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Is There a Shortage of Analytical Chemists?

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In July 1980 the Royal Society of Chemistry published the report of a working party on the "Supply of and Demand for Analytical Chemists."¹ Some of the events leading to the formation of the working party, the report itself and some subsequent events will be examined.

Background

In October 1978, C. N. Thompson presented a paper to the Professional Affairs Committee (PAC) in which he cited evidence^{2,3} "for a likely potential shortage of analytical chemists" and urged that the matter should be examined by the PAC in consultation with the Qualifications and Admissions Committee (QAC) and the Association of Public Analysts (APA). This latter group were included as Thompson felt he had evidence for a decline in the number of MChemA qualifications (a legal requirement for all public analysts). However, when updated, the figures did not bear this out and the working party, at its first meeting, considered

the MChemA to be outside its terms of reference. There was other evidence of dissatisfaction with trends in certain areas, for example the Government Chemist⁴ had expressed his concern at the "decline in recognition which this subject (*i.e.*, analytical chemistry) has received in Universities in Britain" and went on to say "Both industry and government undertake limited amounts of research into analytical chemistry in support of their technological (and, where necessary, legislative) needs but their contribution to fundamental and original studies is relatively meagre. There is room for much fuller support from the universities in this area."

The PAC set up a small working party to consider the matter further and contact was made with the late Professor R. Belcher [then Analytical Division (AD) President], Professor D. Thorburn Burns [then Chairman of the Education and Training Group (ETG), AD] and Dr. J. F. Tyson (Honorary Secretary ETG, AD) who provided information including the three published reports of the ETG.⁵⁻⁷

As a result, a 6-page report was submitted to the PAC of 15.12.78 with the recommendations that "The work of the working party should not proceed but the ETG be asked if they would be willing to co-opt, say, two members of the working party to assist in the work which they are continuing."

Meanwhile, C. N. Thompson's paper had found its way through two sub-committees of the British National Committee for Chemistry (BNCC), namely Analytical and Applied Chemistry, to the Council of the Royal Society, and the Physical Secretary, Dr. T. M. Sugden, wrote identical letters to (a) The Chairman of the Committee of Heads of University Chemistry Departments (CHUCD) and (b) The President of the Royal Institute of Chemistry (RIC) (Professor Norman), saying that "BNCC share the view that insufficient attention is being given in higher education to the training of analytical chemists, and urges that you consider this matter as an urgent one in formulating advice, plans and policies for the provision of teaching in chemistry." The CHUCD referred the letter to the Standing Committee who considered it on the 23rd February 1979 and minuted that "... it was felt that analytical chemistry as a discipline had been overtaken by events in that analytical techniques were part of the skills of all chemists. The Committee did not feel able to recommend any action to be taken. . . ."

Dr. Sugden's letter to Professor Norman may have had a more sympathetic reception because an enlarged working party did, in fact, meet on three occasions.

The Working Party and Its Findings

The final composition of the working party was G. Osgood (Chairman), H. R. Lee and C. B. F. Rice (all representing PAC), M. J. Fogden and B. Weller (both representing QAC), R. Belcher, D. Thorburn Burns and J. F. Tyson (all representing AD), F. A. Lyne (representing APA), D. C. Abbott (representing the Government Chemist), G. Hills (Chemical Society Council), B. J. Palmer (SRC) and G. A. King (Secretary).

The course of action decided was to survey by questionnaire: (a) university and polytechnic departments to ascertain details of the supply of MSc and PhD analytical chemists and to monitor the level of specialist analytical chemistry staff; and (b) employers who had recently advertised for analytical chemists to ascertain numbers of applicants, suitability, etc.

In the report, the following conclusions were reached.

1. "The survey among employers revealed considerable dissatisfaction with the qualities and education of people applying for posts in analytical chemistry."
2. There was "no noteworthy change in the level of supply of postgraduate analytical chemists between 1972 and 1979." (The levels were approximately 55 UK MSc and PhD graduates per annum from universities and 55 UK MSc and 5 UK PhD graduates from polytechnics.)
3. "There was no distinct trend in the numbers of specialist staff in analytical chemistry or of grants offered to postgraduate students for courses in analytical chemistry." [The numbers of staff were 52 in universities and 47 in polytechnics. Since the report was published there has been a considerable decline in the SERC support for MSc courses, for the academic year 1978/79, 27 analytical studentships were allocated out of a total of 67 (40.3%)⁸ and for 1980/81, 19 were allocated out of 45 (42.2%)⁹]

4. Analysis of various RIC surveys and the Ministry of Technology's Survey of Professional Scientists 1968 showed approximately 9% of all chemists and 25% of the younger age groups were engaged in analytical work.

The following recommendations were made:

1. Improve the education of analytical chemists by encouraging educational establishments "to pay more attention to the coherent teaching of analytical chemistry (both theoretical and practical) within the over-all chemistry course." (In this connection it was mentioned that the ETG was preparing a model syllabus for undergraduate courses.)
2. Incentives should be provided to encourage people of higher quality to study and to work in the field of analytical chemistry.
3. More grants should be available for the study of analytical chemistry.
4. Analytical chemists should be better paid, the subject should have higher status and should be given greater publicity, especially amongst students.

