

Letter to the Editor

Phil Race

Inspired by one of the submissions for the Journal, which I had great pleasure in reviewing, I recalled my own experience as a student in a laboratory on a day which turned out to be a formative learning experience. You could call it 'learning by error and trial' perhaps!

Long ago, when I was a 2nd-year student of chemistry and physics, I prided myself on my efficiency regarding practical work. My joint-honours course included a lot of practical work, and I really enjoyed this, but had to maximise my efficiency so that I still had time to learn for exams. In organic chemistry, we each had a list of preparations to do, and a cupboard of glassware, and a designated bench space. My aim was to use *all* of the glassware so that I had several things going on at the same time – for example, something distilling, something else refluxing, something else being filtered, and so on. I proudly potted around, enjoying my multi-tasking. I enjoyed cook-book chemistry, and following several recipes all at the same time.

One day, the Professor came into the lab. In those days, professors had divine status in the eyes of students – they were much rarer than they are nowadays. The Professor was an elderly gentleman, and an imposing lecturer. He made his way round, talking quietly to each individual student. I looked forward to him coming to me, as I had so many things going on at once – much more than any of my neighbouring fellow-students. Before long, he arrived.

He pointed to one of my flasks, where something was boiling away under reflux conditions. He asked: "What exactly is happening in this flask?". **I had no idea!**

I'd started that one off an hour ago, and could not even remember what I had put into the flask. All I knew was that it had another twenty minutes to go. My silence replying to his question seemed to go on for several hours. I have never forgotten how I wished for that silence to end.

After a while, he kindly moved on. But thereafter, I never again got into the position where I would not be able to explain 'what is going on here is....'.

However: there's an aftermath. At the end of my second year, I was summoned to go and see this selfsame Professor. My spirits fell. Was I finally to be soundly told off? Not at all, in fact. He asked if in the vacation between 2nd and 3rd year I might like to work with one of his research students extracting melanin at minus 5 degrees Celsius from mushrooms, and tracking an enzyme involved using radiochemical processes. I happily agreed. And I was to be paid for seven weeks' work. But even during the times when I was working in a very large refrigerator at minus 5 degrees, I still knew exactly what was going on. These seven weeks inducted me into the joys of learning by researching – which I suppose I've done ever since, even if my laboratory is now the lecture theatre and exam room.