

Joan Davena Peden, BSc, C Chem, FRSC, MChemA, (1920-1997)

An Exemplar Public Analyst and the First Female President of the Association of Public Analysts

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Summary

The career and activities in retirement of Miss Joan Davena Peden, the first female President of the Association of Public Analysts are reviewed.

Introduction

Joan Davena Peden was the first female to head a department for Somerset County Council and to hold the post of President of the Association of Public Analysts, (APA). She was an enterprising and innovative Public Analyst (Official Control Scientist) remembered with considerable respect within the profession and it was surprising to find that the only obituary in the public domain is that of the Somerset Archaeological & Natural History Society (SANHS)¹. The likely reason for this is that she resigned from the Royal Society of Chemistry in 1977, long before her death. The only other obituary is that in the APA Bulletin and is thus restricted in access to APA members². This article registers Miss Peden's achievements and allows others to appreciate her personal and scientific qualities. It also exemplifies the power of datasets gathered by sampling and analysis in underpinning a robustly deployed Public Analyst's certificate in fostering improved labelling transparency and safety without further recourse to the courts or new legislation. Such attributes are important when, as now, attitudes to regulation are changing.



Training and Career

Miss Joan Peden completed her secondary school education at Holly Lodge High School, Liverpool, in 1938 and then entered the University of Liverpool where she graduated with an II(i) honours degree in organic chemistry in June 1941. After graduation she obtained a post as an assistant analyst at the Public Analyst's Laboratory in Liverpool where she was elected an Associate of the Institute of Chemistry in October 1941. In 1945 she passed the Branch E Diploma (Chemistry of Food and Drugs and of Water, including microscopy), the Fellowship examination of the Royal Institute of Chemistry³ (now the Royal Society of Chemistry (RSC)). The Branch E Diploma was the qualification required to practice in the statutory appointment of Public Analyst. She was appointed Deputy Public Analyst for the City of Stoke-on-Trent and for the Urban District of Brierley in 1948⁴. On 4th February the same year she was elected a Member of the Society of Public Analysts and other Analytical Chemists⁵. In 1957 she moved to become Deputy County Public Analyst for Somerset and Deputy Official Agricultural Analyst and in 1958 became the County Public Analyst and Official Agricultural Analyst. When, in 1968, the Royal Institute of Chemistry changed the Branch E Diploma into the Mastership in Chemical Analysis (MChemA) and allowed existing Branch E holders to apply for the new qualification Miss Peden did so. The MChemA remains the statutory qualification stipulated in UK food law for an Official Food Control scientist and court reporting officer.

Following her retirement from the post of Public Analyst she resigned from the RSC in 1977, "due to fostering interests in other directions", as she put it. As we will see she brought her considerable talents and much dedication to her new interests, testimony to her ever enquiring mind, in the light of which her decision to abandon the RSC was characteristic of her self-possession and focus.

The Somerset County Analyst appointment made history as she was the first female to head a department for Somerset County Council, a distinction she repeated upon her retirement in 1974 when she became the first female President of the Association of Public Analysts (APA). In this role she represented the Association at the Society for Analytical Chemistry (SAC) Centenary Celebrations, the only female amongst the 27 representatives from kindred societies and related organisations worldwide⁶.

Reports as Public Analyst

Until the 1980s Public Analysts were required to produce annual reports of their official activities. In the SANHS biography we learn that:

"Joan's reports on the work of her department at County Hall were highly regarded and revealed a literary gift which was much admired and that copies of

these reports, lodged in the Record Office and Somerset Studies Library, will provide source material for future students of public health.”

We would add that this material would be invaluable for aspiring MChemA students in particular as sight of a selection of these Annual Reports confirmed their value as training aids.

These most informative Annual Reports follow a common pattern; an introductory letter, a summary of changes in food and drug legislation and their implications, data on the samples examined and the outcomes, (the opinion of the Public Analyst as to whether each sample was genuine or adulterated) in text and tabular formats. They also contain comments on scientific progress, information on presentations to interested audiences (whom we would now call “stakeholders”) and updates on the state of the laboratory. Her successor, Wilfred Cassidy, commented,

“The Annual Reports were read avidly by all journalists, TV stations, County Councillors and even other chief officers. When she left, I missed them terribly – there was no way that I was ever attempting to compete”².

