

Robert Rattray Tatlock (1837-1934), Public Analyst for Glasgow

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Summary

Continuing the series of essays on exemplar Public Analysts from the 19th and early 20th centuries, the studies on Cameron (Ireland) and Wynter Blythe (southern England) are complimented by the present account of Tatlock of Scotland. Tatlock became an experienced expert witness and published a respectable number of papers including several on calibration and on international standards for sampling and analysis, topics that find contemporary resonance, as too do his studies on whisky. He was active and influential in several professional bodies becoming President of the Society of Public Analysts and the first President of the Association of Public Analysts for Scotland. In his wide general practice in analytical science and published studies he is shown to be an exemplar Public Analyst and a worthy forerunner of the highly regarded service provided by Scottish Public Analyst laboratories of today.

Birth and Ancestors



**Fig 1 - Robert Rattray
Tatlock, 1837-1934**

Robert Rattray Tatlock was born in Glasgow May 18th, 1837, and died at Helensburgh on December 22nd, 1934 [1-3]. He was the eldest son of Robert Tatlock a manufacturer in Glasgow. On the maternal side he could trace his ancestors back to the early part of the seventeenth century.

Education

After his early education at Greyfriars' School and at the Trades' House School his ambition was to become an analytical chemist. He then studied chemistry with Dr. Fredrick Penny at Anderson's College (now the University of Strathclyde). Later he was appointed chief assistant to Dr. Penny, a post he held from 1857-1865. This was a private not an official college position. His obituarist, his nephew, states that during this period his most important undertaking was the analysis of over 100 exhibits in the trial of Dr. Pritchard in 1865 for murder.

Pritchard, a medical practitioner, was found guilty of the killing, by poisoning, of his wife and of his mother-in-law and he was the last man to be publically hanged in Glasgow. The certificates were signed by, and given in evidence, by Tatlock's employer, Dr. Penny [4].

Early Career – in Industry, as a Consultant Analyst and Teacher

From 1865-67 he was a chemist at the Kames Gunpowder Factory, Kyles of Bute. In 1867 he began his career as an analytical and consulting chemist in Glasgow in a laboratory in George Street. Success came slowly, gained by determination and hard work. In addition to commercial analysis, classes were held for students, some of whom became famous such as Sir William Ramsay, who was a student in 1869. Later Ramsay wrote "In 1869 I entered the laboratory of Robert Tatlock, who had been assistant to Professor Penny. Mr. Tatlock was (and is) an eminent analytical chemist and during the year I had with him I had a course of qualitative analysis and got through a good part of quantitative analysis" [1, 5]. Other students of significance include Robert Addie (1870-1934) [6] and William Rintoul (1870-1936) [7]. In parallel with his private classes, Tatlock was a lecturer in chemistry at the Glasgow Mechanics' Institute from 1873-1884 [8].

Research and Publications

Tatlock read his first paper, co-authored with James Chalmers (Chemist at the Kames Gunpowder Works), to the Chemical Section of the Glasgow Philosophical Society in 1860, on the gravimetric estimation of potassium [9]. Thereafter he produced a series of papers on a range of topics of concern to a public analyst. His later papers were co-authored with his nephew, Robert Tatlock Thomson. Many of his papers remain relevant even today, for example those on the calibration of glassware [10] and that “*On the practicality of internationally establishing and maintaining standard methods of sampling and analysis*” [11], cited not so long ago by Campbell as an exemplar on valid sampling [12]. In addition to his publications in the scientific literature, Tatlock held a Patent, Number 11,096 (1901) jointly with James Graham on “*Improved Automatic Self-inflating Life Belt, Garment or Appliance*” and his extensive verbal and written evidence to the Royal Commission on Whiskey and other Potable Spirits in 1908 was recorded in full [13].

Two of Tatlock’s methods were endorsed by Crookes in “*Select Methods of Chemical Analysis*” [14], namely those for the gravimetric determination of potassium and for mixed halogens. Crookes mentions, but with no references, that a Committee appointed by the chemical section of the British Association had looked into gravimetric determination of potassium as the platino-chloride. The three Committee Reports [15-17] record their approach to the problem that would still be acceptable in the present time. They sent a detailed circular questionnaire to all Fellows of the Chemical Society and to all gentlemen known to be interested in the subject. They received 37 positive replies and numerous declining to assist, such as:

“Dear Sir, We are in receipt of your favour relating to the examination of phosphates and potash salts; but we must decline to give you the information required, as we do not think ourselves called upon to publish our methods of analysis, which we have perfected after long and careful investigation, for the benefit of those who have not taken the trouble.

