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Viewpoint

My 62 years in food science and technology: some reflections

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Introduction

“Viewpoint” usually means an opinion piece; but it can also mean a viewing position. In a working career of 67 years (so far), 62 of them in food science and technology, the writer –referred to hereafter as JRB – is extraordinarily fortunate to have had a grandstand viewing position of the evolution of our subject and our profession over six decades and to have been an active participant (even an initiator) in some of the developments.

Although inevitably this account will at various points have to refer to JRB’s personal involvement in the developments described, to avoid it consisting wholly of an (I hope premature) auto-obituary or a lengthy personal cv, some personal background to illuminate how JRB came to be in that fortunate position will be given in this introduction.

Having trained as a chemist at Imperial College, London University, and having been directed into wartime chemical research, the end of WW2 saw JRB free to seek the work he wanted, which was in the food industry; but, as he quickly discovered, with virtually no knowledge of the scientific principles or practices of food manufacture. As a result of 62 years of study – still ongoing - and of practical experience with four of the largest food manufacturing companies, concerned with many technologies and hundreds of different food products, and in the past 29 years running a busy international consultancy, JRB "evolved" into a professional food scientist/technologist! That was the only way in those days in the UK, to train in chemistry, or physics or biology or nutrition or chemical engineering and so on, and develop from there by experience and study of other science disciplines (later including unanticipated ones such as veterinary science and molecular biology!).

More fortunate than he first realised, he secured a job as a senior chemist in Lyons Laboratories, which at that time was at the forefront of UK science and technology in the food industry. J Lyons was a huge food service company with hundreds of tearooms and many hotels around the country and factories making a wide variety of food products for those outlets. Five years there, initially as an analyst and then in process control and research, combined with private study, provided a wonderful grounding for what was to follow. During the 1950s, many technical managers to be found in UK food companies had undergone a similar grounding in Lyons Laboratories.

In 1951 JRB joined Bachelors Foods (a Unilever company) where he spent seven years as Deputy Chief Chemist, before moving to CWS Preserves Group in 1958 as Group Chief Chemist; and in 1969 joined Bush Boake Allen as Food Industries Technology Manager. In hard times for that company in 1980, the bean-counters determined that his department was a dispensable luxury and he was made redundant.

With a thus acquired background of many food products, technologies and management, in 1980 he established his own busy international consultancy which he has operated to date.

During those 62 years, JRB

- Ø helped in the creation and subsequent development of the Institute of Food Science and Technology, initiated the formation of its first Regional Branch and has remained continuously involved to date in voluntary work for IFST, including as Hon Secretary 1970-75 and President in 1979 and 1980;
- Ø devised and published in 1966 the first succinct definitions of “food science” and “food technology”;
- Ø took part in 1962 in the first International Congress of Food Science & Technology which gave rise to the formation of ICFoST, the forerunner of IUFOST;
- Ø was involved (1958-80) in the work of what are now Leatherhead FRI and Campden BRI;
- Ø led the creation of the Code of Professional Conduct for IFST (1974-75) and later for IUFOST (1991);
- Ø pioneered the formation of the European Federation of Food Science & Technology (EFFoST) (1981-83)
- Ø instigated in 1985 the development of the IFST Good Manufacturing Practice Guide, was involved in drafting of the five editions including editing the 3rd and 4th editions;
- Ø created for IFST the first food science professional website (1995) and managed it for eleven years;
- Ø received the first PROMED-MAIL Award for Excellence in Outbreak Reporting in 1996, “in recognition of his outstanding reporting of the BSE/CJD crisis”.
- Ø was appointed MBE in 1997 for services to the food industry;
- Ø was the first (and to date, the only) recipient of IFST’s Mounfield Award in 1997 “in recognition of an outstanding contribution to the profession and his outstanding and devoted service to the Institute for over 30 years”;
- Ø In 1997 began teaching an on-line distance learning module on GM for Michigan State University and in 2000 was appointed Adjunct Professor in the Department of Food Science and Human Nutrition;
- Ø served as IFST Chair of External Affairs (1996-2007) and in 2001 simultaneously as Chair of IFT Committee for Global Interests;
- Ø in 2002 was the first ever non-US recipient of the (US) Institute of Food Technologists’ Carl R. Fellers Award “to honor individual members of IFT and Phi Tau Sigma who have served and brought honor and recognition to the profession of food science and technology.”
- Ø became actively involved in IUFOST from 1991; including service on its Finance Committee (1991-1999), on its Constitution Advisory Committee (1999-2003 – Chair 2001-2003)), on its Governing Council (2003-2008) and Scientific Council (2006 to date) and as President of its International Academy of Food Science & Technology (2006-08).