The introductory letter to her first Report as County Analyst, in 1958, gives a brief résumé of the progress made under her predecessor, details of the recent improvements in accommodation and reasons for their future space needs. It records that in 1946 the laboratory examined 1399 samples, with a technical staff of 4, while in 1958 this had risen to 5351 samples with a staff of 7⁷.



Miss Peden discussing a report, probably that of 1958, with, left to right, her Deputy Analyst, Wilfred Cassidy and her Chief Assistant, A. Fisher

In the equivalent letter in the 1964 report⁸, she noted the acquisition of a gas liquid chromatograph and its value to their work; in 1969⁹ she reports on an infrared spectrometer and its value in drug analysis. She also reports that she had given 16 talks that year to a variety of audiences on “The Work of the Public Analyst”.

She had an interesting style in her comments and her literary skills were also well demonstrated in her scientific¹⁰⁻¹³ and other publications^{14,15}. A few examples from her 1969 report⁹ illustrate her wit and insight.

On frozen fish,

“...the presence of a slight off-taste was confirmed in a piece of frozen cod in batter; although with some frozen fish, the presence of any kind of flavour would come as something of a surprise.”

On Camembert cheese of considerable over-ripeness,

“.....here a question of connoisseurship arises, since one man’s cheese may well be another man’s poison”

On a large box of chocolates,

“...more in the Sherlock Holmes line, but very careful inspection showed no traces of the suspected tampering and they were eventually tested in the most direct fashion, by consumption, with no ill effects.”

Work load and staffing increased in the years that followed. Looking back, it might be considered that these were the “Golden Years” for the PA profession as they were (in the opinion of one of us (DTB)) for those in academia, from about the mid 1960’s until the early 1980’s.

Scientific Publications

Evidence shows that during her tenure as County Analyst she was hands-on in the laboratory and that she commanded a formidable team.



Miss Peden using an SP 500 UV-Vis spectrometer

She published on topics including copper in animal feeds, pesticides residues in human fat and on arsenic in pigs' liver.



Miss Peden and Senior Colleagues

Her first publication, that on copper in animal feeds was written in the latter part of 1961 and was published in the first volume of JAPA in 1963. After analysing numerous animal feed samples taken in Somerset it was found that an increasing number of additives (vitamins, minerals, antibiotics etc.) had been added to the feeding stuffs by manufacturers, without in many cases any information being passed to purchasers. To deal with the matter of the non-declared copper additions, she added the following comment in her formal certificate:

“I am further of the opinion that the amount of copper is in excess of that normally associated with the ingredients, that its presence should be declared and that it is a potentially deleterious ingredient.”

Her paper further notes that presented with the above opinion feed manufacturers were induced to make the required declaration to their customers¹⁰.

The publication in 1962 of Rachel Carson's *Silent Spring* stimulated widespread concern about improper pesticide use and the need for better controls. Miss Peden's next publication, in 1967, was on organochlorine pesticide residues in human fat. This contains the detailed results of the gas chromatographic analyses of 101 human abdominal necropsy fats, collected exclusively from residents in Somerset. Data were obtained for the pesticides dichloro-diphenyl-trichloroethane (DDT), BHC (“benzene hexachloride” or “lindane”, more properly hexachlorocyclohexane) and dieldrin. Comparisons were made with the data in the three previous British surveys of the same kind and only one of the subjects was found to contain little or no residues of the compounds analysed for. Very high results were recorded for two individual subjects and the mean arithmetic values were 2.85 ppm total DDT, 0.19 ppm BHC and 0.34 ppm dieldrin¹¹. Her successor commented in her obituary

*“Gas liquid chromatography became an everyday tool in the laboratory years before many other colleagues dared to touch it. Such was her drive and foresight...”*²

Following two incidents of over-dosage of pigs with arsenical compounds in Somerset, a survey was conducted of 120 random samples of pigs' liver for arsenic and of 15 samples for arsenic, copper and lead¹². This paper concluded by giving very clear advice as to the use of arsenical chemicals on farms. Her final remarks being:

“No amount of legislation can control or prevent the occasional miss-use of dangerous substances or the neglect of safety factors: perhaps increased publicity as to the attendant dangers of usage and abuse would be a more effective deterrent”.

