

P R O C E E D I N G S  
O F T H E  
C H E M I C A L S O C I E T Y .

Ordinary Scientific Meeting, Thursday, January 21st, 1926, at 8 p.m. In the absence of the President, the Chair was occupied by Prof. W. P. WYNNE, D.Sc., F.R.S., Vice-President.

Reference was made to the following deaths :

	Elected.	Died.
John Ernest Jewell .....	Dec. 7th, 1922.	Sept. 20th, 1925.
John Henry Village .....	Feb. 19th, 1925.	Sept. 22nd, 1925.

and the following announcements were made :

1. That the Council has received with sincere regret, as from the next Annual General Meeting, the resignation of Dr. Arthur W. Crossley from the office of President owing to ill-health. At its meeting this afternoon, the Council had passed the following resolution :

“ The Council, having received with great regret Dr. Crossley’s wish to resign the Presidency at the close of his first year of office on the ground of ill-health, desires to express its sincere thanks for the services he has rendered as President and its best hope that his recovery may be speedy and complete.”

2. That the names of the members of Council who retire at the Annual General Meeting on March 25th, 1926, and who are ineligible for re-election to the same office until after the lapse of one year, are as follows :

Vice-Presidents who have filled the office of President :

Sir William J. Pope and Sir James Walker.

Vice-Presidents who have not filled the office of President :

Prof. G. T. Morgan and Prof. J. M. Thomson.

Ordinary Members of Council :

- (a) Town Member :  
 Dr. G. W. Monier-Williams.
- (b) Country Members :  
 Prof. W. N. Haworth, Prof. C. K. Ingold, Dr. H. McCombie,  
 and Prof. J. Reilly.

The following vacant places fall due to be filled at the Annual General Meeting to be held at the University of Manchester on Thursday, March 25th, 1926, at 4 p.m. :

President	...	...	...	...	One vacancy.
Vice-Presidents who have filled the office of					
President	...	...	...	...	Two vacancies.
Vice-Presidents who have not filled the office					
of President	...	...	...	...	Two vacancies.

Ordinary Members of Council :

- (a) Town Members ... .. One vacancy.
- (b) Country Members ... .. Four vacancies.

The Council has nominated Prof. H. Brereton Baker to the office of President.

The following letter has been received from Madame Mendeleév thanking the Council for financial assistance afforded from the Russian Fund Account, which is now closed :

LENINGRAD,  
 KATTARIN STR. 27,  
 December 25th, 1925.

DEAR SIR,

Herewith I thank you and the Chemical Society for the cheque I have just received.

The Chemical Society helped me in hard times and I hasten to express my sincere gratitude for all that the Chemical Society has done for me.

If ever I shall be in need of help, I hope you will allow me to address myself again to you.

With best thanks,

I remain,

Yours very truly,

S. E. CARR, Esq.

ANNA MENDELEÉV.

The following were formally admitted Fellows of the Chemical Society : E. A. Tricker, E. F. Gee, G. Jessop, S. Lenher, G. A. Elliott, S. Husain, H. W. Palmer, E. Britnell, E. B. Evans, L. J.

Chalk, H. F. Betts, R. F. Smith, C. H. L. Miller, and J. B. Murgatroyd.

Certificates were read for the first time in favour of :

- Thomas Harvey Bailey, 40, Avenue Road, Highgate, N. 6.  
 George Henry Carter, 31, Horsforth Avenue, Bridlington.  
 Sydney George Clarke, B.Sc., A.I.C., 38, Durlston Road, Kingston.  
 William Joseph Elford, B.Sc., Ph.D., A.I.C., National Institute for Medical Research, Hampstead, N.W. 3.  
 Frederick Raine Ennos, B.A., B.Sc., A.I.C., 34, Carminia Road, Upper Tooting, S.W. 17.  
 Graham Charles Gibson, B.Sc., A.I.C., 14, College Square, Llanely.  
 Antonius de Graaf, Philips' Glowlampworks, Eindhoven.  
 Richard Walter Hardacre, M.Sc., 17, Bright Street, Skipton.  
 Arthur Jacob Immins Harding, M.Sc., Ratcliffe House, The Fosse, Syston.  
 John Haslam, M.Sc., 6, Colwith Road, Hammersmith, W. 6.  
 Joseph Frederick Hirst, B.Sc., A.I.C., 3, Wolseley Gardens, Gunnersbury, W. 4.  
 Thomas Hodgkinson, B.Sc.Tech., Kululu, Temple Street, West Brunswick, Melbourne.  
 Charles Ambrose Kelly, 26, Gloucester Road, Tue Brook, Liverpool.  
 James Wallace Laing, 85, Polwarth Gardens, Edinburgh.  
 Percy Joshua Leaper, B.Sc., A.I.C., 207, Meadow Street, Nangatuck, Conn., U.S.A.  
 Philip Guy Marshall, 39, Prince's Avenue, Watford.  
 Leonard William Needham, M.Sc., 92, Greenfield Road, Harborne, Birmingham.  
 Millicent Emma Nottage, B.Sc., 162A, Hampton Road, Twickenham.  
 John Packer, M.Sc., Chemistry Dept., Imperial College of Science and Technology, S. Kensington, S.W. 7.  
 Jogesh Chandra Paul, B.Sc., Harababu's Ghat, Serampore P.O., Bengal.  
 Henry Grattan Pring, Slieve na Failte, Whiteabbey, co. Antrim.  
 George Henry Purvis, Mona Lodge, Usk.  
 Henry Mills Spittle, Hillfoot Bungalow, Church Street, Wednesbury.  
 Cyril James Allan Taylor, M.Sc., A.I.C., 7, Chetwynd Road, Wolverhampton.  
 James Walkden, 33, Hemming Street, Winnington, Northwich.  
 Kenneth Norman Welch, B.Sc., The Hollies, Westfield Drive, Gosforth.  
 George Ogilvie Wills, B.Sc., Ph.D., 1, Melbourne Terrace, Saltcoats.  
 William John Wilson, F.I.C., Fairlawn, Honor Oak Road, Forest Hill, S.E. 23.  
 William Ewart Wright, M.Sc., A.I.C., 54, Ash Street, Southport.

The following certificates have been authorised for presentation to ballot under Bye-Law I (2) :

- James Miller Breckenridge, M.S., Ph.D., Vanderbilt University, Nashville, Tenn., U.S.A.  
 Hugh Martin Leake, Sc.D., M.A., Imperial College of Tropical Agriculture, St. Augustine, Trinidad.  
 L. S. Narayanaswamy, B.A., M.B., B.S., 2, Akbar Sahib Street, Triplicane, Madras.  
 Johan Pieter Wibaut, Org. Chem. Laboratorium, The University, N. Prinsengracht 126, Amsterdam.

The following papers were read :

- “Studies of valency. Part VII. Surface polarity and the reaction of ethylene and chlorine. The effect of the adsorbed water layer.” By R. G. W. NORRISH and G. G. JONES.
- “A revision of the structural formula of glucose.” By W. CHARLTON, W. N. HAWORTH, and S. PEAT.
- “Dvi-manganese.” By J. G. F. DRUCE and F. H. LORING.
- “The nitration of benzamidines.” By R. FORSYTH, V. K. NIMKAR, and F. L. PYMAN.

---

### LECTURE.

Professor J. Barcroft's lecture entitled “Hæmoglobin” will be delivered in the Chemistry Theatre of University College, Gower Street, on Thursday, February 11th, 1926, at 8 p.m. Light refreshments will be provided in the College Refectory after the meeting.

---

### ANNUAL GENERAL MEETING.

The Annual General Meeting will be held in the University of Manchester on Thursday, March 25th, 1926, at 4 p.m., the Dinner being held at the Midland Hotel, Manchester, the same evening at 6.30 for 7 p.m. Tickets, price 10s. 6d. each, for ladies or gentlemen (including gratuities but not including wine), can be obtained from Mr. L. B. Tansley, The Shirley Institute, Didsbury, Manchester.

List of papers, or abstracts thereof, received between December 17th, 1925, and January 21st, 1926. (This list does not include the titles of papers, or abstracts thereof, which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

- “Preparation and reduction of methyleneanthrone.” By E. de B. BARNETT and M. A. MATTHEWS.
- “Studies on the Walden inversion. Part X. The reaction between water and the phenylchloroacetate and phenylbromoacetate ions.” By A. M. WARD.
- “The relative directive powers of groups of the forms RO- and RR'N- in aromatic substitution. Part I.” By J. ALLAN and R. ROBINSON.
- “The relative directive powers of groups of the forms RO- and RR'N- in aromatic substitution. Part II. The nitration of some 2-benzyloxyanisoles substituted in the benzyl group.” By A. E. OXFORD and R. ROBINSON.
- “The relative directive powers of groups of the forms RO- and

- RR'N- in aromatic substitution. Part III. The nitration of some *p*-alkyloxyanisoles." By R. ROBINSON and J. C. SMITH.
- "The relative directive powers of groups of the forms RO- and RR'N- in aromatic substitution. Part V. The nitration of phenyl *p*-methoxyphenyl ether." By T. R. LEA and R. ROBINSON.
- "Investigations on the dependence of rotatory power on chemical constitution. Part XXVIII. *d*- $\beta$ -Butylbenzene." By P. W. B. HARRISON, J. KENYON, and J. R. SHEPHERD.
- "The chemistry of polycyclic structures in relation to their homocyclic unsaturated isomerides. Part VI. Some reactions of isophorone." By J. W. BAKER.
- "The interaction of nitric oxide and hydrogen and the molecular statistics of termolecular gaseous reactions." By C. N. HINSHELWOOD and T. E. GREEN.
- "Styrylpyrylium salts. Part VI. Styryl derivatives of 9-methylxanthylum chloride, and 3 : 6-dihydroxy-9-methylxanthylum chloride." By H. ATKINSON and I. M. HEILBRON.
- "The arylsulphuric acids." By G. N. BURKTHARDT and A. LAPWORTH.
- "An automatic syphonic gas circulator." By G. M. GREEN.
- "The reactivity of alkyl iodides with sodium benzyl oxide—a criticism." By L. J. GOLDSWORTHY.
- "The velocities of the reactions between ethyl iodide and the sodium salts of various substituted phenols in ethyl-alcoholic solution." By L. J. GOLDSWORTHY.
- "The molecular configurations of polynuclear aromatic compounds. Part V. The identity of the nitration products derived from 2 : 7- and 4 : 5-dinitrophenanthraquinones." By G. H. CHRISTIE and J. KENNER.
- "The molecular configurations of polynuclear aromatic compounds. Part VI.  $\beta$ -Dinitrodiphenic acid; its constitution and resolution into optically active components." By G. H. CHRISTIE, A. HOLDERNESS, and J. KENNER.
- "The conversion of berberine into  $\beta$ -homochelidonine ( $\alpha$ -allo-cryptopine)." By R. D. HAWORTH and W. H. PERKIN.
- "Tetrahydroacridine, octahydroacridine, and their derivatives. Part II. Resolution of the octahydroacridines (A) and (B)." By W. H. PERKIN and W. G. SEDGWICK.
- "Orientating effects in the diphenyl series. Part I." By H. G. DENNETT and E. E. TURNER.
- "The reciprocal salt pair (Na, Ba)-(Cl, NO<sub>3</sub>) in aqueous solution at 20°." By A. FINDLAY and J. CRUICKSHANK.

- “The electrometric titration of halides.” By W. CLARK.
- “Synthetical work on the *isoquinoline* alkaloids. Part I. Some substituted *o*-carboxyphenylethylamines.” By G. A. EDWARDS.
- “Synthetical work on the *isoquinoline* alkaloids. Part II. A method of opening the rings of cyclic ketones. By G. A. EDWARDS.
- “Some unsymmetrically substituted dinitro- and diamino-derivatives in the stilbene and tolane series. Part II. The mode of addition of water to 3 : 4'-dinitro- and diamino-tolanes.” By H. A. HARRISON.
- “Elimination of the amino-group of tertiary amino-alcohols. Part III. A new method for the preparation of optically active ketones.” By A. MCKENZIE, R. ROGER, and G. O. WILLS.
- “10-Chloro-5 : 10-dihydrophenarsazine and its derivatives. Part I. The synthesis, preparation, and some properties of 10-chloro-5 : 10-dihydrophenarsazine.” By H. BURTON and C. S. GIBSON.
- “10-Chloro-5 : 10-dihydrophenarsazine and its derivatives. Part II. The action of primary chloroarsines on diphenylamine and its homologues.” By H. BURTON and C. S. GIBSON.
- “A comparison of the atomic weight of silicon from different sources.” By P. L. ROBINSON and H. C. SMITH.
- “The constitution of the oxidation products obtained by the action of chromyl chloride on the terpenes, as deduced from a new interpretation of the reaction.” By J. SWORD.
- “Studies on the dependence of optical activity on chemical constitution. Part VII. The absorption spectra of aryl derivatives of imino- and bisimino-camphor.” By B. K. SINGH and R. RAI.
- “The absorption spectra of various derivatives of salicylic acid.” By J. E. PURVIS.
- “Synthesis of iodine compounds of the salvarsan group.” By A. D. MACALLUM.
- “Preparation of bromohydrin.” By F. H. McDOWALL.
- “Investigations in the diphenyl series. Part I. Migration reactions.” By F. BELL, J. KENYON, and P. H. ROBINSON.
- “Experiments on the variation of the angles of crystals during growth.” By E. S. HEDGES.
- “Experiments on the synthesis of brazilin and hæmatoxylin and their derivatives. Part I. Veratrylidene-7-methoxychromanone and an account of a new synthesis of some benzopyrylium salts.” By W. H. PERKIN, J. N. RAY, and R. ROBINSON.
- “Synthesis of 7-methoxy-3-(6-bromohomopiperonyl)-2-methyl-1 : 4-benzopyrone.” By W. BAKER.

- “The resolution of *dl*-alanine and the formation of trans-2 : 5-dimethylpiperazine.” By F. B. KIPPING and W. J. POPE.
- “A study of the rule of conservation of substitution type in aromatic substances. Part I. The chlorination of 2-chloro-4-nitrotoluene.” By W. DAVIES and G. W. LEEPER.
- “The reactivity of meso-substituted anthracenes. Part I.” By J. W. COOK.
- “Derivatives of tetrahydrocarbazole. Part V. Carboxylic acids.” By W. M. COLLAR and S. G. P. PLANT.
- “The reduction of ethyl dibenzylacetoacetate.” By E. S. HILL.
- “The complexity of the solid state. Part III. The behaviour of pure sulphur trioxide. Part II.” By A. SMITS and P. SCHOENMAKER.

CERTIFICATES OF CANDIDATES FOR ELECTION AT  
THE BALLOT TO BE HELD AT THE ORDINARY  
SCIENTIFIC MEETING ON THURSDAY, FEBRUARY  
18TH, 1926.

N.B.—The names of those who sign from “General Knowledge” are printed in *italics*.

BAILEY, EDWIN MELHUISH, Almond Hill, Pumpherston, Midcalder. Scotch. Technical Chemist. Since 1898 I have been Chief Chemist with Pumpherston Oil Co., Ltd., engaged in manufacture of crude shale oil and its refining, and in the production of sulphate of ammonia, and at present am Chief Chemist with Scottish Oils, Ltd. (*Signed by*) A. E. Dunstan, R. G. Neilson, F. G. P. Remfry, Thos. A. Smith, S. F. Birch.

BAILEY, THOMAS HARVEY, 40, Avenue Rd., Highgate, N. 6. British. London Manager and Technical Chemist to Spurway & Cie, Ltd., Essential Oil Distillers, etc., Cannes-Grasse, France. Pharmaceutical Major qualification. For 17 years on staffs of the British Drug Houses, Evans, Sons, Lescher & Webb, and Burroughs Wellcome & Co. Have carried on a considerable amount of experimental work in connection with essential oils and synthetic products used in perfumery, and am desirous of utilising the literature, library, and lectures of the Society for furthering that work. (*Signed by*) John W. Patterson, Frank B. Arnold, Percy Barrs.

BAL, DATTATRAYA VISHWANATH, Nagpur, Central Provinces, India (at present at the Rothamsted Experimental Station, Harpenden, England). British (Hindu). Extra Assistant Director of Agriculture, C. P. (for research and lecture work on soil micro-biology at the Agricultural Research Institute and College, Nagpur). L.Ag. (with Honours). Medallist in Agricultural Chemistry and Research work in Agricultural Chemistry and Soil Microbiology. Published as follows: *Agric. Jour. India*, Vols. XV, XVI, XVII, and XX; *Jour. Agric. Science*, Vol. XV, No. 4, 1925. (*Signed by*) C. J. Russell, H. J. Page, R. P. Hobson, C. T. Gimingham.

BHATT, JANARDHANA RAM, Sri Sumangala College, Panadura, Ceylon.

Indian. Science Master. Was a teacher (Chief Science Master) for the last 3 years. A graduate of the National University, Madras. Preparing for the Calcutta M.Sc. (*Signed by*) J. P. C. Chandrasena, K. V. Rau, M. Parthasarathy.

BLAKEY, WILLIAM, jun., 14, Marshall Road, Cambridge. British. Research Student. Natural Science Tripos, Cambridge. Part I, First Class. Part II, Second Class. (*Signed by*) Hamilton McCombie, Harold A. Scarborough, John Dexter.

BROWN, BERNARD MEREDITH, Hill Close, Croham Manor Road, S. Croydon. British. Analytical Chemist. B.Sc. (Hons.). London. F.I.C. Sometime Assistant in War Department Laboratory, Woolwich Arsenal; Assistant in Government Laboratory, London; Assistant Quinologist, Bengal; now Assistant Chemist, Messrs. Whitbread & Co., Ltd., London. (*Signed by*) B. F. Sawbridge, L. Melville Clark, R. Leslie Collett.

CARTER, GEORGE HENRY, 31, Horsforth Avenue, Bridlington. English. Metallurgical Chemist. At present Head of Transport and Shipping Dept., Messrs. G. & T. Earle, Cement Manufacturers, Hull. 1st Class Practical, and 2nd Class Theoretical, Hons. Inorganic Chemistry (Certificate), Hull Technical College. Also 1st Class Practical, and 2nd Class Theoretical, Inorganic Chemistry Certificates, Stage II, Board of Education. 2nd Class Practical, and 2nd Class Theoretical, Advanced Organic Chemistry, Hull Tech. 2nd Class Practical Certificate, Stage II, Metallurgy, Board of Education. Chemist in the Laboratories of The Leeds Forge Co., 12 years, and Messrs. G. & T. Earle, 4 years. (*Signed by*) Frank S. Wood, E. B. Atkinson, Edward Chapman, Harry Thompson.

CLARK, FREDERICK LESLIE, 170, Barnsley Road, Sheffield. English. Student at Sheffield University. Candidate for Hons. B.Sc. in Chemistry at end of present session. (*Signed by*) W. P. Wynne, G. M. Bennett, Arthur W. Chapman.

CLARKE, SYDNEY GEORGE, 38, Durlston Road, Kingston-on-Thames. English. Temporary Assistant Chemist, Government Laboratory, W.C. 1. B.Sc. London, 1st Class Hons. Chemistry. A.I.C. by election. Research in Organic Chemistry, Oct. 1923 to March 1924, under Dr. Kenyon at Battersea Polytechnic, S.W. 11. Assistant Chemist, Messrs. Riley, Harbord & Law, Consulting Metallurgists and Chemists, 16, Victoria St., S.W. 1, March 1924 to April 1925. Assistant Chemist, Research Dept., Woolwich, S.E. 18, April 1925 to Sept. 1925. (*Signed by*) Robert Robertson, Geo. Stubbs, J. Kenyon.

CLAYTON, HERBERT, The Dyson-Perrin Lab., South Parks Rd., Oxford. English. Research Student. Science Master (1922-25), Silcoates School, Yorks. B.Sc., M.A. (Oxon.). One year's research. Publications: "Preparation and Properties of the Aldehyde-benzoic Acids" (with N. V. Sidgwick), "Chlorination of the Toluic Acid Chlorides" (with W. Davies and W. H. Perkin), *J.C.S.*, Trans., Oct. 1922. (*Signed by*) W. H. Perkin, F. Lions, S. G. P. Plant, R. D. Haworth, John Rankin.

COLLIE, CARL HOWARD, New College, Oxford. English by birth. Winchester Scholar at New College, Oxford. Junior Demonstrator of Inorganic Chemistry in the Old Chemistry Department, Oxford. 1st Class Honours in the Honour School of Natural Science (Chemistry) of the University of Oxford, 1925. (*Signed by*) B. Lambert, Allan F. Walden, Frederick Soddy.

DOWNEY, WILLIAM ERIC, 32, Grasscroft Road, Huddersfield, Yorks. (permanent), Imperial College of Science and Technology, S.W. 7. British. Beit Scientific Research Fellow. Ph.D. London External, 1923. D.I.C., 1923. "The Relation between the Glow of Phosphorus and the Formation of Ozone," *J.C.S.*, 1924, **125**, 347; "A Spectroscopic Study of the Lumines-



cent Oxidation of Phosphorus," H. J. Emeléus, *J.C.S.*, 1924, **125**, 2491. (*Signed by*) H. B. Baker, H. J. T. Ellingham, J. N. Sugden.

ELFORD, WILLIAM JOSEPH, National Inst. for Medical Research, Hampstead, N.W. 3. British. Physical Chemist engaged in research work at National Inst. Med. Research, Hampstead. B.Sc. (1st Class Hons. Chemistry). Ph.D. of Bristol University. Colston Soap Research Fellow in Dept. Physical Chemistry, Bristol University, 1923-1925. A.I.C. "Equilibria underlying the Soap-boiling Processes. The System Potassium Oleate-Potassium Chloride-Water," by J. W. McBain and W. J. Elford (this paper has been accepted for publication by Chem. Soc., but as yet has not appeared in the Transactions). (*Signed by*) Harold King, Isidore E. Balaban, H. W. Dudley, H. C. Sayer.

ENNOS, FREDERICK RAINE, 34, Carminia Rd., Upper Tooting, S.W. 17. British. Analytical Chemist, Government Laboratory, London. B.A. (Cantab.). B.Sc. (London). A.I.C. 11 Years on staff of the Government Chemist. "The Analysis of Aluminium Alloys and Metallic Aluminium," by J. J. Fox, D.Sc., F.I.C., E. W. Skelton, B.Sc., A.I.C., and F. R. Ennos, B.A., B.Sc., *J.S.C.I.*, 1918, **37**, 328-333; "On the Structure and Composition of the Strathmore Meteorite," by W. F. P. McLintock, D.Sc., and F. R. Ennos, *Min. Mag.*, 1922, **19**, 323-329; "Determination of Iron in Ores and Silicate Rocks," by F. R. Ennos and R. Sutcliffe, M.A., Appendix VIII, Summary of Progress of Geological Survey, 1921; "Special Report on the Mineral Resources of Gt. Britain," by F. R. Ennos and A. Scott, M.A., D.Sc., Vol. XXVIII, "Refractory Materials." (*Signed by*) J. Carmichael, W. Williamson, J. J. Fox.

FAWCETT, REGINALD CLIFFORD, The Cottage, Pentre, Wrexham, Denbighshire. British. Student (Research). 1st Class Hons. B.Sc. (Man.). Carrying on research work under the direction of Prof. R. Robinson, F.R.S., at the Victoria University, Manchester. (*Signed by*) Arthur Lapworth, R. Robinson, Frederick Challenger.

FODOR, ANDOR, Professor, Ph.D. Jerusalem, Palestine. Jewish, German subject. Head of the Institute of Biological and Colloidal Chemistry, Hebrew University, Jerusalem. *Berichte d. Deutsch. Chem. Gesel.*, **42**, 2573-2574 (1909), Eug. Bamberger and A. Fodor, "Ueber *o*-Nitrosobenzaldehyd." *Zeitsch. f. d. gesam. Schiess- u. Sprengstoffwesen*, **5**, 1-14 (1910), "Ueber Stickstofffreie Abbauprodukte u.s.w.," E. Berl und A. Fodor. *Ibid.*, **5**, 1-23 (1910), "Ueber Stickstoffhaltige Abbauprodukte u.s.w.," E. Berl und A. Fodor. *Berichte d. Deutsch. Chem. Gesel.*, **43**, 3321-3335 (1910), Eug. Bamberger und A. Fodor, "Bildungsweisen des *o*-Nitrosobenzaldehydes," and others. (*Signed by*) Ch. Weizmann, Robert Mond, C. H. Spiers.

FORSYTH, JOHN CHARLES, 62, Worcester St., Christchurch, New Zealand. British. Chemist. Senior Assistant Chemist, Chemical Laboratory of New Zealand Refrigerating Co., Ltd. Chemistry Student of Canterbury College, 1921-23. (*Signed by*) A. M. Wright, H. G. Denham, George Gray.

GBSON, GRAHAM CHARLES, 14, College Square, Llanelly, Carm. British. Schoolmaster. Class II, Division I, Honours in Chemistry. B.Sc., Wales. Associate of the Institute of Chemistry of Great Britain. Past Student Demonstrator in Chemistry at Univ. Coll., Cardiff. (*Signed by*) W. J. Jones, E. P. Perman, A. A. Read.

GRAAFF, ANTONIUS DE, Library Department of Philips' Glowlampworks, Eindhoven, Holland. Dutch. Chemical Engineer of Philips' Glowlampworks, Ltd. The candidate is desirous of becoming a member of your Society, because in his quality of a chemical engineer of a Glowlampworks he is much

interested in the proceedings of your Society. (*Signed by*) A. Smits, W. A. Frederikse, J. C. Hartogs.

GYI, KO KO, Agricultural College, Mandalay, Burma. Burman. Assistant Director of Agriculture (Bacteriology), since 1st April, 1925. Assistant to the Agricultural Chemist, Mandalay, Burma. "Prussic Acid on Burma Beans," published by the Agric. Research Institute, Pusa, India, Bulletin No. 79. Undergone a full research course of training in Agricultural Bacteriology at the Agric. Research Institute, India. (*Signed by*) Moug Thein Kin, Nagendra Prasad, Moug Ba San.

HARDACRE, RICHARD WALTER, 17, Bright St., Skipton-on-Craven. English. Research Student. Student in Colour Chemistry, Leeds University, 1920-6. B.Sc. (Hons.), 1924. M.Sc., 1925. (*Signed by*) A. G. Perkin, R. B. Forster, W. Lowson.

HARDING, ARTHUR J. I., Ratcliffe House, The Fosse, Syston, nr. Leicester. British. Late Research Student. B.Sc. with Honours in Chemistry, June 1924. Master of Science, Dec. 1925. Sept. 1924 to Oct. 1925, Research on Bromine Compounds of Tervalent Molybdenum (paper not yet published). (*Signed by*) G. T. Morgan, W. N. Haworth, Wm. Wardlaw.

HARRIS, HERBERT, 1, Royal York Villas, Clifton, Bristol. British. Research Assistant in the Physical Chemistry Department, University of Bristol. A.R.C.S., B.Sc., Ph.D., D.I.C. Spent over two years at the Imperial College in post-graduate research in Physical Chemistry. 1925, 127, 1049. (*Signed by*) James C. Philip, J. W. McBain, M. Nierenstein.

HASLAM, JOHN, (Home address) 15, Dorset St., Burnley. (Present address) 6, Colwith Rd., Hammersmith, W. 6. British. Temporary Assistant Chemist, Govt. Lab. 3½ Years as Articled Pupil of R. St. G. Ross, F.I.C., Borough Analyst, Burnley. Graduated as B.Sc. (Honours Chem.), Manchester, 1923, as M.Sc., 1924. 2 Years' research experience under F. Challenger, Esq., D.Sc. 2 Years Lecturer and Demonstrator in Org. and Inorg. Chem., Burnley Technical College. Joint author of Paper on "The Sulphur Compounds of Kimmeridge Shale Oil," January 1925. (*Signed by*) Robert Robertson, Geo. Stubbs. Arthur Lapworth, Frederick Challenger, John F. Wilkinson, Raymond Ross.

HEAP, TOM, "Birch Mount," Church Rd., New Mills, nr. Stockport. British. Research Student in Chemistry at Manchester University. B.Sc. (Hons. Chem.), Manchester, 1924. (*Signed by*) Robert Robinson, Arthur Lapworth, Frederick Challenger.

HIRST, JOSEPH FREDERICK, 3, Wolseley Gardens, Gunnersbury, W. 4. British. Temporary Assistant Chemist, The Government Laboratory, Clements Inn Passage, Strand. B.Sc. (1st Hons. Chem.), London. Associate of the Institute of Chemistry. (*Signed by*) J. J. Fox, T. H. Bowles, A. G. Francis.

HODGKINSON, THOMAS, "Kululu," Temple St., W. Brunswick, Melbourne. British. Investigator, "Pulp and Paper Section" of the Commonwealth Institute of Science and Industry, Melbourne. B.Sc. Tech. All data obtained by the officers of the above Institute is published periodically in the form of Bulletins by the Director, and not privately. (*Signed by*) Frank Lee Pyman, John K. Wood, F. M. Rowe.

JOHNSON, STANLEY BARKER, c/o Colombo Gas and Water Co., Ltd., Gas Works, Colombo, Ceylon. British. Engineer and General Manager to the above Company (Gas, Water, and Chemical Works). Ordinary and Honours Medallist (Bronze and Silver, First Prizeman) in "Gas" City and Guilds London Inst., 1910 and 1911, respectively. Lecturer in Gas at Hull Technical

College, 1912-14. Queen's Jubilee Prizeman for Hull, 1913-14, for research paper entitled "Investigations on the Determination of Sulphur and Nitrogen in Coal, Coal Gas, and Sulphate of Ammonia." Ordinary and Honours Certificates (B. of Ed.) in Pure and Applied Chemistry. Designed and engineered all the various carbonising and chemical improvements at the Colombo Gas Works since being Manager to the Company in 1919. (*Signed by*) H. James Yates, H. Hartley, John Wm. Biggart, Arthur Forshaw.

JUPP, LEONARD GEORGE, 6, Chesham Rd., Kemp Town, Brighton. British. Post Graduate Student (full time) at Imperial College, Royal College of Science. A.R.C.S. in Chemistry. B.Sc. (2nd Class Hons.) in Chemistry. Taking a course of research in Organic Chemistry. (*Signed by*) H. B. Baker, Jocelyn Thorpe, M. A. Whiteley.

KELLY, CHARLES AMBROSE, 26, Gloucester Rd., Tue-Brook, Liverpool. British. Analytical Chemist. Assistant Chemist, Analyst's Laboratory, five years (Messrs. Huson and Hardwick, Analysts and Assayers). Assistant Chemist, Oil Works Laboratory, two years (C. C. Wakefield & Co., Ltd.). (*Signed by*) George Tate, George S. Irving, Andrew J. Myles.

KLEIN, RALPH HARRY, 11, Park Place Villas, Maida Hill, W. 2. English. Analytical Chemist with May & Baker, Ltd., Manufacturing Chemists. Associate of the Institute of Chemistry, Oct. 1925. (*Signed by*) Arthur J. Ewins, R. W. E. Stickings, George Newbery, A. Haythornthwaite, Wm. H. Simmons.

LAING, JAMES WALLACE, 85, Polwarth Gardens, Edinburgh. British. Chemist. Member of the Pharmaceutical Society. Employed by Messrs. T. & H. Smith, Ltd., Blandfield Chemical Works, Edinburgh, in various manufacturing processes. Author of "Plant Products," published in *Pharmaceutical Journal*, 21/6/24. (*Signed by*) A. Scott Dodd, G. F. Merson, William Duncan.

LEAPER, PERCY JOSHUA, 207, Meadow Street, Nangatuck, Connecticut, U.S.A. British. Organic Research Chemist with the Nangatuck Chemical Co., Nangatuck, Conn., U.S.A. B.Sc. (Lond.), 2nd Class Hons. A.I.C. (by examination). Two years as private Analytical and Consulting Chemist in Southampton, England. One year as Analytical and Research Chemist with the Tidewater Oil Co., U.S.A. (*Signed by*) D. R. Boyd, A. E. Clarence Smith, D. R. Snellgrove.

MARSHALL, PHILIP GUY, 39, Prince's Avenue, Watford. British. Schoolmaster (since Sept. 1925). 1 Year's Research work for Medical Research Council. 1 Year's Research work with Prof. C. K. Ingold, F.R.S. (*Signed by*) C. K. Ingold, A. G. Perkin, Arthur Smithells.

MAYES, HORACE ALFRED, "The Cottage," Sewage Works, Vicarage Lane, East Ham, E. 6. English. Student at East London College for 2 years. Awarded First Class Honours in Chemistry at London University Final B.Sc. examination. At present engaged on Research Work at E. L. C. (*Signed by*) J. R. Partington, E. E. Turner, E. Roberts.

NAYAR, ANKARATH SANKUNNI MANNADI, Madras. Indian. Professor of Biochemistry, Medical College, Madras. M.B., B.S. (Madras). Ph.D. (Edin.). Subjects for the thesis being (i) Non-cystein Sulphur of Proteins. (ii) (Some new facts about) The Coenzyme of Urease (under Prof. G. Barger, M.A., D.Sc., F.R.S., was the work done). (*Signed by*) Clive Newcomb, George Barger, Ellen Stedman.

NEEDHAM, LEONARD WILLIAM, 92, Greenfield Rd., Harborne, Birmingham. English. Research Student and Teaching Scholar, Birmingham University. Master of Science (Birmingham, 1925). (*Signed by*) W. N. Haworth, C. E. Wood, Wm. Wardlaw.

NOTTAGE, MILLICENT EMMA, 162a, Hampton Rd., Twickenham. British. Research Worker, D.S.I.R. B.Sc., Chemistry Hons., London, 1st Class. (*Signed by*) L. L. Bircumshaw, Guy Barr, I. H. Hadfield.

