

Short communication

100 years of chromatography—or is it 171?

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Abstract

It is pointed out that the term ‘chromatography’ existed already before Tswett introduced it for the separation technique he described.
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There have been a number of celebrations to mark the centenary of Tswett’s invention of the use of solid particles, packed in a column, to separate substances. The name of Tswett is connected not only with the discovery of this method of separation, but also with the invention of the term ‘chromatography’ (or chromatographie, the German equivalent) itself. A typical remark is that of Bayer [1] who states that Tswett coined the term chromatography from the Greek chroma (colour) and graphein (to write). Tswett introduced the term in his first 1906 paper [2], where he writes, “Ich solches Präparat nenne ich eine Chromatogramm und die entsprechende Methode, die chromatographische Methode”. That is, “I call such a preparation a chromatogram and the corresponding method the chromatographic method”. Tswett does not elaborate on this at all; indeed he does not refer to this nomenclature again in his paper, and he does not give the origin of the term. His next 1906 paper [3] is entitled “Adsorptionsanalyse und chromatographische Methode” but although he uses the terms chromatogramme and chromatographie in the text, the origin of the terms is again not discussed.

A number of commentators [4–6] have pointed out that the name ‘Tswett’ means ‘colour’ in Russian, and have speculated that Tswett named the technique after himself, literally ‘Tswett’s writing’. Purnell [5] and Etre [6] both suggest that Tswett was intrigued by this play on words when he formulated the term ‘chromatography’.

What seems to have been overlooked, is that the term ‘chromatography’ was in use throughout the 19th century in connection with artists’ materials, especially artists’ colours and pigments. George Field was the foremost ‘colourman’ of the nineteenth century and published his treatise on chromatography in 1835 [7], some 71 years before Tswett used the term. This book of George Field was no obscure manual. The list of subscribers included 20 members of the Royal Academy, amongst them such illustrious artists as Constable, Turner, Landseer and Thomas Laurence. The treatise was so popular that it was reprinted and extended in 1841 [8], 1869 [9] and 1885 [10], and it is likely that any professional artist would either have had a copy of ‘George Field’ or would have had access to a copy.

Interestingly, Field does not give the origin of the term ‘chromatography’, although he does spell out the origin of the name he gave to an apparatus he had constructed to view colours [8]. This was the ‘chromascope’ from the Greek ‘colour’ and ‘to view’. It is possible that the term ‘chromatography’ was so well known in 1835 that Field saw no reason to spell out the origin. Alternatively, Field may have thought that it was so close to ‘chromatics’ that readers would easily establish the connection. In his book of 1817, Field [11] notes that the term chromatics, defined [11] as the science of the relations of light, shade, and colours, had been in use since the 16th century.

Tswett’s mother tongue was French, and although there seems to have been no book entitled chromatography or chromatographie published in French during the 19th century, there was a very considerable exchange of painters between

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London and Paris. Alma-Tadema, Monet, Sargent, Sickert, Sisley, Tissot, Toulouse-Lautrec, Whistler and van Gogh all traveled between the two capitals in the last half of the 19th century, and must have been acquainted with Field's major work on artists' materials.

Both Campbell-Gamble [4] and Purnell [5] have speculated as to why Tswett used such an inappropriate term as 'colour-writing' to describe his method of separation. It seems quite possible that Tswett came across the term 'chromatography' in its artistic connection, was intrigued by the play on the words 'Tswett' and 'colour', and simply used the already existing term for his method of separation. Certainly the term 'chromatography' is more apt for a description of artists' colours than for a separation method (even of coloured substances).

'Chromatics' has a long history as a term to denote the scientific study of colour, and was followed by 'chromatography' used in connection with artists' materials. The artistic use of the term 'chromatography' has almost disappeared, but Simon Jennings has a fleeting reference to George Field's 'chromatography' in his recent manual on colour [12]. It is interesting that a term, originally only used by artists, is now almost exclusively the province of scientists.

Acknowledgement

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