

Did the Romans exploit uranium?

Michael Vickers

Uranium Glass. By Ken Tomabechi. Iwanami Book Service Center, 2-3 Jinbocho Kanda Chiyoda-ku, Tokyo 101, Japan: 1995. Pp. 180. ¥7,000.

KEN Tomabechi has spent his professional life in the Japanese atomic energy industry, but for many years his hobby has been the collection and study of objects made from a material known variously as Vase-



Taken from Uranium Glass

Uranium glass vase made by the famous Moser Glassworks in Czechoslovakia (c.1920).

line or uranium glass in English, *Annagelb* or *Annagrün* in German, and *verre canari* in French. Vases, candlesticks, ashtrays, clocks, drinking vessels and even jewellery were fashioned in this curious medium (which is fluorescent under ultraviolet light) between the early nineteenth century and the Second World War, when uranium production took another direction. Uranium glass today is manufactured only for specific industrial rather than decorative purposes. Tomabechi describes well the peculiar scientific properties of uranium glass, and gives a comprehensive account of the centres at which it was produced in Europe, the United States and Japan. The resplendent colour illustrations show a wide range of uranium glass products from the author's collection.

There is, however, one section of the book that I find difficult to accept. This is where it is asserted that the Romans exploited uranium glass in order to achieve a light green tint in mosaics. The evidence is said to lie in some mosaic *tesserae* from a villa at Cap Posillipo destroyed at the same time as Pompeii in AD 79, supposedly brought back to Oxford by the excavator R. T. Gunther in 1911.

The relevant scientific literature certainly states as much. The reality, as described to me by David Brown, my predecessor as curator of the Roman section of the Ashmolean Museum, is somewhat different.

Uranium glass first entered the picture in 1911 when it was the only material with which the Daubeny Laboratory at Oxford could replicate the effect of the Roman glass. This was confirmed in the later 1960s when, at Franz Kirchheimer's suggestion, samples of fused glass preserved in test-tubes at the Ashmolean were analysed by the Max Planck Institute in Munich. None proved to be older than 1911, and none of the complete *tesserae* kept with them was found to contain uranium at all. The site at Cap Posillipo was also scanned with Geiger counters, and nothing of interest was registered. These researches were never published; Kirchheimer's interest seems to have waned once the Romans, and the possibility of 2,000-year-old uranium, fell out of the picture. To complicate matters further, the samples in Oxford were accidentally thrown away a few years ago, to the great disappointment of researchers who periodically come looking for them.

This is, however, simply intended to put the record straight, and in no way to belittle Tomabechi's achievement in writing the first book on a material of such scientific, social and aesthetic interest. □

Michael Vickers is at the Ashmolean Museum of Art and Archaeology, University of Oxford, Oxford OX1 2PH, UK.

Sensible to feeling

Stuart Sutherland

Emotional Intelligence: Why It Can Matter More Than IQ. By Daniel Goleman. Bantam: 1995. Pp. 342. \$23.95. To be published in the United Kingdom by Bloomsbury on 10 January at £16.99.

LIKE the Bible, the literature of social psychology can provide support for any view one happens to hold: it is ridden with contradictory results and pitfalls in interpretation. For example, it is easy to assume that because parents have been beastly to a child, he or she will turn into a beastly adult, but there are two alternative explanations. First, the parents may have treated the child badly because it was fractious from an early age (and continued to be so in later life). Second, the transmission of bad behaviour may have occurred through genetic inheritance affecting both parent and child in the same way, rather than through the child's environment.

Although Daniel Goleman does not consider these alternatives, he puts forward a case for the influence of parents on

personality, but he does so by selecting only studies that support his argument: there are many others that do not. For example, in a massive longitudinal study, George Vaillant found that an unhappy childhood was associated with success in later life. Goleman maintains, however, that "emotional intelligence" is an important factor in determining success. These curious buzz words mean the capacity to know and to verbalize what emotion one is feeling at a given time and why one is feeling it, the capacity to sense what emotion others are feeling and to empathize with them, and the ability to control one's reactions when emotionally aroused. But Goleman cites no evidence that these attributes of emotional intelligence actually occur together: indeed, cold people are usually restrained.

