**LIQUID**

I remember as a chemistry undergraduate spending a lot of time in the library, writing up lab reports, consulting journals (this was long before the internet was invented by Al Gore) and no doubt reeking of whatever chemicals that I had played with in the lab that day. The journals stood from floor to ceiling in serried ranks, in time dulled red, blue and green dust jackets some dating back even into the Nineteenth Century1 and they seemed to look down on those of us that were destined to be here for just three years with the contemptuous gaze that the Statues of Easter Island reserved for those that had made them and through the process of making them had then, in turn, made themselves extinct.

The journals were ordered into the three branches of Chemistry; Organic, Inorganic and Physical. Now it’s a popular misconception that Organic Chemistry is exclusively concerned with the Chemistry of Living Things. It isn’t, it is dedicated to the Chemistry of Carbon with the exception of the chemistry of carbides, carbonates and hydrogen carbonates. So, for example, plastic bags would come under the Umbrella of Organic Chemistry but the enamel of your teeth would not. Inorganic Chemistry is the chemistry of all the other elements which may make it sound rather greedy but it isn’t as Carbon is particularly insatiable in it’s ability to not only to bond with itself, which has rather a kinky undertone, but also to react with other elements. Physical Chemistry is simply that bit of Physics that Physicists allow Chemists to play with. It’s about electrochemistry, gases, solids, solutions and liquids. It’s practitioner’s tend to be somewhat solitary and fit the stereotype of eccentric scientists by cooking mince pies in their glass drying ovens and keeping their clocks on Greenwich Mean Time whatever the time of year may be. Organic Chemists seemed, to my eyes at least back then, to be full of Thatcherite go getters who would be more at home at Harvard Business School than in a Laboratory but perhaps they needed to act fast as they tended to die young through over exposure to carcinogens. Inorganic Chemists, seemed to be more human, they had lives outside of chemistry2, my tutor was one of them and I think he was the cleverest person I ever met, he also had, a perhaps unique ability to make the chemistry of the inert gas Xenon funny3.

Now I noticed, while day dreaming in the library one day that in the Physical Chemistry Section that there were many journals on gases and solutions, some on solids but hardly anything on liquids and I got to wondering why. I thought about asking my Personal Tutor, he of the mince pies and Greenwich Mean Time, but he had an annoying habit of gazing benevolently at me and saying “Dig and learn young Tim, dig and learn.” When, in fact, there were no Journals out there entitled ‘On explaining the dearth of Journals on liquids and the plethora of ones on solids.”

Now, the feminist philosopher Luce Irigaray suggests that the reason for this lack is because,

“The privileging of solid over fluid mechanics is due to the association of fluidity with femininity. Whereas men have sexual organs that protrude and become rigid, women have openings that leak menstrual blood and vaginal fluids.”

An argument that convinces me that George Orwell was right when he said that “Some ideas are so stupid that only an intellectual can believe them.”

The real reason for the dearth of literature on the subject being that the behaviour of liquids is bloody complicated when compared to the approximations that work rather well when studying solids and gases. Water, for example, forms small clusters in a variety of sizes held together by hydrogen bonding that break apart and then reform with different partners within the time scale of a thousand millionth of a second.4 It’s only nowadays that something so complex can begin to be studied using the most advanced computer modelling.

But, the complexity of their behaviour didn’t stop me being fascinated by liquids but in fact in my contrary way they only added to it. Even as an adult I would sit watching my children’s swimming lessons at the local pool and instead of concentrating on how they were mastering the crawl I would be entranced by the perfect diffraction patterns that the wavelets, created by all the motion of these frantic limbs, made as they reached the edge where I sat. Watching water is a wonderful thing, the reflections on it’s surface and also the patterns that repeat as it breaks from smoothness into turbulence5 but what strange patterns it makes as unlike true symmetry, which would swiftly become dull to watch, these are patterns that are both similar but at the same time never quite the same, perhaps, just like all of our lives are when watched from cradle to grave?

1. I remember one of my contemporaries having to consult a German journal from the 1880’s which amongst the details of how to prepare a particular organic compound also included information on how long different varieties of fish took to die when immersed in said liquid.
2. One of my Inorganic Professors was the most terrible lecturer but a fascinating man when you talked to him on a one to one basis. He kept a pet anaconda which once escaped and was apprehended hiding under a car on the King’s Road. He was also close friends with Christine Keeler, chain smoked and had a most interesting fund of Ancient Brahman Sayings.
3. Technically, Xenon is a Noble Gas rather than an inert gas because it does react with Fluorine but then again what doesn’t?
4. See <http://www.chem1.com/acad/sci/aboutwater.html> for a really interesting article on this.
5. The Great Russian Physicist Lev Landau said that the first question he would ask God was “Why turbulence?”