ORDISH, HENRY GEOFFREY, "Chilcombe," Milton Rd., Harpenden, Herts. British. Present occupation: Chemical Research in University Labs., Cambridge. Hons. B.A., Cambridge, Tripos Part II in Chemistry, Class II. (*Signed by*) W. J. Pope, W. H. Mills, J. B. Whitworth.

PACKER, JOHN (During 1926) Chemistry Dept., Imperial College of Science and Technology, South Kensington, S.W. 7; (usual address) Canterbury College, Christchurch, New Zealand. British. Lecturer in Chemistry, Canterbury College (Univ. of N.Z.), Christchurch, New Zealand. M.Sc. (First Class Hons. in Chem.), Melbourne. Dixon Research Scholar (Melbourne). Associate of Australian Chemical Institute. 1922 Assistant Chemist in large-scale technical investigation of special method of carbonising bituminous coal, results published in *J.S.C.I.*, 1925, **44**, 519t; "Carbonisation Research in Australia," by R. E. Thwaites and J. Packer. 1922 Tutor in Chemistry, Queen's College, Univ. of Melbourne. Temporary Research Chemist, Defence Dept., Melbourne. Since 1923 Lecturer in Chem., Canterbury College, Univ. of N.Z. Unpublished yet, "Phase Rule Research on Systems  $BaI_2-H_2O$ ,  $BaI_2-I_2-H_2O$ . At present doing research work at Imperial College (Organic Chem.). "Capritartrates," by J. Packer and I. W. Wark, *Trans.*, **119**, 1348. Sent for publication, "An Improved Hydrogen Sulphide Generator," by H. G. Denham and J. Packer. (*Signed by*) Jocelyn Thorpe, G. A. R. Kon, M. A. Whiteley.

PAUL, JOGESH CHANDRA, B.Sc., Harababu's Ghat, Serampore P.O., Bengal, India. Bengalee. Assistant Chemist to the East India Chemical Works Co., Victoria Road, Barnagore, Bengal, India. B.Sc. (with distinction) of the Calcutta University (India). I am desirous of keeping in touch with the modern developments in Chemistry. (*Signed by*) Tin Kari Ghose, Anu Ghose, Profulla Kumar Banerjee.

PHILLIPS, MONTAGUE ALEXANDRA, 31, Cator St., S.E. 15. British. Research Chemist in employ of Messrs. May and Baker, Ltd., Bell Lane, Wandsworth, S.W. A.I.C. (examination, Sept. 1925). Desire to receive Journal and Abstracts and to keep in touch with developments in Chemistry. (*Signed by*) Arthur J. Ewins, George Newbery, J. Kenyon, Harold Hunter.

PILLAI, DEVASIKHAMANI SUNDERAVELU, 37, Hill Street, Stoke-on-Trent. Jaffnese, Hindoo, British Subject. Govt. of India, State Tech. Scholar. Member of Society of Chem. Industry and Ceramic Society. Proficiency Certificate from Indian Inst. of Science, where carried out the following investigations: Magnesium-Oxychloride and its Industrial Application, and Preliminary Research on the Action of Bacteria on Cement. Hold Pottery Certificate on following grades: Prelim., Ordinary, and Advance Pottery from the Central School of Science and Technology, Stoke-on-Trent. Factory research on leadless glazes at Messrs. Sampson, Bridgwood & Son, Longton, Stoke-on-Trent, 1923-1924. Carrying on research work on Ceramic Colours. (*Signed by*) J. W. Mellor, H. V. Thompson, F. H. Clews.

PINKUS, ARNOLD, 238, Amhurst Rd., Stoke Newington, N. 16. Russian. Chemist at Heppells. Student of Charkov University (Russia), also College of Charkov. I desire to keep in touch with the new scientific discoveries of chemistry and to make use of the Library. (*Signed by*) Hartley Shaw, J. Cofman-Nicoresiti, G. Cofman-Nicoresiti.

PRICE, WILLIAM BENNETT, The Laurels, Woolwich Road, Belvedere, Kent. British. Research Student at King's College, London. B.Sc. in Chemistry,

2nd Class Honours. Engaged in Organic Research at K.C.L. with a view to proceeding to the degree of Ph.D. (*Signed by*) Samuel Smiles, H. W. Cremer, A. J. Allmand, Arthur Fairbourne.

PRING, HENRY GRATTAN, Slieve na Failte, Whiteabbey, Co. Antrim. British. Chairman and Governing Director, Grattan & Co., Wholesale and Retail Manufacturing Chemists and Aerated Water Manufacturers, Belfast. President, Employers' Federation of Pharmaceutical Chemists, Ireland. Vice-President, Ulster Drug Trade Association. Member of Council, Pharmaceutical Society of Northern Ireland. Member of Executive Council, Pharmacists of Northern Ireland. Member, Belfast Chamber of Commerce (Chemical Section). No published papers in Chemical Society. In order to keep in touch with current advances in Chemistry, particularly in relation to Pharmacy and Medicine. (*Signed by*) D. Hughes J. F. Ward, Henry Wren, Theophilus Harper, D. P. Woosley, W. W. Jones, P. J. Thompson.

PURVES, CLIFFORD BURROUGH, Edenbank, Cupar, Fife. British. Research Student in Chemistry. B.Sc. Degree. First Class Honours in Chemistry. Second Class Honours in Mathematics and Natural Philosophy. Two years' experience of Research in the Carbohydrate Group. "The Structure of the Normal Monosaccharides," Hirst and Purves, T., 1923, 1352. (*Signed by*) J. C. Irvine, John Read, Geo. J. Robertson.

PURVIS, GEORGE HENRY, Mona Lodge, Usk. British. Vice-Principal, Mon. Agricultural Institution, Usk, and Assistant Agricultural Organiser for Monmouthshire. 1911-1913, Assistant Lecturer Agric. Science, Hampshire Farm School; 1914-1923, Senior Lecturer Agric. Science, Mon. Agric. Institution; 1923 to date, Vice-Principal and Assistant County Organiser. (*Signed by*) C. W. Walker-Tisdale, Geo. R. Thompson, G. W. Robinson, T. W. Fagan.

RAY, CHARLES AYLMOORE, 47, Somerford Grove, Tottenham, London, N. 17. British. Member of the Laboratory Staff of the Tottenham District Light, Heat, and Power Company, Tottenham, London, N. 17. Bachelor of Arts of Cambridge University; studied Principles of Chemistry, Applied Chemistry, Metallurgy, and Mineralogy. Research Student at the Northern Polytechnic Institute, Holloway. Member of the Society of Chemical Industry. (*Signed by*) T. J. Drakeley, G. J. Avey, S. A. Hurren.

ROGERS, IVY WINIFRED ELIZABETH, 8, St. Lawrence Road, W. 10. English. Honours Chemistry Student. (*Signed by*) J. F. Spencer, H. Crompton, E. R. Levy.

RUSSELL, RONALD STANLEY, 47, Redington Road, Hampstead, N.W. 3. British. Student in Chemistry. Graduate of the University of Cambridge in Natural Science Tripos, Part I. (*Signed by*) W. J. Pope, W. H. Mills, Eric K. Rideal, I. J. Faulkner.

SCHAFFER, ROBERT JOHN, 3, Hambalt Road, S.W. 4. British. Scientific Assistant, H.M. Building Research Station. B.A. (Oxon.). B.Sc. (Oxon.). Sometime Demonstrator in Chemistry in the University of Oxford. (*Signed by*) B. Lambert, N. V. Sidgwick, E. J. Bowen, E. Hope, C. H. Hinshelwood.

SHAH, MADHAVLAL SUKHLAL, 22, Oxford Road, Putney, London, S.W. 15 (Gujarat College, Ahmedabad, India). Hindu (India). Research Student at the Imperial College of Science. Designation in India at present: Assistant Lecturer in Chemistry, Gujarat College, Ahmedabad, India. M.Sc. (distinction) of the Bombay University, India. Carrying on Research and Lecturing work in Chemistry since 1920 (India), and have contributed two papers under joint names in the Journal of the Chemical Society, *J.C.S.*, 1923, 123, 1982; *J.C.S.*, 1923, 123, 1986. (*Signed by*) H. B. Baker, James C. Philip, H. J. Emeléus.

SMITH, EDNA CLARK, 9, Gilston Rd., S.W. 10. British. Biochemical Research Student at the Lister Institute. 2nd Class Hons. B.Sc. Chem. (Lond.), 1925. (*Signed by*) Arthur Harden, A. L. Stern, J. C. Crocker, Charles Dorée.

SPITTLE, HENRY MILLS, Hillfoot Bungalow, Church St., Wednesbury, Staffs. British. Student at Birmingham University. At present in the Honours School of Chemistry. Have qualified for a 1st Class Degree with Distinction in Chemistry, Tertius Collins Prize in Metallurgy (Birmingham Univ.). (*Signed by*) C. E. Wood, Wm. Wardlaw, M. Badia.

STROUTS, CHARLES RICHARD NOËL, Westminster Bank, Kew Gardens, Richmond. British. Research Chemist to Messrs. Elliott & Sons, Ltd., Barnet. B.A. (Oxon.). B.Sc. (Oxon.). A.I.C. "Halogen-substituted 1-Aryl Pyrazolones" (Chattaway and Strouts), *J.C.S.*, 1924, **125**, 2423. (*Signed by*) F. D. Chattaway, S. G. P. Plant, W. H. Perkin.

SUTTON, SIDNEY DAVID, 2, Glasshouse St., W. 1. English. Analytical Chemist (Rubber). Chief Works Chemist, Vultex Products, Ltd. Abbey Road, Park Royal, N.W. 10. Member of Institution of the Rubber Industry. (*Signed by*) Philip Schidrowitz, T. J. Drakeley, C. H. Birkitt.

TAYLOR, CYRIL JAMES ALLAN, 7, Chetwynd Rd., Wolverhampton. British. Research Chemist, Messrs. Thornley and Knight, Ltd., Birmingham. M.Sc. (Birm.). A.I.C. Published work: *J.C.S.*, 1924, **127**, 797; 1924, **127**, 2620; also paper on "Keto-Enol Isomerism of Ethylene-bis-acetylacetone," at present in the press. (*Signed by*) G. T. Morgan, C. E. Wood, Wm. Wardlaw.

TAYLOR, FRANK SHERWOOD, Birch Cottage, 21, Shortlands Rd., Shortlands, Kent. British. Schoolmaster. M.A. (Oxon.) in Chemistry. Four years responsible Chemistry Master at Maidenhead County Boys' School. Now at Wyggeston Boys' School, Leicester. Awarded B.Sc. for research on Greek Alchemy, pursuing subject for Ph.D. London. (*Signed by*) W. H. Perkin, B. Lambert, M. P. Applebey, E. G. J. Hartley, N. V. Sidgwick.

TAYLOR, RAYMOND, St. Brelades, Woodside Road, Parkstone, Dorset. British. Research Chemist. M.A. (Cantab.). B.Sc. (Oxon.). Research Chemist, 1919-1921, Messrs. Albright & Wilson, Oldbury. Research on Chlorination of Methane for Department of Scientific and Industrial Research, 1921-1925. (*Signed by*) Wm. T. Thomson, R. V. Eaton, E. W. Blair.

THOMAS, RICHARD VICTOR, 17, Pretoria Road, Cambridge. British. Research Student. First Class in Natural Sciences Tripos, Part I and Part II (Chemistry), at the University of Cambridge. Shuttleworth Research Student in Chemistry, Gonville and Caius College, Cambridge. (*Signed by*) W. J. Pope, W. H. Mills, W. J. V. Ward.

THOMPSON, GEORGE ERNEST, 7, Campbell Rd., Bow, E. 3., British. Assistant Gas-works Chemist (Stepney Branch, Commercial Gas Co.). Intermediate Science Exam., 1923 (University of London). 10 Years works experience. Certificates for Gas Engineering and Tar Distillation from City and Guilds of London. (*Signed by*) H. F. Hills, P. C. L. Thorne, Henry J. S. Sand.

TOWN, BERNARD WILLIAM, 79, The Grove, Hammersmith, W. 6. English. Engaged in Biochemical Research at Imperial College of Science and Technology. B.Sc. (2nd Class Honours in Chemistry), London. A.R.C.S. (2nd Class) in Chemistry. (*Signed by*) S. B. Schryver, James C. Philip, G. A. R. Kon.

TRIKOJUS, VICTOR MARTIN, Queen's College, Oxford. British. Research Student in Organic Chemistry at Dyson Perrins Laboratories, Oxford. B.Sc. (Sydney) with 1st Class Hons. Organic Chemistry (1924). Engaged there

(Sydney) on Research work in various subjects for 18 months (work as yet unpublished). (*Signed by*) R. D. Haworth, Fredk. A. Mason, S. G. P. Plant, Francis Lions.

WALKDEN, JAMES, 33, Hemming Street, Winnington, Northwich, Cheshire. British. Ph.D. Student. At present engaged in Research work with Dr. F. Challenger on Heterocyclic Compounds. Joint authorship, with G. N. Burkhardt and A. Lapworth, of a paper on "Polarity Theories and Four-membered Rings," *J.C.S.*, 1925, **127**, 2458. (*Signed by*) Arthur Lapworth, Frederick Challenger, G. N. Burkhardt, D. H. Bangham, John F. Wilkinson, J. E. Myers.

WATSON-WILL, CLAUDE STANLEY, Station Road, Indooroopilly, Brisbane. English. Pharmaceutical Chemist. Member of the Pharmaceutical Soc. of Gt. Britain. Late Lecturer and Examiner of King Edward VII Medical College, Singapore, 1918 to 1921. (*Signed by*) H. Lucas, David J. Williams, A. Thomas.

WELCH, KENNETH NORMAN, "The Hollies," Westfield Drive, Gosforth, Newcastle-on-Tyne. British. Now doing Research work for Degree of Ph.D. B.Sc. with 2nd Class Honours. Awarded Friere-Marreco Medal and Prize and Saville Shaw Medal (1925). (*Signed by*) G. R. Clemo, H. V. A. Briscoe, M. G. Thomson, G. C. Leitch.

WILKINS, HENRY, 13, Kinfauns Road, Goodmayes, Essex. British. Assistant Schoolmaster (Secondary). Teaching Chemistry at Raine's Foundation School for Boys, Arbour Sq., E. 1. B.Sc. (Lond., Pass Intl. 1912), Chemistry, Mathematics, Physics. B.Sc. (Lond., Hons. Chemistry, Intl. 1924, 2nd Class). Chemist on Nitration Plants and later Chemist-in-Charge Schröder-Grillo Plant for Dept. of Explosives Supply (Oct. 1915 to Dec. 1918). Joint author of the following papers in the *J.C.S.*: (a) "The Parachor and Chemical Constitution. Part I. Polar and Non-polar Valencies in Unsaturated Compounds," 1925, **127**, 1525. (b) "The Parachor and Chemical Constitution. Part III. Orientation Isomerism in Aromatic Compounds" (in the press, proofs received). (*Signed by*) Samuel Sugden, Cyril M. Willecox, E. J. Warren.

WILLIAMS, IDRIS, 19, Silver Street, Cambridge. British. Student of Chemistry. Graduate of the University of Cambridge in Natural Sciences. (*Signed by*) W. J. Pope, W. H. Mills, Eric K. Rideal, I. J. Faulkner.

WILLS, GEORGE OGILVIE, 1, Melbourne Terrace, Saltcoats, Ayrshire. British. Chemist with Nobel's Explosives Co., Ltd. B.Sc., Ph.D. (St. Andrews). "Conversion of Amino-acids into Tertiary Amino-alcohols," McKenzie and Wills, *J.C.S.*, 1925, **127**, 283. (*Signed by*) Alex. McKenzie Nellie Walker, Norman Picton, Bertram Campbell.

WILSON, WILLIAM JOHN, Fairlawn, Honor Oak Road, Forest Hill, S.E. 23. British. Research Chemist. Fellow of the Institute of Chemistry. Associate of City and Guilds of London Institute. Head of Research Department. The Burmah Oil Co., Ltd. Author (with A. Campbell) of "Paraffin Wax and its Manufacture," *J. Inst. Petroleum Tech.*, 1919, **5**, 106; (with B. C. Allibone) of "Studies on Lubricating Oils, Parts I, II, and III," *J. Inst. Petroleum Tech.*, 1925, **11**, 177. (*Signed by*) Robert Redwood, A. E. Dunstan, Ernest C. Craven.

WOOLF, HENRY, P.O. Box 14, Broken Hill, Northern Rhodesia. British. Technical Chemist. Trained at the East Ham Technical College. Six years course of Pure Chemistry (Organic and Inorganic) and Applied Chemistry. Two years course of Coal Tar Dyes and Colouring Matters. One year's course of Oils, Fats, and Waxes. One year Soap Manufacture. One year Physical

Chemistry. One year Chemical Engineering. At Sir John Cass Institute, one year Study Microbiology, also Metallurgy and Assaying. Ten years' practical work as an Analytical and Manufacturing Chemist in Paint, Lubricating Oil and Grease, Petroleum Distilling, Heavy and Fine Chemical Works, e.g. with Messrs. Alex Duckham & Co., Ltd.; Burrell & Co., Ltd.; Glico Petroleum, Ltd.; Gross, Sherwood, and Heald, Ltd.; The Chemical Supply Co. Member of the Oil and Colour Chemists' Association. (*Signed by*) E. D. Griffiths, W. T. Clough, Harold Toms.

WRIGHT, REGINALD FRANK, "Fairhazel," Avondale Road, Hove, Brighton. British. Research Student. A.R.C.S. (Chemistry, 2nd Class). I am still a student at the Royal College of Science, South Kensington, S.W. 7. I have not yet published any papers. (*Signed by*) G. A. R. Kon, E. H. Farmer, R. F. Hunter.

WRIGHT, WILLIAM EWART, 54, Ash Street, Southport. British. Research Chemist. B.Sc. (2nd Class Hons. Chemistry), London. M.Sc. (London), A.I.C. Reasons for desiring to join the Society: To keep in touch with the progress and advancement of Chemistry. (*Signed by*) Samuel Smiles, Arthur Fairbourne, Arthur John Allmand.

Certificates have been accepted by the Council under Bye-Law I (2) in favour of the following:

BRECKENRIDGE, JAMES MILLER, Nashville, Tenn. American. Professor of Chemistry, Vanderbilt University. 10 Years as Technical Chemist in Industry. 10 Years' University teaching experience. M.S. and Ph.D., University of Wisconsin. Reference, see "American Men of Science, 1924-25." (*Signed by*) J. P. Longstaff.

LEAKE, HUGH MARTIN, Sc.D., M.A., F.L.S., St. Augustine, Trinidad. British. Principal of the Imperial College of Tropical Agriculture. (*Signed by*) James P. Ogilvie.

NARAYANASWAMY, L. S.; Madras. Hindu, Brahmin. Registered Medical Practitioner, No. 2, Akbar Sahib St., Triplicane, Madras. (i) Passed the B.A. degree and M.B. and B.S. degrees of the Madras University (B.A., M.B., B.S.). (ii) Has finished the Laboratory work in Public Health Chemistry, i.e. Analysis of H<sub>2</sub>O, Food Supply, Beverages, Sewage, Disinfectants, etc. (*Signed by*) T. S. Natrajan.

WIBAUT, JOHAN PIETER, Org. Chem. Laboratorium of the University, N. Prinsengracht 126, Amsterdam. Dutch. Professor of Organic Chemistry at the University of Amsterdam. Several papers in *Recueil des Travaux Chimiques des Pays Bas* and in *Proceedings* of the Royal Akademie of Sciences, Amsterdam. (*Signed by*) J. Kalf.

## ADDITIONS TO THE LIBRARY.

### I. Donations.

ABDERHALDEN, EMIL. [Editor.] *Handbuch der biologischen Arbeitsmethoden*. Abt. I. *Chemische Methoden*, Teil 1, Heft iv. Berlin 1925. pp. 543 to 926 + xxiv. ill. M. 16.20. (*Recd.* 31/12/25.)

From the Publishers: Herren Urban & Schwarzenberg.

DAVIDSON, ALFRED. *Intermediates for dyestuffs*. London 1926. pp. xiv + 256. 36s. net. (*Recd.* 16/12/25.)

From the Publishers: Messrs. Ernest Benn.



P R O C E E D I N G S  
O F T H E  
C H E M I C A L S O C I E T Y .

Ordinary Scientific Meeting, Thursday, February 4th, 1926, at 8 p.m.,  
Professor W. P. WYNNÉ, D.Sc., F.R.S., Vice-President, in the Chair.

The following were formally admitted Fellows of the Chemical Society : W. V. Thorpe, L. F. Hewitt, M. S. Dixon, R. J. Bromfield, and E. S. Hiscocks.

Certificates were read for the first time in favour of :

Basil William Anderson, B.Sc., Moorlands, Woldingham.  
Edward Sidney Armstrong, B.Sc., 69, Breakspears Road, Brockley, S.E. 4.  
Arnold Belchetz, M.Sc., Emmanuel College, Cambridge.  
Einar Christian Saxtorph Biilmann, D.Ph., Østervoldgade 5, Copenhagen.  
Robert Sidney Cahn, M.A., D.Ph., 25, Ashwood Avenue, West Didsbury, Manchester.  
William Denis Coales, B.Sc., Melrose, Chiltern Road, Dunstable.  
Nicholas Michael Cullinane, M.Sc., Ph.D., F.I.C., 27, Michael Street, Waterford.  
James Dundee, 95, University Road, Belfast.  
John Garwood Everett, A.I.C., 39, Montserrat Road, Putney, S.W. 15.  
Harvey Satchell Garlick, 15, Duke's Avenue, Chiswick, W. 4.  
Charles Roy Greenwood, 21, Stanstead Road, Forest Hill, S.E. 23.  
Sidney John Gregg, B.Sc., A.R.C.S., 20, Acfold Road, Fulham, S.W. 6.  
Arthur William Jarman, B.Sc., 9, Crouch Hill, N. 4.  
William Johnston, 16, Warburton Road, Seaforth, Liverpool.  
Hilda Mabel Enid Jones, B.Sc., 3, Holly Lodge Gardens, Highgate, N. 6.  
Francis Charles Kelly, B.Sc., c/o Medical Department, Nairobi.  
John McDonald, M.A., B.Sc., Ph.D., 19, White Street, Lochgelly.  
Gordon Nonhebel, B.A., The University, Leeds.  
Leonard James Spencer, M.A., Sc.D., F.R.S., Mineral Department, British Museum, S. Kensington, S.W. 7.  
Walter Arthur Steed, 72, St. John's Road, Isleworth.  
Ralph Charles Storey, M.Sc., A.I.C., 119, Moorside, Armley, Leeds.  
Christine Elizabeth Webb, B.Sc., A.I.C., 12, Clenheim Road, St. Albans.  
Vera Katherine Wilson, B.Sc., Willow House, Penistone, Sheffield.

The following papers were read :

- “ The complex salts of  $\beta\beta'\beta''$ -triaminotriethylamine with nickel and palladium.” By F. G. MANN and W. J. POPE.
- “  $\gamma\gamma'\gamma''$ -Triaminotripropylamine and its complex compounds with nickel.” By F. G. MANN and W. J. POPE.
- “ A comparison of the atomic weight of silicon from different sources.” By P. L. ROBINSON and H. C. SMITH.
- “ Trypanocidal action and chemical constitution. Part IV. Arylamines of aminohydroxyphenylarsinic acids.” By L. F. HEWITT and H. KING.

Special Lecture held in the Chemistry Theatre of the University College, Gower Street, W.C. 2, on Thursday, February 11th, 1926, at 8 p.m., Professor H. E. ARMSTRONG, LL.D., F.R.S., Vice-President, in the Chair.

Professor J. Barcroft, F.R.S., delivered his Lecture entitled "Hæmoglobin." A vote of thanks to the Lecturer, proposed by Dr. H. H. Dale, Sec.R.S., and seconded by Professor J. C. Drummond, was carried with acclamation, Professor Barcroft making acknowledgment.

After the Lecture the following demonstrations were given :

- (1) Dr. Hartridge and Dr. Roughton : Method of measurement of rapid velocity constants.
- (2) Dr. Keilin : Cytochrome in animal and vegetable tissues.
- (3) Professor Barcroft and Dr. Hecht : Method of measurement of equilibrium constants.
- (4) Mrs. Kerridge : Glass electrode.
- (5) Mr. R. Hill : Porphyrins of the heavy metals.
- (6) Mr. G.S. Adair : Measurements of osmotic pressure of hæmoglobin.

Ordinary Scientific Meeting, Thursday, February 18th, 1926, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., Vice-President, in the Chair.

The CHAIRMAN referred to the loss sustained by the Society, through death, of the following Fellows :—

	Elected.	Died.
Lewis Smith Cocking .....	Feb. 16th, 1888.	Nov. 15th, 1925.
Sir John Burchmore Harrison .....	May 17th, 1888.	Feb. 8th, 1926.

It was announced that :

1. The Harrison Memorial Prize Selection Committee, consisting of the Presidents of The Chemical Society, The Institute of Chemistry, The Society of Chemical Industry, and The Pharmaceutical Society, had unanimously resolved that no award of the Harrison Memorial Prize be made for 1925.

2. The Second National Congress of Pure and Applied Chemistry and the Celebrations of the Centenary of the birth of Stanislao Cannizzaro will be held under the auspices of the Associazione Italiana di Chimica in Palermo from May 23rd to June 2nd, 1926.

The following were formally admitted Fellows of the Chemical Society: F. K. V. Koch, Fred. H. Webb, John Carlile, and B. D. Laroia.

Certificates were read for the first time in favour of :

James Allan, M.A., B.Sc., 36, High Street, Chorlton-on-Medlock.

Reginald Percy Ayres, B.Sc., 140, Hanley Road, N. 4.

Robert Jones Evans, B.Sc., Waenllan, Penmachno, Bettws-y-Coed.

William Gerrard, B.Sc., 31, South Side, S.W. 4.  
 Richard Isaac Edward Hall, B.A., 289, Iffley Road, Oxford.  
 John Valon Head, B.A., St. George's Lodge, Winchester.  
 Edmund B. Middleton, B.A., M.Sc., Ph.D., Parlin, N.J., U.S.A.  
 Claudius Philip Proctor, The University, Edgbaston, Birmingham.  
 Charles Norman Ridley, B.Sc., 36, Percy Terrace, Sunderland.  
 James William Allan Woodley, B.Sc., A.I.C., 22, Taunton Road, Lee, S.E. 12.

Miss E. Lakeman and Mr. P. Appleyard were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared elected as Fellows :

Edwin Melhuish Bailey.	Leonard William Needham, M.Sc.
Thomas Harvey Bailey.	Millicent Emma Nottage, B.Sc.
Dattatraya Vishwanath Bal.	Henry Geoffrey Ordish, B.A.
Janardhana Ram Bhatt, B.Sc.	John Packer, M.Sc.
William Blakey, B.A.	Jogesh Chandra Paul, B.Sc.
James Miller Breckenridge, M.S., Ph.D.	Montague Alexandra Phillips, A.I.C.
Bernard Meredith Brown, B.Sc., F.I.C.	Devasikhamani Sunderavelu Pillai.
George Henry Carter.	Arnold Pinkus.
Frederick Leslie Clark.	William Bennett Price, B.Sc.
Sydney George Clarke, B.Sc., A.I.C.	Henry Grattan Pring.
Herbert Clayton, M.A., B.Sc.	Clifford Burrough Purves, B.Sc.
Carl Howard Collie, B.A.	George Henry Purvis.
William Eric Downey, Ph.D., D.I.C.	Charles Aylmore Ray, B.A.
William Joseph Elford, B.Sc., Ph.D., A.I.C.	Ivy Winifred Elizabeth Rogers.
Frederick Raine Ennos, B.A., B.Sc., A.I.C.	Ronald Stanley Russell, B.A.
Reginald Clifford Fawcett, B.Sc.	Robert John Schaffer, B.A., B.Sc.
Andor Fodor, Ph.D.	Madhavlal Sukhlal Shah, M.Sc.
John Charles Forsyth.	Edna Clark Smith, B.Sc.
Graham Charles Gibson, B.Sc., A.I.C.	Henry Mills Spittle.
Antonius de Graaff.	Charles Richard Noel Strouts, B.A., B.Sc., A.I.C.
Ko Ko Gyi.	Sidney David Sutton.
Richard Walter Hardacre, M.Sc.	Cyril James Allan Taylor, M.Sc., A.I.C.
Arthur Jacob Immins Harding, M.Sc.	Frank Sherwood Taylor, M.A., B.Sc.
Herbert Harris, B.Sc., Ph.D., A.R.C.S., D.I.C.	Raymond Taylor, M.A., B.Sc.
John Haslam, M.Sc.	Richard Victor Thomas, B.A.
Tom Heap, B.Sc.	George Ernest Thompson.
Joseph Frederick Hirst, B.Sc., A.I.C.	Bernard William Town, B.Sc., A.R.C.S.
Thomas Hodgkinson, B.Sc.Tech.	Victor Martin Trikojus, B.Sc.
Stanley Barker Johnson.	James Walkden.
Leonard George Jupp, B.Sc., A.R.C.S.	Claude Stanley Watson-Will.
Charles Ambrose Kelly.	Kenneth Norman Welch, B.Sc.
Ralph Harry Klein, A.I.C.	Johan Pieter Wibaut.
James Wallace Laing.	Henry Wilkins, B.Sc.
Hugh Martin Leake, Sc.D., M.A.	Idris Williams, B.A.
Percy Joshua Leaper, B.Sc., A.I.C.	George Ogilvie Wills, B.Sc., Ph.D.
Phillip Guy Marshall.	William John Wilson, F.I.C., A.C.G.I.
Horace Alfred Mayes, B.Sc.	Henry Woolf.
L.S. Narayanaswamy, B.A., M.B., B.S.	Reginald Frank Wright, A.R.C.S.
Ankarath Sankunni Mannadi Nayyar, M.B., B.S., Ph.D.	William Ewart Wright, M.Sc., A.I.C.

The following papers were read :—

- “The ultra-violet spectrum of the rare earths, neodymium, praseodymium, samarium, europium, erbium, and some others.” By J. H. GARDINER.
- “The application of graphic formulæ to molecular compounds hydration and variations of valency.” By H. D. CAREY.
- “The inhibition of the glow of phosphorus.” By H. J. EMELÉUS.
- “Properties of conjugated compounds. Part I. Conjugative associations in extended ‘conjugated’ systems.” By E. H. FARMER and J. ROSS.

### ANNUAL GENERAL MEETING AND DINNER.

The Annual General Meeting will take place in the University of Manchester on Thursday, March 25th, 1926, at 4 p.m., tea being served at 3.30; the Dinner will be held the same evening at the Midland Hotel, Manchester, at 6.30 for 7 o'clock. The price of tickets for the Dinner is 10s. 6d. each, including gratuities to waiters, but not including wine, and application for tickets should be made as soon as possible to Mr. L. B. Tansley, The Shirley Institute, Didsbury, Manchester.

The ordinary fares from London to Manchester are £3 17s. 2d. first class return, and £2 6s. 4d. third class return. For a party of not less than twelve travelling together from the same place and returning the same day, the Railway Company is prepared to issue cheap tickets at the single fare for the double journey. This concession applies to Fellows travelling to Manchester from London or any provincial town. Those travelling from London should send in their names to the Assistant Secretary, The Chemical Society, Burlington House, W. 1, by Thursday, March 18th, stating whether it is their intention to return the same day. Those residing in the provinces desiring cheap tickets should make arrangements with the local Stationmaster.

A train leaves London (St. Pancras) at 10.25 a.m., arriving at Manchester (Central Station) at 2.25 p.m. The return journey can be made by the train leaving Central Station at 12 midnight, reaching St. Pancras at 6 a.m.

List of Papers, or Abstracts thereof, received between January 22nd, 1926, and February 18th, 1926. (This list does not include the titles of papers, or abstracts thereof, which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

- “The isomeric fluorobenzaldehydes and derivatives.” By J. B. SHOESMITH, C. E. SOSSON and R. H. SLATER.

- “The oximes of 2:4-dinitrobenzil and the Beckmann change.”  
By G. BISHOP and O. L. BRADY.
- “The constitution of magnesium acetate solutions.” By A. C. D. RIVETT.
- “The relative concentrations of various electrolytes required to salt out soap solutions.” By J. W. MCBAIN and A. V. PITTER.
- “Aminobenzthiazoles. Part III. The tautomerism and unsaturation of the aminothiazole system.” By R. F. HUNTER.
- “The reactions of thiocarbonyl chloride. Part II. Reaction with alkylamines, and synthesis of *s*-alkyl- $\alpha$ -naphthylthiocarbamides.” By G. M. DYSON and R. F. HUNTER.
- “*s*-Arylallylthiocarbamides and their bromination.” By R. F. HUNTER.
- “Termolecular reactions. Reduction of silver acetate by sodium formate.” By A. COUTIE.
- “Derivatives of 2-thiobenzimide.” By E. W. MCCLELLAND and A. J. GAIT.
- “The reaction between formic acid and iodine in aqueous solution.”  
By D. L. HAMMICK and M. ZVEGINZOV.
- “The oxidation potential of the system: selenium dioxide-selenium.” By S. R. CARTER, J. A. V. BUTLER and F. JAMES.
- “The boiling points of some higher aliphatic *n*-hydrocarbons.”  
By F. E. FRANCIS and N. E. WOOD.
- “On the deposition of metallic zinc on the positive pole of a simple voltaic cell.” By S. R. HUMBY and M. W. PERRIN.
- “Synthesis of derivatives of  $\gamma$ -xylose.” By W. N. HAWORTH and G. C. WESTGARTH.
- “Preparation of nickel membranes for ultrafiltration.” By J. MANNING.
- “Some organo-silicon compounds.” By R. R. WIDDOWSON.
- “Conditions of formation of rings attached to the *o*-, *m*-, and *p*-positions of the benzene nucleus. Part II. The reduction of *m*- and *p*-phenylenediacetonitrile.” By A. F. TITLEY.
- “Some substituted cinnamic amides and acids.” By H. A. HARRISON and H. WOOD.
- “The nitration of benzil.” By F. D. CHATTAWAY and E. A. COULSON.
- “The binary system barium iodide-water.” By J. PACKER and A. C. D. RIVETT.
- “The hydrolysis of potassium cuprocyanide by sulphuric acid.”  
By A. S. CORBET and R. M. WOODMAN.
- “A note on the synthesis of naphthathioxins.” By R. CHILD and S. SMILES.

