

# PROCEEDINGS

OF THE

## CHEMICAL SOCIETY.

A meeting under the auspices of the Society was held on November 30th, 1933, in the Chemistry Lecture Theatre of the University of Manchester, Dr. R. H. PICKARD, D.Sc., Ph.D., F.R.S., Vice-President, in the Chair.

Professor A. J. ALLMAND, M.C., D.Sc., F.R.S., gave a lecture entitled "The Relations between Photochemical and Thermochemical Reactions." The kinetics of unimolecular and bimolecular thermal reactions, and primary photochemical processes were dealt with, and the way in which thermal reactions often followed initial photochemical reactions was described.

Following a discussion, a vote of thanks to the Lecturer, proposed by Mr. P. Chorley and seconded by Mr. D. C. Henry, was carried with acclamation.

Ordinary Scientific Meeting, Thursday, January 18th, 1934, at 8 p.m., Professor G. T. MORGAN, O.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.
John B. Hoblyn .....	June 20th, 1918.	Dec. 24th, 1933.
Edward Watkin Lewis .....	Dec. 7th, 1899.	Oct. 28th, 1933.
George Tate .....	June 16th, 1881.	Nov. 24th, 1933.
Vargas J. M. Vergara .....	Dec. 1st, 1887.	Dec. 3rd, 1933.

The PRESIDENT announced that

1. The names of the members of Council who retire at the next Annual General Meeting, and who are ineligible for the same office until after the lapse of one year, are as follows :

*Vice-Presidents* who have filled the office of President : Professor H. E. ARMSTRONG and Professor J. F. THORPE.

*Vice-Presidents* who have not filled the office of President : Dr. F. A. FREETH and Dr. R. H. PICKARD.

*Honorary Secretary* : Professor T. S. MOORE.

*Ordinary Members of Council*—

(a) *Town Members* : Mr. C. R. BAILEY, Professor C. R. HARINGTON, and Dr. I. S. MACLEAN.

(b) *Country Members* : Professor W. N. HAWORTH and Professor F. M. ROWE.

In April 1933, the Council appointed Dr. E. F. Armstrong as Vice-President until the next Annual General Meeting to fill the vacancy caused by the elevation of Professor G. T. Morgan from this office to the Presidency. The Council has also accepted the resignation of Professor T. Slater Price from the office of Vice-President. These two vacancies, therefore, also fall due to be filled, increasing the number of vacant places among the Vice-Presidents (who have not filled the office of President) from two to four.

NOTICE is hereby given that in accordance with the Bye-Laws the following vacant places in the Council fall due to be filled at the Annual General Meeting of the Society,

which will be held at the University, Edgbaston, Birmingham, on Thursday, March 22nd, 1934, at 3 p.m. :

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

*Ordinary Members of Council—*

- (a) *Town Members* (*i.e.* those living within a radius of 50 miles from Charing Cross) ..... *Three vacancies.*  
 (b) *Country Members* (*i.e.* those living beyond a radius of 50 miles from Charing Cross) ..... *Two vacancies.*

In accordance with Bye-Law VI the Council has made the following nomination :

*Honorary Secretary* : Dr. H. J. T. ELLINGHAM.

Fellows are reminded that nominations for any of the above vacancies may be made in writing signed by at least twenty Fellows, and must be received by the Secretaries at the Society's Rooms not later than the 14th day of February, 1934. Every nomination must relate to one vacant place only, and must be accompanied by a signed declaration by the nominee that he is willing to accept office if elected. Forms of nomination can be obtained on application to the Assistant Secretary.

2. The Council has accepted an invitation from Fellows resident in Birmingham to hold the next Annual General Meeting and Anniversary Dinner in that City in March, 1934. The Lord Mayor and Corporation of the City of Birmingham will honour the Society by holding a Civic Reception on Wednesday, March 21st, and the Chancellor, Council, and Senate of the University of Birmingham have invited the Council to hold its Annual General Meeting in the University Buildings on Thursday, March 22nd, at 3 p.m. The Anniversary Dinner will be held the same evening at the Grand Hotel at 7 for 7.30 p.m. Visits of interest are being arranged and full particulars will be sent to Fellows at the end of this month. The Council hopes that the occasion will be marked by a large attendance of Fellows and others associated with chemistry who reside in the Midlands, and that in view of the special railway facilities afforded and the accessibility of Birmingham many Fellows from London and other parts of the country will also be present.

