BOOK REVIEWS

Handbook for Analysts, Fundamentals (Analitikai kézikönyv, Módszertani alapok)

Edited by László ERDEY and László MÁZOR

Műszaki Kiadó, Budapest, 1973. 942. p. (in Hungarian)

In the field of analytical chemistry no concise survey of all applicable analytical methods has been published so far. The former coworkers of the late Prof. L. ERDEY tried to make up this deficiency by their recently published book, dealing with all the analytical methods so thoroughly that the method to be applied is easy to understand and to evaluate. The outline of this handbook had been compiled still by L. ERDEY. This book is recommended first of all to leaders of analytical laboratories whose main task is to select an appropriate method rather than to carry out the analysis itself. Besides, it is very useful also for students in higher education as well as for chemists attending post-graduate courses.

The following chapters are included in the book (with authors):

I. History of analytical chemistry (F. SZABADVÁRY), Sampling methods (L. MÁZOR), Results of analyses and calculation of error (J. BALLA); Qualitative analysis (L. MÁZOR); Volumetric analysis (I. BUZÁS); Gravimetric analysis (J. BALLA); Gas analysis (J. BALLA).

II. *Methods for separation*

Theory of separations (J. INCZÉDY); Application of Ion-exchangers (J. INCZÉDY); Electrochromatography (J. INCZÉDY); Paper chromatography (J. INCZÉDY); Thin-layer chromatography (M. KUCSERA-PÁPAY); Gas chromatography (J. TAKÁCS).

III. *Electroanalysis*

Fundamentals of electrotechnics (E. DEBRECZENY); Potentiometric analysis (É. BÁNYAI); Conductometric analysis (O. GIMESI); Oscillometry (O. GIMESI); Dielectrometry (O. GIMESI); Voltammetric methods (É. BÁNYAI); Electrolytic separation (É. BÁNYAI); Coulometric analysis (É. BÁNYAI).

IV. *Optical methods*

Fundamentals (L. PÓLOS); Emission spectrography (T. KÁNTOR); Flame photometry (T. KÁNTOR); Atomic absorption analysis (L. PÓLOS); Fluorometric analysis (L. PÓLOS); Electron probe X-ray microanalyzer method (L. PÓLOS); Electron microscopy (É. BUZÁGH-GERE); Polarimetry (É. BUZÁGH-GERE); Refractometry (É. BUZÁGH-GERE); E. S. R. spectroscopy (T. MEISEL); M. S. R. Spectroscopy (T. MEISEL); Mass spectrometry (I. CORNIDES); X-ray fluorescence analysis (S. GÁL).

V. *Thermal and radioanalytical methods*

Thermal methods (F. PAULIK and J. PAULIK); Calorimetric methods (P. MARIK-KORDA); Thermometric methods (P. MARIK-KORDA); Radioanalytical methods (F. SZABADVÁRY, E. DEBRECZENY and O. GIMESI).

F. SZABADVÁRY

L. ERDEY and G. SVEHLA: Ascorbinometric Titrations

Akadémiai Kiadó, Budapest, 1973. 183 p.

The influence of the activity of a really great scientist continues even after his death. Particularly if his death is so unexpected and sudden as that of Prof. L. ERDEY, the well-known professor of our University and the famous scientist of analytical chemistry. Four years have passed since his death in February 1970, when just in this journal I, his follower and a historian of analytical chemistry bade him farewell. This obituary not only contained the appreciation of his whole life and scientific activity but was completed by a bibliography of his works. However, this list did not include all his works, because ever since several papers have been published with ERDEY as co-author. This fact commensurates the importance of his inspiration and instructions in solving certain problems. At present there are two more posthumus books of his to be reviewed.

Most of measuring methods in classical titrimetry have already been developed during the last century. Few possibility remained to the analyst of our days to find new chemical reagents, since almost every compound have been tried formerly — either successfully or unsuccessfully. Especially great many experiments were carried out in the field of redox titrations. Numerous, very effective oxidizing solutions were found, while little success was achieved in finding reductometric solutions. Namely the reagents suggested for direct reductometric purposes required very complicated treatment, they were unstable, mostly did not sustain even the presence of air. As a matter of fact, no scientific publications on different reducing solutions appeared furtheron. In practice, oxidizing materials were determined generally by an indirect way: after previous reduction oxidized with an oxidizing reagent, as it is well demonstrated on the example of iron(III)-ion.

In 1950, Professor ERDEY suggested ascorbic acid as reducing material. It seemed to be a suitable one, since ascorbic acid as vitamin-C is an easily available industrial product and at the same time free of the disadvantages of the above mentioned reducing reagents, i.e. it is standard enough and can be stored in normal conditions. It is well applicable for the direct and indirect determination of oxidizing reagents. Great many redox indicators ensure excellent detection of end-point (from among them, especially the variamine blue indicator introduced again by ERDEY is to be mentioned). A further advantage of ascorbinometry is that it can be combined with iodometry and hexacyanoferrate (III) methods, widely extending, its applicability. Ascorbic acid was successfully used — besides for volumetric analyses — also for a number of catalytic chronometric and colorimetric determinations.

In the last decade, ascorbic acid was dealt with not only by László ERDEY and his disciples but also by several other chemists. Gyula SVEHLA, a coworker of ERDEY, clearly and excellently recapitulated all the relevant publications in this monography written in English language.

