Uncle Tungsten

Mother knew of chemical differences (eg gold heavier than lead – combined with other metals re softness crystal structure) and shared them readily. Entire family seemed to relish the questioning and answering – an unusul thing?. Sciencey family – Abe in development of luminous paints, Dave with own company making tungsten filaments. Entire family had been infused with passion for sciences - physical or natural – by their father/ Oliver’s grandfather

Everyday question – what happens to sugar in tea, melted fuses, ice crystals etc

Availbiliyt of mercury quicksilver

Parents had medical practice in the home. Surgery, diagnostics, prescription prep. Regulation would stop this now? What about Jules?

Tongue not really black, chewed charcoal biscuits because they had gas. (p16)

He’s only atoms (p25)

Freeman Dyson quoted on p26

We found refuge in a territory that wa sequally inaccessible to our Latin obsessed headmaster and our football obsessed schoolmates. We found our refuge in science … We learned … that science is a territory of freedom and friendship in the midst of tyranny and hatred.

Family had staff – nannys, cooks, chauffer, gardener, secretary – who left during / after the Second World War

Level of access to experimental chemistry (IN A FACTORY SETTING) is unusual? Entrepreneur uncle Dave keen to share wonder, skills and understanding of practical chemistry.

Break open expired bulbs and add the filaments/ mounts to metal and chemical collection. ACQUISITION OF CHEM (p52) also penny bags of mixed minerals (p63)

Where did he get the bromoform, methylene iodid and Clerici solution (thallium salts) ? p65

Children’s books – eg Playbook of metals, The geological story,

Other books JJ Griffin Chemical Reactions 1850ish, AJ Bernays Yhe science of home life, JFW Johnston The Chemistry of Common Life, Jams Parkinson The Chemical Pocket Book or Memoranda Chemica

Kitchen chem. Shown by parents– vinegar on chalk, pouring heavy gas to extinguish flame. Red cabbage pickled in vin adding household ammonia to neutralise – lots of colour changes

Brother showed how to make crystal gardens from supersaturated solns. These experiments/ tricks didn’t stimulate any desire for further investigation until had experienced the hands on investigation at Uncle Dave’s tungsten factory.

Uncle advised on equipment. Had space in house to have a lab or his own. Hoard pocket money to spend at Griffin and Tatlock – which was vistitable, browsable. Cheaper chemicals were kept in glass jars on the shelves. Carboys of acid (sulphuric, nitric, aqua regia) were beneath. HydrofloLS;uric acid (for etching glass) was sold in gummy gutta percha containers. Slabs and ingots of metals. More expensive and rarer chemicals behind the counter. VGot to know Oliver. Would always sell him what he wanted “go easy with that one!” (70-71)

Father had litmus paper

Used mother’s bleaching powder instead of the chlorine called for.

P74 Try it – drink it. Drink it – was he mad? But it tasted of nothing but salt. (hydrochloric acid and caustic soda)

Mixed potassium perchlorate with sugar and banged it with a hammer on the back step. Nitrgen tri-iodide on filter paper(p77)

P85 Astonished at the nonchalant way in which Friggin and other books proposed the use of intensely poinous substances. I had no fdiffiulty in getting potassium cyanide from te chemist, the pharmacy down the raod – it was normally used for collecting insects in a killing bottle – but I could rather easily have killed myself. /Coud have poisoed / blown up the entire street.. Footnote p86 – Linus Pauling also remarked on the availability of chemicals. He got his potassium cyanide from Mr Ziegler, family friend “ to think so easily turned over one-thirds of an ounce to me, an eleven year old boy” When visited the site of the old Griffin & Tatlock home, had gone. Suppliers that have provided simple apparatus and reagents, unimaginable delights for generations have vanished.

P89 carbon tetrachloride sold as Thawpit – dry cleaning fluid

P105 Our Hoover was a good substitute for Boyles air pump

P114 collect hydrogen in water trough – breathe it in to sound like Mickey Mouse

P115 fire extinguishers at home were filled with CO2, used these occasionally for gas.

P123 Sodium was much cheaper and not as violent as potassium, so I decided to look at its atcion outdoors. I obtained a good-sized lump of it, about three pounds and made an excursion to the Highgate Ponds in Hampstead Heath … I pulled the sodium out of its oil with tongs and flung it into the water… it took fire instantly and sped around and around on the surface like a demented meteor, with a huge sheet of yellow flame above it.

P132 hypo (sodium hyposulfite) pyrogallol, flashblubs stuffed with inflammable metal foils – magnesium

P137 introuced by cousin to photog/devt

P138-9 made own light sensitive solns (10% soln silver nitrate, added to soln of potassium chloride and gelatin. Or impregnate paper directly with silver chlride, madke own printout patper, make contact prints form negatives or silhousettes of lace or firms, after several minutes of exposer uto direct sunlight.

Fixing – ugly colours with hypo straight after exposure so experimented with toning. Silver sulfide = sepia, gold chloride = bluish, purple image. Or gold toning after silver gave red colour. Selenium – rich reddish colour. Palladium and Platinum toned printes were more delicate than silver. One had to start with silver of course, because only silver salts were sensitive to light but could replace with almost any other metal.

Vanadium salt with iron salt such as ferric oxalate – brilliant green. Photographic manual described toning with tin, cobalt, nickel, lead, cadmium, tellurium, molybdenum .. becoming obsessed … pressing all the metals I new into use in the darkroom.

P147 When one of my dental fillings came out, I was able to distill off the mercury unchanged.

P150 Father had shown him how a very bitter substance such as strychnine could be diultd a millionfold and still be tasted (can infer that he tasted a dilute strychnine soln?)

P186 Set up lab as retreat from Michael’s madness (beaten bullied at school, as Oliver was).

Excitement, obsessive memorisation of chemical facts (melting points, etc), predicting what would happen during experiments.

P207 first hears of rare earths from mother, who lit cig after cig with a small Ronson lighter. She showed me the flint one day, pulling it out and said it was not really flint but a metal that produced sparks when it was scratched. This “mischmetal” cerium mostly was a mishmash of half a dozen different metals

P212 mother introduced to flame tests –threw salt onto the stove to get yellow after she saw how he loved the fireworks red and green, strontium and barium.

P292 I also had, as many did, a sense of jubilation at the scientific achievement of spiitting the atom, and I was enthralled by the Smyth Report which came out In Aug of 1945 and gave a full description of the making of the bomb. The full horror of the bomb did not hit me until the following summer, when John Hersey’s Hiroshima was published in a special one –article edition of the New Yorker and broadcast soon after by the BBC on the Third Programme. Up to this point, chemistry and physics had been for me a source of pure delight and wonder and I was insufficiently conscious perhaps of their negative powers. The atomic bombs shook e, as they did everybody. Atomic or nuclear physics, one felt, could never again move with the same innocence and light heartedness as it had in the days of Rutherford and the Curies.

Mr Tompkins in Wonderland

Mr Tompkins explores the atom

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