Messrs. C. Ockrent, T. L. Parkinson, W. E. J. Hansford, H. A. Dane, and Miss E. K. Parsons were formally admitted Fellows of the Chemical Society.

Forms of Recommendation for Fellowship were read for the first time in favour of :

Bernard William Bryant, B.A., B.Sc., Red House Farm, Langham, Colchester, Essex.  
 Abraham Burawoy, D.Phil., 336, Watford Way, N.W. 4.  
 James Colvin, Ph.D., The University, Leeds.  
 William James Mitchell Cook, Glenside, Duke's Hill, Woldingham, Surrey.  
 Francis Raymond Cropper, B.Sc., 40, Ringmer Road, N. Moulsecombe, Brighton.  
 George Alan Earwicker, B.Sc., 49, Clifton Road, Shirley, Southampton.  
 Frederick Henry Highley, 100, Allerford Road, Catford, S.E. 6.  
 Philibert Gerard L'Ecuyer, M.A., Oriol College, Oxford.  
 Walter Frederick Loates, A.I.C., 26, Watson Avenue, East Ham, E. 6.  
 Joseph McLean Macdonald, Ph.D., 46, Brunswick Street, Edinburgh.  
 Wilfred Samuel Nathan, B.Sc., 44, Cathedral Road, Cardiff.  
 John Richard Percival O'Brien, M.A., B.Sc., 137, Corn Street, Witney, Oxon.  
 Kesavapillay Sivaramakrishna Pillay, B.A., Rubber Research Institute of Malaya, Kuala Lumpur, F.M.S.  
 Donald Plews, B.Sc., 16, Woodfield Street, Bolton, Lancs.  
 Laurence Ernest Price, 3, Friends Road, Croydon.  
 Kathleen Margaret Rogers, Kingswinford, Farnborough, Kent.  
 Edward Sharratt, B.Sc., 74, Harden Road, Leamore, Walsall.  
 James Sowler, 34, Parkfield Road, Waterloo, Liverpool, 22.  
 Henry Tod, jun., Ph.D., Carnethy, Seafeld, Roslin, Midlothian.  
 Thomas Wilkinson, 9, Grimsby Road, Cleethorpes, Lincs.  
 William Aaron Woodard, 28, Vancouver Road, Edgware, Middlesex.

The following forms of recommendation for Fellowship have been accepted by the Council under Bye-Law I (2) :

Albert Edward Broué, 66a, Darling Point Road, Edgecliff, Sydney, N.S.W., Australia.  
 Lionel Laloo Daniel, Department of Agriculture, St. Clair, Trinidad.  
 Léon Lortie, B.A., D.Sc., University of Montreal, Montreal.  
 William Tennent Shaw, c/o The Gourepore Co., Ltd., Nailati, E.B. Rly., Bengal.  
 Paul Benjamin Adolphe Weill, D.-ès-Sc., 66, Avenue de Versailles, Paris, XVI<sup>e</sup>.

Forms of Recommendation for Fellowship in favour of twenty-two Candidates were read for the second time.

The following papers were read :—

- “The structure of the thio-ether compounds of platinous and palladous chlorides.”  
 By E. G. COX, H. SAENGER, and W. WARDLAW.  
 “Chemical evidence for the planar structure of platotetrammines.” By H. D. K. DREW  
 and F. S. H. HEAD.  
 “Active charcoal. Part II. The constitution of the surface and the activated adsorption  
 of water.” By C. OCKRENT.

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List of papers, or abstracts thereof, received between December 21st, 1933, and January 18th, 1934. (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.)

