

Book Review

Uncle Tungsten. Memories Of A Chemical Boyhood,

by Oliver Sacks (Alfred P. Knopf, 2001) 337 pp., ISBN 0-676-97261-6; \$25.00 (hardcover)

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It is ironic that the best book I have read about the fascination of chemistry was not written by a chemist, but by a physician. *Uncle Tungsten. Memories of a Chemical Boyhood* is the product of Oliver Sacks, the neurologist who wrote *The Man Who Mistook His Wife For a Hat*, *Awakenings* and several other books. The book is an almost lyrical recollection of a childhood immersed in and consumed with chemistry. So, why wasn't *Uncle Tungsten. Memories Of A Chemical Boyhood* written by a chemist, or turning the question around, why isn't Oliver Sacks a chemist?

Uncle Tungsten tells of Sacks' discovery of, and growing absorption in, chemistry beginning in his boyhood and lasting until the beginning of adolescence, by which time his enterprise, degree of knowledge and sophistication seem to have been about what I would be happy to see in a sophomore chemistry major. He did not simply play with chemicals, he experimented, haunted natural history and mineralogical museums, read widely, and questioned, going beyond the "Gee whiz!" stage through the "Gee, why?" stage to the "Gee, then ..." stage that characterizes the scientist. Growing up in post-World War II England, Sacks found in chemistry a place of retreat, pleasure and stability that nurtured the artist as well as the scientist in him.

There is a remarkable amount of descriptive chemistry in *Uncle Tungsten*, Sacks having been the beneficiary of a rather unique and accomplished family. Two parents who were physicians provided him with a privileged (and relatively unsupervised and unscheduled) childhood of the type that has almost vanished in contemporary middle-class society. His Uncle Dave (the Uncle Tungsten of the title) owned a light bulb factory and obligingly supplied Sacks with a wide variety of metals used in filaments, plus commentary on their properties), and a collection of other relatives provided him with an array of metals and pure compounds that would today bring down the wrath of both OSHA and EPA. How many youngsters have synthesized the hydrides of sulfur, selenium and tellurium, as Sacks did in his home laboratory, or held a diamond from the Kimberly Mine, or a

sample of radium chloride? Uncle Abe provided him with a pocket spectroscope and a tutorial on emission and absorption spectra, while Uncle Yitzchak made his X-ray machine available. Here is Sacks, describing preparing his own colored prints during a period of fascination with photography:

“The simplest was sepia toning – not (alas) done with cuttlefish ink, sepia, as I had hoped, but by converting the silver of the image to sepia-colored silver sulfide. One could do gold toning – this involved immersion in a solution of gold chloride, and bluish purple image, metallic gold being precipitated onto the particles of silver. And if one tried this after sulfide toning, one could get a lovely red color, an image of gold sulfide.

“I soon spread from this to others forms of toning. Selenium toning ... palladium and platinum-toned prints ... copper, uranium, or vanadium.”

I doubt that most chemistry students have had anything like this level of access to selenium, palladium or platinum compounds, or comparable laboratory experience, short of upper-level college courses. Would Sacks have fallen in love with the romance of chemistry if Uncle Dave had only discoursed dryly about gas laws, or electron configurations, or the Nernst equation, without having been able to tie them to Sacks' own personal observations of the elements and their properties? Most chemists (at least experimentalists) are, after all, tinkerers at heart, people whose hands and brains operate best in tandem and simultaneously. I could not help recalling my own youth, when I (and many other chemists of a less enlightened generation) fell in love with the smells, color changes, flashes (and occasional booms) of chemistry while unwittingly flirting with harm.

So why is Oliver Sacks a neurologist and not a chemist? Despite his best attempt at explanation, the book ends with a puzzle: why did someone whose boyhood was so completely immersed in chemistry, who speaks so lyrically of its beauty and intricacy, seem to lose interest and move on? True, Sacks does tell us that it was always understood that he, as the child of physicians, would go into medicine, but I find it hard to accept that a person of his ability and independence of mind would have docilely given up his love in the interest of obligation. And, of course, Sacks does provide a picture of a gradual forgetfulness, rather like a mist dissipating, but perhaps the most telling observation is of the intrusion of scientific schooling:

“I had been spoiled, in a sense, by my two uncles, and the freedom and spontaneity of my apprenticeship. Now at school, I was forced to sit in classes, to take notes and exams, to use textbooks that were flat, impersonal, deadly. What had been fun, delight, when I did it in my own way became an

aversion, an ordeal, when I had to do it to order. What had been a holy subject to me, full of poetry, was being rendered prosaic, profane.”

This has, an unfortunately familiar ring. Like many bright students I have seen in thirty-five years of teaching chemistry, did Sacks “vote with his feet”, ultimately finding chemistry “refreshing, but not filling”? While it would be easier to understand (and accept) had he spoken glowingly of chemistry’s being displaced by a growing love for medicine, there is not much evidence of this in the book (except briefly in one early chapter, then later, when Sacks mentions being deeply in the throes of love with marine biology), so we are left to wonder what motivated the shift.

Whatever the reason, it is clear that five decades away from chemistry have not dimmed his memory or affection. With his characteristically fluid writing style, Sacks clearly and compellingly recaptures the romance of chemistry, with its stinks, booms and beauty, of the people who created it, and of the masterful intellectual synthesis of fact and theory that evolved during the nineteenth and early twentieth centuries. *Uncle Tungsten* is both personal and intellectual history, and such an enjoyable and easy read that I have seriously considered encouraging my freshman chemistry students to read it. At the very least they would learn a lot about chemistry and its history, and they might even be captured by it. My hesitancy stems only from a reluctance to confront the inevitable question, “Is this going to be on the exam?” and the fear that Sacks, like a Pied Piper, will lead them through a fascination with chemistry, then out of it and into medicine.