Mitteilungen aus chemischen Gesellschaften

The Society for Analytical Chemistry

Ordinary Meeting

An Ordinary Meeting of the Scottish Section of the Society for Analytical Chemistry was held at 7.15 p. m. on Wednesday, November 15th, 1961, at the Royal Society of Edinburgh, 22 George Street, Edinburgh, 2. The Chair was taken by the Chairman of the Section, Mr. *A. F. Williams*, B. Sc., F. R. I. C.

The following paper was presented and discussed:

'Recent Developments in Chromatography on Cellulose and Ion-Exchange Cellulose", by *N. F. Kember*, A. R. P. S., A. R. I. C. (Chief Chemist, W. & R. Balston Ltd., Maidstone, Kent).

The development of chromatographic methods of analysis tends, from its initial simplicity, to become empirical. By an understanding of the reasons for the correct choice of a chromatographic medium, an improvement can frequently be made to the efficiency of a separation. This aspect was first discussed with relation to conventional chromatography with organic solvents on unmodified cellulose. More advanced forms of chromatographic media were then discussed including ion-exchange cellulose, hydrophobic papers and loaded papers together with special techniques which can be used to take advantage of the particular properties of these papers.

Joint Meeting

A Joint Meeting of the North of England Section of the Society for Analytical Chemistry and the Newcastle upon Tyne and North-East Coast Section of the Royal Institute of Chemistry was held at 6.30 p. m. on Wednesday, 15th November, 1961, in the Chemistry Department, King's College, Newcastle upon Tyne, 1. The Chair was taken by the Chairman of the North of England Section, Mr. *J. Markland*, B. Sc., F. R. I. C.

The following paper was presented and discussed:

"Chemical Services on British Railways", by *G. H. Wyatt*, B. Sc., Ph. D., F. R. I. C. (British Railways Chemical Services Laboratories, Muswell Hill, N. 10).

The early history and present organisation of Chemical Services in British Railways was described and an account was given of the functions of the component laboratories, nine of which deal with general matters arising in the nine areas into which the country is divided and five of which are

specialist sections. All of these may be consulted by any railway department as well as by certain other sections of the British Transport Commission. The resultant day-to-day business and routine testing cover a wide field and a number of investigations were selected to illustrate the variety of work undertaken by the railway chemist.

Annual General Meeting of the Physical Methods Group

The Seventeenth Annual General Meeting of the Physical Methods Group of The Society for Analytical Chemistry was held at 6.45 p. m. on Tuesday, November 21st, 1961, in the Meeting Room of the Chemical Society, Burlington House, Piccadilly, London, W. 1. The Chair was taken by the Chairman of the Group, Dr. *G. W. C. Milner*, F. R. I. C., A. Inst. P.

The following officers were elected for the forthcoming year:

Chairman: Dr. *W. Cule Davies*, F. R. I. C.

Vice-Chairman: Mr. *L. Brealey*, B. Sc., F. R. I. C.

Hon. Secretary and Treasurer: Dr. *T. L. Parkinson*, B. Sc., F. R. I. C., Product Research Division, Beecham Foods Ltd., Harpenden Rise, Harpenden, Herts.

The Annual General Meeting was followed by the 80th Ordinary Meeting of the Group. Dr. *W. Cule Davies* was in the Chair.

The retiring Chairman, *G. W. C. Milner*, D. Sc., F. R. I. C., A. Inst. P., delivered a lecture entitled

"Electrochemical Methods in Analysis"

In polarography, consideration is given to the newer techniques employing square-wave or rectangular voltage wave forms. The advantages of this type of instrument in analysis were described. In cathode-ray polarography, the potentialities of the differential cathode-ray polarograph were discussed. The technique of controlled-potential coulometry was considered in some detail, and the advantages of this method for the determination of certain metals in mineral and metallurgical analysis were described.

Joint Meeting

A Joint Meeting of the North of England Section of the Society for Analytical Chemistry and the Manchester and District Section of the Royal Institute of Chemistry was held at 2 p. m. on Friday, 1st December, 1961, in the Large Lecture Theatre, Manchester Literary and Philosophical Society, 36 George Street, Manchester, 1. The Chair was taken by the Chairman of the North of England Section, Mr. *J. Markland*, B. Sc., F. R. I. C.

