anatomist who had stuck rigidly to the geological theories of 'catastrophism', despite his brilliant understanding in other fields. Lyell also met Alexander von Humboldt, the German naturalist; both men influenced his eventual ideas. In 1831 he became professor of geology at King's College, London, and a year later he married the daughter of the geologist Leonard Horner. Lyell was knighted in 1848 and created a baronet in 1864. He died in London on 22 February 1875.

Lyell did not originate much material, but he expounded the theories of Hutton and organized them into a popular and coherent form. His masterpiece, *The Principles of Geology*, was published in three volumes 1830-33 and was revised regularly until 1875. It laid out evidence to support the theory that the Earth's geological structure evolved slowly through the continuous action of forces still at work today, including the erosive action of the wind and weather. Lyell conceded very little to catastrophism, although modern geologists accept that some ‘catastrophies’ must have occurred - for instance, at the
time of the disappearance of the dinosaurs. Lyell classified some geological eras - subdividing the Tertiary into the Eocene, Miocene, Pliocene, and Pleistocene - and suggested that some of the oldest rocks might be as much as 240 million years old. People were astonished by such a time scale, even though present-day geologists think that ten times that number may be nearer the probable truth.

The conservative scientists were alarmed by Lyell's theories, but his book was popular and stimulated other geologists to investigate along similar lines. Charles Darwin, a colleague and friend of Lyell's, was deeply impressed, and Lyell in turn eventually embraced the theory of evolution as outlined in Darwin's *On the Origin of Species* (1859) - it was Lyell and Joseph Hooker who in 1858 presented to the Linnaean Society the original papers on natural selection by Darwin and Alfred Russel Wallace. Lyell then went further than Darwin had been prepared to do in an attempt to trace human origins, and used archaeological findings as the key to his book *The Geological Evidence of the Antiquity of Man with Remarks on Theories of the Origin of Species by Variation* (1863).
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