- “Conversion of 2-*p*-toluenesulphonyl  $\beta$ -methylglucoside into methyl *epi*glucosamine.”  
 By E. W. BODYCOTE, W. N. HAWORTH, and E. L. HIRST.  
 “Isolation of a crystalline dimethyl anhydro-methylhexoside. Characterisation of  
 3 : 4 : 6-trimethyl glucose.” By W. N. HAWORTH, E. L. HIRST, and L. PANIZZON.  
 “Catalytic hydrogenation of unsaturated compounds. Part II. The step-wise reduction  
 of conjugated acids.” By E. H. FARMER and L. A. HUGHES.  
 “*d*- $\Delta^{3,8(9)}$ -*p*-Menthadiene from *d*-pulegone.” By W. J. GRUBB and J. READ.  
 “Synthetical experiments in the chromone group. Part XI. A synthesis of *isoflavone*.”  
 By P. C. JOSHI and K. VENKATARAMAN.  
 “The condensation of  $\alpha$ -methylmannoside with benzaldehyde.” By G. J. ROBERTSON.  
 “Equilibrium constants in terms of activities (cryoscopic). Part III. The dissociation  
 of quinoline *o*-chlorophenoxide in benzene and *p*-dichlorobenzene.” By H. M.  
 GLASS, W. M. MADGIN, and (in part) F. HUNTER.  
 “The oxidation of phosphine in presence of tungsten and molybdenum.” By H. W.  
 MELVILLE and H. L. ROXBURGH.  
 “The formation and decomposition of phosphonium salts. Part I. The reaction between  
 alkyl bromides and tri-*n*-propyl- and tri-*n*-butyl-phosphine.” By W. C. DAVIES and  
 S. U. EVANS.  
 “Piperitone. Part XII. The two varieties of piperitol.” By J. READ and J. WALKER.  
 “Researches in the menthone series. Part XII. Isolation and characterisation of the  
*neoisomenthols*.” By J. READ and W. J. GRUBB.  
 “Phosphoric acid compounds of menthols and other alcohols.” By J. W. BLAGDEN and  
 W. E. HUGGETT.  
 “The reactions of thiocarbonyl chloride. Part III. Structure of the so-called ‘thio-  
 carbonyl benzidene.’” By G. M. DYSON and D. W. BROWNE.  
 “Reactions of unsaturated compounds. Part II. Addition of arylamines to styrene.”  
 By W. J. HICKINBOTTOM.  
 “The action of halogens on polycyclic indole derivatives. Part IV. Some reactions of  
 1-keto-1 : 2 : 3 : 4-tetrahydrocarbazole.” By A. J. MEARS, S. H. OAKESHOTT, and  
 S. G. P. PLANT.  
 “Organo-derivatives of bismuth and thallium.” By F. CHALLENGER and O. V. RICHARDS.  
 “The acid condensation of salicylaldehyde with (a) acetylacetone, (b) ethyl acetoacetate,  
 and (c) pyruvic acid.” By R. J. W. LE FÈVRE.

- "The stereochemistry of 2:2'-disubstituted diphenyls. Part IV. The diphenates of the cinchona alkaloids." By (Miss) M. S. LESSLIE and E. E. TURNER.
- "The synthesis of compounds related to the sterols, bile acid and œstrus-producing hormones. Part II. The formation of some tetracyclic hydroaromatic hydrocarbons." By J. W. COOK and C. L. HEWETT.
- "The halogenation of phenolic ethers and anilides. Part IV. The chlorination of some para-substituted anilides." By B. JONES.
- "Optically active mixed benzoin derivatives derived from (+) mandelonitrile." By A. MCKENZIE and A. L. KELMAN.
- "Catalytic hydrogenation of unsaturated compounds. Part III. Selectivity of attack in relation to the nature of the catalyst." By E. H. FARMER and L. A. HUGHES.

FORMS OF RECOMMENDATION FOR FELLOWSHIP. THE BALLOT WILL BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, FEBRUARY 15th, 1934.

BACON, REGINALD GEORGE ROBERT, 74, Hermitage Road, Finsbury Park, N. 4. British. Research Student. A.R.C.S. (1st Class); B.Sc. Hons. (1st Class), Royal College of Science, London. Student of Chemistry at the Royal College of Science, London. (*Signed by*) G. A. R. Kon, M. A. Whiteley, R. P. Linstead.

BAHL, RAMA KRISHNA, c/o Lloyd's Bank, Ltd., 67, Kingsway, W.C. British Indian. Research Student. B.Sc. and M.Sc. from Punjab University (India). Lecturer in an Intermediate College in Punjab. (*Signed by*) J. R. Partington, E. G. Carter, H. D. K. Drew.