We are, dear sir, Yours obediently, &”

Among those who had replied positively were: CA Cameron (Public Analyst, Dublin), CR Fresenius (Wiesbaden), W Galbraith (former chemist, Phospho-Guano Co., Liverpool), Wallace, Tatlock and Clark (Joint Public Analysts, Glasgow). The bulk of the section of the First Report dealing with potassium is the exchange of correspondence to the Committee, given *in extenso*, respecting a sample of “muriate” analysed independently by Professor Fresenius and Mr RR Tatlock. Despite excellent agreement, 56.10% potassium and 55.97% potassium, respectively, using basically the same basic method, both found fault over the fine details in each other’s procedures [15]. The Committee carried out experiments using the modifications suggested to them from various sources, and in the Second Report [16] concluded that Tatlock’s modification to the basic method had many practical advantages. In the Third Report [17] the Committee recorded their experimental investigations into the determination of potassium by the silico-fluoride method, finding it to be useless in the presence of sodium.

His publications (see below, References) demonstrate his interests also included water analysis, food chemistry, migration of toxic metals from cooking ware, sustainability (using the heating power of smoke) and environmental matters (acid rain). All these topics remain in the territory of the modern Public Analyst.

Partnerships

In 1877 Tatlock joined in partnership with Dr. William Wallace and Dr. John Clark [18], both of them eminent analysts, and practised under the designation of Wallace, Tatlock and Clark. John Clark, also a pupil of Penney, was the predecessor to Tatlock as President of the Society of Public Analysts [19 (a)]. They proved to be a very strong combination and practically monopolised all the analytical work needed in the City of Glasgow. They were jocularly known locally as the “*Chemical Trinity*”. In 1877 Tatlock was, along with his partners, appointed Public Analyst for Glasgow, and held that post until his death. In 1888 this partnership was dissolved and Tatlock joined with Dr. JB Readman a well known Edinburgh analyst to form a new firm, RR Tatlock and Readman. After seven years Robert Tatlock Thomson was taken in as a partner and the style became RR

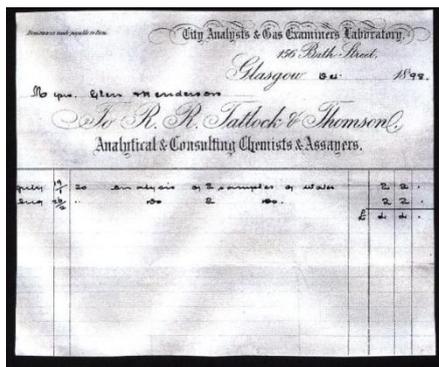


Fig 2 - Bill head for Tatlock and Thomson, 1898

Tatlock, Readman and Thomson. On Dr. Readman's retirement in 1895, the firm became RRTatlock and Thomson. The progress of the various later partnerships can in part be followed from the "List of Official Chemical Appointments", issued by the Institute of Chemistry from 1906 [20]. In 1906 the two partners were Agricultural Analysts to two counties and Public Analysts to eighteen burghs. In the 1934 listing [21], they were Official Agricultural Analysts to six authorities and retained the eighteen burghs; the City of Glasgow laboratory was staffed by 2 Public Analysts, RT Thompson and FW Harris, additional, T Cockburn; Staff, 3 first-class assistants, 4 second-class assistants and 3 junior assistants. As Tatlock's name is omitted the list must have been produced after his death. The company was continued after Tatlock's death by his nephew, and continues to this day, trading as Tatlock and Thomson but without the Public Analyst function.

