

Moving on to another broad and problematic word, pollution, the Longman dictionary describes it as “any harmful or undesirable change in the physical, chemical or biological quality of air, water or soil”, embracing both anthropogenic and natural pollutants. Kemp gives a much longer definition, full of examples. Interestingly, neither introduces aesthetic pollution issues, restricting the idea of unwanted effects to the more physical. As a final awkward concept I looked up Gaia. I was impressed with Kemp’s reasonably unbiased account and his final comment that “the partial or complete removal of mankind might be Gaia’s natural answer to the Earth’s current problems”. The

Longman dictionary gives a tight definition, but no sense of the controversy that surrounds the Gaia hypothesis.

Specialist terms often present problems for the lexicographer, whose expertise can hardly cover every topic. From atmospheric chemistry I took the word immission, which I cannot understand or pronounce, but it was in neither book. Henry’s law is found only in the Longman work, and is given in the dimensioned form with non-SI units ( $\text{mol}^{-1} \text{atm}^{-1}$ ) that is often used by atmospheric chemists, although others formulate it differently.

The nitrogen oxides are difficult to refer to. In both speech and textbooks they are often introduced carelessly, perhaps because

the word ‘nox’ is so ugly. Longman defines “nitrogen oxides”, “oxides of nitrogen” and “NO<sub>x</sub>” (the latter correctly as NO + NO<sub>2</sub>). Kemp has no entry for NO<sub>x</sub>, which is a pity as a reader might well use this index term. The “oxides of nitrogen”, N<sub>2</sub>O, NO and NO<sub>2</sub>, have an entry, but are incorrectly equated to NO<sub>x</sub>. Oddly, neither dictionary spells sulfur in the way approved by IUPAC.

Overall, however, each of these books will find its readers, and will serve them well, providing either comprehensible short accounts or tight definitions. □

Peter Brimblecombe is in the School of Environmental Sciences, University of East Anglia, Norwich NR4 7TJ, UK.

## In retrospect chosen by Gordon L. Herries Davies

### Principles of Physical Geology

by Arthur Holmes  
(1944)

In Britain in the early 1940s things looked pretty black. From Norway and Dunkirk to Crete and Singapore, the war had been a chain of disasters. The public craved the relief of escapism. There was no prospect of victory in sight, but that did nothing to inhibit dreams of a glorious post-war world. The building of castles in the air was easier than the holding of redoubts in Greece or Malaya. The Beveridge Report (1942) offered a vision of British society reborn. The Scott Report (1942) looked forward to the day when there would be national parks for national enjoyment. Butler’s Education Act (1944) held the promise of a new scholastic Elysium.

Up in Durham, Arthur Holmes (1890–1965) was a man of that age. He was the university’s professor of geology and he found himself with time on his hands. By day his teaching duties were diminished because the call to arms had removed most of his students. By night the nocturnal hours dragged on as he performed his air-raid patrols. In the dark skies above, menacing Heinkels opened their bomb doors; in the shadow of St Cuthbert’s shrine below, Holmes could do little more than reflect on the future well-being of his science.

During those troubled years Holmes was by no means unique in his concern for geology’s destiny. The science was widely seen as ailing. For decades it had been plodding through a sludge of stratigraphy within a miasmic fog of fossils. The British geological theatre had lacked real drama ever since 1888 when the curtain fell on that long-running and thrilling production, ‘The Highland Controversy’.

More recent offerings, such as Arthur Vaughan’s epic of 1904 set amid the Carboniferous strata of the Bristol district, might possess great scientific merit, but they were unlikely to bring the audience to its feet. In Victorian times, geology had been a favourite among the sciences, but by the 1930s it was a lame ‘also ran’. Its devotees grumbled about a press which no longer reported on their



Holmes: revitalized interest in geology.

activities. Even the fellowship of the famous Geological Society of London was in decline. Its numbers had fallen from 1,279 in 1922 to 1,067 in 1942, and the society’s president had felt it appropriate to devote half of his 1941 anniversary address to a diagnosis of geology’s malaise. Ten years later I must surely have wondered about the health of the discipline myself, because when I became an undergraduate in 1950 I discovered that three pillars of my first-year reading-list — Rutley’s *Elements of Mineralogy*, Watts’s *Geology for Beginners*, and Wood’s *Palaeontology* — were all written the previous century.

Holmes’s reflections upon the condition of geology brought him to a decision. Through the authorship of a new textbook he would seek to play his part in shaping the subject’s future. That work, *Principles of Physical Geology*, was published during September 1944, its preface bearing the twin dates of July 1942 and May 1944. (By that second date Holmes had moved from Durham to the Regius Chair in Edinburgh.) In retrospect these seem to be singularly apt dates. Individually they mark the eve of those two climacterics of the Second World War, Stalingrad and Normandy. On a very different plane, the appearance of the book stands at an equivalent turning-point in the story

of modern geology. Widely acclaimed, it was soon an international best-seller. Known simply as ‘Holmes’, it was destined to become the vade-mecum of an entire generation of young geologists.

I was given my own first copy by my father sometime during 1945, when I was 13. Displayed in the window of a Manchester bookshop, the volume had excited his interest. That particular copy — a volume from the first of 18 post-1944 reprintings — now lies before me as I write. The claret of the spine has lost its sparkle. The frayed corners, the loose hinges, and the thumb-marked fore-edge all betoken the age and heavy usage of a book which has been my companion through life. It today well merits its honourable retirement from active service, shelved in its Valhalla alongside my Coles, Geikies, Lyells and Ramsays.

Having selected physical geology as his canvas, Holmes created some exciting images. He treated the shaping of the Earth’s topography from arêtes to yardangs. Earthquakes, orogenesis, volcanism, and the cause of ice ages all received attention. Ever since 1911 Holmes had been writing about radioactive minerals and the age of the Earth, so that topic too featured strongly. And the final chapter was decidedly risqué, exploring the notion that our continents might be mobile, an idea which most geologists of the 1940s would surely have dismissed as risible.

Within just a few years of the appearance of that first edition of Holmes, geology began to enjoy a new prosperity, as startling discoveries once again placed the science squarely in the public gaze. The study of an early Holmes must have been a seminal experience for many who subsequently became active participants in the subject’s mid-twentieth-century renaissance. Now, 50 years later, those same geologists are passing from the intellectual scene, and it is fitting that we should remember the text that was for so many their earliest inspiration in the Earth sciences. □

Gordon L. Herries Davies is at Trinity College Dublin and Ballinacloough House, Nenagh, Co. Tipperary, Ireland.