BALFE, MICHAEL PHILIP, British Leather Manufacturers' Research Association, 20, St. Thomas' Street, S.E. 1. British. Ph.D., B.A. (London). Research Chemist, British Leather Manufacturers' Research Association. Part author, *J.C.S.*, 1930, 2554; 1933, 127. (*Signed by*) Henry Phillips, Dorothy Jordan Lloyd, J. Kenyon.

BEAVEN, PAUL RAYWOOD, 9, Elm Vale, Fairfield, Liverpool. British. Student. B.A., Oxford, 2nd Class Hons. in Chemistry. Research on the influence of the oxides of chlorine on the photochemical union of hydrogen and chlorine. (*Signed by*) H. J. George, D. L. Chapman, A. D. Ainley.

BLAIKIE, KENNETH GUY, 138, Cedar Avenue, Shawinigan Falls, Quebec, Canada. British. Research Chemist. B.A. (Cape), A.R.C.S., Ph.D. (Oxon.). Hydroxy Acid Esters, Brit. Pats. Nos. 264,143, 257,907; Prevention of Polymerisation of Vinyl Compounds, U.S. Pat. No. 1,768,434, 1927; Synthetic Resins, Brit. Pat. No. 351,082, March 25, 1929. "The Methoxy-indoles and their Derivatives," K. G. Blaikie and W. H. Perkin, jun., *J.C.S.*, 1924, 125, 296. (*Signed by*) E. Hope, S. G. P. Plant, T. W. J. Taylor.

BOON, WILLIAM ROBERT, 76, Croham Valley Road, Selsdon, Surrey. British. B.Sc., London, King's College. Research Student in Biochemistry. (*Signed by*) Samuel Smiles, John L. D'Silva, William Robson.

BOYCE, ERNEST GEORGE, "Ranmore," 34, Regent Road, Surbiton, Surrey. British. Chemist. B.Sc. (London); Associate of the Institute of Chemistry. Research work on "Some Derivatives of *m*-Xylene" in the Organic Research Laboratory, East London College, under the direction of Dr. A. Robertson, 1928-29. "Some Derivatives of *m*-Xylene," *J.C.S.*, 1930, 1216. Date of birth May 12th, 1910. (*Signed by*) J. R. Partington, D. C. Jones, W. H. Patterson.

BRYANT, BERNARD WILLIAM, Red House Farm, Langham, Colchester, Essex. British. Student. B.A. (2nd Class Hons. Chemistry), B.Sc., Oxford. Research on the Guareschi Reaction. (*Signed by*) H. J. George, D. L. Chapman, A. Plowman.

BURAWOY, ABRAHAM, 336, Watford Way, N.W. 4. German. Research Chemist. Dr. phil., Leipzig. Author and joint author of numerous papers chiefly published in the *Berichte der Deutschen Chemischen Gesellschaft*. (*Signed by*) C. S. Gibson, W. M. Colles, B. Levin, F. H. Brain.

CHAMBERLAIN, KENNETH ALFRED JOHN, "Elmleigh," Cookhill, nr. Alcester, Warwickshire. British. B.Sc., Birmingham. Research Student and Demonstrator in Chemistry. (*Signed by*) W. N. Haworth, E. L. Hirst, W. J. Hickinbottom, S. R. Carter, Wm. Wardlaw.

CLUER, ABRAHAM, 5, Nightingale Road, Clapton, E. 5. British. Research Student. Passed B.Sc. Hons. (1st Class), London University (degree to be awarded in 1934) after two

years' study at East London College. Date of birth Oct. 13th, 1912. (*Signed by*) J. R. Partington, G. Broughton, H. I. Stonehill.

COLVIN, JAMES, The University, Leeds. British. Demonstrator in Inorganic Chemistry. B.Sc., Ph.D. (Liverpool). Part author of various papers dealing with reactions in the solid state. *Proc. Roy. Soc.*, 1929, **A**, 125, 635; 1931, **A**, 132, 548; 1932, **A**, 137, 531; *Phil. Mag.*, 1929, **VIII**, 589; 1932, **XIV**, 1102; *Trans. Faraday Soc.*, 1931, **27**, 283; 1933, **29**, 876; *J.C.S.*, 1925, **127**, 2788. (*Signed by*) R. Whytlaw-Gray, H. S. Patterson, F. L. Usher.