Follow-up

A brief account of the report appeared shortly afterwards,¹⁰ in which considerable prominence was given to individual employers' comments; this in turn generated sufficient correspondence to warrant a further publication.¹¹ This additional evidence served to underline the findings and recommendations of the Working Party's report: "One clear point that emerged from the correspondence was that a serious problem of one kind or another does indeed exist"; "There was considerable support for the view . . . that improvements were necessary in the education of analytical chemists"; "Many felt that analytical chemistry was not being given enough weight in university first degree courses."

Disappointingly, the next RSC Annual Report¹² only gave the briefest mention of the Working Party's activities. The report was cited in a document produced by the SERC Working Group on Analytical Science,¹³ which came to a somewhat different conclusion to that found by the RSC working party, namely that "The major criticism made by industry is not that the graduates it recruits do not know sufficient detailed analytical chemistry but that they do not have a sound understanding and experience of the science of measurement and the interpretation of data in the widest sense."

In an earlier report⁸ the SRC (as it was then) commented on the teaching of analytical science to undergraduates and concluded, "that there was little interest in the teaching of the subject as a coherent whole and that there was a requirement to adopt a more positive approach to the teaching of the subject."

Conclusions

In an Editorial¹⁴ which pre-empted the RSC working party's deliberations, G. E. Penketh recalled Brains Trust panellist Professor Joad's famous opening remark of "Well it all depends on what you mean by . . ." and went on to discuss what he considered was meant by "shortage." The working party's report contains evidence to support two opposing views. All vacancies for analytical chemists were eventually filled with a reasonably satisfactory candidate, therefore there is no shortage. However, 45% of vacancies had to be re-advertised, therefore there is a shortage. Part of the problem for this ambiguity over whether there is a shortage or not, has arisen over what is meant by "analytical chemist." Now that there is a unified professional body, strenuous efforts should be made to (a) ensure that the term "chemist" means someone of "chartered chemist" status, *i.e.*, a graduate plus appropriate experience and (b) that for anyone wishing to pursue a career in chemistry, working towards the designation chartered chemist should be mandatory.

Despite the ambiguity over the existence of a shortage, there is little doubt that there is considerable dissatisfaction with the potential analytical chemists emerging from university departments. The ETG has now published¹⁵ its model syllabus mentioned in several publications cited earlier^{1,12,13} and as the message from industry is quite clear—something needs to be

done—it is to be hoped that the RSC will bring some pressure to bear on universities; perhaps even by requiring that if a course is to be recognised for GRSC status it must contain a certain amount of coherently taught analytical chemistry.

References

1. "Supply of and Demand for Analytical Chemists." Report of an Investigation by a Working Party of the Royal Institute of Chemistry, July 1980.
2. "Gaps in Chemical Research in British Universities and Polytechnics," Standing Advisory Committee on Relationships between Higher Education and Industry, 1977.
3. "Manpower Implications of Changes in the UK Chemical Industry During the 1980s," Chemistry and Allied Products Industrial Training Board, June 1978. (Part of this report was summarised by Marmion, W., and Willing, E., *Chem. Br.*, 1981, **17**, 290.)
4. "Annual Report, Laboratory of the Government Chemist, 1977," HM Stationery Office, London, 1977.
5. "Education and Training in Analytical Chemistry at Educational Establishments," A Report by the Education and Training Committee of the Society for Analytical Chemistry, *Proc. Soc. Anal. Chem.*, 1972, **9**, 173.
6. "Education, Training and Research in Analytical Chemistry in Universities and Polytechnics," Second Report by the Committee of the Education and Training Group to the Analytical Division of The Chemical Society, *Proc. Anal. Div. Chem. Soc.*, 1977, **14**, 1.
7. "Education Training and Research in Analytical Chemistry in Universities and Polytechnics," Third Report by the Committee of the Education and Training Group of the Analytical Division of The Chemical Society, *Proc. Anal. Div. Chem. Soc.*, 1979, **16**, 107.
8. SRC Chemistry Committee Newsletter and Statistical Review, December 1979.
9. SERC Chemistry Committee Newsletter and Statistical Review, December 1981.
10. Royal Society of Chemistry Professional Bulletin, September 1980.
11. Royal Society of Chemistry Professional Bulletin, December 1980.
12. Royal Society of Chemistry Annual Report, 1980, p. 11.
13. Report of the Analytical Science Working Group. SERC Document cc. 81-173, 1981.
14. Penketh, G. E., *Anal. Proc.*, 1980, **17**, 163.
15. "Undergraduate Teaching Syllabus in Analytical Chemistry," Fourth Report by the Committee of the Education and Training Group of the Analytical Division of the Royal Society of Chemistry, *Anal. Proc.*, 1982, **19**, 104.