The late 1940s

This was the immediate post-WW2 period, a time in the UK of continued austerity and food rationing; a time when laboratory scientists weighed “by swings” and pipetted by mouth; a time when *E.coli* was a harmless bug merely indicative of poor hygiene; a time without internet or web or e-mails or fax - when communications were handwritten or hammered out on a mechanical typewriter. However, it was also

a time when application of wartime research into irradiation, dehydration and freeze-drying was beginning to be exploited in industry.

The 1950s

This decade saw a great extension of science and technology in the UK food industry. A significant contributory part was played by two complementary factors. Nathan Goldenberg left Lyons Laboratories to inaugurate the Marks & Spencer scientific laboratories. M & S were the leading retailing group. They produced nothing - all their products were own-label and Goldenberg laid down stringent hygiene and safety requirements with which their manufacturing suppliers must comply. For this the supplying companies needed comparable science/technology expertise. Thus at the same time other Lyons Laboratories "alumni" (including JRB) took up senior science/technology positions in major manufacturers which supplied M & S.

After a long period in which individual scientific disciplines had been applied to food in virtually watertight compartments, food science was beginning to emerge in the UK as a multi-disciplinary subject in its own right in the 1950s. This led to the establishment of the National College of Food Technology in 1955 and the development of food science courses in four UK universities and one polytechnic.

The 1960s

By the early 1960s, food science and food technology graduates were beginning to appear on the UK scene but they were ineligible to be admitted to any existing "single discipline" professional institution. Equally, practitioners who had been trained in single disciplines had realised that to practise effectively in the food field they needed further knowledge both in and beyond the subject in which they had trained. Instead of thinking of themselves as chemists, physicists, microbiologists, chemical engineers, etc. who happened to be working in food, they were increasingly describing themselves as food scientists or food technologists. At this time, leaders in the field realised that a new profession was in the making, with professional needs that could not be met either by existing scientific professional bodies or by any of the various learned and specialist societies with food interests. Foremost among these was the late Professor Denis Mounfield, the then Principal of the National College of Food Technology. He, and other like-minded individuals, were conscious of the need for an organisation that could cater for the new food science and technology graduates as well as those whose professional qualifications were through the more traditional route. At a meeting of interested individuals in February 1962 which Mounfield called, an ad hoc Committee (including JRB) was elected to draft proposals for a professional Institute. In consequence the Institute of Food Science & Technology (IFST) was formed in 1964 to cater for this new breed of scientists. By 1968, the Institute became an incorporated body, with a Memorandum and Articles of Association and Bye-Laws. Meanwhile in 1965 JRB had instigated the formation of the first regional Branch of IFST, the North of England Branch, and became its Founder President.

1962 was also a landmark year internationally. The First World Congress of Food Science & Technology took place in London, and a major outcome was the formation of the International Committee of Food Science & Technology (ICFoST). In order to create a UK adhering body to ICFoST, several UK societies (including IFST) with direct or overlapping interest in food science and technology came together to create the UK Committee of Food Science & Technology, UKCFoST.

The 2nd World Congress was held in Warsaw, Poland, in 1966.

The 1970s

In 1970 the 3rd World Congress took place in Washington at which IUFoST was formally constituted as a country member organisation in which each country was represented by a national food science body. UKCFoST became UKFFoST.

In retrospect, probably the most important food safety legacy from the 1970s was the development of Hazard Analysis Critical Control Point (HACCP). Originally developed by Howard Bauman at the Pillsbury Company and Paul LaChance at NASA as a proactive preventive system for assuring food safety for foods for use by astronauts in the US Space Program, its publication in 1973 and gradual adoption by industry and eventually in legislation has proved of the greatest value.

Also during the 1970s there was a widespread but mistaken belief that a major food technology contribution to the problem of world hunger would be meat-like “novel protein”. Extensive industrial R&D was directed at producing acceptable novel protein from soya, from petroleum and from field beans, variously involving spinning, extrusion, “puffing” using breakfast cereal technology, fermentation and mycelium formation.