COOK, DOROTHY ELLEN, 36, Hanover Road, Brondesbury, N.W. 10. English. Research Student, Bedford College, University of London. B.Sc., Special Chemistry, University of London. I desire admission to the Society in order that I may receive its publications and have access to the Library. Date of birth Dec. 20th, 1910. (*Signed by*) E. E. Turner, Mary S. Lesslie, E. E. J. Marler, B. R. Carpenter.

COOK, WILLIAM JAMES MITCHELL, "Glenside," Duke's Hill, Woldingham, Surrey. British. Chief Chemist. Assoc. Manchester College of Technology (A.M.C.T.). Higher National Certificate. Ten years in Chemical Laboratory of Metropolitan Vickers Elec. Co., Manchester, during which investigation and research upon corrosion (causes and prevention), insulating materials, fuels, synthetic resins, base-exchange materials. Experience in metallurgy and metallurgical analysis. Three years with present company, namely, the Neckar Water Softener Co., Ltd., London. (*Signed by*) Fredk. C. Eastick, J. H. Lindfield, F. Stanley Baxter.

CRANE, NORMAN CHARLES, 107, Salisbury Road, Barnet, Herts. British. Student at Royal College of Science, South Kensington. Date of birth Mar. 28th, 1914. (*Signed by*) James C. Philip, H. J. T. Ellingham, H. F. Harwood.

CROPPER, FRANCIS RAYMOND, 40, Ringmer Road, N. Moulsecombe, Brighton, Sussex. English. Research Student (for Ph.D.) at University College, London. B.Sc. (University of London), 1st Class Hons., 1933; Special Chemistry, Subsidiary Zoology. Part-time Lecturer at Brighton Technical College. Date of birth Aug. 3rd, 1911. (*Signed by*) O. L. Brady, C. K. Ingold, C. L. Wilson.

DZO, KENNETH KING-LEN, 15, Alma Square, St. John's Wood, N.W. 8. Chinese. Chemist. B.Sc. (Shanghai University). Assistant in Chemistry Department of Shanghai University. (*Signed by*) G. A. R. Kon, M. A. Whiteley, R. P. Linstead.

EARP, DONALD PERCY, 225, Western Road, Sheffield, 10. British. B.Sc., 1st Class Hons. in Chemistry, Sheffield. Research Student in Physical Chemistry. Date of birth Aug. 12th, 1912. (*Signed by*) G. M. Bennett, S. Glasstone, Arthur W. Chapman.

EARWICKER, GEORGE ALAN, 49, Clifton Road, Shirley, Southampton. British. Research Student (University College, Southampton). B.Sc., Hons., Lond. (*Signed by*) Alexander Lawson, G. H. Jeffery, S. R. Pethrick.

FLOWERDEW, FREDERICK JOHN, 87, Liverpool Road, Birkdale, Southport, Lancs. English. B.Sc. (Hons. School of Chemistry), University of Birmingham. Chemist and Druggist; Member of the Pharmaceutical Society. Works Chemist to Messrs. Bob Martin, Ltd., Southport. (*Signed by*) S. R. Carter, Wm. Wardlaw, S. D. Nicholas, W. J. Hickinbottom, E. Ashley Cooper.

HASLEWOOD, GEOFFREY ARTHUR DERING, Toc H, Mark VII, 15, Fitzroy Square, W. 1. English. Research Worker (Chemist). B.Sc., M.Sc. (Lond.). Chemical work on œstrin, and other substances from pregnancy urine, with Dr. G. F. Marrian, e.g. see *Biochem. J.*, 1932, **26**, 25, 1227; *Chem. and Ind.*, 1932, **51**, 277t. (*Signed by*) J. W. Cook, E. L. Kennaway, C. Hewett.

HENRIKSEN, RICHARD HENRY, 65, Moss Lane, Orrell Park, Liverpool, 9. British. (Diploma), M.P.S. Pharmacist, Liverpool Radium Institute and Cancer Hospital. Student in Chemistry Dept. of Liverpool Central Technical School. (*Signed by*) John D. Johnson, H. Humphreys Jones, A. E. Findley.

HIBBIT, DOUGLAS CECIL, 86, Weston Road, Strood, Kent. British. Research Student. A.R.C.S., B.Sc. (2nd Class Hons.), Royal College of Science. (*Signed by*) R. P. Linstead, Jocelyn Thorpe, James C. Philip.