The deterrent impact of publicity has been a weapon in the armoury of public protection since at least the 19th century but Miss Peden articulated well what has now become commonplace in the 21st century.

During 1971-2 the County Laboratory provided the analytical data for a survey of heavy metals in marine organisms from eleven sites on the Somerset side of the heavily polluted Bristol Channel and four comparison sites in Devon. The study of bioaccumulation of heavy metals, particularly in marine organisms, was a young discipline at the time. Limpets and their

predators were examined and it was demonstrated that cadmium could be transmitted up the food chain to species for human consumption, such as shore crabs, gulls' eggs and whelks. Levels were higher in samples from the Bristol Channel than those from Devon. It was concluded that there was a considerable cadmium load in certain marine organisms. It was not possible to state a limiting concentration above which the toxicological end-point of renal damage would occur but the authors concluded that it was perhaps fortunate that it was unlikely that anyone was eating substantial quantities of shore crabs or limpets from the Somerset coast¹³.

Miss Peden's last publication as a chemist, "PAs of the Past", was based upon her invited lecture in the Analytical Division's contribution of a 7-paper Symposium on the History of Analytical Chemistry to the Annual Congress of the Chemical Society and the Royal Institute of Chemistry in 1977 held at Imperial College⁶. In the lecture and publication, she covered the foundation of the Society of Public Analysts, the establishment of the "Branch E" examination of the Institute of Chemistry the qualification for Public Analysts and appraisals of the pioneering activities of several prominent members up to about 1900¹⁴. Overall, this publication, written in Miss Peden's typical literary style, is an informative and pleasant read.

Contributions to Local History, Archaeology and the Parish of Pitminster

Alongside her successful scientific career, Miss Peden was a major contributor to her parish community and to knowledge of local history. Her scientific writing was followed by many articles and two books¹⁵ on local history in her retirement.

She joined the Somerset Archaeological and Natural History Society in 1960. Her many contributions to this society and activities in local history are outlined by her biographer¹. For over a decade she systematically compiled an archive of materials relating to her parish of Pitminster and become its acknowledged historian, attracting numerous overseas visitors seeking her assistance. She was an active participant in fieldwork projects such as the rescue archaeology on the new M5 motorway in the 1970's. In her later years she worked with an archaeological field-survey group on the Blackdowns, an area she knew well and cared for deeply.

In her parish of Pitminster, Miss Peden, as she was always known, contributed in full measure to the life of the community. She served at various times in offices such as parish councillor, school governor, secretary to the Parish Council, editor of its magazine, President of the Blagdon Hill Women's Institute, and the local Over-Sixties group amongst others. Joan Peden was an accomplished speaker and in regular demand for talks on local history and other topics. She wrote numerous plays with historical backgrounds for her local Women's Institute to perform at the Annual Speech and Drama Festival. Despite her many accomplishments,

including that as a model Public Analyst, she was always modest and took more interest in the achievements of others.

Conclusion

Miss Peden was willing to embrace modern analytical techniques, successfully confront lack of transparency in feed additive declarations and tackle challenges such as pesticide bioaccumulation and heavy metal environmental pollution.

It was to be seven years from Miss Peden's first paper on animal feed before feed additive law began to be harmonised across the six members of the then European Economic Community (Council Directive 70/524/EEC). The UK was not then a member of the EEC. However, with adequate datasets available to her through sufficient sampling, Miss Peden was able to apply her analytical and risk assessment skills to effect improved disclosure of feed additives wielding the effective instrument of her Agricultural Analyst's certificate. Those pondering regulation post UK exit of the EU should take note.

Coupled with an engaging literary style, consummate expertise and natural personal authority, Joan Davina Peden was an exemplar Public Analyst. She was a woman ahead of her time, who set standards in all her areas of activity.

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