From 1970 to 1975 JRB served as Hon Secretary to IFST. During that period he was instrumental, with the then President, John Hawthorn, in instigating the adoption of an IFST Code of Professional Conduct and Professional Conduct Guidelines, most of which he drafted.

The 4th IUFoST World Congress took place in Madrid in 1974 and the 5th in Kyoto in 1978.

In 1979 JRB was elected President of IFST and re-elected for a second term in 1980. During this period he made the main themes of his presidency the professional responsibility to serve the public interest and the need to develop a federation of European food science societies as a regional grouping within IUFoST.

The 1980s

The 6th IUFoST World Congress took place in Dublin in 1983 and the 7th in Singapore in 1987.

In 1981, IFST organised a Symposium at University of Nottingham on “Food Technology in Europe”, to which leaders of food science societies across Europe had been invited. During this event a number of meetings laid the foundation for the formation of EFFoST in 1983. IFST provided its secretariat in its early years.

Scientifically the important food-related topics in the 1980s were:

- Ø the launch of IFST’s “Food & Drink: Good Manufacturing Practice – A Guide to its Responsible Management” – familiarly known as the GMP Guide;
- Ø the first visible emergence of the BSE epidemic in cattle and initial measures to contain it and prevent possible transmission to humans;
- Ø the beginning of the emergence of *E.coli* O157;
- Ø the early research on genetic modification of crops

The 1990s

The 8th IUFoST World Congress took place in Toronto in 1991. In Toronto JRB initiated talks which led in 1995 to the establishment of the Co-operating Societies Agreement between IFST and IFT. Agreement in principle was fairly easily reached; what took 3½ years was agreeing what to call it! In the years that followed it was the forerunner of several similar agreements by IFST with other national food science bodies.

The 9th IUFoST World Congress took place in Budapest in 1995, at which the General Assembly committed IUFoST to the Budapest Declaration, of which JRB was one of the drafters.

1997 saw the establishment, by IUFoST, of the International Academy of Food Science & Technology (IAFoST) as a group of elected distinguished food scientists and technologists who collectively form a pool of scientific expertise in food science and technology from which IUFoST may draw non-aligned expert advice on scientific matters. JRB was among the first tranche of Fellows, served on the Executive Council, then as President Elect, and as President for 2006-2008.

The 10th IUFoST World Congress took place in Sydney in 1999.

Scientifically the important food-related developments in this decade were:

- Ø the field application of genetic modification to crops;
- Ø in 1996 the first scientific evidence of a link between BSE in cattle and vCJD in humans and intensification of research and measures to protect the food chain and minimise risk of transmission to humans;
- Ø recognition of food allergens as a major food safety issue;
- Ø increasing emphasis on importance of sustainability;
- Ø progress in non-thermal processing preservation technologies;
- Ø functional foods;
- Ø obesity.

The present decade

The present decade opened with the good intention of the Millennium Goals which, *inter alia*, focussed increased attention on the need to address food insecurity. This, together with sustainability, compounded by the threat posed by climate change, were overriding issues.

This decade also saw the use of food crops (or land that could be used for food crops) for biofuel. Like many food scientists, for JRB the only acceptable feedstock for biofuel would be cellulosic waste from food crops.

The IUFoST World Congresses took place: the 11th in Seoul in 2001; the 12th in Chicago in 2003 (at which IUFoST adopted its present Constitution/Bye-laws); the 13th in Nantes in 2006; and the 14th in Shanghai in 2008. The 15th in 2010 will take place in Cape Town.

Scientifically the important food-related developments of the decade have been

- Ø The enormous expansion (worldwide except for Europe) in GM crops;

- Ø the development of the “omics” sciences (genomics, proteomics, metabolomics);
- Ø further research into BSE/vCJD;
- Ø research into acrylamide formation in food;
- Ø nanotechnology.

As for the future?

One cannot foresee the future merely by extrapolation of known concepts. New concepts affecting the future food chain will come from many sciences and scientists, including food scientists, but it will be the mission of food scientists and technologists to enable the application of existing and new concepts to the future of the food chain for the benefit of society and humanity.

"As for the future, your task is not to foresee it, but to enable it."
[Antoine de Saint-Exupery, *The Wisdom of the Sands* (1948)]

References

J Ralph Blanchfield Website: www.jralphb.co.uk

IFST Website: www.ifst.org

IUFoST Website www.iufost.org