HIGHLEY, FREDERICK HENRY, 100, Allerford Road, Catford, S.E. 6. English. Manufacturing Chemist. Late of Admiralty Chemist's Department, H.M. Dockyard, Portsmouth, and Manager and Director of Messrs. H. E. Burgess & Co., Ltd. Desire to receive the publications, attend the meetings, and use the Library. (*Signed by*) S. P. Schotz, George W. Ferguson, Ernest J. Parry.

HOPKINS, JOHN FRANCIS, 15, Downs Court Road, Purley, Surrey. British. Assistant in Government Laboratory. Intermediate B.Sc. Student at London University. Desire to use the Library and receive certain publications, also to attend meetings. Date of birth Aug. 23rd, 1913. (*Signed by*) J. J. Fox, R. Robertson, A. More.

HSÜ, SHING KONG, 17, Arlington Road, N.W. 1. Chinese. B.Sc., Peking University, China. Research Student in Organic Chemistry with Prof. C. K. Ingold, 1930, Demonstrator in Chemistry at Wuhan University. Lecturer, 1931-33, at Anhwei University. (*Signed by*) C. K. Ingold, C. L. Wilson, E. Isaacs.

JOHNSTON, HILDA ELLEN, 126, Clifford Gardens, Kensal Rise, N.W. 10. British. Research Student. B.Sc. (London). Nitration of di-*p*-tolyl- and di-*p*-chlorophenyl-phenylpyrylium perchlorates. Holder of Catherine Maude Pearce Scholarship for most distinguished third year student wishing to continue for fourth year. *J.C.S.*, 1932, 11, (Miss) H. E. Johnston and R. J. W. Le Fèvre. Date of birth April 10th, 1912. (*Signed by*) C. K. Ingold, C. L. Wilson, J. N. E. Day.

JOLLEY, LESLIE JOHN, 2, Holland Road, Westcliffe-on-Sea, Essex. British. Student (Royal College of Science, London). A.R.C.S. Engaged in research in chemistry. Date of birth Jan. 30th, 1912. (*Signed by*) James C. Philip, H. J. Emeléus, M. A. Whiteley, H. J. T. Ellingham.

JONES, JOHN IDRIS, "Brynderyn," Elm Tree Avenue, Aberystwyth, Cards. British. Research Student. Hons. B.Sc. (Wales). Entered the University College of Wales, Aberystwyth, as Senior Student in 1929. Now engaged on post-graduate research in the Cinnamic Acid Series. Date of birth June 27th, 1910. (*Signed by*) T. Campbell James, C. R. Bury, L. J. Hudleston, D. Gwynne Davies.

JONES, VICTOR BASIL, Coney Hill, Hayes, Kent. British. Student at Cambridge University. (*Signed by*) W. J. Pope, H. McCombie, Harold A. Scarborough.

KAKEMI, KÜCHIRÖ, The Pharmaceutical Institute of the Tokyo Imperial University. Japanese. Graduate from the Pharmaceutical Institute of the Tokyo Imperial University. Research student under Prof. S. Keimatsu in the Institute mentioned above. (*Signed by*) Yasuhiko Asahina, Shigehiko Sugasawa, Junzo Shinoda.

L'ECUYER, PHILIBERT GÉRARD, Oriel College, Oxford. Canadian. Research student with a Rhodes Scholarship. Chimiste Diplômé and Master of Arts obtained at Laval University, Quebec, Canada. I wish to receive the *Journal* of the Chemical Society and its Abstracts. (*Signed by*) D. Ll. Hammick, F. E. King, R. Robinson.

LOATES, WALTER FREDERICK, 26, Watson Avenue, East Ham, E. 6. British. Chemical Manufacturers Representative. Student, Inst. Chem. Engineers. Four years' assistant Analytical Chemist. Student following third year course. A.I.C. (*Signed by*) B. Dudley Sully, Thos. H. Durrans, L. W. E. Townsend.

LOCKHART, DIANA, 36, Hanover Road, Kensal Rise, N.W. 10. British. Research Student. B.Sc., Special Chemistry, University of London. I wish to join in order to attend the meetings and have access to the Library and receive the *Journal*. Date of birth Jan. 24th, 1911. (*Signed by*) E. E. Turner, Ruth M. Murray, Mary S. Lesslie.