Activities as Expert Witness

According to his nephew there were four outstanding matters dealt with in addition to the usual routine work of the laboratory during the various co-partnerships. In 1898 Tatlock was appointed Sewage Analyst to the Corporation of Glasgow, the object being to determine the best method of treatment taking into account all the local circumstances. In 1896 he was requested to go to South Africa to give expert evidence in favour of the patentees, McArthur and Forrest [22, 23] in the case brought by the Chamber of Mines to break their patent concerning the extraction of gold from ores and mine tailings with potassium cyanide. The case commenced February 17th 1896 in Pretoria before Chief Justice Jorissen. The case was prosecuted vigorously by JW Wessels and it appears from E Kahn's reminiscences of South African lawyers that Tatlock did not enter the witness box to give evidence [24]. According to Khan, "It was during the same case that Judge Jorissen said 'Mr. Wessels, don't ask him (meaning Sir William Crookes, the great scientist, who was giving expert evidence for the other side) another question. He is lying, and he knows he is a liar'. Thereupon Sir William Crookes left the box. The next witness to be called was Professor Tatlock. He absolutely refused to go into the box". Having heard the previous evidence and the defence barristers approach, Tatlock probably concluded that it was prudent professionally to withdraw. The judgement was delayed, possibly due to political pressure, until November 5th 1896, when Jorissen ruled that the scale up from laboratory experiment to production scale was not an invention, a judgment of interest worldwide in all gold mining locations, including the USA [25] and New Zealand [26].

Tatlock became involved in this case because, earlier, in 1889, he had endorsed the cyanide extraction process for gold in a pamphlet for the Cassel Gold and Silver Company (patent holders of the process in America) reported in the *Northern Advocate*. Their correspondent, Mr Melville reporting "Those who know and the position Mr Tatlock holds there, can form some idea of the great value to attach to his statements" [27]. Whilst in South Africa he also gave evidence in the Johannesburg Dynamite Inquiry, March 20, 1896, reported in newspapers in several mining areas, such as Australia [28, 29]. The fourth important business was to give evidence before the Royal Commission to answer the question "What is Whiskey?", noted earlier under publications [13].

Commercial Acumen

Like other Public Analysts of the period Tatlock was not averse to having his certificates and endorsements for products and processes published in the popular press and in trade journals. Many of his product endorsements were cited worldwide for example, that for paint in the *Otago Daily News*, 29th July, 1882 and for "Germol" in the U.S.A. [30], the latter an example of the assessment of the effectiveness of a phenolic disinfectant, a procedure that will be familiar to modern practitioners.

The Colonist.
Vol. XXV. NELSON, NEW ZEALAND, THURSDAY, OCTOBER 13, 1881. No. 2982
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Fig 3 - Otago Times 29 July 1882

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Fig 4 - American Trade Journals circa 1898

Contributions to the Profession

In 1867 Tatlock was elected a Fellow of the Chemical Society, in 1870 a Fellow of the Royal Society of Edinburgh and in 1877 a Fellow of the Institute of Chemistry. Tatlock was in 1876 a member of the Third Organisation Committee [31(a)] which led to the foundation of the Institute in 1877, and a member of its first Council [31(b)]. Whilst President of the Society of Public Analysts he was part of the joint Institute and SPA delegation, in 1908, to lobby the Board of Trade and Fisheries on the question of the security of tenure of appointments as Official Agricultural Analysts [31(c)]. He became a member of the Society of Public Analysts in 1876, served on its Council in 1887-8 and 1904-5, was Vice-President in 1891-2 and President in 1908-9 [19(b)]. During his Presidency in 1909, the Seventh International Congress on Applied Chemistry was held in London, Tatlock headed up section 8(C) on Bromatology (a term used at the time for the consideration of the nature and quality of food) [32]. When the Association of Public Analysts of Scotland was formed in 1903 he was elected its first President.

The Human Side

It is recorded [1] that he had “*the courtly manners of a true gentleman*” and that within and outside his profession he was excellent company, always having some good stories to tell. He was no narrow specialist and took an interest in politics, music and literature. He held liberal principles but was not a rigid or active party man. He was very fond of music, in his earlier days an excellent violinist. He was especially fond of Scots songs, and when going round the laboratory among his assistants would be quietly singing some melody.

He greatly admired Faraday for his great work as a chemist, and spoke of hearing him in a Glassite Chapel in Glasgow preach a simple and beautiful sermon on “*Let brotherly love continue*”.

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