- “The vapour pressures of chlorine dioxide.” By F. E. KING and J. R. PARTINGTON.
- “The morphine group. Part III. The constitution of neopine.” By C. F. VAN DUIN, R. ROBINSON and J. C. SMITH.
- “The action of thionyl chloride on hydroxyanthraquinones. Part II. Quinizarin.” By A. GREEN.
- “Diacetyl quinizarin.” By A. GREEN.
- “Note on the critical temperature of mercury.” By L. A. SAYCE and H. V. A. BRISCOE.
- “The hydrolytic action of low pressure superheated steam on salts of the alkaline earth metals.” By P. L. ROBINSON, H. C. SMITH, and H. V. A. BRISCOE.
- “The monochloro-derivatives of *m*-cresol.” By G. P. GIBSON.
- “The chemistry of the glutaconic acids. Part XIX. A consequence of mobility.” By J. PACKER and J. F. THORPE.
- “Some observations on liquid boundaries and diffusion potentials.” By S. R. CARTER and F. M. LEA.
- “The molecular configuration of polynuclear aromatic compounds. Part VII. The molecular asymmetry of 6-nitrodiphenic acid.” By G. H. CHRISTIE, J. KENNER, and V. M. TRIKOJUS.
- “The system ammonium acetate-acetic acid-water.” By R. SUGDEN.
- “Aminobenzthiazoles. Part IV. The stability of the bromides of the 1-xylylidinodimethylbenzthiazoles.” By R. F. HUNTER.
- “Liquid-line corrosion.” By E. S. HEDGES.
- “The ternary system sodium thiosulphate-sodium sulphate-water.” By R. R. GARRAN.
- “The additive formation of four-membered rings. Part VIII. Some additive reactions of nitroso-compounds.” By M. D. FARROW and C. K. INGOLD.
- “The nature of the alternating effect in carbon chains. Part IV. Some abnormal reactions as evidence of the incipient ionisation of certain hydrogen atoms in hydrocarbon radicals.” By E. L. HOLMES and C. K. INGOLD.
- “The nature of the alternating effect in carbon chains. Part V. A discussion of aromatic substitution with special reference to the respective rôles of polar and non-polar dissociation; and a further study of the relative directive efficiencies of oxygen and nitrogen.” By C. K. INGOLD and E. H. INGOLD.
- “The nature of the alternating effect in carbon chains. Part VI. A study of the relative directive efficiencies of oxygen and fluorine in aromatic substitution.” E. L. HOLMES and C. K. INGOLD.
- “Studies with the microbalance. Part III. The filtration and

- estimation of very small amounts of material." By E. J. HARTUNG.
- "An experimental study of protective colloids. Part I. The influence of concentration." By S. SUGDEN and M. WILLIAMS.
- "A method for determining the solubility of sparingly soluble substances." By S. MITCHELL.
- "An adjustable low-temperature bath." By W. H. PATTERSON.
- "The hydrolysis of guanidine." By J. BELL.
- "Some reactions of 1-*p*-toluidinocyclopentane-1-carboxylic acid. A new carbazole synthesis." By S. H. OAKESHOTT and S. G. P. PLANT.
- "The conditions underlying the formation of unsaturated and cyclic compounds from halogenated open-chain derivatives. Part VIII. Products derived from pimelic acid. An application of Bischoff's dynamic hypothesis." By A. HASSELL and C. K. INGOLD.
- "The conditions underlying the formation of unsaturated and cyclic compounds from halogenated open-chain derivatives. Part IX. Products derived from suberic acid." By C. K. INGOLD.
- "The conditions underlying the formation of unsaturated and cyclic compounds from halogenated open-chain derivatives. Part X. Products derived from azelaic acid." By F. R. GOSS and C. K. INGOLD.
- "5-Chlorophentharsine and its rate of formation from *o*-thiophenoxyphenyldichloroarsine." By E. ROBERTS and E. E. TURNER.
- "Further contributions to the organic chemistry of arsenic." By E. ROBERTS, E. E. TURNER, and (in part) F. W. BURY.
- "The constitution of polysaccharides. Part IX. The degradation of cellulose to an anhydro-trisaccharide." By J. C. IRVINE and G. J. ROBERTSON.
- "The hydrates of chromic nitrate." By J. R. PARTINGTON and S. K. TWEEDY.
- "Interactions of tellurium tetrachloride and aryl alkyl ethers. Part II." By G. T. MORGAN and R. E. KELLETT.
- "Carboxylated  $\beta$ -diketones." By G. T. MORGAN and C. R. PORTER.
- "Researches on residual affinity and co-ordination. Part XXVI. A quadridentate group in combination with bivalent metals." By G. T. MORGAN and J. D. M. SMITH.
-

## ADDITIONS TO THE LIBRARY.

I. *Donations.*

BATE, STANLEY CHARLES. The synthesis of benzene derivatives. London 1926. pp. 230. 21s. net. (*Recd.* 4/2/26.)

From the Publishers : Messrs. Ernest Benn.

BRAUN, JULIUS V. Lehrbuch der organischen Chemie. Leipzig 1925. pp. xii + 508. (*Recd.* 9/2/26.) From the Author.

CLARK, CECIL HENRY DOUGLAS. The basis of modern atomic theory. London 1926. pp. xx + 292. ill. 8s. 6d. net. (*Recd.* 20/1/26.) From the Publishers : Messrs. Methuen & Co.

EVERS, NORMAN. The chemistry of drugs. London 1926. pp. 247. 32s. 6d. net. (*Recd.* 16/12/25.)

From the Publishers : Messrs. Ernest Benn.

GAS JOURNAL. Winning papers in the coke competition. London 1925. pp. 86. ill. (*Recd.* 31/12/25.)

From Mr. H. M. Spiers.

MACARDLE, DONALD W. The use of solvents in synthetic organic chemistry. London 1926. pp. viii + 218. 15s. net. (*Recd.* 25/1/26.) From the Publishers : Messrs Chapman & Hall.

ORGANIC SYNTHESSES : an annual publication of satisfactory methods for the preparation of organic chemicals. Vol. V. Edited by CARL SHIPP MARVEL [and others]. New York 1925. pp. viii + 110. ill. 7s. 6d. net. (*Recd.* 20/1/26.)

From the London Publishers : Messrs Chapman & Hall.

POZZI-ESCOT, MARIUS EMMANUEL. Les diastases et leurs applications. Paris [1900]. pp. 218.

— État actuel de nos connaissances sur les oxydases et les réductases : établissement du groupe nouveau des réductases. Paris 1902. pp. 240.

From Dr. R. H. A. Plimmer.

RESEARCH ASSOCIATION OF BRITISH RUBBER AND TYRE MANUFACTURERS. *Information Bureau*. Summary of current literature. Vol. II, etc. Croydon 1924 +. (*Reference.*) From the Association.

THOMS, HERMANN. [Editor.] Handbuch der praktischen und wissenschaftlichen Pharmazie. Vol. IV, Part iii. Berlin 1925. pp. 545 to 816. ill. M. 10. (*Recd.* 31/12/25.)

From the Publishers : Herren Urban & Schwarzenberg.

II. *By Purchase.*

BABLIK, HEINZ. Galvanizing : a theoretical and practical treatise. Translated by CHARLES T. C. SALTER. London 1926. pp. viii + 168. ill. 12s. 6d. net. (*Recd.* 15/1/26.)

BAILEY, CLYDE H. The chemistry of wheat flour. New York 1925. pp. 324. ill. 20s. net. (*Recd.* 5/1/26.)



PROCEEDINGS  
OF THE  
CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, March 4th, 1926, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., Vice-President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death on February 21st, of its distinguished Honorary Fellow, Professor Dr. Heike Kamerlingh Onnes (elected 18th March, 1920), and stated that the following telegram had been sent to Madame Kamerlingh Onnes: "President and Council of Chemical Society deeply mourn the loss of their distinguished Honorary Fellow, Kamerlingh Onnes.—Donnan, Foreign Secretary."

The following List of Nominations for vacant places on the Council was read from the Chair:

President:

H. Brereton Baker.

Vice-Presidents who have filled the office of President (two vacancies):

Arthur W. Crossley and Percy F. Frankland.

Vice-Presidents who have not filled the office of President (two vacancies):

Sir Robert Robertson and Robert Robinson.

Ordinary Members of Council:

(a) Town Members, *i.e.*, those resident within 50 miles of Charing Cross (one vacancy):

R. H. Pickard.

(b) Country Members, *i.e.*, those resident beyond 50 miles from Charing Cross (four vacancies):

H. V. A. Briscoe, R. Whytlaw Gray, T. J. Nolan, and K. J. P. Orton.

The following were formally admitted Fellows of the Chemical Society: Bawa Kartar Singh, H. W. Keenan, S. D. Sutton, Henry Wilkins, Edna C. Smith, Ivy W. E. Rogers, J. Packer, J. Haslam,

R. F. Wright, M. A. Phillips, L. G. Jupp, P. G. Marshall, W. A. N. Markwell, H. K. Southern, Niels Bjerrum, Sir Robert Robertson, A. Chaston Chapman.

Certificates were read for the first time in favour of :

William John Dann, B.Sc., Biochemical Laboratory, The University, Cambridge.

George Henry Davis, 34, Bouverie Road, N. 16.

Samuel Hill, 53, Lodge Road, Orrell, Wigan.

Clifford Walter Howell, M.Sc., St. Mary's Hall, Stonyhurst, Blackburn.

Andrew McKeown, Muspratt Laboratory, The University, Liverpool.

Gobindram Tarachand Mansharamani, 13, Inglis Street, Stoke-on-Trent.

Navin Chandra Mittal, B.Sc., The Prince of Wales College, Jammu, India.

David Muir, Gwernygerwn House, Treforest, Pontypridd.

John Trevor Nicholl, Denehurst, Adelaide Park, Belfast.

Muhammad Qudrat-i-Khuda, M.Sc., 6/39, Linden Gardens, Notting Hill Gate, W. 2.

Arthur Howard Roberts, A.R.C.S., A.I.C., Gammons Farm, Gammons Lane, Watford.

Kunwar Bisheshwar Dayal Seth, Kotra Biswan, District Sitapore, India.

Charles Soyka, A.R.C.S., 65, Castletown Road, W. 14.

The following papers were read :

- “ An experimental study of protective colloids. Part I. The influence of concentration.” By S. SUGDEN and M. WILLIAMS.
- “ The constitution of the condensation product of  $\beta$ -phenylhydroxylamine and acetone.” By F. H. BANFIELD and J. KENYON.
- “ The unsaponifiable matter from oils of elasmobranch fish. Part I. A contribution to the constitution of squalene (spinacene).” By I. M. HEILBRON and E. D. KAMM.
- “ The unsaponifiable matter from oils of elasmobranch fish. Part II. The hexahydrochlorides of squalene.” By I. M. HEILBRON and W. M. OWENS.

---

Ordinary Scientific Meeting, Thursday, March 18th, 1926, at 8 p.m., Professor W. P. WYNNE, D.Sc., F.R.S., Vice-President, in the Chair.

The Chairman referred to the loss sustained by the Society, through death, of the following Fellows :

	Elected.	Died.
Martin Fenn Roberts .....	Jan. 20th, 1876.	Feb. 22nd, 1926.
Shigetake Suguira .....	Dec. 5th, 1878.	Feb. 13th, 1924.

The Chairman announced that

1. The next Ordinary Scientific Meeting arranged for April 15th, had been postponed to April 22nd, 1926, at 8 p.m.

2. The second of the two Informal Lectures arranged by the

Council will be delivered on Thursday, April 29th, 1926, at 6 p.m., by Professor W. E. S. Turner, O.B.E., D.Sc., who has chosen as his subject "Additive Relationships in the Properties of Glasses."

3. The Council, at its meeting this afternoon, had appointed Dr. A. D. Mitchell as Assistant Editor.

4. The List of Fellows for 1926 will not be published.

The following were formally admitted Fellows of the Chemical Society: W. J. Elford and S. G. Clarke.

Certificates were read for the first time in favour of:

Arthur Percival Anderson, B.Sc., The High School, South Shore, Blackpool.

Francis George Barker, 61, Crimicar Lane, Fulwood, Sheffield.

Joseph Blake Koepfli, M.A., Dyson Perrins Laboratory, Oxford.

Robert Osborne Orr McCrone, B.Sc., 15, Montgomerie Quadrant, Kelvinside, Glasgow.

John McLintock, B.Sc., 8, Sardinia Terrace, Glasgow.

Peter Maitland, B.Sc., 10, Dryburgh Gardens, Glasgow.

William Leopold Peard, B.Sc., 42, Dingwall Road, Croydon.

The following certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2):

Giuseppe Grassi Cristaldi, Via Androne 35, Catania, Italy.

Robert Henry King Foster, Charleston, West Virginia, U.S.A.

Nicolas de Kolossowsky, Prospekt Maklina 20, Leningrad.

Hershel Gaston Smith, Gulf Refining Co., Port Texas, U.S.A.

The following papers were read:

"Orientation effects in the diphenyl series. Part II. The constitution of Bandrowski's dinitrobenzidine." By R. J. W. LE FÈVRE and E. E. TURNER.

"The orientating influence of free and bound ionic charges on attached simple or conjugated unsaturated systems. Part I. The nitration of some derivatives of benzylamine." By H. R. ING and R. ROBINSON.

"The morphine group. Part IV. A new oxidation product of codeine." By R. S. CAHN and R. ROBINSON.

"The laws of aromatic substitution. Part V. The directing effect of electrolytically dissociated groups." By B. FLÜRSCHHEIM and E. L. HOLMES.

"The velocity of decomposition of heterocyclic diazonium salts. Part II. The aminopropyltriazoles." By J. REILLY and P. J. DRUMM.

---

List of Papers, or Abstracts thereof, received between February 18th and March 18th, 1926. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

- “Studies in the diphenyl series. Part I. The isomeric 4 : 4'-dichloro-3 : 3'- and -3 : 5'-dinitrodiphenyls and 4'' : 4'''-dichloro-3'' : 6 : 3''' : 6'- and -3'' : 6 : 2' : 5'''-tetranitrobenzerythrenes.”  
By H. H. HODGSON and (in part) F. C. GOROWARA.
- “The isomerism of the styryl alkyl ketones. Part III. Methoxy-2-hydroxy and 4-hydroxystyryl alkyl ketones.” By A. MCGOOKIN and D. J. SINCLAIR.
- “A study of the basic copper sulphates.” By G. FOWLES.
- “The constitution of maltose.” By J. C. IRVINE and I. M. A. BLACK.
- “The dehydration of glycols derived from  $\alpha$ -naphthylglycollic acid.  
By A. MCKENZIE and W. S. DENNLER.
- “The preparation and resolution of *dl-cis*-2 : 5-dimethylpiperazine.”  
By F. B. KIPPING and W. J. POPE.
- “The ternary system sodium sulphide–sodium sulphate–water.”  
By A. R. HOGG.
- “The resin of Hevea rubber.” By G. S. WHITBY, J. DOLID, and F. H. YORSTON.
- “Some fatty acid derivatives.” By G. S. WHITBY.
- “The hydrolysis of acetyl-*o*-benzylideneaminophenol.” By F. BELL and J. KENYON.
- “1-Amino-2-acetylaminobenzene and acetyl-1 : 2 : 3-benzotriazole.”  
By F. BELL and J. KENYON.
- “Some reactions of benzoylmandelonitrile.” By B. H. INGHAM.
- “Trypanocidal action and chemical constitution. Part V. Aryl-sulphonamides of some phenylarsinic acids.” By L. F. HEWITT, H. KING, and W. O. MURCH.
- “Applications of thallium compounds in organic chemistry. Part III. Alkylations.” By C. M. FEAR and R. C. MENZIES.
- “The labile nature of the halogen atom in organic compounds. Part XII. Halogen compounds of barbituric acids.” By A. K. MACBETH, T. H. NUNAN, and D. TRAILL.
- “The halogenation of phenols.” By F. G. SOPER and G. F. SMITH.
- “The structure of racemic substances.” By W. J. HICKINBOTTOM.
- “Studies of equilibrium in systems of the type : lead halide–potassium halide–water. Part I. Lead chloride–potassium chloride–water at 25°.” By L. J. BURRAGE.
- “Studies of equilibrium in systems of the type : lead halide–potassium halide–water. Part II. Lead bromide–potassium bromide–water and lead iodide–potassium iodide–water at 25°.” By L. J. BURRAGE.
- “An analysis of the ether. Part I.” By W. C. REYNOLDS.
- “The determination of the rate of hydrolysis of sparingly soluble esters.” By R. C. SMITH and H. A. PATERSON.

- “The heat of combustion of salicylic acid. A reply to E. Berner.”  
By P. E. VERKADE and J. COOPS.
- “The introduction of the selenocyano-group into aromatic compounds.” By F. CHALLENGER, A. T. PETERS, and J. HALÉVY.
- “Porphyroxine. Part II.” By J. N. RAKSHIT.
- “The behaviour of mannose diacetone on methylation.” By J. C. IRVINE and A. F. SKINNER.
- “The chemistry of the three-carbon system. Part V. The mechanism of tautomeric interchange and the effect of structure on mobility and equilibrium.” By C. K. INGOLD, C. W. SHOPPEE, and J. F. THORPE.
- “The relationship between the optical rotatory powers and the relative configurations of optically active compounds. Part III. Optical rotatory dispersive power.” By G. W. CLOUGH.
- “The reactivity of meso-substituted anthracenes. Part II.” By J. W. COOK.
- “The constitution of the disaccharides. Part X. Maltose.” By C. J. A. COOPER, W. N. HAWORTH, and S. PEAT.
- “The complexity of the solid state. Part IV. The behaviour of pure sulphur trioxide. Part III.” By A. SMITS and P. SCHOENMAKER.
- “A synthesis of 1:2-dihydroquinaldine. A correction.” By F. A. MASON.
- “The isomerism of the dihydroxystearic acids produced by oxidation of acids of the oleic and elaidic series.” By T. P. HILDITCH.
- “The action of phosphorus on salts of silver and other metals.  
By O. J. WALKER.
- “The nature of the alternating effect in carbon chains. Part VII. A study of the relative directive efficiencies of oxygen and sulphur in aromatic substitution.” By E. L. HOLMES, C. K. INGOLD, and E. H. INGOLD.
- “*o*-Phenylene dithiol.” By W. R. H. HURTLEY and S. SMILES.
- “Note on the density of boric oxide from a fractional crystallisation of boric acid.” By H. V. A. BRISCOE and P. L. ROBINSON.
- “Quaternary ammonium perhalides.” By T. H. READE.
- “Selective solvent action. Part V. Salting in.” By R. WRIGHT.
- “The correlation of additive reactions with tautomeric change. Part V. The structural conditions affecting mobility and equilibrium.” By K. E. COOPER, C. K. INGOLD, and E. H. INGOLD.
- “Experiments on the formation of mother-of-pearl.” By P. B. GANGULY.

“ An analysis of the ether. Part II. The magnetic fields in atoms.”  
By W. C. REYNOLDS.

“ On the existence of the suboxides of lead and thallium.” By F.  
AUFENAST and H. TERREY.

“ On active nitrogen. Part I. The heat of formation and nature  
of active nitrogen.” By E. J. B. WILLEY and E. K. RIDEAL.

## ADDITIONS TO THE LIBRARY.

### I. *Donations.*

ABDERHALDEN, EMIL. [Editor.] Handbuch der biologischen  
Arbeitsmethoden. Abt. XI. Methoden zur Erforschung der  
Leistungen des Pflanzenorganismus, Teil 3, Heft iv. Berlin 1926.  
pp. 613 to 714. ill. *M.* 4.80 net. (*Recd.* 22/2/26.)

From the Publishers : Herren Urban & Schwarzenberg.

BRITISH DRUG HOUSES. The B.D.H. book of A.R. standards.  
London 1926. pp. xiv + 112. (*Reference.*) 2s. 6d. net.

From the Publishers : The British Drug Houses, Ltd.

DALE, HENRY HALLETT [and others]. Lectures on certain aspects  
of biochemistry. London 1926. pp. viii + 314. ill. 12s. 6d. net.  
(*Recd.* 2/3/26.)

From Professor J. C. Drummond.

LEVY, STANLEY ISAAC. An introduction to industrial chemistry.  
London 1926. pp. xiv + 288. ill. 15s. net. (*Recd.* 17/2/26.)

From the Publishers : Messrs. G. Bell & Sons.

SNELGROVE, DOUGLAS ROSEBERY, and WHITE, JOHN LEDGER.  
Qualitative inorganic analysis. London 1926. pp. xii + 282.  
ill. 7s. 6d. net. (*Recd.* 18/2/26.)

From the Publishers : Messrs. Methuen & Co.

SYKES, SIR ALAN JOHN. [Compiler.] Concerning the bleaching  
industry. Manchester [1926]. pp. x + 120. ill. (*Recd.* 24/2/26.)

From the Compiler.

UNION INTERNATIONALE DE LA CHIMIE PURE ET APPLIQUÉE.  
Comptes rendus de la première, deuxième, cinquième Conférences  
Internationale de la Chimie ; Rome 1920, Bruxelles 1921, Copenhague  
1924. Paris [1921, 1922, 1925]. pp. 90, 124, 192. (*Reference.*)

— Deuxième rapport de la Commission Internationale des  
Éléments Chimiques : table internationale des poids atomiques.  
Paris 1925. pp. 10. (*Reference.*)

— Rapport du Comité de Travail de Réforme de la Nomen-  
clature de Chimie Minérale. Paris 1926, pp. 20. (*Reference.*)

From the General Secretary.

### II. *By Purchase.*

ALLEN, PAUL W. Industrial fermentations. New York 1926.  
pp. 424. ill. 25s. net. (*Recd.* 11/3/26.)

AUB, JOSEPH C. [and others]. Lead poisoning. With a chapter on the prevalence of industrial lead poisoning in the United States by ALICE HAMILTON. Baltimore 1926. pp. x + 266. ill. 18s. net. (*Recd.* 11/3/26.)

BEAUMONT, ROBERTS. The finishing of textile fabrics (woollen, worsted, union and other cloths). 2nd edition. Revised by ALEX. YEWDALE. London 1926. pp. xvi + 368. ill. 15s. net. (*Recd.* 11/3/26.)

BEYERSDORFER, PAUL. Staub-explosionen. Dresden 1925. pp. viii + 125. ill. *M.* 7. (*Recd.* 30/12/25.)

COLE, SYDNEY WILLIAM. Practical physiological chemistry. 7th edition. Cambridge 1926. pp. xii + 482. ill. 16s. net. (*Recd.* 11/3/26.)

ELLIS, CARLETON, and WELLS, ALFRED A., assisted by NORRIS BOEHMER. The chemical action of ultraviolet rays. New York 1925. pp. 362. ill. 25s. net. (*Recd.* 30/12/25.)

FAIRRIE, GEOFFREY. Sugar. Liverpool 1925. pp. xiv + 234. ill. 12s. 6d. net. (*Recd.* 21/1/26.)

GRIFFITHS, EZER. Methods of measuring temperature. 2nd edition. London 1925. pp. xii + 204. ill. 10s 6d. net. (*Recd.* 11/3/26.)

HENRI, VICTOR. Structure des molécules : conférences faites au laboratoire de CHARLES MOUREU et à la SOCIÉTÉ DE CHIMIE PHYSIQUE. Paris 1925. pp. iv + 124 + iii plates. 20 fr. net. (*Recd.* 9/2/26.)

HOLLEMAN, ARNOLD FREDERIK. A text-book of organic chemistry. 6th English edition. Edited by ANDREW JAMIESON WALKER, assisted by OWEN EDWIN MOTT, with the co-operation of the Author. New York 1925. pp. xx + 582. ill. 17s. 6d. net. (*Recd.* 21/1/26.)

HOWE, H. E. [Editor.] Chemistry in industry. Vol. II. New York 1925. pp. xiv + 392. ill. 6s. net. (*Recd.* 6/1/26.)

JAHRBUCH DER ORGANISCHEN CHEMIE. By JULIUS SCHMIDT. Year XI : Die Forschungsergebnisse und Fortschritte im Jahre 1924, etc., Stuttgart 1925 +. (*Reference.*)

JOËL, ERNST. Das kolloide Gold in Biologie und Medizin : die Goldsolreaktion im Liquor cerebrospinalis. (Kolloidforschung in Einzeldarstellungen.) Leipzig 1925. pp. viii + 115. ill. *M.* 7.50 net. (*Recd.* 28/1/26.)

KARRER, PAUL. Einführung in die Chemie der polymeren Kohlenhydrate : ein Grundriss der Chemie der Stärke, des Glykogens, der Zellulose und anderer Polysaccharide. (Kolloidforschung in Einzeldarstellungen.) Leipzig 1925. pp. x + 285. *M.* 16 net. (*Recd.* 28/1/26.)

KOSTYTSCHEW, S. Lehrbuch der Pflanzenphysiologie. Vol. I. Berlin 1926. pp. viii + 568. ill. *M.* 28.50. (*Recd.* 9/2/26.)

LE CHATELIER, HENRY. Introduction à l'étude de la métallurgie : le chauffage industriel. 3rd edition. Paris 1925. pp. iv + 556. ill. 48 fr. net. (*Recd.* 28/1/26.)

MARILLER, CHARLES. Distillation et rectification des liquides industriels (alcools, benzols, pétroles, éthers, produits chimiques, air et gaz liquides, récupération des solvants). Paris 1925. pp. vi + 724. ill. 87 fr. net. (*Recd.* 28/1/26.)

MICHAELIS, LEONOR. Practical physical and colloid chemistry : for students of medicine and biology. Authorised translation from the 2nd German edition. By THOMAS RICHARD PARSONS. Cambridge 1925. pp. x + 196. ill. 7s. 6d. net. (*Recd.* 15/1/26.)

MORRELL, ROBERT SELBY, and WOOD, HUBERT ROGERS. The chemistry of drying oils. London 1925. pp. 224. ill. 21s. net. (*Recd.* 3/3/26.)

PEARSON, HERBERT P. Waterproofing textile fabrics. Containing the formulæ of the principal processes in use in the United States and many employed in other countries; with an index of United States, British, French and German patents. New York 1924. pp. 112. ill. 13s. net. (*Recd.* 15/1/26.)

PEARSON, WILLIAM ALEXANDER, and HEPBURN, JOSEPH SAMUEL. Physiological and clinical chemistry. Philadelphia 1925. pp. 306. ill. 17s. net. (*Recd.* 15/1/26.)

REGELSBERGER, FRIEDRICH. Chemische Technologie der Leichtmetalle und ihrer Legierungen. (Chemische Technologie in Einzeldarstellungen.) Leipzig 1926. pp. xx + 385. ill. *M.* 29 net. (*Recd.* 1/2/26.)

RÖTTGER, H. Lehrbuch der Nahrungsmittelchemie. 5th edition. Edited by EDUARD SPAETH and A. GROHMANN. Vol. I. Leipzig 1926. pp. xii + 1028. ill. *M.* 46 net. (*Recd.* 24/2/26.)

SCHMIDT, JULIUS. Synthetisch-organische Chemie der Neuzeit. 2nd edition. Braunschweig 1926. pp. xii + 328. *M.* 20 net. (*Recd.* 1/2/26.)

STARLING, ERNEST HENRY. Principles of human physiology. The chapter on the sense organs edited by HAMILTON HARTRIDGE. 4th edition. London 1926. pp. xiv + 1074. ill. 25s. net. (*Recd.* 11/3/26.)

STEWART, ALFRED WALTER. Recent advances in physical and inorganic chemistry. 5th edition. London 1926. pp. xii + 312. ill. 18s. net. (*Recd.* 11/3/26.)

TOCH, MAXIMILIAN. The chemistry and technology of paints. 3rd edition. London 1926. pp. x + 413. ill. 28s. net. (*Recd.* 11/3/26.)



PROCEEDINGS  
OF THE  
CHEMICAL SOCIETY.

DINNER.

THE Dinner of the Society was held at the Midland Hotel, Manchester, on Thursday, March 25th, 1926, at 6.30 for 7 p.m., Prof. H. BRERETON BAKER, C.B.E., D.Sc., F.R.S., President, in the Chair. The following is a list of those present:—

Allan, J.	Carr, S. E.
Allan, Mrs. J.	Chapman, A. W.
Armstrong, E. F., F.R.S.	Chorley, P.
Armstrong, Mrs. E. F.	Christie, G. H.
Ashton, Miss M. M.	Clayton, R. H.
Associated Newspapers.	Clemo, G. R.
Baddiley, J.	Clibbens, D.
Baddiley, Mrs. J.	Clifford, F. W.
Bain, D.	Coffey, S.
Baker, H. B., C.B.E., F.R.S.	Coulthard, A.
Baker, Mrs. H. B.	Craven, Mrs. M. B.
Baly, E. C. C., C.B.E., F.R.S.	Cronshaw, C.
Baly, Mrs. E. C. C.	Cronshaw, Mrs. C.
Bangham, D. H., M.C.	Cross, S. M.
Barrowcliffe, M., M.B.E.	Crossley, A. W., C.M.G., C.B.E., F.R.S.
Barrowcliffe, Mrs. M.	<i>Daily Dispatch.</i>
Barwick, F. W.	Desch, C. H., F.R.S.
Barwick, Mrs. F. W.	Dixon, H. B., C.B.E., F.R.S.
Bennett, Miss D. M.	Dixon, Mrs. H. B.
Bennett, G. M.	Doran, W.
Best, S. R.	Drummond, J. C.
Best, Mrs. S. R.	Dunn, F. P.
Briggs, S. H. C.	Dunningham, A. C.
Brightman, R.	Dunningham, Mrs. A. C.
Brindley, W. H., M.C.	Dutt, P. K.
Brindley, Mrs. W. H.	Eldridge, A. A.
Briscoe, H. V. A.	Ellison, R.
Brown, H. P.	Emsley, J., J.P.
Callan, T.	Evers, H.
Campbell, A. F.	Fairbrother, F.
Cardwell, D.	Fargher, R. G.
Cardwell, Mrs. D.	

- Fargher, Mrs. R. G.  
 Freeth, F. A., O.B.E., F.R.S.  
 Fyfe, A. W.  
 Gaunt, R.  
 Gaunt, Mrs. R.  
 Gay, A. D.  
 Geake, A.  
 Gibson, C. S., O.B.E.  
 Green, A. G., F.R.S.  
 Green, Mrs. A. G.  
 Greenaway, A. J.  
 Hankey, J. L.  
 Hart, L. R.  
 Hart, Mrs. L. R.  
 Hatton, A. B.  
 Haworth, E.  
 Haworth, W. N.  
 Hayhurst, H.  
 Hayhurst, Mrs. H.  
 Henderson, J. A. R.  
 Henderson, Mrs. J. A. R.  
 Henstock, H.  
 Henstock, Mrs. H.  
 Hey, Mrs. Spurley  
 Hilditch, T. P.  
 Hinkel, L. E.  
 Holroyd, G. W. F.  
 Holt, F., O.B.E.  
 Hope, E.  
 Horner, T.  
 Horsfall, R. S.  
 Huebner, J.  
 Ingold, C. K., F.R.S.  
 Ingold, Mrs. C. K.  
 Jones, B. Mouat, D.S.O.  
 Kay, W. E.  
 Kay, W. W.  
 Lancashire, G. H.  
 Lange, E. F. S.  
 Lapworth, A., F.R.S.  
 Lapworth, Mrs. A.  
 Leech, B.  
 Lees, Sir W. Clare, O.B.E., J.P.  
 Levinstein, H.  
 Levinstein, Mrs. H.  
 Love, Miss M.  
 McCombie, H., D.S.O., M.C.  
 McCombie, Mrs. H.  
 Mackay, D. R.  
 Mackay, Mrs. D. R.  
*Manchester Guardian.*  
 Marshall, W., J.P.
- Mason, F. A.  
 Menzies, R. C.  
 Menzies, Mrs. R. C.  
 Miall, S.  
 Milner, J. B.  
 Milner, Mrs. J. B.  
 Mouilpied, A. T. de.  
 Mouilpied, Mrs. A. T. de.  
 Myers, J. E., O.B.E.  
 Myers, Mrs. J. E.  
 Naunton, W. J. S.  
 Owen, F.  
 Payman, J.  
 Pearson, Mrs. L.  
 Pennington, R. W.  
 Pennington, W. H.  
 Perkin, W. H., F.R.S.  
 Perkin, Mrs. W. H.  
 Philip, J. C., O.B.E., F.R.S.  
 Pickard, R. H., F.R.S.  
 Pickles, S. S.  
 Pope, Sir William J., K.B.E., F.R.S.  
 Porritt, B. D.  
 Potts, T. T.  
 Prentice, B.  
 Prentice, Mrs. B.  
 Press Association.  
 Preston, J. M.  
 Price, T. Slater, O.B.E., F.R.S.  
 Probert, M. E.  
 Probert, Mrs. M. E.  
 Pyman, F. L., F.R.S.  
 Pyman, Mrs. F. L.  
 Radcliffe, L. G.  
 Raper, H. S., C.B.E.  
 Rawson, C.  
 Rawson, V. S.  
 Rée, A.  
 Rée, Mrs. A.  
 Renshaw, A.  
 Rideal, E. K., M.B.E.  
 Ridgway, L. R.  
 Robinson, R., F.R.S.  
 Robinson, Mrs. R.  
 Robinson, Miss R.  
 Rodd, E. H.  
 Rodd, Mrs. E. H.  
 Rogers, W. D.  
 Rowe, F. M.  
 Rowe, Mrs. F. M.  
 Saunders, K. H.  
 Saunders, Mrs. K. H.

