Getting it down on paper

Walter Gratzer

The Pencil. By Henry Petroski. Knopf: 1990. Pp.434. \$25.

"WHERE on earth is my teeny weeny penis?", demands Aldous Huxley's wag-gish edwardian pedant, Mr Beavis, to the inexpressible embarrassment of his son. "*Penecillus*", Beavis explains, "diminutive of *peniculus*, double diminutive of *penis*; which as you know originally meant a tail". For the primal pencil, as Henry Petroski also reveals, was a brush made from the tail hairs of domestic animals (a derivation that survives in the German, *Pinsel*, for a brush).

Etymology aside, the pencil appeals to Professor Petroski as one of those unregarded objects, like buttons or scissors, which nonetheless have a rich social and technological history. Pencils for many of us are numbered among the totems of childhood — pleasingly captured in a pair of Norman Rockwell pictures that Petroski reproduces. In one, "Back to School", a benign old codger behind the counter of a drugstore hands a Dixon Ticonderoga to an earnest little boy with a satchel. Venus and Koh-I-Noor are surely more names laden with nostalgia —

so familiar that *1066 and All That*, the epitome of English schoolboy humour, has it that Queen Victoria was presented at the Great Exhibition with a gigantic pencil called the Koh-I-Noor.

According to Petroski, a pencil was often known in the last century as a Faber. The French Caran d'Ache was named after the illustrator, Poiré, who took this as his pen name (so to speak) from the Russian *karandash*, a pencil. And how many people know that the familiar crazed green design on the Venus was the result of a faulty batch of lacquer — an effect judged to be distinctive enough to preserve?

Petroski is an engineer, the author of the admirable book *To Engineer is Human*. He has chosen the story of the pencil as an exemplar of technological evolution and its relation to economic circumstance and the desires of the consumer — largely, of course, before our own epoch of rampant technology, which has made invention the mother of necessity. Petroski's story begins with the

observation that a metal point could be used to make black marks on surfaces; this led to the search for more responsive materials, culminating in the discovery of the special properties of graphite, otherwise plumbago, black lead, *ochra nigra* or wadd, from the famous Borrowdale mines in Cumberland in northwest England. Soon, shafts of this material were encased in cedar wood, which is still used to make the best pencils.

The next great advance came when Conté, a French engineer, was enjoined to find a substitute for Borrowdale plumbago, which had become unavailable with the onset of the Napoleonic wars. The Conté process consisted in mixing, moulding and calcining cheap powdered graphite with clay and water. And so by degrees, with adjustments in the proportions of the components and in the procedures by which they were treated, and also the incorporation of new materials, such as waxes, it became possible to make pencils of reproducible quality and varying degrees of blackness (B) or hardness (H). In the United States, one of the first pencil manufacturers was the father of Henry David Thoreau, and the thriving cottage industry was continued by the sage of Walden Pond himself.

Petroski does not neglect the sociology or the economics of pencil making. With the expansion of demand came the search for new sources of suitable graphite. In the mid-nineteenth century, a French trader, Jean-Pierre Alibert, discovered a rich deposit in eastern Siberia, where with the assistance of the Russian government he set up a self-supporting colony of workers. Towards the end of the century, the pencil was replacing the slate in schools and, by 1870, 20 million pencils were being consumed every year in the United States. One reformer there noted that the written language contained one redundant (silent) letter in every seven, and so a seventh of all wood pulp (and graphite) production was wasted — a reflection to appeal to the modern ecologist, and reminiscent of the thrifty old Duke of Portland, who always left his 'i's undotted and 't's uncrossed to save ink.

Petroski has filled more than 400 pages with fact, fancy and cogitation about his subject. His treatise is stuffed with recondite knowledge, abundantly spiced with anecdote, and engagingly written. I confess to experiencing a slight sensation of surfeit by the time I arrived at the appendices, while conscious that I was in the presence of a notable contribution to technological history. The publishers have done their author proud: the book is most handsomely produced, the illustrations felicitous, the index a model and it is worth the money for the jacket design alone. □

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Mary Evans

Prized recipe — note taking in a cookery class, London c1900.