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1. Information from the EuCheMS Division of Analytical Chemistry (DAC)

The highlight within the DAC activities of the year 2015 was Euroanalysis XVIII, held in Bordeaux, France, 6-10 September. This conference was perfectly organized by the French Chemical Society with Philippe Garrigues and Christian Rolando as co-chairs and attracted around 700 participants from 56 countries. It was also a worthy venue for presenting the prestigious Merck Award to Petra Dittrich (ETH Zurich, Switzerland) and the recently established DAC-EuCheMS Award to Miguel Valcárcel (University of Cordoba, Spain). The Robert Kellner Lecture was delivered by Bernhard Lendl.

Bordeaux was also the venue for the 46th Meeting of DAC on 6 September 2015. On this occasion the DAC Tribute was awarded to Reiner Salzer in recognition of his longstanding

commitment to the Division of Analytical Chemistry (DAC) of EuCheMS and the advancement of Analytical Chemistry in Europe. In 2016, DAC is chaired by Paul Worsfold (UK). The Delegates unanimously adopted the nomination of Slavica Ražić (Serbia) as Chair Elect. She will be Chair of DAC for 2017-2019. The other members of the Steering Committee for 2016 are Wolfgang Buchberger (Austria), Jiri Barek (Czech Republic), Christian Rolando (France), Charlotta Turner (Sweden), and Sibel Özkan (Turkey). A meeting of the Steering Committee has been scheduled for April 2016 in Stockholm to discuss ongoing activities as well as the preparations for Euroanalysis XIX to be held in this city from 28 August to 1 September 2017 (information is provided at http://euroanalysis2017.se). Please make a note of this date. We can expect to see another premier European meeting in analytical chemistry that constitutes a broad forum for scientists from academia, the public sector and industry.

At the Annual Meeting in Bordeaux the Delegates also voted unanimously in favor of Istanbul as the venue for Euroanalysis XX in 2019.

Major activities of DAC are carried out within its Study Groups dealing with topics of particular importance in analytical chemistry, namely, “Education in Analytical Chemistry”, “Bioanalytics”, “History”, “Quality Assurance”, “Chemometrics”, “Analytical Chemistry in Archaeology and Cultural Heritage”. Besides, in 2015, a Task Force “Nanoanalytics” has been established for one year. Information about ongoing activities of DAC can be found on its website at www.euchems.eu/divisions/analytical-chemistry/.

DAC encourages you to participate in the 6th EuCheMS Chemistry Congress in Seville, 11-15 September 2016 (http://euchems-seville2016.eu). The scientific programme is structured into horizontal major themes, one of them being “Physical, Analytical and Experimental Methods in Chemistry”. Within this congress DAC will hold its next Annual Meeting on 11 September 2016.

In this European Analytical Column D. Thorburn Burns and Michael J. Walker provide a personal view on one of the roles of history in analytical chemistry.

2. The role of knowledge of the history of analytical chemistry for academics and for law enforcement authorities

The DAC History Study Group arose as a result of earlier activities in the field by Professors Ronald Belcher and Hans Malissa; these were formalised by the establishment of the group in 1994 with Hans Malissa as chair and J. A. Perez-Bustamante as co-chair. Their first task was to prepare an account of the first *25 years of the Working Party on Analytical chemistry*, published in 1999 [1].

The stated objectives of the group are to study and publish accounts of the history of analytical chemistry in Europe with reference to individual countries, specific locations, techniques, applications, professional bodies and personalities. One primary way to achieve this, and be consistent with the Rules for EUROANALYSIS, has been to promote and support a plenary or keynote lecture on the material relevant to the host country at each EUROANALYSIS Conference, and ensure its subsequent publication. With the exceptions of EUROANALYSIS I, XII and XV held respectively in Heidelberg, Dortmund and Innsbruck, this aim has been achieved. As detailed accounts for Austria were provided at EUROANALYSIS VII (Vienna) and at the 80th Birthday Conference for Hans Malissa, held in Vienna, 2000, no further account was deemed necessary to be given in Innsbruck. No historical review lecture was given at either of the two EUROANALYSIS conferences held in Germany, due to it being regarded as a nearly impossible task to achieve within the time frame available of an opening ceremony.

This omission has recently been dealt with, after twelve years of concerted effort by members of the Study Group, by the publication of a well-illustrated monograph, *Important Figures of Analytical Chemistry from Germany* [2].