Sever, W.	Walmsley, Mrs. J. R.
Sheldon, W.	Warburton, T.
Silvester, W. A.	Weir, J. M.
Smith, Clarence.	Weir, Mrs. J. M.
Smith, Norman.	Wheaton, H. J.
Smith, Mrs. Norman.	Whetmore, F.
Stenhouse, T.	Whitham, H.
Stern, H. J.	Wightman, W. A.
Stubbs, G., C.B.E.	Wightman, Mrs. W. A.
Swann, H.	Wilkinson, J. F.
Tansley, L. B., M.C.	Wilson, F. J.
Thomas, G.	Withers, J. C.
Thorpe, J. F., C.B.E., F.R.S.	Withers, Mrs. J. C.
<i>Times, The.</i>	Wood, J. K.
Turner, Miss E. G.	Woodhouse, Sir Percy, J.P.
Walker, T. K.	Wyatt, W. F.
Walker, Mrs. T. K.	Wylter, M.
Walmsley, J. R.	Wynne, W. P., F.R.S.

The following is the Toast List and Programme :—

1. "His Most Gracious Majesty The King."
2. "Her Majesty the Queen, His Royal Highness the Prince of Wales, and the other Members of the Royal Family."

By SIR PERCY WOODHOUSE, Kt., J.P. :—

3. "The Chemical Society," coupled with the name of the President.

By Professor E. C. C. BALY, C.B.E., F.R.S. :—

4. "The City of Manchester," coupled with the name of the Right Hon. The Lord Mayor.

By Professor J. F. THORPE, C.B.E., F.R.S.

5. Professor H. B. DIXON, C.B.E., F.R.S., on the Fiftieth Anniversary of his election to the Chemical Society.

6. Song by Professor J. C. Philip, O.B.E., F.R.S. :—

By Professor Sir WILLIAM POPE, K.B.E., F.R.S. :—

7. "Our Guests."

Reply by Sir W. CLARE LEES, O.B.E., J.P.

8. Song by Professor J. C. Philip, O.B.E., F.R.S.

Sir PERCY WOODHOUSE, in proposing the toast of "The Chemical Society," said :—

I have been called upon at very short notice to take the place of Sir Martin Conway to propose the toast of "The Chemical Society." I am sure that we all regret Sir Martin's absence. I do particularly, as he would have spoken to you with much more knowledge of the subject than I possess. I have utilised the very few hours since I knew I had this toast to propose in the endeavour to get some knowledge of your Society. I am told that the objects

of the Society are to further the pursuit of knowledge and research in Chemistry in all its branches. I am also told that your Society was founded in 1841, and received its charter in 1848, and that, though venerable in age, it is very virile in its activities.

This, I understand, is the first occasion that the Society has held its annual gathering in the provinces. Hitherto they have been held in London, and I assure you that Manchester appreciates the honour done to her by selecting this city for your first official visit to the provinces. On behalf of the Chamber of Commerce, of which I am President, I offer you a most hearty welcome, and assure you that all your activities are of intense importance to us commercial men who carry on business here.

You have, I think, made a particularly appropriate choice in selecting Manchester. It is the great industrial centre of the North, and is not only associated with the manufacture of cotton goods, with which many alone connect it, but it is also to a great extent very important in regard to the manufacture of chemicals, and more particularly in the application of the products of the chemical industry to textiles.

Manchester is also now particularly associated with the great organic chemical industry, and I am given to understand that researches connected with the latter fill the bulk of the pages of the well-known journal of your Society.

I gather, too, that before the war this organic chemical industry was almost entirely in foreign hands, and that the war has taught us the real necessity of encouraging the industry in this country. To create that industry, technical and scientific skill of the highest order is essential, and we are fortunate indeed that this country commands chemical brains capable of doing this and of doing it well.

It is not merely a question, however, of research and chemical knowledge, but a capacity to apply the results obtained in such research on a practical and industrial scale. This involves great organising ability, for there is no industry quite as complicated as the organic chemical industry. Those guiding that industry require an unusual breadth of outlook and a wide knowledge, a capacity for big business organisation and financial acumen, and the industry is fortunate indeed in having secured the services of eminent business men, who are willing to associate with the scientist in the development of this industry.

As far as dyes are concerned, I am told that of the 1,200 individual dyestuffs that are mentioned in the most recent book, not less than 600 are now being produced in this country, while before the

war the number did not exceed 100. The development of the dyestuffs industry has entailed a great amount of anxiety to those who have had to handle the situation, and I am told by my predecessor as President of the Manchester Chamber of Commerce, who has recently rejoined that industry, that he finds that what has so far been accomplished is most satisfactory, and that the industry is being managed on very sound lines.

It would, perhaps, not be out of place to mention that in 1913 the consumption of dyes in this country was forty-five million pounds, 11 per cent. of which were produced here. In 1924 the consumption of dyes was thirty-four million pounds, of which 87 per cent. were produced here. Further, the average price of dyes of British manufacture in 1921 was 3s. 11*d.* per lb., and in February 1926 1s. 9*d.* per lb., a reduction of 55 per cent.

I congratulate you gentlemen, Fellows of the Chemical Society, on this achievement, for to you, to a great extent, is due the remarkable improvement in the position of the dyeing industry to-day, a matter of the utmost importance, not only industrially, but nationally.

There is another reason why Manchester is the appropriate centre for your meeting. It has been the home of great chemists; the names of Dalton and Roscoe may well be recalled, and there have been many eminent successors. Then we have Professor Crossley, who, after the exceptionally valuable services rendered to the country during the war, when he held a most important and responsible post in the chemical war section, has done most admirable work at the Shirley Institute.

Then, at the University, special attention has always been paid to chemical research, and I am told that no other university has held so high a position as Manchester with regard to the training in chemistry. The distinction of the Professors who have held, and are now holding, the principal offices in the chemical department of the University accounts for this. The names of a few that occur to me are Perkin, Pope, Lapworth, Robinson, and Dixon, among others. It is impossible to overstate the importance of the chemist to textile and other trades, and I firmly believe that in the future chemistry will play a part of importance which few realise. There are still ever-fresh fields for the rising chemists of our generation to conquer. Despite the number of problems which still remain to be solved, I am quite certain that with the training they get, and with the recollection of what their predecessors have done, the students of to-day will not fail us in the future.

May I, in conclusion, tell you of a personal experience, and explain to you why I am not a chemist? I was at the Grammar School, as your President was some years after me. I was on the Classical side. One had to have some science subject. What that was depended on the form one was in. I had nearly twelve months under Dr. Watts, who was the first chemical master there, and it was a great relief from the classroom to go to the laboratory and, after being told certain details, be taken on to the benches to perform some experiment illustrating the lesson. I was so interested that I invested what pocket money I had in a Bunsen burner, retorts, and very limited apparatus, with which I sought to perform these experiments at home. My father was quite interested, and, having a number of sons to put out in the world, he actually thought of sending me to a chemical works. But, unfortunately, one night I started an experiment. I got on all right for a time, but it would not work before I had to go to bed. Still more unfortunately, it did work afterwards. My parents had some visitors who were playing whist in the room above. When I tell you that I was experimenting with sulphuretted hydrogen, and that it began to work, you will understand that there was trouble. It was so serious that I afterwards heard no more of going into the chemical industry. It was my misfortune, probably, but since then it has been my lot to be in the cotton trade.

I have the good fortune to propose the toast of "The Chemical Society" and its continued success and prosperity. I firmly believe it is the chemist who is going to save the trade of this country by his new discoveries and the new applications to industry which will result therefrom.

The toast, coupled with the name of the President, was honoured with enthusiasm.

Professor H. BRERETON BAKER replied :—

Before I begin the serious part of my speech I should like to dispel the illusion I find hinted at in certain quarters that the Chemical Society has come to Manchester in connection with the event which is going to happen in Liverpool to-morrow. I should like also to refer to a second hypothesis which has been promulgated. You know—though those who are not Fellows of the Chemical Society perhaps don't know—that there has been variation in the size of the "Abstracts" published by the Society, which has destroyed the symmetry of the book-shelves of all the Fellows of the Chemical Society. The second hypothesis advanced to explain the visit of the Chemical Society to Manchester was that the Council was supposed to be so afraid of meeting

their Fellows in London because they would have a struggle on the issue of the "Abstracts" question that they had to flee up North.

But those are not the reasons we have come to Manchester. We have come to Manchester because Manchester is the birthplace of modern chemistry, and also it may be said that it is the birthplace of modern physics.

I am not too young not to have met—as I did in my youth—the old gentleman, Lord Playfair, walking arm-in-arm with Dalton and Joule down Market-street in Manchester on what would be called a busy day. I tremble to think of those three old gentlemen walking arm-in-arm down the present Market-street; but there they were.

We have, as Sir Percy Woodhouse has suggested, reason to be proud of the profession of chemistry. Chemists have done good work in the world. I would like to call attention to one particular fact. That is, that all—or nearly all—Research Associations which were alluded to at the meeting this afternoon, whatever their object, are in the hands of chemists. I put it to you that this simply means that the chemist is recognised as a person who can be trusted, and usefully trusted, to do research work in any field.

What I have said may give point to the criticism that is often made of chemists, namely, that "they are self-sufficient"; and I am afraid that it is made more particularly of them if they come from Manchester. In the course of my rather varied career, I was head master of a large school in the south of London. I had on one occasion to admit a small boy. I had altogether somewhere about fifty or sixty small boys coming up. One boy told me he came from Rochdale. I said I was very glad to see a Lancashire boy there and I asked him what he thought of London. It turned out that he didn't think much of London. I said to him: "But think. It is much bigger and very much more important than Liverpool or Manchester." After thinking for a moment, he replied: "Well, it is only because we Lancashire boys"—notice the subtle compliment—"come up to London to keep it going."

A more personal experience, showing the self-sufficiency of chemists, especially when they are young, happened to me myself. I and others had been climbing in Lapland. We had chosen Lapland, by the way, because it was cheap and because there were no guides to bother us—nobody to say "This is the right way and that is the wrong way." We had accidents, it is true, but they were not painful. But, coming down the coast in a small steamer—we were all very disreputable-looking after six weeks in a savage

country: you can imagine we were not in a condition to walk down Piccadilly or across Albert Square—I noticed on board a man who was, on the balance, more disreputable than the rest of us. I got talking with him, and we got what Americans call swopping stories. He told me how on one occasion he jumped on a glacier across a crevasse and then found he could not jump back again. I said: “That was uncommonly foolish. The first lesson the Swiss guides gave us, because we learned in Switzerland, was never to go on a glacier alone and never to go without a rope.” He was very humble about it. He said: “You are quite right; I ought not to have done it. In fact I was punished by having to stay the whole day till a search party came to look for me.” We kept talking on and on in the desultory way one does on board a ship, and we got on the subject of public lecturing. I said: “It is such a pity that public lecturing has dropped out of English life.” He said: “Well, I don’t agree with you. Only a few months ago I was lecturing in the Free Trade Hall, Manchester, and there were some five thousand people there.” I began to think I had made a mistake. I didn’t know who he was. But a little later he told me he was going to give an account of his experiences in the far North to the Geographical Society. I said: “I wish you would tell me your name. I would like to come and hear you.” He replied that his name was Conway. I said: “For goodness’ sake don’t tell me you are ‘Himalaya Conway,’ when I have been lecturing you on what you are to do when you get on a glacier!”

You may imagine that I feel very hurt that Sir Martin Conway should not have been present to-night to give point to my story.

That is the disease. I am going to try to give you the remedy. The disease is self-sufficiency. The remedy I have found best is to try to put myself in the position of a chemist of, say, 150 years ago and think what, with his knowledge, I should have done. I think probably in this assembly most of us, if we had been put in the position of Priestley, knowing what Priestley did himself, most of us might have discovered oxygen. A smaller number—and that because we have not the requisite qualities of perseverance in difficulties—might have made the discoveries that Scheele did. You remember how Scheele was an office boy in a chemist’s shop. He used to go and beg candle ends round the village so as to light him in a disused cow-shed where, with broken bottles out of the pharmaceutical chemist’s shop, he used to go and make experiments. I say a few of us, not many, might possibly have made Scheele’s discoveries; but how many of us would have drawn the conclusion that Lavoisier did as to the part played by oxygen



in combustion? I venture to say that a good many of us would still remain believers in the theory of phlogiston.

Coming down later, when we come to Dalton's time, whatever view you may take as to the origin of the atomic theory, the amount of knowledge that Dalton had on which to base that theory was so small that I venture to say that not half a dozen of the members of this company here to-night would have devised the atomic theory, and I am quite certain I should not be one of the six.

We have heard this afternoon, to change the subject, of the financial difficulties of this Society. I have been President only about three hours, but I have got a plan. Sir Arthur Schuster, a Manchester man, has recently been investigating the expectation of life of the Fellows of the Royal Society. Now he has come to a very remarkable conclusion. That is, that if you belong to the Royal Society you have 10·7 additional years of life to live. In other words, your expectation of life is 10·7 years longer than that of an ordinary person. Well, if persons wish to live a long while they will join the Royal Society. But there are obstacles. What I should like to suggest is that some Fellow of our Society should deal with the Chemical Society in precisely the same way. He will no doubt prove that chemists live fifteen to twenty years longer than the ordinary person. If that is done, what a rush there will be to join the Chemical Society. We shall have all the old ladies in the country wanting to come in, and the increased revenue will, I am sure, rejoice the heart of our Treasurer. It will, of course, ruin all the insurance companies, but that is their business. I beg to thank you for the way in which you have received this toast.

The toast of "The City of Manchester," coupled with the name of the Right Honourable the Lord Mayor, was proposed by Professor E. C. C. BALY, who said :

It is with peculiar pleasure that I rise to propose the toast of "The City of Manchester," and it is with no uncertain voice that I assert this. My pleasure is based on two reasons—first my unbounded admiration for the City of Manchester and all that she stands for, and all that has been achieved by the labours of her citizens; and, secondly, because I have the pleasure to associate with this toast not the Lord Mayor—whose absence we regret so much—but my friend Dr. Levinstein, a member of the Corporation of this city, and a future Lord Mayor, who, at still shorter notice than I have had, has agreed to respond for the Lord Mayor.

In endeavouring to speak to the toast of the City of Manchester,

I find myself somewhat bewildered by the wealth of material that is at my command. There are so many facets to it that they embarrass me by their very number. Out of this multiplicity, if I may, I will select three, representing the life that is typical of Manchester. First, her culture; second, her civic government; and last, her University.

The culture of Manchester, I think, is best typified by her love of beauty in real music. Do we not envy her—all of us who are not Mancunians—her Hallé Orchestra, her splendid concerts, and those wonderful interpretations of the real gems of music? What, too, of the Free Trade Hall, where these concerts are given? Is not Manchester the envy of us who are unfortunate enough to live outside?

I do not say, of course, that we in Liverpool have no concerts. We have, and exceedingly proud we are of them, but I always note that our concerts must end quite early in order to enable the members of the orchestra to catch the last train back to their homes in Manchester.

In her civic government Manchester is an object lesson as to how that government should be achieved and how it should be maintained. One of the great difficulties of civic government is that of transport, and, as an adopted son of the sister city of Liverpool, I very much envy Manchester her tramways. Yet now, with the keen foresight she has always shown, her Corporation, I understand, are toying with the idea of subterranean tubes, that type of troglodytic transport that has so deeply embedded itself in the London clay. How shall I voice our full appreciation of Manchester's civic government? May I say that, with so notable a Corporation, small wonder it is that Manchester waxeth fat and ever progresseth with so dignified a gait.

Above all, Manchester is possessed of a University which has a fine and great reputation. I am only qualified to speak of two schools to which reference has already been made—the schools of Physics and of Chemistry. One has only to recount the names recorded on their rolls of fame to realise what is meant by that great and noble reputation. In the one school we find the names of Schuster, Rutherford, coupled with that remarkable man Bohr, and now Bragg, a member of that unique partnership, *père et fils*, who gained the Nobel Laureateship in 1915. In the sister school of Chemistry we find the names of Frankland, Roscoe, Schorlemmer, Dixon, and Perkin; and now the mantle has fallen on the shoulders of two men most worthy to uphold the great traditions of the past, Lapworth and Robinson.

There is one thing, however, in which Manchester is not so fortunate nor so blest. Those soft and balmy winds which blow from the West; well, we in Liverpool have the first taste of them. Deeply do we quaff those sea-borne draughts, and Manchester has to be content with what we leave—a sort of aerial heel-taps.

I think that Manchester is peculiarly fortunate in its Lord Mayor, and particularly for this reason, that his interests and ideals march so closely with our own. As you know, we men of chemistry are a very misunderstood race. But we are not, as popular fancy so often paints us, the devotees of 40,000 different smells and twice as many stinks. We are a group, or a series of groups, united by one common bond in a truly co-ordinated whole. May I instance what I mean? Our late President is interested in the outer clothing of man—the human engine; the dyeing chemist interests himself more particularly in the outer decoration and adornment of that engine. The soap chemist deals with the outer cleanliness of that engine—its external lubrication. The food chemist caters for the internal combustion machinery, and the brewing chemist concerns himself with its internal lubrication.

In all seriousness, the bond which unites us is the desire of every one of us to promote the health and benefit of the human race. That brings me to the two particular interests of the very versatile Lord Mayor of Manchester, which, I think, appeal to us as chemists more than most. As Chairman of the Housing and Sites Committee, he is attacking a key problem—a problem which I firmly believe to be the most important of all problems which confront the social reformer to-day. If his Lordship were here—and we regret that he is not: Dr. Levinstein will perhaps pass on my message to him—I would beseech him to remember the paramount importance of light in the lives of men, and, above all, in the life and growth of children. I would remind him of the work of those great chemists who have proved the cardinal importance of the vitamins, and who have proved that light, and light alone, produces those compounds from the normal products of the living organism. Then will the work of the Lord Mayor in providing the houses and open sites form the true complement of our own.

Secondly, as Vice-Chairman of the Agricultural Committee, his work again marches with ours. It is surely not necessary for me to point out the parallelism between him and us in this work. The great work of the Schools of Agriculture at Rothamsted and at Cambridge is too well known for me to mention, but one cannot but feel that the work of the Lord Mayor in providing allotments

and small holdings, to mention only one portion of his work, again forms the true complement of our own.

I sincerely regret the Lord Mayor's absence because I wanted to speak of his hobby. Like all wise men, he has a hobby, and his hobby is coal. This, of course, at once brings up in one's mind the Coal Commission Report, but you need not be afraid, for I am following Mr. Baldwin's advice: "Do not discuss the Coal Commission Report until you have read it," and this I have not had time to do. I am sure the Lord Mayor must be pleased and gratified by the recommendation in that report in favour of the municipal distribution of coal, seeing that he himself gave such yeoman service during the war as a member of the Coal Distribution Committee of this city. But the real reason was that if he had been present I wanted to ask him a question which Dr. Levinstein, as Deputy for the Lord Mayor to-night, may possibly be able to answer. I wanted to ask the Lord Mayor if he could solve a difficulty which is in my mind almost every year as Christmas approaches—it is a difficulty which has a certain sinister sound, I know. My question is: Why is it that so many people, when Christmas approaches, in order to secure sufficient coal to tide them over the festivities, always join slate clubs?

In the absence of the Lord Mayor, I am very pleased to be able to couple the name of my friend Dr. Levinstein with this toast. As I have said, we welcome him to-night as a Lord Mayor of the future, but also we greet him as one who has done much in industry, and nowhere is this work more recognised than in the University of Liverpool.

I listened this afternoon during the Presidential Address to some kindly criticisms of the modern Universities, in that we do not train our students in the right way to equip them for entering industry. I venture to think that one all-important factor was forgotten when these criticisms were made, namely, the psychology of the student. In Liverpool, for example, we have a large school of chemistry, but very few of our students have the *flair* for chemical engineering, nor desire to become chemical engineers. Still, they come to us full of enthusiasm, keen to follow other paths; I do not blame myself for my encouragement of them, for such enthusiasm is a precious thing, and I hesitate before persuading a student to follow a career to which he does not aspire.

In Dr. Levinstein we find a keen member of the Education Committee of this city, and one who is more than interested in that remarkable institution, the Manchester School of Technology. As External Examiner, I can speak very highly of its work, and

can say that Manchester has every reason to be proud, not only of her life and her culture, but also of her College of Technology. It is very appropriate, seeing that the Lord Mayor cannot be here, that the name of Dr. Levinstein, who is so much a part of that for which we stand, and who has so great a keenness for the technological interests of this area, should be coupled with the toast of "The City of Manchester."

In responding, Dr. H. LEVINSTEIN said :—

I would have you know, in the first place, that I am not Lord Mayor of Manchester. In parts of Professor Baly's charming speech I realised that he realised that I was not Lord Mayor. In other parts I was not so sure. It is well that you should understand this point, and that you should also appreciate the fact that Professor Baly's other hints as to possibilities are also the outcome of his own very versatile brain. I am, indeed, a member of the Manchester Corporation, alas! I am but the bottom but two in the class. There are just two below me, and the reason for that is that we tossed up as to who should have the last of the three places and I happened to come out on the top. I don't know whether you know what the Lord Mayor of Manchester really is. A schoolboy in a Sunday-school class was asked what frankincense was. He answered correctly, but when asked what was myrrh, had to confess that he didn't know. But one little chap cried out: "I know, please, teacher. He's the boss of the town." So that, having no qualification whatever for responding to the toast from its civic side, even as an old member of the Chemical Society, I feel I am in rather an anomalous position.

I notice here to-night people who were professors of mine in the past, and at least one demonstrator, and it seems rather an extraordinary thing for me to stand up here as representative of the Lord Mayor and thank you, the Chemical Society, and my revered instructors, for coming to visit this city. Of course we who know the locality are quite aware that there is nothing in the suggestion about Manchester being chosen for this, the first Provincial dinner, because the Grand National is being run at Aintree to-morrow. There are other vastly more important reasons. I remember two years ago, when Professor Treadwell came over here from Zurich, he was simply delighted with the intellectual life and atmosphere he found in Manchester. I am an old student of Zurich, and I have always regarded it as being a great centre of culture from a general and a scientific point of view, but when Professor Treadwell came here he was enamoured

of the activities which he found in the life of Manchester. I am rather inclined to believe that this was because of the extraordinarily active chemical life of Manchester, and because this city is the centre of a very large chemical industry, and am convinced that this is the real reason why you did us the very great honour of choosing this city to be the first in which you hold a provincial meeting.

As regards our "inferiority" to Liverpool, it is perfectly true that on occasion we are under the disagreeable necessity of breathing the air wafted from the salubrious city of Liverpool, of which Professor Baly is an adopted citizen. But I would have you know that when the Chemical Society comes to Manchester we manage to arrange to have an easterly wind. Professor Baly has wisely come to Manchester to-night—we are delighted to see him—where he will have the gratification of knowing that had he stayed in Liverpool he would have had to breathe the air wafted over this gathering.

I am not sure I am competent to reply to Professor Baly's remarks regarding our tramways and our housing. The Lord Mayor would probably have answered them differently. I am all in favour of buses, whilst he is deeply committed to trams. And in regard to the housing question, I know I should not respond in the same words as the Lord Mayor himself would use. I well remember being present as a very junior member at the meeting of the Manchester Corporation which discussed a scheme the Lord Mayor had very much at heart. That was the Wythenshawe extension scheme. That scheme was defeated by one vote. I voted against it.

I would, however, say on behalf of the Corporation of Manchester that we feel it to be a great distinction that you should have come here for this meeting, and I am sure the Lord Mayor would have wished to be here in order to show the world of chemistry how the citizens of Manchester—chemists and non-chemists—appreciate what the country and this county owe to chemistry. I regret, with you, that he was suddenly called away, for he could have told you himself that the people of this city take the visit of this great Society as a compliment not only to the city and its life and work, but to its wonderful educational establishments. I thank you, Professor Baly, for the way in which you have proposed this toast, and you, ladies and gentlemen, for the kind way in which you have received it.

Professor J. F. THORPE, C.B.E., F.R.S., who proposed the toast of "Professor H. B. Dixon, C.B.E., F.R.S., on the Fiftieth Anniversary of his election to the Chemical Society," said :—

Unlike some of those who have preceded me, I have known for three weeks that I should have the honour of proposing this toast. I cannot say that I have prepared a speech, because the toast allotted to me of "The Health of Professor Dixon on the Fiftieth Anniversary of his election to the Chemical Society" is an exceedingly easy one to deal with owing to the wealth of matter supplied by his remarkable record.

I feel that many of us who sit on that very uncomfortable bench of the Chemical Society and watch those young men file before the presidential chair little think how famous some of them may become. The Secretary first of all announces their names to the President. Sometimes he catches the name and sometimes he doesn't, but he takes their hand and they are thus made Fellows of the Society. I often feel that those of us who have been on the bench on these occasions must have had some Dixons passing before us without recognising the privilege we were sharing in thus admitting them to the Society.

Thus when Harold B. Dixon, on the 3rd of April, 1876, passed before that presidential chair, few of those present realised what an exceptional man was coming into the Society. On the same occasion Bernard Dyer and Dugald Clarke were elected Fellows. Since his introduction to the Chemical Society, Professor Dixon has been on the Council four years and been Vice-President three years, and then filled the office of President for two years. I have had the honour only on very rare occasions to occupy the presidential chair. I can assure you it is the most uncomfortable chair in London. For any president to sit there for two years must call for a degree of vitality which few of us possess. After that he served as Vice-President for periods of ten years and three years, making altogether service to the Society of twenty-two years.

Although I have not had the great privilege of being a student of Professor Dixon's, I was able at an early age of my career to come under his notice. In 1895 I came to Manchester and was able to profit by my association with him. One of the great achievements of Professor Dixon, amongst many others, was the fact that he induced Perkin to come to Manchester, and between them, to build up in this great city and great University a School of Chemistry which is pre-eminent—that is the wrong word—I should say unique as regards chemical research. Manchester was unique not only because she had carried out those remarkable and almost innumerable researches under the direction of Dixon and Perkin, but because she set the example to other institutions in this country and in other countries, too. All have followed more or less successfully the example thus set.

The foundation work done by Roscoe and Schorlemmer was carried on by Dixon and Perkin until the Chemical Department of the University of Manchester won the great position it holds to-day.

Of course, those days were not without friction. There were occasions on which great minds clashed—the occasion, for instance, when Perkin ran Dixon out at cricket. It is said that Dixon's remarks on that occasion were certainly unchemical. But what you have to realise is this : That Professor Dixon not only carried out great and far-reaching researches, but became the scientific father of a great number of other researchers. He is father, for example, of that very healthy and promising offspring, our present President, Professor Baker, and also the scientific father of our late President, Colonel Crossley. I have not been able to find that Professor Dixon condescended to carry out organic research. Well, he was able, without doubt, to instil into his students the desire to carry out organic research.

Not only is Professor Dixon the father of chemists, but he is the father of subjects. He is the father of fuel technology, a subject which is becoming of increasing importance in this country. Wherever I have been I have met pupils of Professor Dixon's. When I was in India I met them everywhere where chemists are likely to be met. I found them in America, too, and all hoping that their scientific father would continue his experiments so as to produce alcohol as a fuel.

What I want to say is this : That in proposing this toast I do so principally on behalf of all his old students—students he has trained and who owe everything to him—also for those who came under his influence in early life, an influence which they can never forget and which remains as an abiding force with them. Of course, I propose it also, and no less heartily, on behalf of the general body of Fellows of this Society, including those—if there are any—who have not directly or indirectly come under his personal influence. On their behalf and on behalf of all here I propose this toast : “The Health of Professor Dixon on the Fiftieth Anniversary of his election to the Chemical Society.”

Professor H. B. DIXON said in reply :—

By adding me to that roll of senior past-presidents you have honoured at your annual dinners with a special toast, your kindness has placed me in a terribly isolated position—splendidly isolated, I ought to have said. Unlike Germany knocking at the door of the League of Nations—I would rather have waited until I could be joined by others, since my own nearest contemporaries, Meldola



and Ramsay, alas, have gone before. But as no Power—from China to Peru—has maintained a veto, I stand before you in this isolated—if jubilant—position. I think the reason is very largely because you thought this occasion an appropriate one to pay honour to the Manchester University, which has had on its roll—including the *Di Majores*, Frankland and Roscoe, Russell and Thorpe—just over one-fifth of the presidents of this Society. And perhaps one other reason had weight with your committee. It can have fallen to the lot of very few teachers to see on the same day one of their old students leaving the chair of the Chemical Society and another old student elected in his place. That has been my singular fortune today: I can assure you that no teacher can look for a higher reward.

Professor Thorpe has passed in such kindly review the things I have attempted during the fifty years of my fellowship that I am frightened of disturbing the beautiful picture his words may have conjured up in your minds. I will leave this, I fear largely ideal, portrait, therefore, and try, if I may be permitted, to answer two questions that have often been put to me. The first, put by unscientific friends of my family: "How did you, brought up in a literary home, come to be a chemist?" The other, put by scientific friends: "What does it feel like to be in an explosion-wave, since apparently you survived to tell the tale?"

Well, if it were permitted to answer these questions on so public an occasion, I should say luck had a good deal to do with both the experiences referred to.

Being head-monitor in a public school of the old sort where no taint of science ever filtered into the curriculum, I went up to Oxford with a school scholarship and the pleasing delusion that native wit would take me through "Classical Mods" without the necessity of reading the set books in Latin and Greek.

I can assure you that the months passed quickly, I might say "et militavi non sine gloria"—but most of my successes were only those of the football and cricket field; and the fatal day came all too soon when I was put on to translate passages from the unread Latin and Greek authors. The Latin I pass over, but the Greek I thought I had got the hang of—even if a few words had to be guessed at. It was obviously a battle-piece: "The archers, *οἱ τοξόται*, were hidden waiting for the signal. Then," I translated it, "they went over the top, while a cloud of missiles, some bursting like shells, fell in their ranks. They charged through the barrage, overturned something—I called it the palisade—and quickly routed the foe." When I related my experiences in

Hall that evening a quiet scholar remarked: "That piece seems familiar, but those missiles were vegetables, the bursting shells egg-shells, the things upset were costers' barrows, and *τοξόται* was the common name for policemen at Athens."

"Well," I said, "I've done with classics." "They seem to have done for you!" said my neighbour, an old school-fellow who had begun to prepare for a medical career. "Why don't you try chemistry?" "Well, what *is* chemistry?" I asked. He took a piece of some metal from his pocket, and said: "How could you find out what that is?" I said: "Weigh it and get its density." "No, that's mechanics," said my friend. "Well, see whether it would melt easily." "No, that's physics." "Well, how does chemistry get at it?" I asked. After a pause he said: "Chemistry just takes its inside out—and tells by the colour or the smell what it is."

Two days later I called on the Lee's Reader in Chemistry, told him my predicament and asked him if he would take me as a pupil. "Do you know any chemistry?" he said. "Not a word," I answered. Then he smiled and asked: "Were you by chance the classical student we discussed in Common-room to-day?" I said I thought it very likely, and asked him if it was possible, if one tried hard, to get through in chemistry. "I don't know," said he, "but it would be fun to try!"

It was fun—and a revelation, too! I should like to add that, from that day until he died a few years ago, I and mine had no firmer friend than my old Christ Church tutor, A. G. Vernon Harcourt.

Now the answer to the other question is easier. To the second question: "What does it feel like to be in an explosion-wave?" the answer is: "There is no feeling about it: it is an absolute blank."

Yes, I tried it—standing in front of a five-feet iron holder filled with electrolytic gas, when by a concatenation of accidents two of us managed to send into it an explosion-wave. That the thing had happened or must happen, I knew, for the flash was visible as it went through the "safety-tubes" duly provided. Suddenly all was blank—darkness and silence. Sensation had disappeared. Then, after an apparent interval of seconds, came the shock, the stinging of the flame and the curious crash of plate glass splitting into long fragments. By some miracle we had escaped the flying fragments of iron, lead, and glass, though we did not need to have our hair cut for many weeks. So you see there was not very much to tell.

I believe that experience was taken off in a caricature referred to

by Professor Thorpe : the cartoon also contained the portrait of a cricketer being run out by Professor Perkin. That was a shock, too; but I think it is true that there was silence, also, then—and not the unseemly ejaculations suggested by the asterisks and notes of exclamations added by the artist.

I have often wondered since whether one would not find in the explosion-wave a good vehicle to waft one over the Stygian stream instead of bargaining with Charon; unless indeed one's sudden arrival in a colloidal or gaseous state might disturb the equanimity of Minos or Rhadamanthus or whosever turn it was to occupy the bench. But lately I have found a better way. Not a hundred miles from University College, London, there is a quiet funeral emporium. A modest notice in the window says: "Our motor-cortège combines style with economy. *N.B. Distance and Destination no Object.*" Appearing then with this "cheap but stylish" equipage, I shall not attempt to persuade Minos that I have any positive excellencies or qualities, though I may subconsciously hope that he has taken note of Professor Thorpe's eulogies. But I shall urge that as a professor of chemistry I might claim three negative virtues which—considering that I held a Chair of Chemistry for nearly forty years and have had very great opportunities and often temptations to go wrong—might be pleaded in mitigation of punishment: First, I have never given expert evidence in a Court of Law; secondly, I have never discovered a new chemical substance with a long name; and lastly, I have never written an elementary text-book for the use of students.

I fear that Minos may reply: "Not a bad record, but what evidence, then, is there that you are a chemist?" Well, I shall answer proudly: "The Chemical Society gave me a jubilee toast," and with that imprimatur, for which I sincerely thank you, I shall hope to pass.