MACDONALD, JOSEPH MCLEAN, 46, Brunswick Street, Edinburgh, Scotland. Scottish. Lecturer (Research Chemist). B.Sc., Ph.D., Edinburgh. "Resolution of  $\alpha$ -*m*-Hydroxyphenylethylmethylamine," etc., *J.C.S.*, 1932, 2513-2519. (*Signed by*) George Barger, C. P. Stewart, Edgar Stedman.

MCGOOKIN, ALEXANDER, Bettyhill, 26, Princes Avenue, Eastham, Cheshire. British. University Lecturer. B.Sc., Ph.D., Liverpool. Researches on Kino: Isomerism of Unsaturated Ketones. *J.C.S.*, 1924, 125, 2099; 1925, 127, 2539; 1926, 1578; 1928, 1170. (*Signed by*) A. Robertson, R. A. Morton, Wm. Doran.

MAXWELL, WILLIAM RALPH, "The Gables," Torrington Grove, Friern Park, N. 12. British. Research Student. Passed B.Sc. Special Examination of London University in July 1933, with 1st Class Hons. (*Signed by*) J. R. Partington, H. H. Hatt, H. I. Stonehill.

MILLER, CECIL HENRY, 54, Acland Road, Bournemouth, Hants. English. Research Student. A.R.C.S. (1st Class) at Royal College of Science; B.Sc. (1st Class) at Royal College of Science. To receive the *Journals*, to attend meetings, to be eligible to receive grants for research, and to make use of the library. (*Signed by*) G. A. R. Kon, M. A. Whiteley, E. H. Farmer.

MOERS, KURT, I.G. Farbenindustrie Aktiengesellschaft, Frankfurt/Main. German. Chief chemist and director of the Literature-Department. Dr.phil., University of Berlin, 1907. "Zur Kenntnis des Glycerin-Aldehyds," Berlin, 1907. (*Signed by*) Henri Busch, Georg Kränzlein, Karl Zahn.

NATHAN, WILFRED SAMUEL, 44, Cathedral Road, Cardiff. British. Student. B.Sc., University of London. *J.C.S.*, 1933, 217, 890, 1248. Date of birth Oct. 2nd, 1910. (*Signed by*) H. B. Watson, E. E. Turner, J. H. Quastel.

NEWITT, DUDLEY MAURICE, 4, Coombefield Close, New Malden, Surrey. British. Chemist. D.Sc. (London), Ph.D. (London), A.R.C.Sc. Researches upon Gaseous Reactions at High Pressures, the results of which have been published in twelve papers in the *Proceedings of the Royal Society* from 1923 to 1932. (Signed by) William A. Bone, G. Ingle Finch, L. G. Brett Parsons.

O'BRIEN, JOHN RICHARD PERCIVAL, 137, Corn Street, Witney, Oxon. British. Research Chemist. M.A., B.Sc. (Oxon.). Papers on Vitamin-B with R. A. Peters and H. Kinnersley, *Biochem. J.*, **27**, 225, 232; *J. Physiol.*, **76**, 170; *Nature*, **130**, 724. With H. Barnes and V. Reader, *Biochem. J.*, **26**, 2035; *Nature*, **131**, 617. (Signed by) R. A. Peters, S. G. P. Plant, T. W. J. Taylor.

PANETH, FRIEDRICH ADOLPH, 9, Cecil Court, Hollywood Road, S.W. 10. Austrian. Professor of Chemistry. Ph.D. (University of Vienna). Papers on Inorganic and Physical Chemistry, published in *Berichte d. Deutsch. Chem. Gesellsch.*, *Zeitschr. für physikalische Chemie*, etc. (Signed by) James C. Philip, H. V. A. Briscoe, Jocelyn Thorpe.

PEARMAN, FRANK HOWARD, 49, Grosvenor Gardens, Woodford Green, Essex. British. Research Student. I am a student of East London College and was recommended for a second class Honours Degree in Chemistry. Date of birth Nov. 15th, 1913. (Signed by) J. R. Partington, H. D. K. Drew, F. S. H. Head.

