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# **Centenary lecture. One hundred years of development**

[H. M. N. H. Irving](#)

## **Abstract**

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## CENTENARY LECTURE

### One Hundred Years of Development in Analytical Chemistry

By H. M. N. H. IRVING

(Department of Inorganic and Structural Chemistry, Leeds University, Leeds, LS2 9JT)

It is a unique honour and a very heavy responsibility to have been entrusted with the task of delivering this Centenary Lecture under the title "One Hundred Years of Development in Analytical Chemistry," but it is almost impossible, in the time available, to give a condensed history of the discipline of analytical chemistry from 1874 until the present day.

In a letter of February 5th, 1750, Lord Chesterfield wrote, "History is only a confused heap of facts," but Henry Ford, giving evidence in his libel suit against the *Chicago Tribune* in July, 1919, was more succinct and even more disparaging when he stated, "History is bunk." The historian of analytical chemistry can accept neither viewpoint, although he will realise that to do this vast subject justice he would need the synoptic view of a Sir Winston Churchill, the style and pungency of a Lytton Strachey and the sheer professionalism of an A. J. P. Taylor. In the event, I take some consolation for my own shortcomings from a typical remark of Oscar Wilde<sup>1</sup>: "Anyone can make history. Only a great man can write it."

A really fascinating history of the last one hundred years could clearly be developed around the theme of successive discoveries and developments in equipment and techniques—on the lines of the enormously important and scholarly "History of Analytical Chemistry" by Ferenc Szabadváry.<sup>2</sup> But could not an equally fascinating story be written around the personalities of those engaged in analytical chemistry, their social background and aspirations and their status in the society of their day? The education of the analytical chemist—or the lack of it—could also form a unifying theme though it might well be one in which the *leitmotif* expressed the continuing neglect of analytical chemistry as a subject worthy of encouragement and support by successive Governments and as an academically respectable and rewarding subject for study in many universities.

The impact of new legislation on the need to develop new techniques or to improve on old ones can certainly be said to have been the major reason for the foundation of the parent Society of Public Analysts in 1874. This, and a great deal more besides, is fully recorded in the recently published History of the Society for Analytical Chemistry (1874-1974) by R. C. Chirnside and J. H. Hamence with the title "The 'Practising Chemists'".<sup>3</sup>

A logical extension of this same theme could be used to interrelate the development in analytical activities resulting from the successive Factory Acts, the Food and Drug Acts of 1955 and earlier, the Consumer Protection Act of 1961, the Medicines Act of 1968, the Labelling of Food Regulations (1970), the Clean Air Act and many others.

Throughout the ages, the frailties and cupidity of human beings have found expression in criminal acts and sharp practices in industry, in commerce and in our daily life. The adulteration of gold and silver in pre-Christian times, the constant pollution of the environment, the adulteration of food and drugs, the doping of racehorses, of athletes and of the mentally sick, all these have engaged the attention and taxed the skills of the analytical chemist. Even so, the public at large may gain its only insight into the applications of analytical chemistry to modern forensic science through the medium of television (for example, the series entitled "The Expert"). Some members of the public have even carried out analytical determinations themselves—under the supervision of a policeman and with a "breathalyser."

I would now like to call attention to the extraordinary neglect of the rôle of the analytical chemist by writers of many fine books in which his activities should surely have merited at least a passing mention. Haber's well known work "The Chemical Industry during the Nineteenth Century"<sup>4</sup> is a valuable textbook for economists, with excellent accounts of the

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the 1990s, the number of people in the UK who are aged 65 and over has increased from 10.5 million to 13.5 million, and the number of people aged 75 and over has increased from 4.5 million to 6.5 million (Office for National Statistics 2000). The number of people aged 65 and over is projected to increase to 16.5 million by 2020, and the number of people aged 75 and over to 8.5 million (Office for National Statistics 2000).

There is a growing awareness of the need to address the needs of older people, and the need to ensure that they are able to live independently and actively in their own homes. This has led to a number of initiatives, including the development of the National Framework for Older People (Department of Health 1999) and the National Strategy for Older People (Department of Health 2000). The National Framework for Older People sets out the government's commitment to older people and the need to ensure that they are able to live independently and actively in their own homes. The National Strategy for Older People sets out the government's commitment to older people and the need to ensure that they are able to live independently and actively in their own homes.

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Next, the document addresses the challenges of data management in the digital age. With the increasing volume of data generated by various sources, businesses face significant challenges in storing, securing, and analyzing this information. The text suggests implementing robust data management strategies, including data backup, security protocols, and regular audits to ensure the integrity and confidentiality of the data.

The third section focuses on the role of technology in enhancing business operations. It explores how cloud computing, artificial intelligence, and automation can streamline processes, reduce costs, and improve efficiency. The text encourages businesses to stay updated with the latest technological advancements and invest in training for their employees to effectively utilize these tools.

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Finally, the document touches upon the role of technology in modern financial management. It highlights how various software tools and applications can streamline processes, reduce errors, and provide real-time insights into financial performance. While technology is a valuable asset, the text also stresses the importance of understanding the underlying principles of finance and maintaining a human touch in decision-making.

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The second part of the document focuses on the analysis of the recorded data. It describes various methods for identifying trends and anomalies in the financial performance. This includes comparing current data with historical trends, analyzing seasonal fluctuations, and identifying areas where costs are higher than expected. The document also discusses the importance of regular reviews and reports to management, providing a clear and concise summary of the financial situation. It includes a sample report format and a list of key performance indicators (KPIs) that should be monitored.

The final part of the document provides practical advice on how to implement these procedures effectively. It suggests starting with a pilot program in one department to test the new system before rolling it out to the entire organization. It also emphasizes the need for training and communication to ensure that all staff members understand the importance of accurate record-keeping and are equipped with the necessary skills to perform their duties. The document concludes with a list of resources and references for further information on financial management and record-keeping.



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