The President then read the following telegram received from Bangalore:—

"Greetings to President and all Fellows at Manchester dinner. Norris, Simonsen, Watson, and Forster."

Sir WILLIAM POPE, K.B.E., F.R.S., in proposing the toast of "Our Guests," stated:—

This is the first time during its glorious history of eighty-five years that the Chemical Society has held its annual gathering outside the metropolis, and it is particularly appropriate that in breaking away from an old tradition the Society should have come to Manchester. We are here in the centre of the chemical industry of the country and in a city which maintains a University famous

for its association with such chemists as Frankland, Roscoe, Schorlemmer, and many others who are, happily, still with us. On the occasion of the Chemical Society banquet we are accustomed to welcome among us as guests members of the Cabinet, famous lawyers, distinguished soldiers, and others who have achieved eminence in walks of life which have but little association with chemistry. This evening, however, we have the honour of greeting as guests a number of gentlemen whose life-work is closely connected with the great object for which our Society stands.

The Lord Mayor had intended to join us this evening, but has been unfortunately prevented; in welcoming the Deputy Lord Mayor we shall all desire to pay a tribute to the solicitude which the Corporation of this great city has always shown for the cause of education, primary, secondary, and technical. No one who has watched the development of educational affairs for the last thirty or forty years could fail to have been impressed by the careful and enterprising interest which Manchester has for long taken in educational matters. It has led the whole country in many of those aspects of educational affairs and of scientific matters with which we as a Society are broadly and particularly concerned. Among us this evening are many representatives of the University of Manchester and the Principal of the College of Technology, one of the foremost of the large technical institutions in this country; the President of the Manchester Chamber of Commerce and the Chairman of the Manchester section of the Institute of Chemistry are with us, and the Society of Chemical Industry and the Society of Dyers and Colourists are also well represented. Whilst we greet all these gentlemen as our guests this evening, we recognise that many of them are closely connected with chemical matters, and indeed a number of them are old and valued Fellows of the Chemical Society.

It is a great delight to all of us, and more especially to those who in earlier days were associated with Manchester, to attend an annual meeting of the venerable Chemical Society in this great northern city. I trust that the precedent which has been set to-day will not be allowed to lapse, and that we shall at some future time hold our annual gathering in another of the great industrial centres of the Empire.

I have much pleasure in proposing the "Health of our Guests," coupling the toast with the name of Sir William Clare Lees, who, as a Director of the Bleachers' Association, well realises the importance of chemical science to the staple industries of Lancashire.

Sir WILLIAM CLARE LEES replied :

I rise with some diffidence to respond to this toast when I contemplate the list of those whom the last speaker enumerated as guests—those for whom I am charged to answer.

One of the difficulties of the one who responds to the toast of the guests is that he is, usually, speaking for quite a number of people whom he has not been able to consult, and he does not know what they would like him to say on their behalf. I can, however, at least say this : every one of us is very grateful to you, Mr. President, and your fellow members, for having asked us to be your guests. We appreciate not only the hospitality that you have offered us so lavishly to-night, but also the distinct honour you have conferred upon us by singling us out as being fit and proper persons to sit at this august board.

This is not the first time that I have felt personally under a sense of obligation to members of your Society. I well remember some two or three years ago having the pleasure of waiting upon a member of your Society and telling him that, at the unanimous wish of his fellow-directors of the Manchester Chamber of Commerce, we invited him to become President of that great institution—I refer to my friend Dr. Rée.

It was a most happy and fortunate coincidence that the scientific life of your Society and the commercial life of this great city should be linked together and brought into closer harmony and sympathy by his occupancy of that high office, which he filled with such dignity and credit to himself, to your Society, and to the Chamber of Commerce.

I used to feel some diffidence in going amongst scientific people, because one always felt that they had, so to speak, a second pair of eyes which enabled them to peer into things of which we ordinary mortals were ignorant. But a few weeks ago I received a good deal of comfort and consolation on that point when I was the guest of another of your members, Dr. Levinstein, who is a versatile person, as you know. Amongst his other offices he is president this year of the Manchester Literary and Philosophical Society, and he was good enough to ask me to be one of his guests. I was consequently amongst literary and philosophical people. A very distinguished professor, in order to put those of us who were strangers at the table more at our ease, assured us that we need not have any fear about literary and philosophical people. They were quite ordinary mortals, he said. He reminded us that on one occasion he saw two literary doctors discussing very earnestly together. Walking up to them to find out what was the great subject they

were discussing, he found that they were debating the abstruse question whether it was correct to say the hen was sitting or setting. By and by they were joined by a philosophical member, who remarked that he didn't mind at all whether it was correct to say a hen was sitting or setting. What he always wanted to know when he heard a hen cackling was whether it was laying or lying.

Well, you know that when those of us who are administrators of business enterprises are brought into touch with the discoveries and achievements of chemists we always want to know, not in a literal sense nor in a scientific sense, but in a practical and applicable sense, whether he is "laying or lying." It makes a very great deal of difference. There are a great many very wonderful discoveries of science which perhaps lack of enterprise and ability on the part of commercial people, or because there is some definite drawback in the possible application, makes it impossible to translate into commercial successes, and I am quite sure that chemists must often feel that the executive end of business life blocks the way of scientific discovery and progress. To some extent and in some directions I think that is sometimes true; but you must remember this: It is not always—indeed, is not usually—a question with business people, in applying a new process or introducing a new method, as to whether they will lead to great profits. It is whether they can be put upon the markets of the world in a continuous and progressive manner, because the revenue and conditions which have to be provided for carrying those processes into permanent use are only very slightly governed by profit. They are governed by conditions which mean the weekly provision of volumes of wages, of raw material, of the constant finding of ordinary paraphernalia of business life, and all the other obligations which go to make up the cost of production. These very mundane considerations have to be taken into account before discoveries and ideas can be brought into the daily use of the consuming people of the world.

I do think that we who are engaged in the business life of this country have much to warn ourselves against and to guard against in the present day—the losses and depression of the post-war period, the sense of the crushing burden of taxation, and so forth—they are ever present in our minds. But we should be careful lest the depression of the post-war period should be so prominent in our minds that we, by lack of enterprise and foresight, may fail to avail ourselves of the progress and uplift of the scientific discoveries which you have been pouring into our laps in such profusion. And there is this encouragement to the scientific minds and brains of the time, that there is surging upwards, not

only in this country, but also in the countries of the world, a growing population of men and women who are not depressed by the considerations which depress us, who have only seen the shadow of the war, who have fresh ideas of human progress, and energetic enthusiasm to apply them. They will either force us forward or drive us out. That force will make for the progress of the world. I believe that the possibilities of science in the future are great and mighty in their influence on progress, and if by your having this gathering here to-day you can bring to the minds of those of us who are round the table—those perhaps not so closely associated with your purely scientific work—ideas which will lead us to put into practical use the scientific discoveries such as your Society has laid up, your journey will not have been in vain, it will have done us all good. I thank you, on behalf of my fellow guests, for the hospitality you have extended to us to-night, for the very delightful entertainment you have afforded, and for the cordiality with which you have associated yourselves with this toast.

Dr. ARTHUR W. CROSSLEY, C.M.G., C.B.E., F.R.S., then rose and said :

I should like, Mr. President, if you will permit me, to propose a toast which is not on the list. When the Chemical Society holds its meetings in London the arrangements are made by the officers. It is considered a part of their duty, and they perform that duty with efficiency and goodwill. But when the Chemical Society arranges for its meetings in the provinces, it is necessary, as in the present instance, to appoint a local secretary, and this office has been filled this year by Mr. L. B. Tansley, one of our local Fellows. It is true that we have had a local committee; also true that the committee has met twice and has made suggestions for to-day's functions: but the actual carrying out of the arrangements has been entirely effected by Mr. Tansley. He has been in daily contact with me and has reported his actions to me, which have in all cases seemed so excellent that no criticism has been possible. The task has not been without its difficulties, which commenced to be of a serious nature at two o'clock yesterday afternoon, when Sir Martin Conway informed us that he would not be able to be present. Telegrams then began to arrive from other speakers who could not attend. But Mr. Tansley had been through an experience which made him quite equal to this emergency, and he has completed his task with remarkable success. It is certainly in his favour that Manchester citizens are noted for their willingness to come forward and assist on such occasions as the present. But I would again repeat that the whole of the arrangements for this

gathering have been in Mr. Tansley's hands, and I think it is our duty to offer him our cordial thanks for the trouble which he has taken to make our meetings successful.

Mr. L. B. TANSLEY replied :—

I must thank you very much indeed for the very kind words which have been said. I have felt it an honour to be asked to do this, and have had very much pleasure in doing what I could. It would have been so much more difficult had it not been for the great assistance given by several local Fellows of the Society, by Dr. Crossley himself, and by the Secretaries. Thank you very much.

Ordinary Scientific Meeting, Thursday, April 22nd, 1926, at 8 p.m., Professor H. BRERETON BAKER, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows :

	Elected.	Died.
Bed Caudwell.....	April 22nd, 1903.	March 16th.
Charles Harrison .....	Dec. 7th, 1916.	March 22nd.
William J. Lewis .....	Nov. 18th, 1869.	April 16th.

The PRESIDENT announced that :

1. The following Committees for 1926–1927 had been appointed by the Council :

*Finance Committee* : J. L. Baker, F. P. Dunn, C. A. Hill, G. T. Moody, J. C. Philip, R. H. Pickard, W. P. Wynne, and the Officers.

*House Committee* : J. L. Baker, Sir Herbert Jackson, Sir Robert Robertson, Alexander Scott, J. M. Thomson, Sir William Tilden, and the Officers.

*Library Committee* : T. A. Henry, J. R. Partington,\* Sir Thomas K. Rose, Alexander Scott, N. V. Sidgwick, J. F. Spencer, and the Officers, together with representatives of contributing Societies.

*Publication Committee* : E. C. C. Baly, H. Bassett, H. V. A. Briscoe, H. W. Dudley, U. R. Evans, J. J. Fox, R. W. Gray, A. J. Greenaway, T. A. Henry, C. K. Ingold, H. King, H. McCombie, W. H. Mills, T. S. Moore, G. T. Morgan, K. J. P. Orton, J. R. Partington, J. C. Philip, R. H. Pickard, F. L. Pyman, R. Robinson, N. V. Sidgwick,\* and the Officers.

*Research Fund Committee* : A. J. Allmand, E. C. C. Baly, F. E. Francis, W. N. Haworth, C. K. Ingold, W. H. Mills, F. L. Pyman,

\* Chairman.



Sir Robert Robertson, N. V. Sidgwick, Sir James Walker, and the Officers.

2. The following Address of Congratulation had been sealed and will be presented to the Associazione Italiana di Chimica Generale ed Applicata on the occasion of the Second National Congress of Pure and Applied Chemistry and the Celebrations of the Centenary of the Birth of Stanislao Cannizzaro to be held in Palermo from May 22nd to June 1st, 1926. The Society will be represented at the functions by Professor H. E. Armstrong and Sir William Pope.

THE CHEMICAL SOCIETY

to

*The President and Members of the  
Associazione Italiana di Chimica Generale ed Applicata.*

On the occasion of the second National Congress of Pure and Applied Chemistry and the Celebration of the Centenary of the Birth of Stanislao Cannizzaro, we, the President and Fellows of the Chemical Society send to you, and through you to all Italian chemists, our most cordial greetings and felicitations, and our best wishes for the success of your Congress and the continued prosperity of Chemical Science and Industry in Italy.

Especially is it our desire to join with you in paying homage to the immortal memory of the illustrious Stanislao Cannizzaro, Italian patriot and world renowned man of Science. When in 1858 he developed and extended the ideas of his great compatriot, Amadeo Avogadro, and applied them to the whole domain of chemistry, the long reign of doubt and confusion vanished from our science, and the true atomic and molecular kingdom of modern chemistry was founded. If Newton completed the work so famously begun by the illustrious Galileo, it was Cannizzaro who completed so magnificently the work begun by John Dalton.

As our distinguished Fellow, Sir William Tilden, said in concluding his Cannizzaro Memorial Lecture, "On the scutcheon which bears the names of Galileo and Torricelli, of Galvani and Volta, of Avogadro and Piria, Italy may proudly write another glorious name, Stanislao Cannizzaro."

It is a source of deep satisfaction to us to recollect that our Society was quick to recognise the outstanding value of his work, for in 1862 Cannizzaro was elected an Honorary Fellow of the Chemical Society, whilst in 1872 we invited him to give the second Faraday Memorial Lecture.

The contemplation of the life and work of your great fellow-countryman must ever be a source of inspiration, alike to the

student and to the historian of our science. Not only did he live to see his pioneer work of 1858 become the universally recognised foundation of chemical philosophy, but by his important contributions to organic chemistry, his establishment of many centres of chemical research in Italy and his long life devoted to scientific development and eminent public service in his native country, he won the gratitude and esteem, not only of his own fellow-countrymen, but of chemists and men of science throughout the world.

When you meet at Palermo, the birthplace of Cannizzaro, to do honour to his memory and to found a monument in public recognition of his undying fame, be assured that all British chemists will join with you in paying reverent homage to the memory and the work of a very great and distinguished Italian.

Signed on behalf of the Chemical Society,

H. BRERETON BAKER, *President.*

JOCELYN THORPE, *Treasurer.*

T. SLATER PRICE, } *Secretaries.*

C. STANLEY GIBSON, }

F. G. DONNAN, *Foreign Secretary.*

(L.S.)

Sealed in Council this Twenty-second day of April, One Thousand Nine Hundred and Twenty-six.

3. The Faraday Society is organising a General Discussion on "Explosive Reactions in Gaseous Media," to be held on May 13th, from 2.30 p.m., at the Institution of Mechanical Engineers, Storey's Gate, Westminster, S.W. 1. The discussion will deal with explosive reactions considered generally and also in reference to internal combustion engines. Fellows of the Chemical Society are invited to attend the meeting and take part in the discussion. Full particulars may be obtained from the Secretary of the Faraday Society, 90, Great Russell Street, W.C. 1.

The following were formally admitted Fellows of the Chemical Society: Thos. J. E. Gardner, L. G. Manchester, B. W. Town, H. A. Mayes, and J. Holloway.

Certificates were read for the first time in favour of:

James Henry Adamson, M.A., c/o Wilts. United Dairies, Ltd., Bason Bridge, Highbridge, Somerset.

John Clark Andrews, B.Sc., University College, Auckland, New Zealand.

Theodore Cohn, B.Sc., A.R.C.S., c/o Medway Oil and Storage Co., Ltd., Isle of Grain, Kent.

Cecil John Turrell Cronshaw, B.Sc., Alnwick, Prestwich Park, Manchester.

John William Croxford, 73, Brighton Road, East Ham, E. 6.

Bertram Eastwood Dixon, B.Sc., A.I.C., Springfield, Great Bookham, Surrey.

William Harry Grindley, B.A., B.Sc., 24, Granville Terrace, Stone, Staffs.

John William Hobday, 535, Liverpool Road, Irlam, Manchester.

Trevor Lovett, M.Sc., 6, Cerdin Avenue, Pontyclun, Glam.

Eric Charles Martin, 45, Regent Square, W.C. 1.

John Frederick Newman, Mount Royal Avenue, St. John's, Newfoundland.

Maurice Charles Oldham, 100, Roose Road, Barrow-in-Furness.

Arnold Thornton Peters, M.Sc., Arnside, Wigan Road, Bolton.

Ralph Skinner Back, Keelby, Habrough, Lincs.

Gubbi Anantha Raman, B.Sc., Shimoga, Mysore State, India.

Ronald Ashley Richards, 10, Orange Hill Road, Heaton Park, Manchester.

John Smart, 249, Friern Road, East Dulwich, S.E. 22.

Prithir Nath Waghray, M.Sc., Shraddha Bhawan, Residency Bazar, Hyderabad, Deccan, India.

Michael Zvegintzov, Corpus Christi College, Oxford.

The following certificate has been authorised by the Council for presentation to ballot under Bye-Law I (2) :

Moses Bruchstein, Ph.M., The New British Pharmacy, Jerusalem, Palestine.

The following papers were read :

“An analysis of the ether. Part II. The magnetic fields in atoms.”  
By W. C. REYNOLDS.

“Investigations on the dependence of rotatory power on chemical constitution. Part XXIX. The resolution of sulphoxides into their optically active forms.” By P. W. B. HARRISON, J. KENYON, and H. PHILLIPS.

“The solubility of beryllium oxide in solutions of its salts.” By N. V. SIDGWICK and N. B. LEWIS.

---

### RESEARCH FUND COMMITTEE.

A meeting of the Research Fund Committee will be held in June next. Applications for Grants, to be made on forms which can be obtained from the Assistant Secretary, Chemical Society, Burlington House, W. 1, must be received on or before Tuesday, June 1st, 1926.

All persons who received grants in June, 1925, or in June of any previous year, whose accounts have not been declared closed by the Council, are reminded that reports must be returned by June 1st.

---

### LIST OF FELLOWS, 1926.

The Council has decided that the List of Fellows for 1926 shall not be published.

---

List of Papers, or Abstracts thereof, received between March 18th and April 22nd, 1926. (This list does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)

- “The temperature effects on mixing liquids.” By W. M. MADGIN, H. V. A. BRISCOE, and J. B. PEEL.
- “The chemistry of the three-carbon system. Part V. The alkylation of unsaturated ketones.” By G. A. R. KON.
- “A method of inserting the thio-aryl group.” By L. G. S. BROOKER and S. SMILES.
- “The constitution of  $\alpha$ -fructose diacetone.” By C. F. ALLPRESS.
- “An improved hydrogen sulphide generator.” By H. G. DENHAM and J. PACKER.
- “The nitration of the 2-, 4-, and 6-chloro-, and the 2:4- and 2:6-dichloro-3-hydroxybenzaldehydes with some consequences of vicinal substitution.” By H. H. HODGSON and H. G. BEARD.
- “The mercuration of *o*-nitrotoluene.” By H. BURTON, F. HAMMOND, and J. KENNER.
- “Mono- and di-bromo-derivatives of quinaldine and nitroquinaldines and their hydrolysis products.” By D. L. HAMMICK.
- “The specific heats of hydrocyanic acid. A reply.” By J. R. PARTINGTON.
- “The constitution of polysaccharides. Part X. The molecular unit of starch.” By J. C. IRVINE and J. MACDONALD.
- “Experiments on the synthesis of anthocyanins. Part I.” By A. ROBERTSON and R. ROBINSON.
- “A synthesis of pyrylium salts of anthocyanidin type. Part IX. Some hydroxyflavylium salts.” By A. ROBERTSON and R. ROBINSON.
- “Experiments on the synthesis of cryptopine and protopine. Part I.” By R. D. HAWORTH and W. H. PERKIN.
- “The condensation of phenols with chloral.” By F. D. CHATTAWAY.
- “Nitrosation of phenols. Part III. Nitrosation of the 4-halogeno-*o*- and -*m*-cresols, and oximation of the 4-halogeno-3:6-toluquinones.” By H. H. HODGSON and F. H. MOORE.
- “Concerning the constitution of  $\alpha$ -methylrhodim.” By J. TCHERNIAC.
- “Studies with the microbalance. Part IV. The photochemical decomposition of silver iodide.” By E. J. HARTUNG.
- “The doubtful existence of aurous oxide.” By W. B. POLLARD.
- “The constitution of sucrose. Part I. Oxidation of tetramethyl  $\gamma$ -fructose.” By G. McOWAN.

- “Periodic phenomena at anodes of copper and silver.” By E. S. HEDGES.
- “Sugar carbonates. Part II. Derivatives of arabinose and xylose.” By W. N. HAWORTH and W. MAW.
- “The order of removal of manganese, chromium, iron, cobalt, and nickel from amalgams.” By A. S. RUSSELL, D. C. EVANS, and S. W. ROWELL.
- “The positions of tungsten and molybdenum in the normal potential series.” By A. S. RUSSELL and S. W. ROWELL.
- “Extinction of methane flames by diluent gases.” By H. F. COWARD and F. J. HARTWELL.
- “Investigations on the dependence of rotatory power on chemical constitution. Part XXX. The resolution of methylcyclohexylcarbinol.” By A. DOMLEO and J. KENYON.
- “The catalytic decomposition of solutions of sodium hypochlorite by finely divided metallic oxides.” By E. CHIRNOAGA.
- “The precipitation of cadmium sulphide from aqueous solutions of cadmium chloride in the presence of hydrochloric acid and other chlorides.” By S. KRISHNAMURTI.
- “Optical activity and the polarity of substituent groups. Part IV. *sec.*- $\beta$ -Octyl esters of *o*-, *m*-, and *p*-methoxy- and nitro-benzoic acids.” By H. G. RULE and A. H. NUMBERS.
- “The direct synthesis of nitrous oxide.” By D. L. CHAPMAN, R. A. GOODMAN, and R. T. SHEPHERD.
- “A new series of bismuthyl derivatives of hydroxy-acids.” By G. A. COLLINSON, E. PHILLIS, and J. B. COHEN.
- “Piperitone. Part VIII. The condensation of piperitone with aldehydes.” By J. C. EARL and J. READ.
- “Resins in coal. Studies in the composition of coal.” By W. FRANCIS and R. V. WHEELER.

The following is a list of donations to the Publications Fund received from Chemical Manufacturers and other Firms.

	£	s.	d.		£	s.	d.
United Alkali Co., Ltd. . .	315	0	0	Howards & Sons, Ltd. . .	50	0	0
The Gas Light & Coke Co. . .	150	0	0	Lever Bros., Ltd. . . . .	50	0	0
Nobel Industries, Ltd. . . .	120	0	0	J. Lyons & Co., Ltd. . . .	50	0	0
Bradford Dyers' Association, Ltd. . . . .	105	0	0	May & Baker, Ltd. . . . .	50	0	0
Burroughs Wellcome & Co. .	105	0	0	The Mond Nickel Co., Ltd. .	50	0	0
Albright & Wilson, Ltd. . .	100	0	0	Parke, Davis & Co. . . . .	50	0	0
Birmingham University . .	100	0	0	Tootal Broadhurst Lee Co., Ltd. . . . .	50	0	0
Boots Pure Drug Co., Ltd. .	100	0	0	Anonymous . . . . .	42	0	0
Hopkin & Williams, Ltd. . .	52	10	0	Borax Consolidated, Ltd. . .	26	5	0
South Metropolitan Gas Co. .	52	10	0	British Cotton & Wool Dyers' Association, Ltd. . . . .	26	5	0
Watney, Coombe, Reid & Co., Ltd. . . . .	52	10	0	The British Drug Houses, Ltd. . . . .	26	5	0
Hardman & Holden, Ltd. . .	50	0	0				

	£	s.	d.		£	s.	d.
The Clayton Aniline Co., Ltd.	26	5	0	Macfarlane, Lang & Co.	5	0	0
The Distillers Co., Ltd.	26	5	0	Major & Co., Ltd.	5	0	0
Cadbury Bros., Ltd.	25	0	0	Murgatroyd's Salt Works, Ltd.	5	0	0
J. & P. Coats, Ltd.	25	0	0	Reckitt & Sons, Ltd.	5	0	0
A. Guinness Son & Co., Ltd.	25	0	0	Peter Spence & Sons, Ltd.	5	0	0
Imperial Tobacco Co., Ltd.	25	0	0	W. Younger & Co., Ltd.	5	0	0
John Miller & Co.	25	0	0	Arcos, Ltd.	3	3	0
Mitchells & Butlers, Ltd.	25	0	0	Baird & Tatlock (London), Ltd.	3	3	0
Allen & Hanburys, Ltd.	21	0	0	Barclay, Perkins & Co., Ltd.	3	3	0
W. J. Bush & Co., Ltd.	20	0	0	F. W. Berk & Co., Ltd.	3	3	0
The Cassell Cyanide Co., Ltd.	20	0	0	William Blythe & Co., Ltd.	3	3	0
Gurney & Jackson	20	0	0	Thomas Horrocks & Sons, Ltd.	3	3	0
Ansells Brewery, Ltd.	10	10	0	United Water Softeners, Ltd.	3	3	0
The Calico Printers' Associa- tion, Ltd.	10	10	0	F. E. Becker & Co.	2	2	0
Carreras, Ltd.	10	10	0	W. Burton & Sons	2	2	0
J. & J. Colman, Ltd.	10	10	0	The Colne Vale Dye & Chemical Co., Ltd.	2	2	0
Goodall, Backhouse & Co.	10	10	0	Henry Ellison, Ltd.	2	2	0
Midland Tar Distillers, Ltd.	10	10	0	Groves & Whitnall, Ltd.	2	2	0
T. & H. Smith, Ltd.	10	10	0	Adolph Hess & Bro., Ltd.	2	2	0
Wright, Layman, & Umney, Ltd.	10	10	0	Adam Hilger, Ltd.	2	2	0
Stafford Allen & Sons, Ltd.	10	0	0	W. C. Holmes & Co., Ltd.	2	2	0
Duncan, Flockhart & Co.	10	0	0	James A. Jobling & Co., Ltd.	2	2	0
J. S. Fry & Sons, Ltd.	10	0	0	B. Laporte, Ltd.	2	2	0
Hull Brewery Co., Ltd.	10	0	0	Massey's Burnley Brewery, Ltd.	2	2	0
McVitie & Price, Ltd.	10	0	0	Paine & Co., Ltd.	2	2	0
Murphy & Son, Ltd.	10	0	0	Reynolds & Branson, Ltd.	2	2	0
John Nicholson & Sons, Ltd.	10	0	0	The "Sanitas" Co., Ltd.	2	2	0
Russells Gravesend Brewery, Ltd.	10	0	0	James Shipstone & Sons, Ltd.	2	2	0
Scottish Dyes, Ltd.	10	0	0	Simon-Carves, Ltd.	2	2	0
Staveley Coal & Iron Co., Ltd.	10	0	0	Smith, Garrett & Co., Ltd.	2	2	0
Joshua Tetley & Son, Ltd.	10	0	0	Société Commerciale des Potasses d'Alsace	2	2	0
Whiffen & Sons, Ltd.	10	0	0	Stainsby & Lyon, Ltd.	2	2	0
Benn Brothers, Ltd.	5	5	0	T. Taylor (Oliver Wilkins & Co., Ltd.)	2	2	0
J. & A. Churchill	5	5	0	J. W. Towers & Co., Ltd.	2	2	0
Hickson & Partners, Ltd.	5	5	0	Typek & King, Ltd.	2	2	0
S. H. Johnson & Co., Ltd.	5	5	0	Walker & Homfrays, Ltd.	2	2	0
John W. Leitch & Co., Ltd.	5	5	0	The West Cumberland By- products Co., Ltd.	2	2	0
H. K. Lewis & Co., Ltd.	5	5	0	Alfred White & Sons, Ltd.	2	2	0
Liverpool Nitrate Co., Ltd.	5	5	0	Williams Bros. & Co.	2	2	0
Oxford University Press	5	5	0	The Yorkshire Dyeware & Chemical Co., Ltd.	2	2	0
John Riley & Sons, Ltd.	5	5	0	British Synthetics, Ltd.	1	1	0
Spencer, Chapman, & Messel, Ltd.	5	5	0	Brotherton & Co., Ltd.	1	1	0
Thermal Syndicate, Ltd.	5	5	0	J. M. Collett & Co., Ltd.	1	1	0
J. Bibby & Sons, Ltd.	5	0	0	The Dorr Company	1	1	0
A. Boake, Roberts & Co.	5	0	0	Hadfields (Merton), Ltd.	1	1	0
Burgess, Ledward & Co., Ltd.	5	0	0	J. & D. Hamilton, Ltd.	1	1	0
R. Clay, Ltd.	5	0	0	J. E. C. Lord (Manchester), Ltd.	1	1	0
The Cookson Lead & Anti- mony Co., Ltd.	5	0	0	T. Lye & Sons	1	1	0
J. & J. Cunningham, Ltd.	5	0	0	Oswald M'Cardell & Co.	1	1	0
Wilfred E. Gooday (Vacuum Oil Co., Ltd.)	5	0	0				
The Graesser - Monsanto Chemical Works, Ltd.	5	0	0				
Harrington Bros., Ltd.	5	0	0				
Locke, Blackett & Co., Ltd.	5	0	0				

	£	s.	d.		£	s.	d.
Frank Myatt, Ltd. . . . .	1	1	0	Usher's Wiltshire Brewery,			
L. Oertling, Ltd. . . . .	1	1	0	Ltd. . . . .	1	1	0
Page & Overton's Brewery,				Royal Holloway College . . . . .	1	0	0
Ltd. . . . .	1	1	0				
Pronk, Davis, & Rusby, Ltd.	1	1	0				
					£2492	19	0

CERTIFICATES OF CANDIDATES FOR ELECTION AT  
THE BALLOT TO BE HELD AT THE ORDINARY  
SCIENTIFIC MEETING ON THURSDAY, MAY 6TH, 1926.

N.B. The names of those who sign from "General Knowledge" are printed in *italics*.

ALLAN, JAMES, 36, High St., Chorlton-on-Medlock, Manchester. British. Research Student. M.A., B.Sc. (St. Andrews), and experience in research work. (*Signed by*) Robert Robinson, Arthur Lapworth, Frederick Challenger.

ANDERSON, ARTHUR PERCIVAL, The High School, South Shore, Blackpool. British. Principal of the above School. B.Sc. (Internal), London Univ. Licentiate of the College of Preceptors. (1) 16 Years' experience as a Science Master. (2) Chairman of Technical School, Evening Schools, and Governors of Blackpool Municipal Secondary School. (3) I have built and fully equipped a Chemical Laboratory at this School, with bench accommodation for twenty-four boys and corresponding apparatus. I take senior Science of the School (130 boys). (*Signed by*) John H. Chew, J. B. Coleman, F. H. Lowe, J. C. Crocker.

ANDERSON, BASIL WILLIAM, "Moorlands," Woldingham, Surrey. British. Chemist to The London Chamber of Commerce. B.Sc. from King's College, London (2nd Class Honours Chemistry), 1924. Abstracting for the Bureau of Chemical Abstracts since December 1924. (*Signed by*) A. G. Bloxam, Samuel Smiles, Bernard Dyer.

ARMSTRONG, EDWARD SIDNEY, 69, Breakspears Road, Brockley, S.E. 4. British. Assistant Master, County Secondary School, Brockley. B.Sc. (Chemistry), Durham University, 1914. Science Master, Bishop Wordsworth's School, Salisbury, 1919-21. Asst. Master, County Secondary School, Brockley, S.E., 1921—(continuing). (*Signed by*) J. Kenyon, Henry Phillips, J. Holloway, P. H. Robinson.

AYRES, REGINALD PERCY, 140, Hanley Road, N. 4. British. Science Teacher. B.Sc. (London). Am taking Post-graduate Course at Westminster College, and am desirous of keeping abreast with modern ideas of research. (*Signed by*) P. C. Austin, Gerald Druce, T. M. Lowry.

BARKER, FRANCIS GEORGE, 61, Crimicar Lane, Fulwood, Sheffield. British. Chief Analyst, H.M. Naval Ordnance Inspection Department, Sheffield. Student, Swindon and North Wilts. Technical School. Three years Junior Assistant Analyst, Great Western Railway Co.'s Laboratories, Swindon. Two years Assistant Analyst, and 3 years Senior Analyst, H.M. Inspector of Steel's Dept., Sheffield. Seven years Chief Analyst, H.M. Naval Ordnance Inspection Laboratories, Sheffield. (*Signed by*) Cecil H. Desch, W. R. Bird, T. C. Davison, C. H. Ridsdale, N. D. Ridsdale.

BELCHETZ, ARNOLD, Emmanuel College, Cambridge. British. Research Student. M.Sc. (University of South Africa). At present carrying out

research work at University of Cambridge. (*Signed by*) W. J. Pope, W. H. Mills, Richard Raper.

BILMANN, EINAR CHRISTIAN SAXTORPH, Ostervoldgade 5, Copenhagen K, Denmark. Dane. Dr.phil. Professor of Chemistry in the University. Director of the Chemical Laboratory of the University of Copenhagen. *J.C.S.*, 1924, 125, 1719 and 1954; 1925, 127, 119. (*Signed by*) C. S. Gibson, T. Slater Price, Jocelyn Thorpe, W. P. Wynne.

CAHN, ROBERT SIDNEY, 25, Ashwood Avenue, West Didsbury, Manchester. English. Research Chemist (D.S.I.R. Investigator Grant). M.A. (Cantab.). Dr. phil. nat. (Frankfurt). Part author with Prof. J. von Braun of following papers: *Ber.*, 1924, 57, 908; *Ann.*, 1924, 436, 262; *Festschrift d. phys. Ver.*, Frankfurt, 1925, 5 pages. Sole author, "Dissert." (Frankfurt), 1925. (*Signed by*) R. Robinson, Arthur Lapworth, J. C. Smith, G. N. Burkhardt.

COALES, WILLIAM DENIS, Melrose, Chiltern Rd., Dunstable, Beds. British. Head Science Master, The Grammar School, Dunstable. London B.Sc. (Pass), 1906. London B.Sc. (Honours, 1st Class in Chemistry), 1920. Science Master, King's College, Taunton, 1907-1909. Science Master, Dunstable Grammar School, 1909-1918. Assistant Chemist, Messrs. Riley and Harbord, Victoria St., and Demonstrator, Sir John Cass Technical Institute, 1918-1919. Science Master, Denstone College, Staffs., 1919-1921. Science Master, Dunstable Grammar School, 1921-present. (*Signed by*) E. H. Tripp, Charles A. Keane, Henry J. S. Sand.