In addition to the treatment of theoretical problems, the detailed description of the single determinations is also given in the book, so it is a very useful help not only for the researchers but also for practical analysts.

F. SZABADVÁRY

Dr. Klára ERŐSS KISS: Application of infrared spectroscopy in analytical chemistry (Az infravörös spektroszkópia alkalmazása az analitikai kémiában)

Műszaki Kiadó, Budapest, 1974. (in Hungarian)

Formerly, infrared spectroscopy was considered as one among the theoretical branches of science. In the last decades, however, it has become an increasingly important measuring method both for researchers dealing with practical analytical problems and for engineers working in industry.

As great many analysts working a wide range of laboratories; engineers, physicians biologists and other researchers, use infrared spectroscopy as a method for solving problems, the publication of a practical guide in this field of science became both necessary and urgent. This aim is excellently achieved by the book of Mrs. Kiss. Theoretical questions are dealt with only to an undoubtedly necessary depth, while the book contains useful informations of use in practical problems and survey of literature on analytical chemistry of the last 15 years. It consists of 9 chapters, from among which the first four give a historical review and comprehen-

sive literature data, present particulars of the theory of the infrared spectra, the apparatus, the recording technique and different preparation problems. Chapter 5 discusses the relations of the qualitative analysis as well as the characteristic binding and group frequencies from analytical point of view. The summarizing tables attached to the end of the chapter can be used for evaluations of infrared spectra even without other literature sources.

In Chapter 6 the fundamentals of quantitative analysis and measuring methods are found.

Chapter 7 gives a literature review on the different practical applications of infrared spectroscopy. In this part the manysided applicability of this method is illustrated and a useful help is given to the analyst in choosing the appropriate method to solve a task or to elaborate new ways of determination.

The book is ended by an informatory chapter to help orienting in the literature of infrared spectroscopy, reviewing the different spectral collections and their application.

Mrs Kiss is an excellent specialist both of the theory and of the practice of infrared spectroscopy.

A completed English version of this book will soon be published in the series "Comprehensive Analytical Chemistry".

F. SZABADVÁRY

IRENE STRUBE: Justus von Liebig.

Teubner Verlag, Leipzig, 1973, 110 S.

Teubner Verlag gedenkte der Hundertjahrfeier des Todes von Justus Liebig durch Herausgabe des zu besprechenden Buches. Obzwar über Liebig schon viel geschrieben wurde, ist es doch immer nötig die Tätigkeit eines Wissenschaftlers von Zeit zu Zeit neu zu besprechen und zu untersuchen. Wissenschaft, Industrie, Landwirtschaft entwickeln sich fortwährend. Im Lichte dieser Entwicklung, verblaßt oft ein Teil einer längstvergangenen Forschertätigkeit, hingegen sich ein anderer Teil um so wichtiger zeigt. Die Zeit ist der beste und objektiveste Wertmesser wissenschaftlicher Tätigkeit.

Irene Strube hat schon durch manche chemiehistorische Werke gezeigt, daß sie fähig ist wissenschafts-geschichtliche Verläßlichkeit mit angenehmer Leslichkeit zu verbinden. In diesem Buch ist die objektive Würdigung Liebigs mit reichen und charakteristischen Zitaten aus den selbstbiographischen Aufzeichnungen Liebigs und aus seinem reichen Briefwechsel illustriert und erleichtert worden.

Der wertvollste Teil des Buches ist die Besprechung wie Liebig als sehr junger Universitätsprofessor in Gießen seine Lehr- und Forschertätigkeit begann und wie er es fertigbrachte in 18 Jahren ein System zu entwickeln, das der ganzen Welt als Modell diente, wie er ein internationales »Forscherteam« ausbildete, dessen Wirkung sich über alle Länder ausstrahlte.

Aus Gießen gingen Anregungen aus, die epochemachend für die Chemie und ihrer Anwendung waren, von dort ging die mächtige Entwicklung der organischen Chemie und landwirtschaftlichen Chemie aus.

Liebig mußte nie um Anerkennung kämpfen, die breite wissenschaftliche Umgebung bewunderte ihn. Um so mehr Energie benötigte der Kampf mit seiner eigenen schwachen physischen Natur und mit seinen eigenen Irrtümern. Diese gelang ihm aber auch zu überwinden: ein Kennzeichen nur von hervorragenden Persönlichkeiten!

Die Forschertätigkeit Liebigs war eigentlich im Alter von 50 Jahren, mit seiner Übersiedlung nach München beendet. Von da an wurde die Feder zu seinem Hauptinstrument. Die Tätigkeit Liebigs als Autor war von sehr großer Bedeutung, nicht nur in Deutschland, sondern in der ganzen Welt. Sie hatte z. B. sehr hohen Ausklang in Ungarn.

Der Verfasserin ist die Gießener Tätigkeit zu beschreiben und zu würdigen ausgezeichnet gelungen, hingegen ich die der Münchener etwas blasser gefunden habe.

Trotzdem bin ich der Meinung, daß Strubes Liebig Buch eine wertvolle Ergänzung der chemie-historischen Literatur bedeutet.

Z. SZŐKEFALVI-NAGY