In many cases extension studies have followed on from earlier plenary or keynote lectures, with more detailed treatments of particular items, or with items omitted earlier. The greatest number of these concern topics in the history of chemistry for Belgium, Ireland, Italy and the UK. References to the plenary and keynote lectures, and the publications arising from the additional studies are listed on the DAC web-site along with the papers arising from other conferences in the field, organised by the Division or its predecessor and those held in cooperation with the International Conference on History of Chemistry series. The output, made over 20 years, comprises of some 53 papers and 2 monographs and one Conference Proceedings Volume [3].

The justification for DAC to support a Study Group in the history of analytical chemistry is twofold:

1. To assist the probity and transparency of publications

For academics and other researchers, a good knowledge of prior work in one's field is essential to efficient working and publication of current work in a fair and transparent manner. There are numerous recent examples of papers being published with seriously defective literature searches which give false implications of originality. Two examples, selected at random, are (a) a paper on the flow injection determination of hydrogen peroxide with immobilised peroxidase which omits at least two papers with 20 year priorities of the concepts and (b) a paper on SERS with an even shorter time interval, 8 years between it and a key prior paper. For both papers the omitted references could have been readily found by simple literature searches. It is time

editors re-took the responsibility and exerted sufficient effort to ensure the accuracy of priority or implied priorities made in their journals.

2. To ensure future preparedness

Awareness of history as an aid to prediction of future problems is a well-known concept, "*Those who don't know history are doomed to repeat it*" has been attributed to various authors such as Edmund Burke and Winston Churchill but without references. The equivalent phrase, "*Those who cannot remember the past are condemned to repeat it*", by George Santayana, is well documented [4].

These two reasons are illustrated by striking examples of the utility of historical salience for the analytical chemistry of food fraud and food safety herein, with particular relevance to food law enforcement.

Food safety

A valuable review [5] of chemical contamination of food and animal feed from the 19th century to the present day, with their health, socioeconomic, environmental and political *sequelae* illustrates well the recurring nature of such unfortunate events.

Recent examples include the 2008 pork dioxin crisis which was a catastrophe for the agrifood sector on the island of Ireland [6, 7]. Its origin was animal feed contaminated with dioxins via an apparently obscure, possibly criminally fostered route. However, the root cause was an entirely predictable and hence potentially avoidable repeat of events in Belgium in 1999 [8].

Antibiotic residues in foods are another regularly re-occurring issue with severe health implications [5]. A review of historical and current problems in official analyses for

nitrofuran residues in farmed prawns gave rise to a detailed consideration of the forensic issues involved with actual or apparent contamination and recommendations for best practice in such analyses of the edible portions [9]. These recommendations are cited in the current extensive review by the European Food Safety Authority, EFSA [10].

The use of a wide range of illegal dyes to improve food appearance is also highly repetitive on an historical scale and has led to the development of a screening method to detect the presence of those most commonly used [11].

Food fraud

As the recent European horse meat episode [12] has shown, historical frauds re-arise with depressing regularity causing massive loss of consumer confidence with significant economic consequences. This particular species substitution was not a new problem in the UK, for in 1886 a question was raised in the parliament about diseased horses being shipped to Rotterdam for slaughter for human consumption and *"…re-shipped to this country in the form of sausages and tinned meats*" [13]. Following this debate the Sale of Horseflesh &c Regulation Act 1889 [14] required that the sale of horseflesh for human consumption to disclosed by way of a sign "*… in legible characters of not less than 4 inches in length and so as to be visible throughout the whole time*". The act created the offence of supplying horseflesh when another meat was asked for or including horse in a compound article of food which is not ordinarily made of horseflesh. Prior to the recent problem of meat species substitution in Europe, the 1981 "*great meat substitution scandal*" in Australia, stemming from the detection of horse meat in Australian beef shipped to a plant in San Diego in the US [15], should have put European food authorities on notice of the possibility its reoccurrence. In the 1981 Australian event considerable quantities of pet food had been illegally diverted

into the human food chain, and beef sold as Halal food, that had not been slaughtered according to Islamic practice.

The review of the history of food authenticity in Belgium and the UK, with reference to butter and margarine again indicated several lessons for the twenty first century in the field of edible oils and fats could be learnt from a knowledge of prior adverse events [16].

Conclusions

(i) A full comprehensive literature search is an essential prerequisite for the transparent and truthful reporting of scientific research.

(ii) Active review and high salience of prior adverse events coupled with advances in measurements and their interpretation are among the best defences against repetition of contamination and fraudulent adulteration of food in their modern variants.

(iii) The current challenge is to ensure those with an appreciation of history and those involved with research and law enforcement communicate effectively.

(iv) That a review of readily available sources of references pre the time period now covered by *Chemical Abstracts* and *SciFinder* would be timely.

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