CULLINANE, NICHOLAS MICHAEL, 27, Michael Street, Waterford, Ireland. British. Assistant Lecturer and Demonstrator in Chemistry, University College, Cardiff. B.Sc. (Chemistry) (Hons., N.U.I., 1917). M.Sc. (1918), and Ph.D. (1922) for research in chemistry. A.I.C. (1919); F.I.C. (1925). Research in Chemistry at University College, Dublin, 1918, 1919, 1920, and also 1923-1924. Assistant Lecturer and Demonstrator in Chemistry, University College, Aberystwyth (1920-1923). Assistant Lecturer and Demonstrator, University College, Cardiff (Oct. 1924-present). I have also carried out research during my terms at Aberystwyth and at Cardiff. List of researches: (1) "The Action of the Oxides and the Oxyacids of Nitrogen on Ethyl-*o*-tolyl-urethane" (*Sci. Proc. Roy. Dub. Soc.*, Vol. XVII (N.S.), p. 119). (2) "The Action of the Oxides and the Oxyacids of Nitrogen on Diphenylene Oxide" (*Sci. Proc. Roy. Dub. Soc.*, Vol. XVII (N.S.), p. 321). (3) "Some Derivatives of Stilbene" (*Proc. Roy. Irish Acad.*, Vol. XXXVI, B, p. 155). (4) "The Action of Reducing Agents on Some Polynitrodiphenylamines" (*Aberystwyth Studies*, Vol. IV, p. 209). (5) "Chromoisomerism in the Stilbene Series." (6) "A Synthesis of some Flavones" (not yet published). (7) "A Synthesis of Chalkones and Benzylidene-coumaranones" (not yet published). (Some of the above researches were carried out in collaboration with other workers.) (1) Abs., 1923, i, 322; (2) Abs., 1924, i, 534; (3) Not yet abstracted in *J.C.S.*; (4) Abs., 1923, i, 606; (5) *J.C.S.*, 1923, 2053. (*Signed by*) W. J. Jones, A. A. Read, E. P. Perman.

DANN, WILLIAM JOHN, Biochemical Laboratory, The University, Cambridge. English. Research Student at the School of Biochemistry, University of Cambridge. B.Sc. degree, Honours School of Chemistry, Class I, at the University of Sheffield. (*Signed by*) Douglas C. Harrison, W. P. Wynne, F. G. Tryhorn, G. M. Bennett, F. Gowland Hopkins.

DAVIS, GEORGE HENRY, 34, Bouverie Rd., N. 16. Analytical Chemist, Research Chemist, and representative for Maynards on the panels of Brit. Ass. Research. Student at Hackney Tech. Inst. (Day School), and later engaged by Thornett and Fehr of 27, Leadenhall St., E.C. 3., as analyst in



oils, fats, waxes, and soaps for 4 years, and present with Maynards, Ltd., as Works Chemist. Student of Organic Research at Hackney Tech. Inst. (Evening Inst.). (*Signed by*) G. A. Stokes, Ernest W. Wright, Thos. Macara, L. E. Campbell, A. W. Stokes.

DUNDEE, JAMES, 95, University Road, Belfast. British. Pharmaceutical Chemist. Member of Council Pharmaceutical Society, Northern Ireland. Teacher of Pharmacy and *Materia Medica* with the late Samuel Templeton, F.I.C., School of Applied Science. (*Signed by*) W. H. Gibson, J. Carroll Culbert, George Scott Robertson.

EVANS, ROBERT JONES, Waenllan, Penmachno, Bettws-y-Coed, N. Wales. British. Chemist, Government Laboratory. B.Sc. (Wales) with Honours, Class I, in Chemistry with Biochemistry. (*Signed by*) Robert Robertson, Geo. Stubbs, J. F. Halpin, T. W. Harrison, J. J. Fox.

EVERETT, JOHN GARWOOD, 39, Montserrat Rd., Putney, S.W. 15. British. Chemist. A.I.C., M.P.S. (*Signed by*) A. J. Ewins, A. Haythornthwaite, George Newbery, R. W. E. Stickings.

GARLICK, HARVEY SATCHELL, 15, Duke's Avenue, Chiswick, London, W. 4. English. Senior Assistant Chemist, Laboratory, Chiswick Works, London General Omnibus Co., Ltd. London University Matriculation and Intermediate Science Examination, King's College, London. Member of the Society of Chemical Industry. Student Member of the Institute of Chemistry. Chairman of the London Branch, Students' Section, Institution of Petroleum Technologists, 1925-1926. Assistant Chemist, H.M. Chiswick Laboratory, M. of M., 1916-1919. Assistant Chemist, S. N. M. Co., Ltd., Hounslow, Fine Chemical Manufacturers, 1919-1921. Senior Assistant Chemist, London General Omnibus Co., Ltd., 1921— . (*Signed by*) J. T. Hewitt, Clarence Smith, George Senter, Wm. W. Myddleton, S. Sugden.

GERRARD, WILLIAM, 92, Bromfelde Road, Clapham, S.W. 4. British. Teaching. Chemistry Honours Graduate (London). Diploma and Degree Course in Chemistry and Fuels, 1921-1925 (Wigan Mining and Technical College). Teaching Chemistry and Physics at the London College of Pharmacy, Clapham Rd., Clapham. Evening Chemical Research at the Battersea Polytechnic. (*Signed by*) Henry Phillips, F. C. Ray, A. Sciver, J. Kenyon.

GREENWOOD, CHARLES ROY, 21, Stanstead Rd., Forest Hill, S.E. 23. English. Analyst. National Diploma Agriculture, N.D.A. National Diploma Dairying, N.D.D. British Dairy Farmer's Diploma, B.D.F.D. Harper Adam's College Diploma. (*Signed by*) Charles Dorcé, J. C. Crocker, F. H. Lowe.

GREGG, SIDNEY JOHN, 20, Acfold Rd., Fulham, S.W. 6. British. Demonstrator in Chemistry. London B.Sc. (1st Class Honours in Chemistry), 1923. A.R.C.Sc. (1st Class in Chemistry), 1923. Research Student in Physical Chemistry, 1923-1925, working under Professor Philip, F.R.S., at the Imperial College. (*Signed by*) H. F. Harwood, James C. Philip, A. B. P. Page.

HALL, RICHARD ISAAC EDWARD, 289, Iffley Rd., Oxford. British. Research Assistant in the Dyson Perrins Lab., Oxford. B.A. (Oxon.), 1923. *J.C.S.*, 1924, 125, 2266. (*Signed by*) W. H. Perkin, E. Hope, R. D. Haworth, John Rankin, J. Masson Gulland.

HEAD, JOHN VALON, St. George's Lodge, Winchester. English. Chemical Engineer. B.A., Cambridge, Natural Science Tripos, Part I, 1925. (*Signed by*) William T. Burgess, R. Lessing, Harold G. Colman.

HILL, SAMUEL, 53, Lodge Rd., Orrell, Wigan. British. Deputy Gas Examiner for the City of Manchester under the Gas Regulation Act, 1920. Five years' course in Practical Metallurgy, Sheffield University, covering :

Chemistry, Geology, Iron and Steel manufacture, Fuel and Refractories. 1st Class Certificates. Awarded Sheffield Prize in 3rd year met. Experience obtained as a Chemist with Messrs. Staveley Coal and Iron Co., Ltd., part of which obtained under Mr. J. A. Clements, F.I.C., F.C.S., and also Chemist to Messrs. Bispham Hall Colly. Co. Now Assistant to Mr. J. Booth, F.C.S., A.M.I.Chem.E. (*Signed by*) James Booth, Oswald P. Cronshaw, John A. Clements, H. C. Applebee.

HOWELL, The Rev. CLIFFORD WALTER, St. Mary's Hall, Stonyhurst, Lancs. English. Cleric. Past experience as Student: 3 years' undergraduate course at Royal College of Science, followed by 1 year post-graduate research on Colloid Chemistry. (M.Sc.) (*Signed by*) J. N. Sugden, H. D. Murray, James C. Philip.

JARMAN, ARTHUR WILLIAM, 9, Crouch Hill, London, N. 4. English. Assistant Works Chemist. 2nd Class Honours B.Sc. (Chemistry), London, 1924. (*Signed by*) T. J. Drakeley, G. J. Avey, S. A. Hurren.

JOHNSTON, WILLIAM, 16, Warburton Rd., Seaforth, Liverpool. British. Chemist. Studied Chemistry at Heriot-Watt College, Edinburgh. Engaged continuously for last 9 years as works chemist at H.M. Factory, Craigleith, Edinburgh, with the Lothian Chemical Co., Ltd., Edinburgh, and with Klarit Ltd., Litherland, Liverpool. (*Signed by*) Alex. C. Cumming, A. E. Findley, Russell G. Thin.

JONES, HILDA MABEL ENID, 3, Holly Lodge Gardens, Highgate, N. 6. British. Hons. B.Sc. in Chemistry (Lond.), 1925. (*Signed by*) J. F. Spencer, H. Crompton, J. Stewart.

KELLY, FRANCIS CHARLES, c/o Medical Department, Nairobi, Kenya Colony, E. Africa. British. Chemical Officer (Colonial Service). B.Sc., Aberdeen University, March 1923. Two years' research experience Biochemical Department, Rowett Research Institute, Aberdeen. Further experience in Biochemical Laboratories, Cambridge University. Papers published in *Biochemical Journal*. (*Signed by*) W. Thomas, W. Godden, T. Harold Reade.

KOEPFLI, JOSEPH BLAKE, Dyson Perrins Laboratory, Oxford. U.S.A. Research Student. B.A. and M.A. (Chem.), Stanford University, California. Engaged in research under the direction of Professor W. H. Perkin. (*Signed by*) E. Hope, S. G. P. Plant, W. H. Perkin.

MCCRONE, ROBERT OSBORNE ORR, 15, Montgomerie Quadrant, Kelvinside, Glasgow. Scottish. Research Student (Sesquiterpenes). B.Sc. (Glasgow), in Chemistry. Manufacturing experience in Margarine, as Manager. Qualified Engineer Journeyman. Sugar Manufacture (Beet and Cane), R. Tech. Coll., Glasgow. (*Signed by*) G. G. Henderson, J. Monteath Robertson, David T. Gibson.

MCDONALD, JOHN, 19, White St., Lochgelly, Fife. British. School Teacher. M.A., B.Sc., Ph.D., St. Andrew's University. Carnegie Scholar, 1920-22. Carnegie Fellow, 1922-23. B.A. Reports, 1922, Section B. "Constitution of Hexamylose," *J.C.S.*, 1924, **114**, 943 (Irvine, Pringsheim, and Macdonald). (*Signed by*) J. C. Irvine, G. M'OWan, John Read.

MCKEOWN, ANDREW, Muspratt Laboratory, University of Liverpool. British. University Lecturer in Physical Chemistry. Publications: *J. Amer. Chem. Soc.*, 1921, **43**, 1288 (with W. C. M. Lewis); *ibid.*, 1922, **44**, 1203. *Trans. Faraday Soc.*, 1921, **17**, 517; *ibid.*, 1925, **21**, Pt. 3 (with R. O. Griffith). *Phil. Mag.*, 1923, **46**, 321. *J.C.S.*, 1925, **127**, 2086 (with R. O. Griffith). (*Signed by*) R. O. Griffith, W. C. M. Lewis, E. C. C. Baly, I. M. Heilbron.

McLINTOCK, JOHN, 8, Sardinia Terrace, Glasgow, W. 2. Scots. Research Student, Glasgow University. Degree of B.Sc. in Applied Chemistry, Glasgow University (1924), with special distinction in Inorganic, Physical, and Organic Chemistry. At present Ferguson Research Fellow in Chemistry. (*Signed by*) T. S. Patterson, S. Horwood Tucker, G. G. Henderson.

MAITLAND, PETER, 10, Dryburgh Gardens, Glasgow, N.W. Scots. Demonstrator and Research Student in Glasgow University (in Organic Chemistry). Graduated in Glasgow, 1924. B.Sc. in Applied Chemistry with special distinction in Adv. Inorganic and Physical and Organic Chemistry. Collaborating in research with Dr. S. Horwood Tucker. (*Signed by*) T. S. Patterson, S. Horwood Tucker, G. G. Henderson.

MANSHARAMANI, GOBINDRAM TARACHAND, 13, Inglis St., Stoke-on-Trent. Hindoo, British subject. Specialising in "Pottery." Member of Ceramic Society. I.Sc., Bombay, 1917. Analytical work on Cement and Building materials at Std. Chem. Lab., Bombay, 1920. Certificate for "Higher Technical Course in Pottery" at Sir J. J. School of Art, Bombay, 1924. Served there on staff as Chemistry Assistant; carried on there analytical work on refractory clays and research work on fire-clay goods, stoneware bodies, and glazes, using local raw materials, 1921-1924. Factory research on majolica colours and glazes at Messrs. "Minten Hollin Tile Works." Pottery certificates (Prel. and Ord.) and analytical work on clays, frits, stains, fuel, etc., at Central School of Science and Technology, Stoke-on-Trent. (*Signed by*) H. V. Thompson, J. W. Mellor, F. H. Clews, D. S. Pillai.

MIDDLETON, EDMUND B., Parlin, New Jersey, U.S.A. American. Research Chemist, The du Pont-Pathé Co. B.A., M.Sc., Ph.D. Formerly National Research Fellow in Chemistry, Harvard University. (*Signed by*) L. W. McCay, Alan W. C. Menzies, Frank F. Renwick.

MITTAL, NAVIN CHANDRA, B.Sc., The Prince of Wales College, Jammu, India. Indian. Demonstrator in Geology, P.W. College, Jammu. Demonstrator in Geology. B.Sc. (Punjab). Ordinary Member of Mining and Geological Institute of India. Ordinary Member of Geological Mining and Metallurgical Society of India. Author of "Notes on Blowpipe Analysis." (*Signed by*) S. J. KOHLI, Kanwal Nain, S. S. Bhatnagar.

MUIR, DAVID, Gwerygerwn House, Treforest, Pontypridd. British. Gas Engineer and Manager. For 6 years I studied Chemistry at the High School and Lauder Technical School, Dunfermline, under Robert Somerville, B.Sc., F.R.S.E., specialising in the analysis of coal, tar, and gases. For 2 years I occupied the position of Chemist at Dunfermline Gas Works. During the last 13½ years I have been in daily contact with the chemical side of gas undertakings. During the last 2½ years I have been associated with S. R. Illingworth, D.Sc., F.I.C., A.R.C.S., F.C.S., in the development of a low-temperature carbonisation plant. (*Signed by*) C. D. Birks, J. H. Canning, S. Roy Illingworth.

NICHOLL, JOHN TREVOR, Denehurst, Adelaide Park, Belfast. British. Pharmaceutical Chemist. (*Signed by*) Theo. Harper, Henry Wren, Chas. J. Still, C. T. Bennett.

NONHEBEL, GORDON, The University, Leeds. English. Demonstrator in Chemistry. B.A., Oxford. Publications: Papers on Electrochemistry, *Phil. Mag.*, 1925, 50, 723, 729. (*Signed by*) R. Whytlaw Gray, B. Topley, W. Lowson.

PEARL, WILLIAM LEOPOLD, 42, Dingwall Rd., Croydon. British. Assistant Chemist in Power-station Laboratory, London. B.Sc. Hons. Chemistry. Research Student, Battersea Polytechnic. Four years' experi-

ence in general analytical and engineering chemistry. (*Signed by*) J. Kenyon, J. L. White, A. Houssa.

PROCTOR, CLAUDIUS PHILIP, The University, Edgbaston, Birmingham. British. Chemistry Lecture Demonstrator for upwards of thirty years. (*Signed by*) W. N. Haworth, Wm. Wardlaw, S. R. Carter, G. T. Morgan.

QUDRAT-I-KHUDA, MUHAMMAD, 6/39, Linden Gardens, Notting Hill Gate, W. 2. Indian (British). Research Student. M.Sc. (Calcutta University). Author of the paper on "The Condensation of Ketones and Aldehydes with Aromatic Hydroxy Compounds." (*Signed by*) Jocelyn Thorpe, G. A. R. Kon, Arnold Stevenson.

RIDLEY, CHARLES NORMAN, 36, Percy Terrace, Sunderland. English. Chief Chemist, Hendon Paper Works & Co., Ltd., Sunderland (since May 1923). B.Sc. (Durham), September 1920. Chief Assistant Chemist, Messrs. C. A. Parsons & Co., Ltd., Heaton Works Newcastle-on-Tyne, from April 1921 to May 1923. (*Signed by*) P. Phillips Bedson, William Thompson, J. A. Smythe.

ROBERTS, ARTHUR HOWARD, Gammons Farm, Gammons Lane, Watford, Herts. British. Research Chemist. Associate of the Royal College of Science. Diploma of the Imperial College. Associate Institute of Chemistry. Also 1 year research under Professor W. A. Bone, F.R.S., on "Gaseous Combustion under High Pressures." (*Signed by*) Frank Brinsley, L. Horton, William A. Bone.

SETH, KUNWAR BISHESHWAR DAYAL, B.Sc., Kotra Biswan District, Sitapore, India. British Indian. Taluqdar (Baron) of Moizuddinpore, Dt. Sitapore. Is greatly interested in Agricultural and Biological Chemistry. Is a member of the Lucknow University Court and the Board of Intermediate and High School Education, U.P., and many other important bodies. His election as a Fellow of the Chemical Society is likely to promote the study of the above sciences in this province. (*Signed by*) B. M. Gupta, E. R. Watson, Madho Prasad.

SOYKA, CHARLES, 65, Castletown Rd., W. 14. Czecho-Slovak. Research Student in Organic Chemistry at the Imperial College. A.R.C.S. Working on "Mobility of Triad Systems." (*Signed by*) G. A. R. Kon, R. F. Hunter, R. W. West, M. A. Whiteley.

SPENCER, LEONARD JAMES, Mineral Department, British Museum (Natural History), South Kensington, S.W. 7. A.R.C.S. (Dub.). M.A., Sc.D. (Camb.). F.G.S., F.R.S. Desires access to an up-to-date library. (*Signed by*) W. P. Wynne, C. S. Gibson, John Greenaway, T. Slater Price.

STEED, WALTER ARTHUR, 72, St. John's Rd., Isleworth, Middx. British. Junior Analytical Chemist, Parke Davis & Co. Student for Hons. Degree, Sir John Cass Tech. Inst. (*Signed by*) P. C. L. Thorne, James W. Cook, Henry J. S. Sand.

STOREY, RALPH CHARLES, 119, Moorside, Armley, Leeds. Research Student in Clothworkers' Laboratory at Leeds University. Hons. B.Sc. (2nd Class) in Colour Chemistry (1923). M.Sc. and A.I.C. (1924). Working under Prof. A. G. Perkin upon "Partially Acetylated Substances of the Anthraquinone Group," to be published in due time in the *J.C.S.* (*Signed by*) A. G. Perkin, H. M. Dawson, R. B. Forster.

WEBB, CHRISTINE ELIZABETH, 12, Blenheim Rd., St. Alban's, Herts. English. Chemistry Mistress, The Grammar School, Colyton, Devon. B.Sc. (Hons. in Chemistry). Associate of the Institute of Chemistry. (*Signed by*) H. Crompton, J. F. Spencer, J. Stewart.

WILSON, VERA KATHERINE, Willow House, Penistone, nr. Sheffield.

British. Teaching and Research. At present engaged doing research work under Dr. Challenger. B.Sc., Manchester. Science Mistress at Mansfield Grammar School for Girls for  $3\frac{1}{2}$  years. (*Signed by*) Arthur Lapworth, Frederick Challenger, Wilson Baker, J. E. Myers, D. H. Bangham, John F. Wilkinson.

WOODLEY, JAMES WILLIAM ALLAN, 22, Taunton Rd., Lee, S.E. 12. British. Temporary Assistant Chemist, Government Laboratory. B.Sc. (1st Class Honours in Chemistry). A.I.C. 1 Year Pupil-assistant to A. E. Parkes, F.I.C., public analyst for Stepney. 15 months' organic research work under A. Fairbourne, M.A., M.Sc., King's College, London. 2 Years Government Laboratory. (*Signed by*) A. G. Francis, J. J. Fox, E. H. Nurse.

---

Certificates have been accepted by the Council under Bye-Law I (2) in favour of the following:—

CRISTALDI, DR. GIUSEPPE GRASSI, Catania, Via Androne, 35. Italia. Professore di Chimica Generale nella R. Università. Laureato nella R. Università di Roma. Assistente istituto chimico diretto dal Prof. S. Cannizzaro (1888–1895). Dal febbraio 1895 professore di Chimica generale nella R. Università di Catania. Preside facoltà Scienze. Membro ord. Società chimica di Berlino. Cassiere Accademia Givonia di Catania. Ha contribuito al progresso della scienza chimica come investigatore, sopra tutto nel campo della Chimica organica. (*Signed by*) Emanuele Paternò, Wm. J. Pope.

FOSTER, ROBERT HENRY KING, Charleston, W. Va., U.S.A., Box 824. American. Chemical Engineer and Research Chemist. "Use of Methyl Salicylate in Flowmeter," *Ind. Eng. Chem.*, Jan. 1926, p. 82. Thesis for B.Ch.E. degree at Ohio State University on a Precision Thermostat Regulator. Member Sigma Xi and Amer. Chem. Soc. (*Signed by*) Friend E. Clark.

KOLOSSOWSKY, NICOLAS DE, Prospekt Maklina 20, app. 4, Leningrad, Russia. Russian. Professor of Physical Chemistry and Thermodynamik of University of Leningrad. Doctor ès sciences. "Recherches sur le phénomène de partage" (*Bull. Soc. Chim. Belg.*, 1911; *Bull. Soc. Chim. France*, 1911 et 1925). "Recherches thérmochimiques" (*Bull. Academie de Belgique*, 1912–1913). "Théorie cinétique de la chaleur spécifique des solutions" (*Journ. de chimie physique*, t. 22; *Bull. Soc. chim. de France*, t. 37 (1925); *Bull. Soc. chim. de Belgique*, t. 34; *Gazzetta chimica Italiana*, (1925), etc. After all approximately 50 papers and articles. Chem. Abstracts (1925), pp. 646, 531, 496, 540, 506, 791, 653, 870, 765, 859. (*Signed by*) N. S. Kurnakow, D. P. Konovalov.

SMITH, HERSCHEL GASTON, Port Arthur, Texas. U.S.A. Chemical Engineer. Superintendent of Research and Refining Technique, Gulf Refining Company. (*Signed by*) J. G. Detwiler.

---

## ADDITIONS TO THE LIBRARY.

### I. Donations.

CHEMICAL ENGINEERING AND CHEMICAL CATALOGUE. A catalogue of heavy and fine chemicals, raw material, machinery, plant, and equipment applicable to production industries, standardised, con-

densed, and cross-indexed. 2nd edition. Compiled with the co-operation of leading British manufacturers, by LEONARD HILL. Edited by DUDLEY MAURICE NEWITT. London [1926]. pp. viii + 354. ill. (*Reference.*) 15s.

From the Publisher : Mr. Leonard Hill.

HANDBUCH DER PHYSIK. Edited by HANS GEIGER and KARL SCHEEL. Vol. X. Thermische Eigenschaften der Stoffe. Edited by FRITZ HENNING. Berlin 1926. pp. viii + 486. ill. *M.* 35.40 net. (*Recd.* 9/3/26.) From the Publisher : Herr Julius Springer.

MENSCHUTKIN, BORIS NIKOLAEVITSCH. Contemporary organic chemistry. Moscow 1926. pp. 191. [In Russian.] (*Recd.* 15/3/26.) From the Author.

NATIONAL ELECTRIC LAMP ASSOCIATION. Abstract-Bulletin of the Physical Laboratory. Vol. I, etc. Cleveland, Ohio 1913 +. (*Reference.*) From the Director.

NEW SOUTH WALES. *Legislative Assembly*. Report of the Director-General of Public Health for the year 1924. Sydney 1926. pp. vi + 192. ill. (*Reference.*) 8s. 3d.

From the Director-General.

PHARMACEUTISCH WEEKBLAD. Vol. 63, etc. Amsterdam 1926+. (*For circulation.*) From the Medical Research Council.

ROTHAMSTED EXPERIMENTAL STATION LIBRARY. Catalogue of the printed books on agriculture published between 1471 and 1840, with notes on the Authors by MARY S. ASLIN. [1926]. pp. 332. ill. (*Reference.*) From the Director.

SCHMIDT, JULIUS. A text-book of organic chemistry. English edition. By HAROLD GORDON RULE. London 1926. pp. xxiv + 798. 25s. net. (*Recd.* 14/4/26.)

From the Publishers : Messrs. Gurney & Jackson.

THOMS, HERMANN. [Editor.] Handbuch der praktischen und wissenschaftlichen Pharmazie. Vol. IV. Part iv. Berlin 1926. pp. 817 to 1036 + viii. ill. *M.* 9 net. (*Recd.* 8/4/26.)

From the Publishers : Herren Urban & Schwarzenberg.

TSCHITSCHIBABIN, ALEXEI EUGENIEVITSCH. Fundamental laws of organic chemistry. Moscow 1925. pp. xvi + 568. ill. [In Russian.] (*Recd.* 15/3/26.) From the Author.

## II. *By Purchase.*

ATAK, FREDERICK WILLIAM. [Editor.] The Chemists' Year Book 1926. Manchester [1926]. pp. xii + 1198. ill. (*Reference.*) 21s. net.

CHAPLET, A. Les soies artificielles. 2nd edition. Paris 1926. pp. 256. ill. 40 fr. net. (*Recd.* 16/3/26.)

CHEMICAL REVIEWS. Vol. I, etc. Baltimore 1924 +. (Two copies.)

COLLOID SYMPOSIUM MONOGRAPH. Papers presented at the third National Symposium on Colloid Chemistry. New York 1925. pp. 324. ill. 25s. net. (*Recd.* 14/1/26.)

EMERSON, PAUL. Soil characteristics: a field and laboratory guide. New York 1925. pp. x + 222. ill. 12s. 6d. net. (*Recd.* 7/4/26.)

ENGLER, CARL, and HÖFER, HANS VON. [Editors.] Das Erdöl. Vol. VI. Leipzig 1925. pp. xiv + 802. ill. *M.* 60 net. (*Recd.* 16/2/26.)

EULER, HANS VON. Chemie der Enzyme. 3rd edition. Part I. München 1925. pp. xii + 422. ill. *M.* 28 net. (*Recd.* 30/3/26.)

GRIFFITHS, EZER. Pyrometers: recent developments in pyrometric appliances and methods for calibrating temperature-measuring instruments, with notes on electric furnaces. London 1926. pp. xii + 126. ill. 7s. 6d. net. (*Recd.* 18/3/26.)

HICKS, JAS. A. The laboratory book of mineral oil testing. 4th edition. Revised by ARTHUR WALTER COX. London 1925. pp. viii + 128. ill. 5s. net. (*Recd.* 18/3/26.)

HINZE, ADOLF. Die Weisszuckerherstellung in den Rübenzuckerfabriken. Magdeburg 1925. pp. 226. ill. *M.* 14 net. (*Recd.* 26/3/26.)

JAMIESON, GEORGE SAMUEL. Volumetric iodate methods. New York 1926. pp. 96. 10s. 6d. net. (*Recd.* 20/3/26.)

JEANS, JAMES HOPWOOD. Atomicity and quanta: being the Rouse Ball lecture delivered on May 11, 1925. Cambridge 1926. pp. 64. 2s. 6d. net. (*Recd.* 18/3/26.)

KRAUS, EDWARD HENRY, and HOLDEN, EDWARD FULLER. Gems and gem materials. New York 1925. pp. viii + 222. ill. 15s. net. (*Recd.* 18/3/26.)

LASSWITZ, KURD. Geschichte der Atomistik vom Mittelalter bis Newton. 2nd edition. 2 vols. Leipzig 1926. pp. xii + 518, viii + 610. ill. *M.* 45 net. (*Recd.* 23/3/26.)

LIPPMANN, EDMUND OSKAR VON. Geschichte der Rübe (Beta) als Kulturpflanze von den ältesten Zeiten an bis zum Erscheinen von Achard's Hauptwerk (1809). Berlin 1925. pp. viii + 184. ill. *M.* 12 net. (*Recd.* 30/3/26.)

LITINSKY, L. Schamotte und Silika: ihre Eigenschaften, Verwendung und Prüfung. Leipzig 1925. pp. viii + 286. ill. *M.* 27 net. (*Recd.* 14/4/26.)

MONJONNIER, TIMOTHY, and TROY, HUGH CHARLES. The technical control of dairy products: a treatise on the testing, analyzing, standardizing and the manufacture of dairy products.

2nd edition. Chicago 1925. pp. xlii + 936. ill. 50s. net. (*Recd.* 18/3/26.)

ROBINET, ÉDOUARD. Manuel général des vins. 7th edition. Vol. I. Paris 1926. pp. iv + 412. ill. 18 fr. net. (*Recd.* 24/3/26.)

ROGERS, ALLEN. [Editor.] Industrial chemistry. 4th edition. 2 vols. [New York] 1925. pp. xx + 511 + xxiv, v, 512 to 1268. ill. 52s. 6d. net. (*Recd.* 29/3/26.)

SCHUCHT, LUDWIG. Die Fabrikation des Superphosphates. 4th edition. Edited by the Verein deutscher Dünger-Fabrikanten. Braunschweig 1926. pp. viii + 372. ill. *M.* 27.50 net. (*Recd.* 30/3/26.)

SCOTT, WILFRED W. Standard methods of chemical analysis. 4th edition. 2 vols. [New York 1925.] pp. xxxviii + [866] + 56, xxviii, 1001 to [1926] + 56. ill. 63s. net. (*Recd.* 9/4/26.)

TOCHER, JAMES FOWLER. Variations in the composition of milk. Edinburgh 1925. pp. iv + 196. ill. 21s. net. (*Recd.* 18/3/26.)

TURNER, THOMAS HENRY, and BUDGEN, NORMAN FREDERICK. Metal spraying. The origin, development, and applications of the metal-spray process of metallisation. London 1926. pp. xiv + 176. ill. 15s. net. (*Recd.* 18/3/26.)

UBBELOHDE, LEO, GOLDSCHMIDT, FRANZ, and HARTMANN, MARTIN. [Editors.] Handbuch der Chemie und Technologie der Öle und Fette. Vol. IV. Leipzig 1926. pp. xiv + 798. ill. (*Recd.* 15/3/26.)

[UNITED STATES] NATIONAL RESEARCH COUNCIL. *Committee on X-Rays and Radioactivity*. Radioactivity. By ALOIS F. KOVARIK and LOUIS W. MCKEEHAN. (National Research Council Bulletin No. 51.) Washington 1925. pp. 204. 12s. net. (*Recd.* 15/1/26.)

UNITED STATES PHARMACOPŒIAL CONVENTION. The pharmacopœia of the United States of America. 10th decennial revision. (U.S.P. X). Official from January 1, 1926. Philadelphia 1925. pp. lxii + 626. (*Reference.*) 20s. net.

VANINO, LUDWIG. [Editor.] Handbuch der präparativen Chemie. 3rd edition. Vol. I. Stuttgart 1925. pp. xxiv + 852. ill. *M.* 39.60 net. (*Recd.* 1/2/26.)

WADE, JOHN. Introduction to the study of organic chemistry. New edition. Revised by HENRY STEPHEN. London 1925. pp. xx + 646. ill. 8s. 6d. net. (*Recd.* 18/3/26.)

WEYMAN, GEOFFREY. The design and arrangement of chemical plant in relation to its economic control. London 1925. pp. 140. ill. 6s. net. (*Recd.* 15/12/25.)

WILEY, HARVEY WASHINGTON. Principles and practice of agricultural analysis. 3rd edition. Vol. I. Easton, Pa. 1926. pp. xiv + 686. ill. 32s. 6d. (*Recd.* 12/4/26.)



PROCEEDINGS  
OF THE  
CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, May 6th, 1926, at 8 p.m.,  
Professor H. BRERETON BAKER, C.B.E., D.Sc., F.R.S., President,  
in the Chair.

Certificates were read for the first time in favour of :

Robert Henry Clayton, B.Sc., 1, Parkfield Road, Didsbury, Manchester.  
Robert Percival Cook, B.Sc., c/o Mrs. M. Watson, 10, Alexander Street,  
Westbourne Grove, W. 2.  
Herbert Douglas Lees, 8, Elvaston Road, Hexham.  
Thomas Stevens Stevens, B.Sc., D.Phil., Marsden, Croft Street, Renfrew.  
George William Hargraves Stokes, 5, Whimble Street, Plymouth.

The President announced that as the Fellows present numbered less than thirty, the ballot for the election of Fellows arranged for May 6th, could not be held (see Bye-Laws, p. 4, par. 1). It was accordingly postponed.

The following papers were read :

- “The nature of the alternating effect in carbon chains. Parts IV, V, VI, and VII.” By C. K. INGOLD, E. HOLMES, and E. H. INGOLD.
- “The mechanism of tautomeric interchange and the effect of structure on mobility and equilibrium. Part I. The three-carbon system.” By C. K. INGOLD, C. W. SHOPPEE, and J. F. THORPE.
- “The correlation of additive reactions with tautomeric change. Part V. The structural conditions affecting mobility and equilibrium.” By K. E. COOPER, C. K. INGOLD, and E. H. INGOLD.
- 

Ordinary Scientific Meeting, Thursday, May 20th, 1926, at 8 p.m.,  
Professor H. BRERETON BAKER, C.B.E., D.Sc., F.R.S., President,  
in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, of the following Fellows :

	Elected.	Died.
James Thomson Bottomley.....	May 15th, 1869.	May 18th, 1925.
Albert Brown Lyons.....	Nov. 18th, 1886.	April 13th, 1926.
Charles Joseph Wilson .....	June 19th, 1879.	Nov. 12th, 1925.

Certificates were read for the first time in favour of :

James Baddiley, 59, Fog Lane, Didsbury, Manchester.  
 Alfred Henry Fennall, 147, Ivy Road, Bolton.  
 Annie Godfree Hamp, B.Sc., 14, Boileau Road, Ealing, W. 5.  
 Ibrahim Hilmi el-Sâid Mattar, B.Sc.Tech., Zifta, Egypt.  
 Harold Fenton Taylor, B.Sc., 5, Carwinian Terrace, Liskeard.  
 Alfred Spencer White, B.Sc., 33, Linwood Road, Bournemouth.