In an ingenious experiment, Walter Mischel presented 4-year-old children with a marshmallow each, telling them that he was going on an errand and that on return he would give them another one, provided they had not already eaten the first. When they were tracked down at the age of 18, it was found that those able to resist temptation had higher examination scores than those who could not. Moreover, their success at 18 was better predicted by the marshmallow test than by conventional IQ tests, although Goleman admits that IQ is a better predictor from about the age of 8 onwards. Indeed, emotional intelligence is not the only route to success: neither Hitler nor Stalin were notable for empathy or self-restraint, but by their own lights both were successful.

Where psychology leads, can neurophysiology be far behind? Goleman mentions Antonio Damasio's exciting work showing that signals associated with emotion that arise in the prefrontal lobes are important for making decisions. He also cites evidence that visual stimuli are analysed not merely by the visual cortex but also by a fast route through the amygdala, which enables people to respond quickly to threat, either with fight or flight: the same applies to other modalities. It is the longer pathways by way of the sensory cortices that enable spontaneous outbursts of emotion to be overcome. Interestingly, lesions in the left prefrontal lobes produce anger and fear, whereas lesions in the right can give rise to extreme cheerfulness. All this may be true, but it is worth observing that despite our anatomical knowledge of the brain's pathways, nobody can explain how their working leads to the subjective emotions of fear or anger and their accompanying reactions: the sympathetic system is aroused in similar ways in both.

Perhaps the most interesting part of *Emotional Intelligence* is the description of the programmes devised to teach that skill, which now exist in about 20 US schools, including ones for deprived

children. The pupils' interactions with one another are observed and they are taught on the spot to identify their own feelings and those of others, to restrain themselves, to delay gratification and to reduce stress: indeed, the only desirable quality on which no instruction is provided is a sense of humour, but that may be lacking in their earnest teachers. Outcome studies on these schools have apparently all been favourable, but Goleman does not give enough information to make it possible to judge them. Were the results significant? How long did the effects of the teaching last? Were the assessors blind to the treatment the children had received? Were there placebo groups to control for the Hawthorne

effect — the tendency for any intervention to improve matters?

Despite these omissions and despite his selective use of evidence, Goleman has written an interesting if somewhat naive book. He has done his homework well, describing many recent studies, although he ignores older work such as that of Stanley Schachter. Some will find the journalistic tone repugnant, but anyone interested in emotion is likely to discover challenging new ideas in this book: it should be read by social workers and agony aunts everywhere. □

Stuart Sutherland is at the Laboratory for Experimental Psychology, University of Sussex, Brighton BN1 9QG, UK.

Geological controversies hammered out

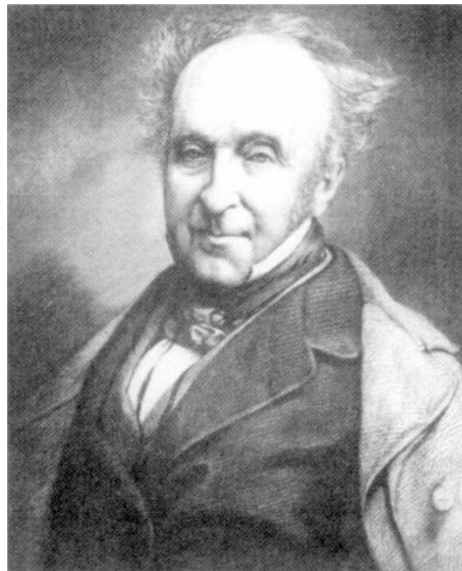
Nicolaas Rupke

Murchison in Moray: A Geologist on Home Ground. With the Correspondence of Roderick Impey Murchison and the Rev. Dr George Gordon of Birnie. By Michael Collic and John Diemer. *American Philosophical Society: 1995. Pp. 263. \$20 (pbk).*