The following paper was presented and discussed:

"The Design and Construction of Laboratories", by *R. R. Young*, F. R. I. B. A., and *P. J. Harrington*.

Various types of laboratories. Preliminary discussions with Scientist in charge mainly concerning site, accommodation required, i. e. schedule of rooms (with floor areas); grouping of rooms; location of groups of rooms at various floor levels; orientation of rooms; locations of stairs; facilities for unloading bulk stores; accesses into building; car parking; cost of building.

Small-scale plans prepared and revised until agreement is reached on general plan arrangement. Main lines of drainage, all services, air supply (if any) and air extracts indicated on small scale plans, in consultation between Scientist in charge, Heating and Ventilating Services Consultants and Architect. Access to service runs.

Structural System adopted in consultation with Structural Consultant. Flexibility of structure.

Large-scale plans now prepared, concurrently with preparation by Scientist in charge of sketch plans of each room showing diagrammatically his specific requirements, i. e. positions of benches (peninsular or island), fume cupboards, service points, sinks, lighting and power points, cupboards, drawers, shelving.

Information on these sketch plans transferred to large scale plans. Gradual build-up of large scale plans, sections and elevations. Frequent discussions with Scientist in charge and all Consultants, and submission of all plans to them for approval.

Advice required on following:

Acids and solvents to be used in laboratories. Building materials to be used to withstand acids and solvents. Fire hazards. Flooding hazards. Radiation hazards. Special equipment.

Still larger details prepared for fume cupboards, benches etc. with drainage and services to these. Gradual build-up of all joinery and furniture details and specification of finishes.

Quantity Surveyor. Bills of Quantities. Tenders. Selection of General Contractor and sub-contractors.

The Meeting was preceded at 10 a. m. by a visit to the Laboratories of Imperial Chemical Industries Ltd., Pharmaceuticals Division, Alderley Park, Cheshire.

Annual General Meeting of the Biological Methods Group

The seventeenth Annual General Meeting of the Biological Methods Group of the Society for Analytical Chemistry was held at 6.30 p. m. on Thursday, December 14th, 1961, in the Restaurant Room of the "Feathers", Tudor Street, London, E. C. 4. The Chair was taken by the Vice Chairman of the Group, Mr. *W. A. Broom*, B. Sc., F. R. I. C.

It was announced that the Officers for the next year would be:

Chairman: Mr. *J. S. Simpson*, F. I. M. L. T.
Vice-Chairman: Mr. *W. A. Broom*, B. Sc., F. R. I. C.
Hon. Secretary and Treasurer: Mr. *K. L. Smith*, M. P. S., Standards Department, Boots Pure Drug Co. Ltd., Station Street, Nottingham.

Immediately following the A. G. M. a Discussion Meeting on "Assessment of Anti-Atherosclerotics" was opened by *G. S. Boyd*, Ph. D., A. R. I. C.

Joint Meeting

A Joint Meeting of the Society for Analytical Chemistry and the Infra Red Discussion Group was held at 11.10 a. m. on Friday, December 15th, 1961, at King's College, Strand, London, W. C. 2.

The subject of the meeting was:

"*Applications of Infra Red Spectroscopy to Quantitative Analysis*" and the following papers were presented and discussed:

Morning Session. The Chair was taken by the Chairman of the Society, Dr. *A. J. Amos*, F. R. I. C.

"Introductory Paper", by *W. R. Ward*, M. A. (Distillers Co. Ltd., Hull).

A résumé of the principles of absorption spectrophotometry and a discussion of the systematic errors encountered in infra red absorbance measurements; methods for eliminating or overcoming these errors in the infra red analyses of mixtures were suggested.

Infra red quantitative analyses can often be made possible or their sensitivity much increased by simple separatory procedures; examples were quoted.

"The Analysis of Agricultural Chemicals by Infra Red Spectroscopy", by *P. G. Marshall*, M. A. (Standards Department Boots Pure Drug Co. Ltd., Nottingham).

The basic principles that govern the development of infra red methods in a control laboratory were briefly described. Their application to multi-component analyses was then discussed with special reference to the determination of the active constituents of a selection of agricultural, horticultural and veterinary preparations.

