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# Book Review

## CHROMATOGRAPHIC ADSORPTION ANALYSIS.

Selected works of Mikhail Semenovich Tswett. Compiler V. G. Berezkin. Ellis Horwood, London, 1990, 112 pp., price, £38.

Chromatography is, together with electrophoresis, the most important separation method which has contributed to the development of analytical chemistry and related disciplines in this century. Although some precursors can be traced, it was invented by the Russian biologist, M. S. Tswett. Therefore there is no doubt that any science library which has not acquired earlier editions of the classical papers reprinted here should purchase this book, from which one gets an insight into the original reasoning and experimental ingenuity of Michael Tswett.

The 1903 Warsaw lecture, published later in "Trudy Varshavskogo Obshchestva Estestvoispytatelei", the two well-known 1906 papers from the "Berichte der Deutschen Botanischen Gesellschaft" and the section on methods (i.e. Part I) from the monograph (1910 Warsaw doctoral Thesis) "Chromophylls in the Plant and Animal World", are presented here in an English translation.

Among other things, the reader can follow Tswett's changing attitude towards the role of adsorption in capillary analysis. Whereas he originally denied it, distinguishing his own "adsorption method" from the capillary analysis of Schoenbein and Goppelsröder, he later admitted the role of adsorption in the latter.

The title of the present book as well as its contents follow the lines of the 1946 Russian edition (USSR Academy of Sciences). Surprisingly, this important Russian book is rather inconspicuously quoted on p.102, and did in fact contain, similarly to the present English edition, a sketch of Tswett's life (Rikhter and Krasnosel'skaya). In writing another succinct biography of Tswett, Berezkin could now draw on a number of publications. The most important ones, namely Tswett's biography by K. Sakodynskii and the even more thorough one by E. M. Senchenkova (1973) as well as an article by L. S. Ettre, are duly acknowledged on p. 102. Of course, as it happens when conciseness is of prime concern, Berezkin could pay only passing attention to Tswett as a human being, on whose personality his letters to Briquet, Kuznetsov and especially Claparède shed light: a man interested in literature, music and psychology, sharing the interests of his friends, a devoted husband, an observer of historical and political developments. . . even his scientific interests including morphology, physiology and physical chemistry of plants and bacteria had to be squeezed to accommodate those which are connected with chromatography, the method for which he is now remembered.

The subsequent closing chapter of the present book, "M. S. Tswett and the foundation of chromatography", is based on a collection of citations. Berezkin is justified in drawing attention (p. 106; cf. p. 29) to the emphasis that Tswett laid on the fineness of the powder and the need for tight packing: the essence of "high-performance" liquid chromatography was thus already part of Tswett's original method; even the application of pressure to increase flow-rate was illustrated (cf. p. 63 in the present publication).

Berezkin quotes: "The fineness of the powder is especially important, since band broadening is obtained when crude grain material is used—this can be explained by the absorption being coupled with diffusion in wide capillaries." And he goes on: "*That is*, Tswett seems to be thinking of a micro-column version of chromatography." Evidently, this is a misunderstanding. Tswett meant here the untoward effect of diffusion in the broad capillary spaces between the particles, if the latter were not densely packed, not the use of broad-diameter capillaries in the micro-column version. On pp. 107–108 Berezkin states that Tswett used gradient elution. Stepwise elution is probably meant, the term "gradient elution" being presently reserved for continuous increase in the elution power.

The 1910 monograph is practically unavailable in most countries, and it also contained materials which were not directly linked with chromatography. If somebody wanted to acquaint himself with Tswett's ideas on the physiology and biochemistry of photosynthesis, he would be disappointed by the present book; although, as in the 1946 Academy of Sciences edition, the list of contents and possibly the bibliography also cover further parts of the monograph, their text is not presented.

Certain omissions might have been due to commercial factors: thus the translation into English of the 1903 Russian lecture and of part of a German paper in 1907 had already been published earlier by other publishers, but they are not mentioned. Berezkin is given credit as compiler, Mary R. Masson as translation editor. The name of the translator is not, however, declared. If compiling means collecting and arranging information and if a book of similar layout has already appeared, what does "compiler" mean in this context?

Unfortunately, the transliteration from the Cyrillic script is inconsistent, e.g. in one sentence, the same letter is transliterated as "h" and as "kh" (p. 5), "shch" becomes "stch" on p. 5 and "sch" on p. 81. The pun of chromatography being translated into Russian as "tsvetopis'" (literally, colour-writing) is spoiled by the misprint to "-pics" (p. 102). The printers or the proof-readers were no more successful in German: e.g. "sch" is presented as "sh" on p. 5. Anwendunge replaces Anwendungen on p. 105; Wurseln replaces Wurzeln on p. 102. Misprints also appear in Hungarian (Horváth becomes Norvath on p. 105); Czech (Stokljasa instead of Stoklasa, p. 69) and Russian (Sakodynakii, index p. 111). It should also be noted that the quality of the translation from Russian to English is very variable and may present problems for some readers unfamiliar with the biochemical background to the work.

In spite of these shortcomings the book is recommended to all analytical scientists, not just those interested in the history of science.

I. M. Hais