ONE of the great and intricate constructs of modern science is the stratigraphic table, which comprises the time-rock units of geological history. The table acquired its nearly definitive form during the first half of the nineteenth century. Among the leading stratigraphers of the period was Roderick Impey Murchison (1792–1871), whose most famous publication, *The Silurian System* (1839; republished under the title *Siluria* in 1854, 1859 and 1867), was an important contribution to the construction of the Palaeozoic era (and erathem). Part of the fieldwork for this book was carried out in the north of Scotland, along the Moray Firth, north-east of Inverness. Here, in the Elgin area, a controversy developed over the stratigraphic position of rocks, which Murchison believed to be old red sandstone, but which proved to be new red (Permo-Triassic). One source of Murchison's information, in particular for the fourth edition of his great book, was a local clergyman-naturalist, George Gordon, who had a thorough knowledge of the geological structure of the region. The Murchison–Gordon correspondence, from 1858 to 1867, forms the second part of *Murchison in Moray*. In editing these letters, Michael Collic and John Diemer have made a valuable contribution to Murchison scholarship.

Murchison was, however, far more than a leading stratigrapher. He was a member of the magic circle of gentlemen-naturalists who ruled British science dur-

ing the Victorian era; he became director-general of the British Geological Survey; he carried out expeditions to Russia; and he was one of the founders of the Geographical Society, and enthusiastically supported explorations and surveys in the context of British colonial expansion. The imperial dimension of Murchison's activities has been discussed by James Secord and, in more detail, by Robert Stafford, who entitled his biography of Murchison *Scientist of Empire* (1989). Moreover, as Martin Rudwick long ago pointed out,



Roderick Impey Murchison: scientist of Empire.

Murchison, who began his career as a military man, had a disposition to turning scientific controversies into "paramilitary campaigns" against his adversaries, such as T. H. de la Beche (over the delineation of the Devonian system) and Adam Sedgwick (over the Cambrian/Silurian).

Such assessments of their hero arc anathemas to Collic and Diemer, and the

first part of their book is designed to present a very different Murchison. To them, interpreting Murchison in the context of his career objectives and of the political dynamics of his metropolitan social circle is nothing less than sully the character and reputation of an upright Scotsman and an honourable geologist. The authors sternly censure "the ease with which some university-based critics stigmatize and condemn Murchison, sneering at him whenever the opportunity presents itself". In places, Collic and Diemer get hot under the collar defending Murchison against both his Victorian and present-day detractors. The latter are rapped over the knuckles for being "retrospective myth-makers". Stafford is the blackest of their *bêtes noires*, and one of his complaints about Murchison, namely that he engaged in élitist socializing in his London home, is countered as follows: "Actually, the criticism of Murchison's establishment in Belgrave Square was John Ruskin's, a person whose egotism and mean-mindedness were amply supported by a private income derived from the sale of sherry. Perhaps not enough sherry was consumed at a Murchison soiree."

The proper historiographical treatment of Murchison requires, in the view of the authors, stepping into his shoes, retracing his footsteps in the field and facing the technical geological problems he encountered. To this end, they use, in addition to Murchison's publications, the Gordon correspondence and also his notebooks — the latter in preference to the journal he wrote towards the end of his life, criticizing along the way David Oldroyd for having given pride of place, in *The Highlands Controversy* (1990), to the journal rather than the notebooks.

There is no doubt that the authors have done a fine and valuable job in following Murchison into the Moray Firth region. Yet their historiographical approach is atavistic, carrying us back to a time when the history of science was for the larger part written by failed or retired scientists. Although their spirited attack on recent Murchison scholarship adds spice to the narrative, the authors might have done better to look for ways of integrating their solid, detailed work with the wider-ranging efforts of previous Murchison studies. The possibility of such an integration is indicated by their own conclusion: "Thus what seemed to be a straightforward argument about the interpretation of geological and palaeontological evidence was in fact ideologically complex and interesting". □

Nicolaas Rupke is at the Institut für Geschichte der Medizin, Georg-August-Universität, Humboldtallee 36, D-37073 Göttingen, Germany.