Afternoon Session. The Chair was taken by the Chairman of the Infra Red Discussion Group, Dr. *A. E. Martin.*

"Quantitative Analysis of Milk and Other Emulsions by Infra Red Absorption Spectroscopy", by *J. D. S. Goulden*, B. Sc., Ph. D. (National Institute for Research in Dairying, University of Reading).

Effects due to variations in fat globule size and to the intense water absorption can be eliminated by examining difference spectra of homogenized emulsions against water. Even though the total energy transmitted at the fat, protein and lactose peaks near 5.8, 6.5 and 9.6 μ is only a few per cent, it has been possible to carry out a rapid 3-component analysis of milk with a fair degree of accuracy.

"Quantitative Analysis of Phosphonitrilic Chloride Polymer Mixtures by Infra Red Spectroscopy", by *A. C. Chapman*, B. Sc., Ph. D., A. Inst. P., *R. T. Baggott*, *R. Harper*, and Miss *I. Walker* [Albright & Wilson (Mfg) Ltd., Birmingham].

Mixtures of cyclic phosphonitrilic chlorides $(PNCl_2)n$ where $n = 3$ to 7 or higher have been analysed in solution by making use of (a) a ring stretching vibration which lies at a lower frequency in the trimeric molecule than in the others, (b) strong coupling between the P-Cl bonds which gives a wide spread to the P-Cl stretching vibrations and reduces overlapping between the spectra of the different polymers.

"Some Applications of Infra Red Spectroscopy to Quantitative Analysis in the Pharmaceutical Industry", by *H. D. C. Rapson*, B. Sc., Ph. D., D. I. C., *K. W. Austin*, and *E. A. Cutmore*, M. Sc. (Beecham Research Laboratories Ltd.).

A number of applications of infra red spectroscopy to the analytical problems encountered in pharmaceutical research and quality control were presented. The applications were selected so as to illustrate as far as possible the range of techniques currently used. Reference was made to some of the problems that confront the spectroscopist in the pharmaceutical industry.

Société de Chimie Industrielle

Groupe de la Chimie Analytique

Compte rendu de la séance du mercredi 8 novembre 1961

La séance est ouverte à 17 h 30 sous la présidence de M. le Professeur *G. Chaudron*, membre de l'Institut. Celui-ci donne la parole à Mme *Micheline Viltange*, chargée de Recherche au C. N. R. S., pour exposer: «*Application de la méthode de la zone fondue à la chimie analytique*».

Le principe de la méthode dite de la zone fondue, utilisée par les métallurgistes, peut s'appliquer à tout système de solution en voie de congélation dans lequel la diffusion a lieu plus rapidement dans le milieu liquide que dans le milieu solide. Il a, de plus, l'avantage précieux pour l'analyste, de concentrer la plus grande partie des impuretés de l'échantillon dans une partie restreinte de celui-ci. Il est donc utilisé en chimie minérale et organique.

On décrit les appareils adaptés aux cas particuliers des études entreprises et qui s'inspirent des mêmes principes que ceux des métallurgistes. On passe ensuite en revue les moyens d'analyse des substances soumises au traitement de la zone fondue: coloration ou fluorescence des impuretés, mesure du point de fusion et surtout, mesure de la résistivité électrique des métaux et semi-métaux, et mesure de la radioactivité. A cet effet, on indique le schéma analytique des séparations chimiques préalables au dosage par cette dernière méthode, des impuretés dans l'aluminium. D'autres exemples sont donnés.

On rappelle enfin quelques réalisations effectives tant en chimie minérale qu'en chimie organique: purification de sels ioniques, séparation d'isomères, fractionnement de substances de points d'ébullition voisins, isolement de constituants de mélanges azéotropiques, le problème de la purification d'un corps intéressant l'analyste au même titre que son dosage.

Le Président remercie Mme *Viltange* et donne des explications complémentaires sur certains points de l'exposé. Il présente ensuite Mme *Gisèle Courbet*, documentaliste, qui retrace l'*histoire de la chimie analytique avant 1800.*

Dans une première partie, Mme *Courbet* expose l'historique des méthodes qualitatives de chimie analytique: voie sèche et voie humide signalées par *Basile Valentin* au 15ème siècle.