The ballot for the election of Fellows, postponed from the last Ordinary Scientific Meeting, was held, Messrs. W. M. Colles and H. J. T. Ellingham being elected Scrutators. The following were subsequently declared elected as Fellows :

James Allan, M.A., B.Sc.	Nicolas de Kolossowsky, D.ès.Sc.
Arthur Percival Anderson, B.Sc.	Robert Osborne Orr McCrone, B.Sc.
Basil William Anderson, B.Sc.	John McDonald, M.A., B.Sc., Ph.D.
Edward Sidney Armstrong, B.Sc.	Andrew McKeown.
Reginald Percy Ayres, B.Sc.	John McLintock, B.Sc.
Francis George Barker.	Peter Maitland, B.Sc.
Arnold Belchetz, M.Sc.	Gobindram Tarachand Mansharamani.
Einar Christian Saxtorph Biilmann, Dr.Phil.	Edmund B. Middleton, B.A., M.Sc., Ph.D.
Robert Sidney Cahn, M.A., Dr.Phil.	Navin Chandra Mittal, B.Sc.
William Denis Coales, B.Sc.	David Muir.
Dr. Giuseppe Grassi Cristaldi.	John Trevor Nicholl.
Nicholas Michael Cullinane, M.Sc., Ph.D., F.I.C.	Gordon Nonhebel, B.A.
William John Dann, B.Sc.	William Leopold Peard, B.Sc.
George Henry Davis.	Claudius Philip Proctor.
James Dundee.	Muhammad Qudrat-i-Khuda, M.Sc.
Robert Jones Evans, B.Sc.	Charles Norman Ridley, B.Sc.
John Garwood Everett, A.I.C.	Arthur Howard Roberts, A.R.C.S., A.I.C.
Robert Henry King Foster.	Kunwar Bisheshwar Dayal Seth, B.Sc.
Harvey Satchell Garlick.	Charles Soyka, A.R.C.S.
William Gerrard, B.Sc.	Herschel Gaston Smith.
Charles Roy Greenwood.	Leonard James Spencer, M.A., Sc.D., F.R.S.
Sidney John Gregg, B.Sc., A.R.C.S.	Walter Arthur Steed.
Richard Isaac Edward Hall, B.A.	Ralph Charles Storey, M.Sc., A.I.C.
John Valon Head, B.A.	Christine Elizabeth Webb, B.Sc.
Samuel Hill.	Vera Katherine Wilson, B.Sc.
Clifford Walter Howell, M.Sc.	James William Allan Woodley, B.Sc., A.I.C.
Arthur William Jarman, B.Sc.	
William Johnston.	
Hilda Mabel Enid Jones, B.Sc.	
Francis Charles Kelly, B.Sc.	
Joseph Blake Koepfli, M.A.	

The following papers were read :

- “The temperature effects on mixing liquids.” By W. M. MADGIN, H. V. A. BRISCOE, and J. B. PEEL.
- “The alcohols of the hydroaromatic and terpene series. Part V. The geometrical and optical isomerism of the methylcyclohexanols.” By G. A. C. GOUGH, H. HUNTER, and J. KENYON.
- “Chemistry of the three-carbon system. Part V. The alkylation of unsaturated ketones.” By G. A. R. KON.
- “Chemistry of the three-carbon system. Part VI. Some systems containing the benzoyl group.” By M. D. FARROW and G. A. R. KON.
- “Chemistry of the glutaconic acids. Part XX. Tetrahydroisophthalic acid.” By E. H. FARMER and H. L. RICHARDSON.
- List of Papers, or Abstracts thereof, received from April 22nd to May 20th, 1926. (This List does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)
- “Note on some properties of complex salts of lead iodide and alkali halides.” By L. J. BURRAGE.
- “Note on the solubility of lead iodide in solutions of sodium chloride at 25° C.” By L. J. BURRAGE.
- “The viscosity of suspensions and of related systems. Parts I, II, and III.” By S. R. HIND.
- “The isomerism of the oximes. Part XXV. The dissociation constants of some isomeric aldoximes.” By O. L. BRADY and R. F. GOLDSTEIN.
- “The classification of the sugars.” By J. G. MALTBY.
- “The action of nitrous acid on *p*-iododimethylaniline.” By T. H. READE.
- “On the alleged decomposition of aqueous ammonium nitrite solutions by light.” By M. HOLMES.
- “The action of light on concentrated aqueous solutions of ammonium thiocyanate.” By M. HOLMES.
- “The adsorption of water vapour on a plane fused quartz surface. The isosteric heats of adsorption of water on silica and on platinum.” By S. LENHER.
- “A study of solution. The conductivities of sodium and potassium derivatives of  $\beta$ -ketonic compounds in alcoholic solution.” By E. WHITE.
- “Compounds of trivalent molybdenum. Part IV. Bromides.” By W. WARDLAW and A. J. I. HARDING.
- “The constitution of sucrose. Part II. Evidence contributed by the oxidation of *d*-arabinose.” By G. MCOWAN.

- “Studies in optical superposition. Part VII. The bornyl dimethoxysuccinates.” By T. S. PATTERSON, J. D. FULTON, and J. M. SEMPLE (Mrs. I. F. MACCULLOCH).
- “Orientation effects in the diphenyl series. Part III. The mononitro-4:4'-dihalogenodiphenyls and some allied compounds.” By R. J. W. LE FÈVRE and E. E. TURNER.
- “The structure of lactones from simple sugars: trimethyl  $\gamma$ -arabonolactone and the supposed  $\beta$ -gluconolactone and  $\beta$ -mannonolactone.” By W. N. HAWORTH and V. S. NICHOLSON.
- “Low temperature oxidation at charcoal surfaces. Part II. The behaviour of charcoal in the presence of promoters.” By E. K. RIDEAL and W. M. WRIGHT.
- “Isomeric phenylserines.” By M. O. FORSTER and K. A. N. RAO.
- “Conessine.” By D. D. KANGA, P. R. AYYAR, and J. L. SIMONSEN.
- “Period of induction in chemical reactions. Part I. Interaction of mercuric chloride and sodium bicarbonate.” P. NEOGI and S. NEOGI.
- “The catalytic decomposition of nitric oxide at the surface of platinum.” By T. E. GREEN and C. N. HINSHELWOOD.
- “A differential method for the measurement of the vapour pressure of liquids.” By V. G. JOLLY and H. V. A. BRISCOE.
- “A new isomerism of halogenhydroxybenzoyltoluic acids.” By M. HAYASHI.
- “Silver carbonate.” By G. H. JEFFERY and A. W. WARRINGTON.
- “Preparation of the symmetrical dihalogenophenols.” By H. H. HODGSON and J. S. WIGNALL.
- “Some new derivatives of guaiacol and veratrole substituted in the 3- and 6-positions.” By A. E. OXFORD.
- “The catalytic hydrogenation of carone.” By S. N. IYER and J. L. SIMONSEN.
- “Examination of the volatile oils from *Xanthorrhoea Arborea*, *X. Hastilis*, and *X. Reflexa*.” By H. H. FINLAYSON.
- “A synthesis of pyrylium salts of anthocyanidin type. Part X. Delphinidin chloride 3-methyl ether.” By E. S. GATEWOOD and R. ROBINSON.
- “A synthesis of pyrylium salts of anthocyanidin type. Part XI. A synthesis of peonidin chloride.” By T. J. NOLAN, D. D. PRATT, and R. ROBINSON.
- “The reactivity of *meso*-substituted anthracenes. Part III.” By J. W. COOK.
- “Copper hydride and its crystal structure.” By H. MÜLLER and A. J. BRADLEY.
- “The temperature of maximum density of alcohol-water mixtures.” By J. P. McHUTCHISON.

- “The photolysis of acetaldehyde and of acetone.” By E. J. BOWEN and H. G. WATTS.
- “The interaction of hydrogen and nitrous oxide on the surface of gold.” By W. K. HUTCHISON and C. N. HINSELWOOD.
- “Olefinic terpene ketones from the volatile oil of flowering *Tagetes glandulifera*. Part II.” By T. G. H. JONES.
- “The catalytic dissociation of carbon monoxide.” By J. CLEMINSON and H. V. A. BRISCOE.
- “A new method of diagnosing potential optical activity. Part II. The optical activity of chlorobromoacetic acid.” By J. READ and A. M. McMATH.
- “The action of thionyl chloride on hydroxyanthraquinones. Part III.” By A. GREEN.
- “The viscosities and densities of anhydrous methyl alcohol and of solutions of some halides of sodium and potassium in this solvent.” By F. K. EWART and H. R. RAIKES.
- “Some unconsidered cases of stereoisomerism.” By J. K. SENIOR.

CERTIFICATES OF CANDIDATES FOR ELECTION AT  
THE BALLOT TO BE HELD AT THE ORDINARY  
SCIENTIFIC MEETING ON THURSDAY, JUNE 17TH,  
1926.

N.B.—The names of those who sign from “General Knowledge” are printed in *italics*.

ADAMSON, JAMES HENRY, c/o Wilts United Dairies, Ltd., Bason Bridge, near Highbridge, Somerset. British. Chemist. M.A. Cantab., Ordinary degree in Chemistry. An Assistant to A. Chaston Chapman, Esq., F.R.S., F.I.C., 1920–1924. (*Signed by*) A. Chaston Chapman, R. Robertson, Geo. Stubbs, J. J. Fox.

ANDREWS, JOHN CLARK, c/o University College, Auckland, New Zealand. British. Post-graduate Research Student in Chemistry at Auckland University College. B.Sc. (N.Z. 1925). Thesis on “The Mutarotation of Glucose,” presented to University of N.Z., Nov. 1925. (*Signed by*) Fredk. P. Worley, W. Frank Short, John R. Hosking.

BADDILEY, JAMES, 59, Fog Lane, Didsbury, Manchester. British. As an Industrial Chemist in charge of a large research laboratory, I wish to become a member of the Chemical Society in order to keep abreast with developments on the scientific side of the subject. (*Signed by*) Henry E. Armstrong, E. F. Armstrong, E. H. Rodd, R. Robinson.

CLAYTON, ROBERT HENRY, 1, Parkfield Road, Didsbury, Manchester. Chemical Manufacturer. B.Sc. (Hon. Chem.), Manchester University. Managing Director of Manchester Oxide Company. Director of Messrs. Hardman & Holden, Miles Plating. Director of Cortonwood Collieries. Hon. Treasurer of Manchester Lit. and Phil. Soc. (*Signed by*) Harold B. Dixon, Arthur Lapworth, John C. Withers, John Allan, Herbert Levinstein.

COHN, THEODORE, c/o Medway Oil and Storage Co., Ltd., Isle of Grain, Kent. British. Works Chemist. Associate of the Royal College of Science, 1923. Honours Graduate, University of London. B.Sc., 1923. Research Student, Royal College of Science, 1923-1925. At present Chemist to the Medway Oil and Storage Co., Ltd. (*Signed by*) H. B. Baker, James C. Philip, H. L. Riley.

COOK, ROBERT PERCIVAL, c/o 404, Collins St., Melbourne, Australia. British. Student, Faculty of Science. B.Sc. (Melbourne). Graduated, Dec., 1925. Major subject, "Physiology with special reference to Biochemistry." In Commonwealth Serum Laboratories (Melbourne) 2 occasions each of about 2 months, (1) Investigations on Diagnostic and Veterinary Bacteriology, (2) Tuberculin Dept., studied Biochemistry, Tubercle Bacillus. In these two departments dealt more especially with Biochemical side of the subject. (*Signed by*) Robert Robertson, J. J. Fox, Geo. Stubbs.

CRONSHAW, CECIL JOHN TURRELL, Alnwick, Prestwich Park, nr. Manchester. British. Chemist. B.Sc. (Hons.), Chemistry, Victoria University, Manchester. Technical Manager, British Dyestuffs Corporation, Ltd. (*Signed by*) William D. Rogers, Percy Chorley, M. Barrowcliff.

CROXFORD, JOHN WILLIAM, 73, Brighton Road, East Ham, E. 6. English. Works Analytical and Experimental Chemist in Oils and Fats (Edible). Six years as an A.I.C. Student at evening classes at East Ham Technical College. Distinction in Organic Chemistry in Higher National Certificate. Full Technological Certificate, City Guilds, Oils and Fats. (*Signed by*) W. T. Clough, E. G. Churchill, E. D. Griffiths.

DIXON, BERTRAM EASTWOOD, Springfield, Gt. Bookham, Surrey. English. Chemist, Government Chemist's Department. A.C.G.F.C. A.I.C. B.Sc. (Lond.). (*Signed by*) J. J. Fox, T. H. Bowles, J. F. Hirst.

FENNALL, ALFRED HENRY, 147, Ivy Road, Bolton. English. Analyst and Assistant Works Chemist to Messrs. E. Griffiths Hughes, Ltd. Trained by Messrs. Brindle and Turner. I possess three years' experience in the Analysis and Assay of Pharmaceutical Chemicals, etc. (*Signed by*) Harry Brindle, Chas. Turner, Charles Smith.

GRINDLEY, WILLIAM HARRY, 24, Granville Terrace, Stone, Staffs. British. Earthenware Manufacturer. B.A. (Cantab., Honours in Nat. Sc. Tripos, Part II, Chemistry). B.Sc. (London, Honours). (*Signed by*) J. W. Mellor, James A. Audley, H. V. Thompson.

HAMP, ANNIE GODFREE, 14, Boileau Road, Ealing, W. 5. British. Private Secretary to Director of Research, and Secretary, Research Association of British Motor and Allied Manufacturers. B.Sc., Hons. (Lond.). Worked in Chemical Dept., Chelsea Polytechnic, for three years. (*Signed by*) J. C. Crocker, F. H. Lowe, Francis Arnall, Edna C. Smith.

HODDAY, JOHN WILLIAM, 535, Liverpool Rd., Irlam, Manchester. British. Coke Oven and By-product Chemist. From 1916-1922, Junior Assistant in Coke Oven Laboratory of Partington Steel and Iron Co. 1922-1924, Chief Assistant to Mr. Humpleby, and from 1924-1925, entirely responsible for all laboratory work on this plant. The Coke Ovens are now closed down and I am at present Chemist to the Road's Dept. of the Partington Steel and Iron Co., Irlam. March 5th, 1926, Appointed Chemist-in-charge of the manufacture of Tarmacadam at the North Lonsdale Tarmacadam Co., Ltd., Ulverston. (*Signed by*) J. W. Humpleby, G. F. Russell, J. J. Morgan.

LEFS, HERBERT DOUGLAS, 8, Elvaston Road, Hexham. British. Gas Engineer. Employed in the Laboratory of the Sunderland Gas Co. for 2½ years, and for the past 7 years as Technical Assistant at the Hexham

Gas Works, with full control of laboratory, and have recently been appointed Engineer of the Company's undertaking. (*Signed by*) F. C. Garrett, C. R. Gent, Chas. Wood, John Gibson.

LOVETT, TREVOR, 6, Cerdin Avenue, Pontyclun, Glam. Welsh. Science Teacher of the Boys' Intermediate School, Pontypridd, Glam. B.Sc. (Wales), Chemistry, Physics, Subsidiary Mathematics. M.Sc. (Wales), as result of original research. Publication on "Vapour Pressure and Heat of Dilution of Aqueous Solutions" in Transactions of Faraday Society, No. 64, Vol. XXII, Part 1, 1926. (*Signed by*) E. P. Perman, W. J. Jones, A. A. Read.

MARTIN, ERIC CHARLES, 45, Regent Square, W.C. 1. British. Analytical Chemist. Eight years' practical experience. Third year Chemistry Student. Passed Inter. B.Sc. (*Signed by*) E. de Barry Barnett, J. W. Cook, J. L. Wiltshire.

MATTAR, IBRAHIM HILMI EL-SAID, Zifta, Egypt. Egyptian. Chemist, Chemical Department, Cairo, Egypt. Bachelor of Technical Science (Manchester). No contributions to Chemical Science. (*Signed by*) John K. Wood, Arthur M. Morley, F. L. Pyman.

NEWMAN, JOHN FREDERICK, Mount Royal Ave., St. John's, Newfoundland. British. Assistant Government Analyst for the Dominion of Newfoundland. Educated at Bishop Feild College, St. John's, Newfoundland. Employed as Analyst in the Government Laboratory, Newfoundland, since July, 1916. Appointed First Assistant in December, 1924. (*Signed by*) D. James Davies, J. C. Hogg, Donald M. Turner.

OLDHAM, MAURICE CHARLES, 100, Roose Rd., Barrow-in-Furness. British. Analytical Chemist. Chief Assistant Chemist, Messrs. Vickers, Ltd., Barrow. Inter. B.Sc. (Lond.). (*Signed by*) Alex. W. McLaren, R. T. Thomson, Alfred R. Campbell.

PETERS, ARNOLD THORNTON, "Arnside," Wigan Road, Bolton. British. Chemical Teaching and Research. M.Sc. (Manchester). One year's research with Dr. Challenger on derivatives of selenocyanogen. A joint paper with Dr. F. Challenger and Mr. J. Halévy entitled "The introduction of the selenocyano-group into aromatic compounds," has recently been submitted to the Society. (*Signed by*) Arthur Lapworth, Frederick Challenger, Leslie Randal Ridgway, John F. Wilkinson.

RACK, RALPH SKINNER, Keelby, Habrough, Lincs. British. Research Chemist and General Manager, British Isinglass Co., Ltd., Grimsby. Member of the Institute of Chemical Engineers. (*Signed by*) Harry Thompson, Edward Chapman, E. H. Tripp.

RAMAN, GUBBI ANANTHA, Shimoga, Mysore State, India. Indian. Research Chemist, Rajkot State, Rajkot (India). In independent charge of The State Research Laboratory, Rajkot. B.Sc. of Mysore University, 1920; Analytical Assistant to Dr. Sudborough, Indian Institute of Science, Bangalore, 1920-1921. Mysore Government Research Scholar, 1921-1924: (1) Refining of Indian gul by the sulphitation process, a study of the possibility of; (2) Hydrogenperoxide from ammonium sulphate through the persulphate. (*Signed by*) M. O. Forster, H. E. Watson, B. A. Mehta.

RICHARDS, RONALD ASHLEY, 10, Orange Hill Rd., Heaton Park, Manchester. English. Analytical Chemist. Assistant to Dr. E. A. Wagstaffe, M.Sc., F.I.C., of Manchester, in chemical analysis and research. (*Signed by*) Alex. K. Miller, Percy Bean, E. Clark.

SMART, JOHN, 249, Friern Rd., E. Dulwich, S.E. 22. British. Analytical Chemist. Three years Chemist to Peyle and Blaina Works (Ferromanganese Works). Three years Chemist to Cammel Laird & Co. (Ferromanganese

Works). Four years Chemist to Haqu Prospecting Syndicate, India (Manganese and Chrome). One year Chemist to Fauti Manganese Chemist, West Africa (Manganese and Chrome). (*Signed by*) Alex. W. McLaren, R. T. Thomson, Alfred R. Campbell.

STEVENS, THOMAS STEVENS, "Marsden," Croft St., Renfrew. British. B.Sc. (Glas.), D.Phil. (Oxon.). Assistant in Organic Chemistry, Glasgow University, 1921-1923, 1925-1926. Ramsay Memorial Fellow, 1923-1925. J.C.S. 1923, 123, 2940; 1925, 127, 1462. (*Signed by*) S. Horwood Tucker, T. S. Patterson, G. G. Henderson.

STOKES, GEORGE WILLIAM HARGRAVES, 5, Whimble St., Plymouth. British. Managing Director, Messrs. Stokes & Son, Ltd., Manufacturing Chemists. Thirty years' Analytical and Manufacturing experience. (*Signed by*) Wm. Dawson Lloyd, H. N. B. Richardson, R. E. S. Richardson.

TAYLOR, HAROLD FENTON, 5, Carwinian Terrace, Liskeard, Cornwall. British. Teacher (County Secondary School). B.Sc. (Sheffield, 1922). I wish to keep in touch with the various branches of chemical research. (*Signed by*) W. P. Wynne, Thos. B. Smith, Arthur W. Chapman, E. Gertrude Turner, H. Burton.

WAGHRAY, PRITHIR NATH, Shraddha Bhawan, Residency Bazar, Hyderabad, Deccan, India. Indian. M.Sc. of Allahabad University, India, in Organic Chemistry. Research Scholar, College of Technology, Manchester, connected with the Chemistry of Dyeing, and a Research Student in the same branch since April, 1925, for the degree of M.Sc.Tech. (*Signed by*) Fredk. M. Rowe, John K. Wood, J. Massey Preston.

WHITE, ALFRED SPENCER, 33, Linwood Rd., Bournemouth. British. Secondary School Science Master. Chemistry Lecturer to Evening Classes. B.Sc. Wales. (*Signed by*) Hubert Painter, E. J. Williams, E. P. Perman.

ZVEGINTZOV, MICHAEL, Corpus Christi College, Oxford. Russian. Student of Chemistry at Oxford University. Desires to receive the Journal of the Society, to use the Society's Library, and attend its Meetings. (*Signed by*) W. H. Perkin, D. Ll. Hammick, N. V. Sidgwick, H. R. Raikes.

The following certificate has been authorised by the Council for presentation to ballot under Bye-Law I (2) :

BRUCHSTEIN, MOSES, Jerusalem, Palestine. Palestinian. Pharmaceutical Chemist. Responsible Manager of the New British Pharmacy. Graduate of the American University of Beirut, Syria, with the degree of Master of Pharmacy (Ph.M.). Member of the "Société Chimique de France." (*Signed by*) Wm. H. Saunders.

At the next Ordinary Scientific Meeting to be held on June 3rd, the following papers will be read :

"The direct determination of the equivalent of silver referred to oxygen." By H. B. BAKER and H. T. RILEY.

"The structure of silver oxide." By H. T. RILEY.

"Some derivatives of naphthaquinoline and naphthaisoquinoline."  
By C. S. GIBSON, K. V. HARIHARAN, K. N. MENON, and J. L. SIMONSEN.



PAGES MISSING FROM 81 TO 92

# PROCEEDINGS

## OF THE

# CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, October 21st, 1926, at 8 p.m.,  
Dr. ALEXANDER SCOTT, M.A., F.R.S., Vice-President, in the Chair.

The CHAIRMAN referred to the loss sustained by the Society, through death, of the following Fellows :

	Elected.	Died.
John J. Broadbent .....	Feb. 6th, 1879.	Feb. 27th, 1926.
Allin Cottrell .....	Dec. 7th, 1922.	Aug. 18th, 1926.
William Gasson .....	Dec. 6th, 1900.	Sept., 1924.
Alfred F. B. Gomess .....	June 17th, 1897.	July 22nd, 1926.
Josiah W. Kynaston .....	Feb. 17th, 1859.	May 9th, 1926.
David J. MacGeorge .....	Dec. 1st, 1910.	Jan. 14th, 1926.
Lester Reed .....	Nov. 16th, 1882.	Aug. 5th, 1926.
Claude Smith .....	Dec. 6th, 1894.	July 7th, 1926.
William Spiller .....	Jan. 15th, 1863.	Oct. 12th, 1926.
Charles Turner .....	Dec. 6th, 1888.	Oct. 10th, 1926.

The following announcements were made :

1. That the following letter had been received from the American Chemical Society :

AMERICAN CHEMICAL SOCIETY,  
1709 G. STREET N.W.,  
WASHINGTON, D.C.,  
*September 13, 1926.*

PROF. FREDERICK G. DONNAN,  
CHEMICAL LABORATORY,  
UNIVERSITY COLLEGE,  
GOWER STREET,  
LONDON, ENGLAND.

DEAR PROFESSOR DONNAN,

The beautifully embossed and complimentary address of congratulation from the Officers and Council of the Chemical Society to our Society on the occasion of its Golden Jubilee, received from you by mail with the request that I arrange for its presentation, was duly presented before the General Meeting of the Society on Wednesday, September 8, by Sir James Colquhoun Irvine.

By request of our President, and on behalf of our Council and members, I wish to express our sincere appreciation of the complimentary expressions from your Society and for the good will to ours, both of which, I can assure you, are most heartily reciprocated.

With kind regards,

Sincerely yours,

(Signed) CHARLES L. PARSONS.  
Secretary.

The following address was sent by the Chemical Society to the President, Council, and Members of the American Chemical Society :

*The Chemical Society  
to the  
President, Council, and Members  
of the  
American Chemical Society.*

We, the President, Council, and Fellows of the Chemical Society, send you our heartiest felicitations and most cordial good wishes on the auspicious occasion of the Jubilee of the American Chemical Society.

The rapid growth of your Society during the last few decades, a growth which has now made it the largest Chemical Society in the world, and the very great and remarkable increase in chemical research in the United States of America, which your Society has done so much to foster and encourage, represent some of the most striking events in the history of our science, and constitute intellectual and material achievements on which we offer you our warmest congratulations.

It was an important moment in the history of Chemistry and in the advance of Science in the New World when on the 6th April, 1876, the group of Chemists called together by your famous fellow-countryman, Professor Charles F. Chandler, and his colleagues, met in the College of Pharmacy in New York City and founded the American Chemical Society. During the last fifty years your Society has steadily increased in numbers, fruitfulness, and influence, and has organised the chemists of your land into a powerful and homogeneous body.

We rejoice with you on this great occasion when you are met together to celebrate the year of your Golden Jubilee. We feel that your hopes and ours are intertwined in a deep and lasting friendship.

It is our sincere wish that the American Chemical Society may continue to grow and prosper, and may contribute in ever-increasing measure to the progress of chemical science and to the well-being of mankind.

Signed on behalf of the Chemical Society,

H. B. BAKER, *President.*

JOCELYN THORPE, *Treasurer.*

T. SLATER PRICE, } *Secretaries.*

C. S. GIBSON, }

F. G. DONNAN, *Foreign Secretary.*

(L.S.)

Sealed in Council this Twenty-Seventh Day of July, One Thousand Nine Hundred and Twenty Six.

2. That the Annual Chemical Dinner will be held at the Connaught Rooms, Great Queen Street, W.C. 2, on Friday, November 12th, at 7 for 7.30 p.m., Professor F. G. Donnan, F.R.S., in the Chair. Dinner will be followed by a few short speeches, and there will be dancing from 9.15 until midnight. Application for tickets, price 12s. 6d. each, for lady or gentleman (including gratuities, but not wines), should be made as soon as possible to S. E. Carr, The Chemical Society, Burlington House, W. 1.

3. That the Harrison Memorial Prize Selection Committee will meet shortly to consider the award of the Harrison Prize.

The Prize, of the value of about £150, is to be awarded to the chemist of either sex being a natural born British subject and not at the time over thirty years of age, who, in the opinion of the Selection Committee, during the previous five years has conducted the most meritorious and promising original investigations in any branch of pure or applied chemistry and published the results of those investigations in a scientific periodical or periodicals.

Provided that in the opinion of the Selection Committee there is a candidate of sufficient distinction to warrant an award of the Prize, the award is to be made in December, 1926.

Applications should contain the following information :

- (a) Name (in full).
- (b) Age (Birth Certificate to accompany application).
- (c) Degrees (name of University where obtained).
- (d) Other qualifications.
- (e) Experience.
- (f) Titles of published papers, with Authors' names, including full references to publication.
- (g) Where research was carried out.
- (h) Testimonials or references.
- (i) Any other information bearing on the application.

The Selection Committee is prepared to receive applications, nominations, or information as to candidates eligible for the Prize. Any such communication must be received by the President, The Chemical Society, Burlington House, Piccadilly, London, W. 1, not later than Wednesday, December 1st, 1926.

It was stated that the President had reason to hope that the difficulties which had hitherto existed in awarding the prize have been overcome.

4. That in response to frequent requests the Council has decided to publish portraits, reproduced by a photo-lithographic process, of the following eminent Chemists :

R. W. Bunsen,  
Emil Fischer,  
A. W. von Hofmann,  
D. I. Mendeléeff,

Louis Pasteur,  
Sir William Perkin,  
Sir William Ramsay,  
Sir Henry Roscoe.

The photographs are 8 by 6 inches (approximately) in size, and the mount 15 by 11 inches. The price to Fellows is 18s. the set of eight, or 2s. 6d. each, post free. Applications should be addressed to the Assistant Secretary.

5. That applications for the Annual Reports for 1926 (price 5s. 6d.) should reach the Assistant Secretary by Christmas Day, 1926.

6. That a meeting of the Research Fund Committee will be held in December next. Applications for Grants, to be made on forms obtainable from the Assistant Secretary, must be received on or before Wednesday, December 1st, 1926. Applications from Fellows will receive prior consideration.

All persons who received Grants in December, 1925, or in December of any previous year, whose accounts have not been closed by the Council, are reminded that Reports must be returned by December 1st.

The attention of Fellows was also drawn to the notice issued on the 15th October, stating that

- (a) The Abstracts Index for 1926 would cover both Pure and Applied Chemistry and that Fellows who are Members of the Society of Chemical Industry would receive only one copy;
- (b) Applications for one-sided abstracts for 1927 (price £2 10s. post free) should reach the Assistant Secretary by the 31st December, 1926;
- (c) The publications of the Society of Chemical Industry and of the American Chemical Society for 1927 would be obtainable by Fellows at the following prices :

#### SOCIETY OF CHEMICAL INDUSTRY.

- (a) Abstracts in Applied Chemistry (exclusive of Index) ... £2 2s. post free
- (b) Annual Reports of the Progress of Applied Chemistry  
for 1926 ... .. 10s. ,,

Application should be made direct to the Secretary, Society of Chemical Industry, 46 and 47 Finsbury Square, E.C. 2, and should reach him by Christmas Day, 1926. Fellows resident abroad should apply by return of mail.

#### AMERICAN CHEMICAL SOCIETY.

- (a) Journal of the American Chemical Society ... .. \$7.25 post free.
  - (b) Chemical Abstracts ... .. \$7.25 ,,
  - (c) Industrial and Engineering Chemistry ... .. \$7.25 ,,
- Price for all three Journals : \$17.50 post free.
- (d) Chemical Reviews ... .. \$4.50 ,,

Application should be made direct to the Secretary, American Chemical Society, 1709, G. Street, Washington, D.C., U.S.A., and should be sent as soon as possible.

- (e) Journal of Physical Chemistry ... .. \$8.00 post free.  
Application should be made to the Journal of Physical Chemistry,  
Ithaca, N.Y., U.S.A.

NOTE.—A remittance, made payable to the Society concerned, must accompany each application.

James M. Bell was formally admitted a Fellow of the Chemical Society.

Certificates were read for the first time in favour of :

- Shintaro Araki, 419, Tonodan-Yabunoshitacho, Kyoto, Japan.  
Henry Norman Bassett, 51, Ashford Road, Swindon.  
Dorothy Baylis, M.Sc., A.I.C., 75, Evington Road, Leicester.  
Carlo Frederico Bonini, Via Ospedale 32, Turin.  
Albert Brewin, B.Sc., 80, Rosebery Street, Leicester.  
Frederick Cecil Bullock, B.Sc., A.I.C., Wingfield, Evington Lane, Leicester.  
Stanley Grove Burgess, B.Sc., A.I.C., 283, Putney Bridge Road, Putney, S.W. 15.  
Albert Christopher Candler, 7, Platt's Lane, Hampstead, N.W. 3.  
Alfred Henry Dickins, 8, Cowbridge, Hertford.  
Harry Dunicliff, B.A., 7, The Terrace, St. Peter's Street, Cambridge.  
James Walter Durant, 95, North High Street, Musselburgh.  
Mona Elizabeth Eck, 10, Priory Road, Bedford Park, W. 4.  
John Trevor Evans, B.Sc., 26, Beechfield Road, Finsbury Park, N. 4.  
Doswell Foggan, 55, Park Parade, Whitley Bay.  
Harold Goodburn, B.Sc., 5, The Precincts, Canterbury.  
Haralal Das Gupta, M.A., T.N.J. College, Bhagalpur, India.  
Frank Winston Hall, B.S., The Texas Company, Port Arthur, Texas, U.S.A.  
Douglas Vernon Nelmar Hardy, B.Sc., 12, Holyrood Avenue, Highfield, Southampton.  
Harold Herbert Hatt, B.Sc., A.I.C., Weybrook Farm, Sherborne St. John, Basingstoke.  
Frank Swain Hawkins, B.Sc., Ben Avon, Sandal Road, New Malden.  
Edward Alan William Hebdon, B.Sc., 66, Culverden Road, Balham, S.W. 12.  
Jack Reginald Irons Hepburn, M.Sc., 119, Richmond Road, N. 1.  
Wilfred Eynon Hugh, B.Sc., 4, Upper Frog Street, Tenby, S. Wales.  
Arupillai Kandiah, B.Sc., Kondavil East, Vannarponne, Ceylon.  
Hermann Kast, Margaretenstrasse 5, Grunewald, Berlin.  
Hideo Katagiri, 364, Finchley Road, Hampstead, N.W. 3.  
Leon Jean Pierre Amand Georges Keffler, M.Sc., 30, Elmbank Road, Waver-tree, Liverpool.  
Ernest Laurence Kennaway, M.D., D.Sc., 6, Spring Grove Road, Richmond.  
Frederic Nairne Kerr, B.A., 1, Claremont Terrace, Glasgow.  
Nurani Sesha Iyer Krishnan, B.Sc., Masina Hospital, Bombay, India.  
William Caruth MacTavish, B.Sc., 44, Commerce Street, New York, U.S.A.  
Cyril Thomas Mason, M.A., A.I.C., Jallo Resin Factory, Jallo, India.  
Herbert Beaumont Matthews, M.Sc., 175, Loose Road, Maidstone.  
Norman Philip Millard, Oakdene, Chase Court Gardens, Enfield.  
Cecil Walter André Mundy, Lyndhurst, London Road, Ewell.  
Frank Paulden, jun., 26, Clyde Road, West Didsbury, Manchester.  
Keshaviah Aswath Narain Rao, B.Sc., 3, Radnor Road, Brondesbury, N.W. 6.  
Kenneth Charles Roberts, M.Sc., 28, Fellows Road, Hampstead, N.W. 3.  
Pasquale Romeo, M.D., Ch.D., 104, Charing Cross Road, W.C. 2.

