Well I suppose I would say this, but by and large geologists are an awfully nice bunch. It must be all that fresh air and exercise in the field, and the excessive production of opiate endorphins. Of course, one may come across one or two bad eggs (you know who I mean…!) from time to time, but generally, we excel in altruism.

So when geologists ‘go bad’, they seem to do so in quite a spectacular way. Take the case of poor old William Smith’s treatment at the hands on our celebrated founding President, George Bellas Greenough. Or that little incident in the Himalayas with Indian geologist Viswa Jit Gupta (ahem)! Well - recently, I stumbled across another example of dastardly geological doings, involving Scottish geologist, William Nicol (c. 1771–1851), pioneer of petrographic microscopy who transformed our field.

UPROAR

Nicol’s illustrious career kicked off in 1807 when he succeeded his blind uncle, Henry Moyes, as Lecturer in Natural Philosophy at Edinburgh University. His boss was Robert Jameson (1774–1854), passionate proponent of Werner’s...
Neptunism and influential Regius Professor. Despite earlier experiments in the microscopy of geological materials, Nicol only started to make his most exciting breakthroughs in the late 1820s. In those days, Edinburgh was a bubbling cauldron of science, politics and filth. Charles Darwin was a queasy young medical student, Burke and Hare made a killing by supplying cadavers for anatomy classes, and the city was in general riot and political uproar. Against this tumultuous backdrop, in 1826, workers in Craigleith Quarry on the outskirts of Edinburgh made a discovery that would change the course of Nicol’s career: they unearthed a gigantic Carboniferous fossil tree.

This ‘Great Tree of Craigleith’ somehow found its way into Jameson’s University Museum and, in 1828, Nicol experimented with samples to make the first translucent thin sections. His new technique, developed in collaboration with Edinburgh lapidary George Sanderson, involved fixing ground slices of fossil wood to glass plates using Canada balsam. That same year, Nicol also pioneered his now famous ‘prism’ using Iceland Spar (a variety of transparent calcite) as a polariser. Together, these two breakthroughs laid the foundation for the entire field of petrography. Yet, at the very moment that Nicol was reaching the height of his powers, a wealthy friend - Henry Witham (1779–1844) of Lartington Hall, County Durham - was seeking to capitalise on his discoveries...

In December 1829, Witham read a paper to Jameson’s Wernerian Society, describing the Craigleith Tree based on Nicol’s thin sections; and in November 1830 he published a landmark book (wonderfully entitled Fossil Vegetables). This book illustrated the cellular structure of Carboniferous plants from across northern Britain (including the Craigleith Tree), and described Nicol’s new thin section technique in sufficient detail that anyone with basic know-how would be able to replicate it. The text itself was fairly bland, but what caused a massive stir were
the amazing illustrations, all based on Nicol’s beautiful thin-sections. Witham dedicated his book to his “indefatigable friend” Nicol, and earlier historians of palaeobotany had imagined theirs to have been a happy academic ‘marriage’. Not so! Reading between the lines, Nicol was furious.

CURT

A few months later in March 1831, Nicol read his own paper on the cellular structure of fossil wood to the Wernerian Society. This contained a curt acknowledgement that the work was based on a technique that he had pioneered (with Sanderson) and that Witham had publicised. But worse was to come. When two further fossil trees were discovered at Craigleith Quarry, Witham now chose to work directly with Sanderson to obtain further thin sections, cutting Nicol out of the deal altogether. Then, in March 1832, John Lindley and William Hutton, in their classic Fossil Flora of Great Britain, identified Witham as pioneer of the thin section technique. Finally, in June 1833, Witham published an expanded second edition of his book - from which all mention of Nicol was expunged.

Witham sent a complimentary copy of his second edition to leading US scientist, Robert Stillman at Yale. Adding insult to injury, Stillman wrote in the American Journal of Science: “Mr. Nicol… appears to have pursued the same path, which was first cleared, with much labor and expense, by Mr. Witham”! This was the final straw for Nicol. Venting his rage at the British Association meeting in Edinburgh in 1834, and the pages of Jameson’s New Philosophical Journal, he accused Witham of inaccuracies in his monograph and of not properly acknowledging his contribution. He also blasted Lindley, Hutton and Stillman for their ignorance. Tensions then rose to fever pitch when William MacGillivray (who had illustrated both of Witham’s books) penned a rebuttal, rebuking Nicol, defending Witham, and stressing that all contact with Nicol had ceased after the first edition of Fossil Vegetables. At the time of Nicol’s death in 1851, it remained the common belief that it was Witham who was the true pioneer of petrography.

However, those who knew the truth of the matter set about putting the record straight. At a meeting of the Botanical Society of Edinburgh, only weeks after Nicol died, John Hutton Balfour (1808–1884), Regius Keeper of the Royal Botanic Garden, Edinburgh, “took the opportunity to draw attention to the labours of Mr Wm Nicol who had been the first to prepare thin sections, and whose great exertions had been too much neglected”. Later, Henry Clifton Sorby (1826–1908), who had visited Nicol on his deathbed, reported that Nicol had told him “that it was he who originated the method of preparing thin sections of fossil wood for the use of the Microscope, and that Mr Witham did not write [Fossil Vegetables]”. Sorby added, “I am inclined to believe that Mr. Witham bought his sections of fossil wood from Mr. Nicol, and had the book written for him, and he thus got the credit of being the first to introduce the method”.

Thankfully, these comments from the father of the petrographic microscope turned the tide of opinion, and William Nicol is today ranked amongst the premier geologists of the early 19th Century, despite dying without his proper recognition.

So, next time you’re looking down your microscope with “analyser in”, remember that dastardly palaeobotanist, Henry Witham, and spare a thought for poor old crossed Nicols.

* Department of Earth Sciences, Royal Holloway, University of London, Egham, Surrey, TW20 0EX, UK. E-mail: h.falcon-lang@es.rhul.ac.uk