Réactions colorées: Pline utilise la noix de galle, réactif généralisé au 17ème s. par *Tachenius. Robert Boyle:* premier emploi du sirop de violette pour distinguer l'acidité de l'alcalinité d'une substance, puis des sucs colorés des végétaux.

Réactions de précipitation: propriété des métaux de se déplacer mutuellement dans un ordre déterminé connue au 17ème s. *(Stahl, Boyle)*. Coloration du verre en rouge par l'or observée par *Libavius* au 16ème s. *Cassius:* auteur présumé du précipité pourpre, *Glauber* précipite l'or de sa dissolution dans l'eau régale par la «liqueur des cailloux». Histoire du bleu de Prusse *(Dippel, Bergman)*.

Essais pyrognostiques: Paracelse, Marggraf. Coloration rouge carmin pour le strontium, verte pour le baryum, rouge orangé pour le calcium signalée par *Hope* en 1793. Intérêt accru pour la coloration des flammes après la découverte du chlorate de potassium par *Berthollet* en 1786.

Cristallisation: travaux de *Paracelse, Bernard Palissy, Marggraf* (cristallisation du salpêtre), *Crawford* (découverte du strontium) et *Lowitz* (utilisation de la cristallisation sous le microscope comme moyen d'analyse en 1793).

Essais sous le microscope: Boyle, Marggraf et *Eller.*

Débuts de l'analyse spectrale: étude de quelques flammes colorées à l'aide du prisme par *Thomas Melwill*, en 1752. Découverte par *Wollaston* des raies du spectre solaire en 1802.

La seconde partie de l'exposé de Mme *Courbet* est relative aux méthodes quantitatives d'analyse.

Méthodes pondérales: Bergman (quantité de sels contenus dans les eaux d'après le poids des précipités), *Lavoisier* (analyse organique élémentaire) et *Richter* (calcul des masses).

Méthodes volumétriques: définition de la technique des opérations alcalimétriques et acidimétriques par *Descroizilles.*

Méthodes physiques: Baumé et *Hassenfratz.*

Création de la chimie pneumatique grâce aux travaux de *Van Helmont* et de *Jean Rey*, puis ceux de *Boyle, Mayow, Bernouilli, Hales* et *Lavoisier.*

A la fin du 18ème siècle, malgré des erreurs assez notables du fait de grandes difficultés techniques, la chimie analytique est fondée non plus sur l'observation des détails mais sur une méthode expérimentale qui fait appel à des mesures de plus en plus précises et systématiques.

M. le Professeur *Chaudron* remercie et félicite la conférencière. Parmi les auditeurs, M. *Emile André* félicite particulièrement Mme *Courbet* et fait part de l'intérêt qu'il a éprouvé en écoutant cet historique.

La séance est levée à 19 h 05.

Buchbesprechungen

Monographs on the Radiochemistry of Elements*

Die hier angeführten weiteren Bändchen sind erschienen und können von "The Office of Technical Services — Department of Commerce — Washington 25, D. C. — USA" bestellt werden:

NAS-NS 3040, *The Radiochemistry of Lead*, 158 Seiten, $ 1.75. Autor: *W. M. Gibson*, Bell Telephone Laboratories, Murray Hill, New Jersey.

NAS-NS 3041, *The Radiochemistry of Cobalt*, 90 Seiten, $ 1.00. Autoren: *L. C. Bate* and *G. W. Leddicotte*, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

NAS-NS 3043, *The Radiochemistry of Germanium*, 48 Seiten, $ 0.50. Autor: *J. A. Marinsky*, University of Buffalo, Department of Chemistry, Buffalo, New York.

NAS-NS 3044, *The Radiochemistry of Platinum*, 30 Seiten, $ 0.50. Autor: *G. W. Leddicotte*, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

NAS-NS 3047, *The Radiochemistry of Silver*, 55 Seiten, $ 0.75. Autoren: *D. N. Sunderman* and *C. W. Townley*, Batelle Memorial Institute, Columbus, Ohoi.

NAS-NS 3048, *The Radiochemistry of Potassium*, 41 Seiten, $ 0.50. Autoren: *W. T. Mullins* und *G. W. Leddicotte*, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

* Siehe Mikrochim Acta Wien **1960**, 484, 623; **1961**, 164, 686, 985.