Frederick William Saxton, *c/o* British Pavements, Ltd., Box 913, G.P.O., Wellington, New Zealand.

James Francis Shillito, B.Sc., Lyndhurst, Scotland Road, Buckhurst Hill.

Harusada Sugimoto, Chemical Department, The University, Manchester.

Charles Dodgson Walton, 515, Dunbar Drive, Cumberland, Md., U.S.A.

George David Wilkinson, Fishburn, Ferryhill, Durham.

Maung Ba Yan, B.Sc., 8, Crisp Street, Rangoon.

The following certificates have been authorised by the Council for presentation to ballot under Bye-Law I (2) :

Gellert Alleman, B.S., Ph.D., Sc.D., 8, Whittier Place, Swarthmore, Pa., U.S.A.

Ganesh Chandra Moitra, B.Sc., 42, Barr Street, Rangoon.

The following papers were read :

- “ Examination of an ancient Egyptian (Tut-ankh-Amen) cosmetic.”  
By A. CHASTON CHAPMAN and H. J. PLENDERLEITH.
- “ The density of boron trichloride, and the suspected variation in the atomic weight of boron.” By H. V. A. BRISCOE, P. L. ROBINSON, and H. C. SMITH.
- “ The formation of protective oxide films on copper and brass by exposure to air at various temperatures.” By W. H. J. VERNON.
- “ The action of antimony trichloride upon some diazotised diamines.” By W. H. GRAY.
- “ The formation and stability of associated alicyclic systems. Part III. The change from ‘*meta-*’ to ‘*para-*’ bridged rings.” By E. H. FARMER and J. ROSS.

List of Papers, or abstracts thereof, received from June 17th to October 21st, 1926. (This List does not include the titles of papers which have been read at a Scientific Meeting, or which have appeared in the Journal.)

- “ A note on the diffusion law as applied to diffusion in solid solution.” By J. S. DUNN.
- “ The hydration of electrolytes and the viscosity of their aqueous solutions.”  
By N. DE KOLOSSOWSKY.
- “ Hydrolysis of the *d*-glucosides of *d*- and *l*-methyl *n*-hexyl carbinol with emulsin.” By S. MITCHELL.
- “ Anticathodic luminescence of some organic substances.” By J. K. MARSH.
- “ The photochemical decomposition of aqueous oxalic acid solutions.” By A. J. ALLMAND and L. REEVE.
- “ The photochemical decomposition of aqueous formic acid solutions.” By A. J. ALLMAND and L. REEVE.
- “ An unproven multiplicity of elements.” By E. F. MORRIS.
- “ The chemistry of cadinene. Part II. Compounds related to cadinene.”  
G. G. HENDERSON and J. M. ROBERTSON.
- “ Nitration of phenol.” By S. VEIBEL.

- “Contribution to the physical chemistry of complex salts. Part I. Transport numbers of copper salicylate.” By W. E. HAMER and C. R. BURY.
- “The specific heats of hydrocyanic acid. A reply.” By E. H. INGOLD.
- “Colour and molecular geometry. Part V. A search for a crucial test of colour theories.” By J. MOIR.
- “Studies in the benzoin series. Part I. Formation and constitution of mixed benzoin.” By W. DORAN and P. J. UDALL.
- “Interaction between hydrated silica and neutral electrolytes in its relation to the nature of hydrolytic adsorption.” By J. N. MUKHERJEE, B. C. GHOSH, K. KRISHNAMURTI, G. N. GHOSH, S. K. MITRA, and B. C. ROY.
- “On the diffusion of zinc in the  $\alpha$ -series of solid solution in copper.” By J. S. DUNN.
- “The action of hydrogen fluoride on compounds of selenium and tellurium. Part III. Solid hydrofluorates of tellurium dioxide.” By E. B. R. PRIDEAUX, J. O’N. MILLOTT, and J. W. BLOOD.
- “The separation of uranium from iron and its determination as fluoride.” By J. B. MURGATROYD.
- “The supposed molecular asymmetry of pentaerythritolspiranes.” By A. FAIRBOURNE, J. W. WOODLEY, and G. E. FOSTER.
- “The alkaline hydrolysis of esters in aqueous-alcoholic solutions.” Part II. By E. L. SMITH.
- “Melting-point curves of optical isomers in the camphor series.” By J. D. M. ROSS and I. C. SOMERVILLE.
- “A synthesis of some substituted 3-methyl quinolines.” By S. G. WILLI-MOTT and I. A. SIMPSON.
- “Crystalline tetramethyl  $\beta$ -methylfructoside.” By W. N. HAWORTH, E. L. HIRST, and A. LEARNER.
- “The metallic compounds of certain monoximes and the structure of the oximes.” By T. W. J. TAYLOR and E. K. EWBANK.
- “The relative stability of the quinoline and indolinone rings.” By J. A. AESCHLIMANN.
- “Studies in the chemistry of oils and fats. Part I. The preparation of mono- and di-palmitins.” By W. BRASH.
- “Germanium. Part III. Some salts of germanic acid.” By W. PUGH.
- “Aminobenzthiazoles. Part V. The unsaturation of heterocyclic rings of the thiazole type and the stability of the bromides of the *l*-alkylamino-benzthiazole series.” By R. F. HUNTER.
- “Aminobenzthiazoles. Part VI. The addition of bromine to nascent tautomeric systems of the aminothiazole type and the mobility and unsaturation of the 5-bromo-*l*-alkylaminobenzthiazole system.” By R. F. HUNTER and C. SOYKA.
- “Selective solvent action. Part VI. The effect of temperature on the solubilities of salts in aqueous alcohol.” By R. WRIGHT.
- “The velocity of saponification of mono- and di-substituted chloro- and methoxy-derivatives of ethyl benzoate.” By W. BLAKEY, H. MCCOMBIE, and H. A. SCARBOROUGH.
- “The influence of dissolved salts on the mutual miscibility temperature of the systems ethyl alcohol and methyl alcohol with paraffins.” By E. J. HOWARD and W. H. PATTERSON.
- “The density of calcium carbonate hexahydrate.” By J. HUME and B. TOPLEY.
- “The dielectric constants of liquid organic mixtures.” By R. N. KERR.



- "The spectra of the phosphorescent flames of carbon disulphide and ether." By H. J. EMELÉUS.
- "The preparation and hydrolysis of the isomeric azoxybenzyl bromides." By J. B. SHOESMITH and W. E. TAYLOR.
- "The systems sodium iodide-acetone and sodium iodide-methyl ethyl ketone." By A. E. WADSWORTH and H. M. DAWSON.
- "Elimination of the amino-group of tertiary amino-alcohols. Part IV. The displacement of the amino- by the hydroxy-group." By A. MCKENZIE and R. ROGER.
- "The formation of phenylhydrazones. Part I. The mechanism of the reaction." By J. E. HUMPHRIES and R. B. STRATHDEE.
- "The influence of substituents on the reactivity of the amino-group in various substituted anilines." By J. E. HUMPHRIES and J. BURNS.
- "The molecular scattering of light in aqueous solutions. Part I." By S. VENKATESWARAN.
- "Miscibility tests of dilute solutions of chromic chloride hexahydrates." By J. E. HOWARD and W. H. PATTERSON.
- "The passivity of metals. Part I. The isolation of the protective film." By U. R. EVANS.
- "Aminobenzthiazoles. Part VII. The 2-alkylamino- $\beta$ -naphthathiazole system." By G. M. DYSON, R. F. HUNTER, and C. SOYKA.
- "Preparation of the 5-halogenoresorcinols." By H. H. HODGSON and J. S. WIGNALL.
- "The basic sulphate of copper. A reply." By H. T. S. BRITTON.
- "The conductivity of phosphoric acid solution at 0° C." By A. N. CAMPBELL.
- "The ignition of gases by the explosion-wave. Part I. Carbon monoxide and hydrogen mixtures." By C. CAMPBELL and D. W. WOODHEAD.
- "Some derivatives of stilbene." By J. N. ASHLEY.
- "The mercuration of aromatic substances. Part III. *p*-Nitrotoluene." By S. COFFEY.
- "A new scaly variety of aluminium hydroxide." By P. NEOGI and A. K. MITRA.
- "The ignition of gases. Part VI. Ignition by flames. Mixtures of the paraffins with air." By N. S. WALLS and R. V. WHEELER.
- "Studies of electrolytic polarisation. Part IV. The electrodeposition potentials of iron, cobalt, and nickel." By S. GLASSTONE.
- "Studies of electrolytic polarisation. Part V. The electrodeposition potentials of alloys of iron, cobalt, and nickel." By S. GLASSTONE.
- "Acid and salt effects in catalysed reactions. Part II. The minimum reaction velocities for acid-salt mixtures." By H. M. DAWSON and N. C. DEAN.
- "The interaction of thiocarbonyl chloride with chloro-substituted anilines and the inhibitory action of *ortho*-substituents." By G. M. DYSON, H. J. GEORGE, and R. F. HUNTER.
- "The colour produced by the action of light on concentrated solutions of ammonium thiocyanate." By E. A. WERNER and K. C. BAILEY.
- "The mechanism of Kolbe's electrolysis." By D. A. FAIRWEATHER and O. J. WALKER.
- "The combustion of complex gaseous mixtures. Part III. The inflammation of mixtures of carbon monoxide and hydrogen with air in a closed vessel." By G. B. MAXWELL, W. PAYMAN, and R. V. WHEELER.
- "The nitration of 2-, 3-, and 4-phenylpyridines." By R. FORSYTH and F. L. PYMAN.

- “Cyclic organo-metallic compounds. Part II. Tellurylium compounds, a new series of intensely coloured tellurium derivatives. The migration of anions in solids.” By H. D. K. DREW.
- “The periodic electrochemical passivity of iron, cobalt, nickel, and aluminium.” By E. S. HEDGES.
- “Arrangement for alternating current electrolysis.” By H. J. S. SAND and W. V. LLOYD.
- “Unsaturated acids of the crotonic acid series. Part II. Crotonic acid.” By M. A. PHILLIPS.
- “The dicarbazyls. Part I. Synthesis of 3:3'-dicarbazyl.” By S. H. TUCKER.
- “Synthesis of some derivatives of methylenedioxybenzene.” By W. H. PERKIN and V. M. TRIKOJUS.
- “Solubility influences. Part II. The effect of various salts on the solubility of ethyl acetate in water.” By S. GLASSTONE, D. W. DIMOND, and E. C. JONES.
- “Solubility influences. Part III. The salting-out effect of mixtures on aqueous solutions of ethyl acetate.” By S. GLASSTONE, D. W. DIMOND, and E. R. HARRIS.
- “Some reactions of carbonylhydrazide. Part I.” By A. C. BROWN, E. C. PICKERING, and F. J. WILSON.
- “Investigations in the diphenyl series. Part III. Some derivatives of 4-hydroxydiphenyl.” By F. BELL and J. KENYON.
- “4-Amino-3-nitro- and the 3:4-dihalogeno-benzaldehydes.” By H. H. HODGSON and H. G. BEARD.
- “Studies in the substituted di-aryl ethers. Part I. Di-*p*-tolyl ether.” By J. REILLY, P. J. DRUMM, and H. S. B. BARRETT.
- “The propagation of flame in mixtures of methane and air. Part V. The movement of the medium in which the flame travels.” By W. R. CHAPMAN and R. V. WHEELER.
- “The oxidation of ammonium sulphide.” By M. P. APPLEBEY and J. A. LANYON.
- “Benzidine monohydrate, and notes on recorded melting points of benzidine.” By R. J. W. LE FÈVRE and E. E. TURNER.
- “The nature of the alternating effect in carbon chains. Part X. The nitration of some derivatives of  $\beta$ -phenyl-ethylamine.” By F. R. GOSS, W. HANHAEDT, and C. K. INGOLD.
- “The nature of the alternating effect in carbon chains. Part XI. Further evidence on the substitution of benzylamine salts.” By J. W. BAKER and C. K. INGOLD.
- “The preparation of *cis*hexahydrohomophthalic acid.” By G. A. R. KON and M. QUDRAT-I-KHUDA.
- “Explosions in closed vessels: after-burning.” By O. C. DE C. ELLIS and R. V. WHEELER.
- “Molecular structure in solution. Part I. The densities and viscosities of aqueous solutions of cobalt chloride and hydrochloric acid.” By O. R. HOWELL.
- “The partial esterification of polyhydric alcohols. Part IV. The oxidation of allyl esters to  $\alpha$ -monoglycerides.” By A. FAIRBOURNE and G. E. FOSTER.
- “The partial esterification of polyhydric alcohols. Part V. The  $\alpha$ -structure of alleged ' $\beta$ '-monoglycerides.” By A. FAIRBOURNE and G. E. FOSTER.
- “The halogenation of 2:6-dimethylbenzobisthiazole and of 3:5-diphenyl-

- imino 2 : 4-diphenyltetrahydro 1 : 2 : 4-thiodiazole. A correction." By R. F. HUNTER.
- "Ferric and manganese dichromates." By S. HUSAIN and J. R. PARTINGTON.
- "Orientation effects in the diphenyl series. Part IV. The nitration of diphtalylbenzidine." By R. J. W. LE FÈVRE and E. E. TURNER.
- "A phase-rule study of the zinc-, cadmi-, mercuri-, and nickelocyanides of potassium." By A. S. CORBET.
- "Some co-ordinated mercaptides." By A. M. DRUMMOND and D. T. GIBSON.
- "The constituents of oil of Supa. A new natural source of copaene." By G. G. HENDERSON, W. M'NAB, and J. M. ROBERTSON.
- "The removal of oxygen from commercial carbon dioxide." By N. H. HARTSHORNE and J. F. SPENCER.
- "A clip for securing paper covers on funnels and beakers." By N. H. HARTSHORNE.
- "Low-temperature oxidation at charcoal surfaces. Part III. The behaviour of blood charcoal and the influence of temperature on the reaction rate." By E. K. RIDEAL and W. M. WRIGHT.
- "Dihydroisoindole-1 : 3-dicarboxylic acid." By W. A. P. CHALLENGER and C. K. INGOLD.
- "The structure of the benzene nucleus. Part V. Some *meso*-derivatives of anthracene." By C. K. INGOLD and P. G. MARSHALL.
- "The constitution of the acid formed by the action of sulphuric acid on camphorquinone." By M. B. BHAGVAT and J. L. SIMONSEN.
- "The decomposition of substituted carbamyl chlorides by hydroxy-compounds. Part III. The influence of substituent groups." By T. W. PRICE.
- "The absolute density and coefficient of expansion of silicon tetrachloride." By P. L. ROBINSON and H. C. SMITH.
- "The condensation of benzidine with carbamide." By R. J. W. LE FÈVRE and E. E. TURNER.
- "Investigations in the diphenyl series. Part IV. The halogenation of 4-aminodiphenyl." By J. KENYON and P. H. ROBINSON.
- "The movement of flame in closed vessels: correlation with development of pressure." By O. C. DE C. ELLIS and R. V. WHEELER.
- "The resolution of coal by means of solvents. Studies in the composition of coal." By C. COCKRAM and R. V. WHEELER.
- "The 'uniform movement' of flame in mixtures of hydrogen and air." By E. H. M. GEORGESON and F. J. HARTWELL.
- "Note on reaction of titanium tetrachloride with ethyl alcohol." By W. R. ORMANDY and E. C. CRAVEN.
- "The oxidation of nitrophenylcyanoacetates." By A. FAIRBOURNE and H. R. FAWSON.
- "The nitration of *s*-methylthiouaiacol." A criticism. By A. POLLARD and R. ROBINSON.
- "The isomerism of molybdenyl monochloride." By W. WARDLAW and R. L. WORMELL.
- "The vapour pressures of mixtures of (a) methyl acetate and water; (b) methyl acetate, sucrose, and water." By A. MCKEOWN and F. P. STOWELL.
- "*iso*Erucic acid." By T. J. MIRCHANDANI and J. L. SIMONSEN.
- "The unsaturation of heterocyclic ring systems. Part I. The benzthiazole and 1 : 2-dihydrobenzthiazole system." By R. F. HUNTER.

- "The unsaturation of heterocyclic ring systems. Part II. The 2-imino 4-keto tetrahydrothiazole system." By R. F. HUNTER and H. MORLAND.
- "The inhibitory effect of substituents in chemical reactions. Part I. The reactivity of the nitrogen atom in substituted arylamines." By G. M. DYSON, H. J. GEORGE, and R. F. HUNTER.
- "Optical activity and the polarity of substituent groups. Part V. *sec.-β*-Octyl esters of some substituted acetic acids and their behaviour towards solvents." By H. G. RILE and R. K. S. MITCHELL.

## ADDITIONS TO THE LIBRARY.

### I. *Donations.*

ABDERHALDEN, EMIL. [Editor.] Handbuch der biologischen Arbeitsmethoden. Abt. III. Physikalisch-chemische Methoden, Teil B, Heft iii. Berlin 1926. pp. 385 to 594. ill. (*Recd.* 20/8/26.)

From the Publishers : Herren Urban & Schwarzenberg.

AMERICAN MEDICAL ASSOCIATION. Archives of Internal Medicine. Vol. 37, etc. Chicago 1926 +. (*Reference.*)

From the Biochemical Society.

ARNALL, FRANCIS, and HODGES, FRANCIS WILLIAM. Theoretical organic chemistry. Part I. London 1926. pp. xii + 372. ill. 10s. 6d. net. (*Recd.* 22/9/26.)

From the Publishers : Messrs. J. & A. Churchill.

BRIGGS, DENNIS BROOK. Classified problems in chemistry. London 1926. pp. viii + 152. 3s. 6d. net. (*Recd.* 6/10/26.)

From the Author.

COLEMAN, JOSEPH BERNARD, and ARNALL, FRANCIS. The preparation and analysis of organic compounds. London 1926. pp. xvi + 352. ill. 15s. net. (*Recd.* 21/6/26.)

From the Authors.

EASTMAN KODAK COMPANY. Abridged scientific publications from the Research Laboratories. Vol. IX, 1925. Rochester, N.Y. 1925. pp. 230. ill. (*Reference.*)

From the Eastman Kodak Company.

ELSDON, GEORGE DAVIDSON. The chemistry and examination of edible oils and fats : their substitutes and adulterants. London 1926. pp. xix + 521. ill. 45s. net. (*Recd.* 26/7/26.)

From the Publishers : Messrs. Ernest Benn.

EPHRAIM, FRITZ. A text-book of inorganic chemistry. English edition. By PERCY CYRIL LESLEY THORNE. London 1926. pp. xii + 806. ill. 28s. net. (*Recd.* 25/6/26.)

From the Publishers : Messrs. Gurney & Jackson.

FINDLEY, ALBERT EDWARD, and WIGGINTON, REGINALD. The practical chemistry of coal and its products. London 1921. pp. 144. ill. 12s. 6d. net. (*Recd.* 6/10/26.)

From Dr. P. E. Spielmann.

FREUNDLICH, HERBERT. Colloid and capillary chemistry. Translated from the 3rd German edition by H. STAFFORD HATFIELD. London 1926. pp. xvi + 884. ill. 50s. net. (*Recd.* 16/8/26.)

From the Publishers : Messrs. Methuen & Co.

FUCHS, WALTER. Die Chemie des Lignins. Berlin 1926. pp. xii + 328. *Rm.* 18. (*Recd.* 7/9/26.)

From the Publisher : Herr Julius Springer.

GEOLOGICAL SURVEY OF ENGLAND AND WALES. Special reports on the mineral resources of Great Britain. Vols. I—III. London 1915. pp. iv + 59, iv + 93, iv + 57. ill. (*Recd.* 6/10/26.)

From Dr. P. E. Spielmann.

HOWE, HARRISON E. Chemistry in the world's work. London 1926. pp. viii + 244. ill. 15s. net. (*Recd.* 6/10/26.)

From the Publishers : Messrs Chapman & Hall.

IMPERIAL COLLEGE CHEMICAL SOCIETY. Journal. Vol. V, containing papers read during the session 1925—1926. London 1926. pp. 68. (*Reference.*)

From the Society.

INSTITUTION OF CIVIL ENGINEERS. First report of the Committee appointed to investigate the deterioration of structures of timber, metal and concrete exposed to the action of sea-water. Edited by P. M. CROSTHWAITE and GILBERT R. REDGRAVE. London 1920. pp. 302. ill. 30s. net. (*Recd.* 30/9/26.)

From the Institution.

KALMUS, H. T. [and others]. Researches on cobalt and cobalt alloys. [Canada Department of Mines.] Parts I and II. Ottawa 1913—1914. pp. x + 36, viii + 48. ill. (*Recd.* 6/10/26.)

From Dr. P. E. Spielmann.

KOLTHOFF, I. M., and FURMAN, N. HOWELL. Potentiometric titrations : a theoretical and practical treatise. New York 1926. pp. xii + 346. ill. 22s. 6d. net. (*Recd.* 18/8/26.)

From the London Publishers : Messrs. Chapman & Hall.

LEOPOLDINA. Bericht der Kaiserlich Deutschen Akademie der Naturforscher zu Halle. Vol. I. Leipzig 1926. pp. viii + 156. ill. (*Reference.*)

From the Academy.

LEWES, VIVIAN BYAM. Oil fuel. London [1913]. pp. 262. ill. (*Recd.* 6/10/26.)

From Dr. P. E. Spielmann.

NEDERLANDSCH-INDISCHE APOTHEKERS-VEREENIGING. Pharmaceutisch Tijdschrift. Vol. 3, etc. Weltevreden 1926 +. (*For circulation.*)

From the Biochemical Society.

NERNST, WALTER. The new heat theorem : its foundations in theory and experiment. Translated from the 2nd German edition

by GUY BARR. London 1926. pp. xvi + 282. ill. 12s. 6d. net. (*Recd.* 16/8/26.) From the Publishers: Messrs. Methuen & Co.

NOYES, WILLIAM ALBERT. Organic chemistry. New York 1926. pp. xviii + 678. ill. \$3.50 net. (*Recd.* 23/7/26.)

From the Publishers: Messrs. Henry Holt & Co.

ORGANIC SYNTHESSES: an annual publication of satisfactory methods for the preparation of organic chemicals. Vol. VI. Edited by HENRY GILMAN [and others]. New York 1926. pp. viii + 120. ill. (*Reference.*) 7s. 6d. net.

From the London Publishers: Messrs. Chapman & Hall.

PAN-PACIFIC SCIENCE CONGRESS, Australia 1923. Proceedings. Held under the auspices of the AUSTRALIAN NATIONAL RESEARCH COUNCIL. Edited by GERALD LIGHTFOOT. 2 vols. Melbourne [1923]. pp. xx + 1024, x, 1025 to 1678 + [354]. ill. (*Reference.*)

From the Australian National Research Council.

PAULI, WOLFGANG. Eiweisskörper und Kolloide: zwei Vorträge für Biologen und Chemiker. Wien 1926. pp. iv + 32. ill. *Rm.* 2.40. (*Recd.* 13/7/26.)

From the Publisher: Herr Julius Springer.

PHYSICS IN INDUSTRY. Vol. III. Electrical precipitation: a lecture delivered before the Institute of Physics. By SIR OLIVER LODGE. London 1925. pp. 40 + 5 plates. 2s. 6d. net. (*Recd.* 1/7/26.)

From the Institute of Physics.

PLIMMER, ROBERT HENRY ADERS. Practical organic and biochemistry. New edition. London 1926. pp. x + 568. ill. 21s. net. (*Recd.* 4/11/26.)

From the Publishers: Messrs. Longmans, Green & Co.

RAMSEY, ALBERT R. J., and WESTON, H. CLAUDE. Artificial dye-stuffs: their nature, manufacture, and uses. London 1917. pp. x + 212. ill. (*Recd.* 6/10/26.) From Dr. P. E. Spielmann.

READ, JOHN. A text-book of organic chemistry: historical, structural and economic. London 1926. pp. xii + 680. ill. 12s. 6d. net. (*Recd.* 11/9/26.)

From the Author.

RIDEAL, ERIC KEIGHTLEY. An introduction to surface chemistry. Cambridge 1926. pp. x + 336. ill. 18s. net. (*Recd.* 26/7/26.)

From the Publishers: The Cambridge University Press.

ROSENMUND, K. W. Hilfsbuch zur Ausführung der qualitativen Analyse. Berlin 1926. pp. viii + 88. ill. *M.* 4.20. (*Recd.* 13/7/26.)

From the Publishers: Herren Urban & Schwarzenberg.

ROSSMÄSSLER, F. A. Lehrbuch der Verarbeitung der Naphtha oder des Erdöles auf Leucht- und Schmieröle. Wien 1886. pp. xx + 106. ill. (*Recd.* 6/10/26.)

From Dr. P. E. Spielmann.

ROWLEY, HANNAH TERESA, and FARRELL, HELEN W. Principles of chemistry applied to the household. Boston 1918. pp. xiv + 284. ill. (*Recd.* 6/10/26.) From Dr. P. E. Spielmann.

SILBERMANN, HENRI. Hilfsapparate für den Färber und Koloristen. An Hand der deutschen Patentliteratur 1913—1925. Leipzig 1926. pp. x + 174 + xlii. ill. *M.* 9.65. (*Recd.* 20/7/26.)

— Maschinen zum Bedrucken von Textilstoffen Garndruck, Zeugdruck, Tapetendruck. An Hand der deutschen Patentliteratur 1913—1925. Leipzig 1926. pp. xii + 198 + lxvi. ill. *M.* 13.90. (*Recd.* 20/7/26.) From the Publisher: Dr. Max Jänecke.

STONER, EDMUND C. Magnetism and atomic structure. London 1926. pp. xiv + 372. ill. 18s. net. (*Recd.* 11/9/26.)

From the Author.

TABLES ANNUELLES DE CONSTANTES et données numériques de chimie, de physique et de technologie. Vol. V. 1917—1922. Part ii. Paris 1926. pp. lii, 805 to 1934. (*Reference.*)

From the Comité International.

THENIUS, GEORG. Die Fabrikation der Leuchtgase nach den neuesten Forschungen. Wien 1891. pp. xvi + 623. ill. (*Recd.* 6/10/26.) From Dr. P. E. Spielmann.

THOMS, HERMANN. [Editor.] Handbuch der praktischen und wissenschaftlichen Pharmazie. Vol. V. Part i. Berlin 1926. pp. 288. ill. *M.* 10. (*Recd.* 20/9/26.)

From the Publishers: Herren Urban & Schwarzenberg.

TOKYO. *Imperial University*. Journal of the Faculty of Science. Section I. Mathematics, astronomy, physics, chemistry. Vol. I, etc. Tokyo 1925 +. (*Reference.*) From the University.

UKRANIAN CHEMICAL JOURNAL. Vol. I, etc. 1925 +. (*Reference.*) [In Russian.]

UNIVERSIDAD NACIONAL DE LA PLATA. Revista de la Facultad de Ciencias Químicas. Vol. I, etc. La Plata 1923 +. (*Reference.*)

From the University.

WOODWARD, WILLIAM EDWARD. The metallography of steel and cast iron. London 1926. pp. xii + 144. ill. 15s. net. (*Recd.* 25/6/26.) From the Publishers: Messrs. Crosby Lockwood & Son.

## II. *By purchase.*

ALEXANDER, JEROME. [Editor.] Colloid chemistry, theoretical and applied. By selected international contributors. Vol. I. Theory and methods. New York 1926. pp. 974. ill. 60s. 6d. net. (*Recd.* 14/10/26.)

CHANDLER, CHARLES DE FOREST, and DIEHL, WALTER S. Balloon and airship gases. New York 1926. pp. x + 226. ill. 17s. 6d. net. (*Recd.* 8/10/26.)

FRIEND, JOHN NEWTON. [Editor.] A text-book of inorganic chemistry. Vol. VII. Part iii. Chromium and its congeners. By REECE HENRY VALLANCE and ARTHUR ALFRED ELDRIDGE. London 1926. pp. xxvi + 380. (*Reference.*) 18s. net.

FÜRTH, OTTO. Lehrbuch der physiologischen und pathologischen Chemie: 2nd edition of "Probleme der physiologischen und pathologischen Chemie." Vol. I, i and ii. Leipzig 1925-6. pp. xiv + 416. *Rm.* 30. (*Recd.* 31/8/26.)

HEVESY, GEORGE, and PANETH, FRITZ. A manual of radioactivity. Translated by ROBERT W. LAWSON. Oxford 1926. pp. xx + 252. ill. 15s. net. (*Recd.* 14/10/26.)

HIRSCH, F. The transport and handling of mineral acids. London 1926. pp. 140. ill. 6s. net. (*Recd.* 8/10/26.)

HUNZIKER, OTTO F. Condensed milk and milk powder. 4th edition. La Grange, Ill. 1926. pp. xvi + 619. ill. 30s. net. (*Recd.* 14/10/26.)

LEWIS, WARREN K., and RADASCH, ARTHUR H. Industrial stoichiometry: chemical calculations of manufacturing processes. New York 1926. pp. xii + 174. ill. 12s. 6d. net. (*Recd.* 14/10/26.)

LIDDELL, DONALD M. [Editor.] Handbook of non-ferrous metallurgy. Prepared by a staff of specialists. 2 vols. New York 1926. pp. xii + 692, vi, 693 to 1440. ill. 60s. net. (*Recd.* 14/10/26.)

LISTER, JOHN EDWARD, and HARRIS, C. HARMAN. Mechanical draught. London 1926. pp. 138. ill. 6s. net. (*Recd.* 8/10/26.)

MACLEOD, JOHN JAMES RICKARD. Carbohydrate metabolism and insulin. London 1926. pp. xii + 358. ill. 18s. net. (*Recd.* 14/10/26.)

MONKHOUSE, ALLAN. Electrical insulating materials . . . with a full description of the methods of testing. London 1926. pp. xvi + 392. ill. 21s. net. (*Recd.* 14/10/26.)

MONYPENNY, JOHN HENRY GILL. Stainless iron and steel. London 1926. pp. x + 304. ill. 21s. net. (*Recd.* 14/10/26.)

PARRISH, PERCY. Sulphuric acid reaction chambers. London 1925. pp. 160. ill. 6s. net. (*Recd.* 8/10/26.)

SCHOTZ, SCHACHNO PEISACH. Synthetic rubber. London 1926. pp. 144. ill. 21s. net. (*Recd.* 14/10/26.)

SCHULZE, HANS [and others]. Klassische Arbeiten über kolloide Lösungen. Edited by EMIL HATSCHKE. (Ostwald's *Klassiker*, No. 217.) Leipzig 1926. pp. iv + 172. *M.* 8.80 net. (*Recd.* 15/6/26.)

SMITHELLS, COLIN J. Tungsten: a treatise on its metallurgy, properties and applications. London 1926. pp. viii + 168. ill. 21s. net. (*Recd.* 14/10/26.)



SPELLER, FRANK N. Corrosion, causes and prevention: an engineering problem. New York 1926. pp. xiv + 622. ill. 30s. net. (*Recd.* 14/10/26.)

THOM, CHARLES, and CHURCH, MARGARET B. The Aspergilli. Baltimore 1926. pp. x + 272. ill. 32s. 6d. net. (*Recd.* 14/10/26.)

### III. Pamphlets.

ALSBERG, CARL LUCAS, and GRIFFING, E. P. Effects of fine grinding upon flour. (From *Cereal Chemistry*, 1925, 2.)

CANNAN, ROBERT KEITH, COHEN, BARNETT, and CLARK, WILLIAM MANSFIELD. Studies on oxidation-reduction. X. Reduction potentials in cell suspensions. (*U.S. Public Health Reports*, 1926, Supplement No. 55.)

CLARK, WILLIAM MANSFIELD, COHEN, BARNETT, and GIBBS, HARRY DRAKE. Studies on oxidation-reduction. VIII. Methylene blue. (From the *U.S. Public Health Reports*, 1925, 40.)

——— Studies on oxidation-reduction. IX. A potentiometric and spectrophotometric study of meriquinones of the *p*-phenylene diamine and the benzidine series. (*U.S. Public Health Reports*, 1926, Supplement No. 54.)

ELVOVE, ELIAS. A method for the examination of neoarsphenamine and sulfarsphenamine. (From the *U.S. Public Health Reports*, 1925, 40.)

GIBBS, HARRY DRAKE, COHEN, BARNETT, and CANNAN, ROBERT KEITH. Studies on oxidation-reduction. VIII. A study of dichloro substitution products of phenol indophenol. (From the *U.S. Public Health Reports*, 1925, 40.)

GRÜN, RICHARD. Thermische Untersuchungen an Hochfenschlacken. Düsseldorf 1925. pp. 39. ill.

MASON, THOMAS G., and WRIGHT, CHARLES HAROLD. A survey of factors affecting the development of the cotton plant in the Oyo and Abeokuta provinces of Southern Nigeria. (From the *Annual Bulletin, Dept. Agric. Nigeria*, 1925, 4.)

MELS, WILLEM HENDRIK VAN. Werking van gehalogeneerde zuren met sulfieten. Baarn 1926. pp. xiv + 124.

MILLER, LEWIS B. A study of the effects of anions upon the properties of "alum flocc." (From the *U.S. Public Health Reports*, 1925, 40.)

MINES DEPARTMENT. *Safety in Mines Research Board*. Paper No. 21. Flameproof electrical apparatus for use in coal mines. Second report—perforated plate protection. By C. S. W. GRICE and RICHARD VERNON WHEELER. London 1926. pp. 26. ill.