Correspondence

Correspondence is accepted on all matters of interest to analytical chemists. Letters should be addressed to the Editor, *Proceedings of the Analytical Division,* The Chemical Society, Burlington House London, W1V 0BN.

Basic Safety in Volumetric Analysis

Sir,

I would very much like to comment on the letters of Messrs. Reid[1] and Chalmers[2] in *Proceedings*, since their views on mouth pipetting, etc., are very common amongst older, more experienced chemists.

Like them, I was brought up to pipette by mouth, and did so for years without mishap. I also became deft enough at pouring to be able to fill a burette from a winchester. Since then, I have spent a number of years as a senior laboratory technician, I have experience of two universities and a major industrial laboratory, I have trained up half a dozen other technicians, instructed a great many students in laboratory technique and observed hundreds of others. This experience has convinced me to abandon these practices because of the danger they represent to other people.

Ironically, it is because people like Reid and Chalmers are skilled in techniques that they give a false sense of the dangers to students who try to emulate them. Extra washing-up *is* a bore, as is the trouble of getting funnels and transfer vessels from the cupboard, so that it is tempting to fill burettes from the bottle. Mouth pipetting *is* easier than using and maintaining bulbs, etc., so why bother just to measure out distilled water? The answer quite simply is that people make mistakes, and novices make them often. People *do* take the wrong beaker, mis-label the bottle, etc.; it ought not to happen but it does. Furthermore, any habits gained with relatively safe material are liable to be used with concentrated sulphuric acid by less careful students.

It has been my experience that only if everyone, including the boss, uses pipette fillers (even with "safe" solutions) can one persuade trainees to avoid risky short-cuts. Likewise, safety spectacles can be a confounded nuisance, but students can be persuaded to regard them as a normal part of laboratory working if they are consistently worn by the supervisor, demonstrators and technicians.

It is, of course, true that safety devices may themselves cause certain hazards, particularly if incorrectly used. As is well known, an incorrectly fitted car seat-belt may cause injury and, in a very small minority of cases, car occupants might be trapped by their belts. In all safety matters there has to be a balance of risks. I would submit that it is safer in general to wear a car seat-belt. Similarly, it is better if eye protection is generally worn in chemical laboratories, and it is the lesser danger to teach the use of safety devices as the only way of using a pipette.

References

1. *Proc. Analyt. Div. Chem. Soc.*, 1977, **14**, 351.
2. *Proc. Analyt. Div. Chem. Soc.*, 1977, **14**, 350.

Martin J. Pitt
Department of Chemical Engineering,
Aston University,
Birmingham, B4 7ET