PILLAY, KESAVAPILLAY SIVARAMAKRISHNA, Assist. Soils Chemist, The Rubber Research Institute of Malaya, Kuala Lumpur, F.M.S. Indian. B.A. (Madras). Employed in the Rubber Research Institute since Feb. 1st, 1929, as a Laboratory Assistant, and promoted to the position of Assist. Soils Chemist from July 1st, 1929. I am mainly occupied with analytical work and occasionally with minor items of research. A copy of an article on "Note on the Acidity of Raw Humus in Relation to Natural Covers," where I am part author and investigator is herewith enclosed. (Signed by) B. J. Eaton, Arthur Moore, H. Tempamy.

PLEWS, DONALD, 16, Woodfield Street, Bolton, Lancs. English. Research Chemist, Leather Industry. B.Sc. (1st Class Hons.), Chemistry of Leather Manufacture, Leeds University. Leeds University, 1929-1933 (as student). Research Chemist, Messrs. W. Walker & Sons, Bolton. (Signed by) F. C. Thompson, J. W. Baker, H. M. Dawson.

PRICE, LAURENCE ERNEST, 3, Friends Road, Croydon, Surrey. English. Student. Reading Chemistry for Natural Sciences Tripos, Pt. II, Cambridge. Date of birth Jan. 8th, 1914. (Signed by) F. B. Kipping, O. H. Wansbrough-Jones, R. G. W. Norrish.

RITCHINGS, WALTER, 6, Harley Road, Sheffield, 11. British. Headmaster of Secondary School. M.Sc. (Victoria). B.Sc., 1st Class Hons. in Chemistry (Victoria). A.I.C. Senior Science Master, St. Helens and Sheffield. (Signed by) G. M. Bennett, John Evans, S. Glasstone, H. F. Coward.

ROBINSON, HAROLD VALENTINE WALKER, Plas Edwards, Towyn, Merioneth. British. B.Sc. (Wales) Bangor; M.Sc. (Wales) Aberystwyth. Science Teacher, Towyn County School, 1922 to present time. Part-time research worker at Aberystwyth, 1928-1933. Robinson and Lewis, *J.C.S.*, September 1933; Robinson and James, *ibid.*, November 1933. (Signed by) T. Campbell James, C. R. Bury, D. Gwynne Davies, L. J. Hudleston.

ROGERS, KATHLEEN MARGARET, Kingswinford, Farnborough, Kent. British. Student at Oxford University. Desire to receive publications, attend the meetings and use the library. Date of birth Dec. 30th, 1911. (Signed by) S. G. P. Plant, F. E. King, W. Baker.

ROSE, JOHN DONALD, Logastone, Greasborough, Rotherham, Yorks. British. B.A. (Oxford). Entitled to B.Sc. (Oxford). Research Student at Oxford. Fellow of the Salters' Institute of Industrial Chemistry. (With Prof. R. Robinson), *J.C.S.*, 1933, 1469. (Signed by) R. Robinson, Ernest Witham, James Walker, A. D. Ainley.

ROSENTHAL, SAMUEL AARON, 24, Brighton Square, Rathgar, Dublin. Irish. Pharmaceutical Chemist. I am a Ph.C., and Chemistry and Physics are my chief hobbies. I hope to be able to keep in touch with the subjects through the Society and its Journals. (Signed by) Geo. A. Turner, A. E. Coverdale, P. J. Fielding.

SATODA, ISAO, No. 40, 3-Chōme, Haramachi, Ushigomeku, Tokyo, Japan. Japanese. Assistant of the Pharmaceutical Institute, Tokyo Imperial University. (Signed by) Yasuhiko Asahina, Shigehiko Sugawara, Junzo Shinoda.

SHARRATT, EDWARD, 74, Harden Road, Leamore, Walsall. British. Research in Inorganic Chem. B.Sc. (1st Class Hons., Chem.), Birmingham (1933). Date of birth March 2nd, 1911. (Signed by) W. N. Haworth, Wm. Wardlaw, A. J. Cooper, W. J. Hickinbottom.

SMITH, GILBERT FREEMAN, "Hillcroft," King Lane, Alwoodley, Leeds. British. University Lecturer. B.Sc. (Wales); Ph.D. (Wales and Cambridge). Work on the Chemistry of

Solutions since 1926. Soper and Smith, *J.C.S.*, 1926, 1582; 1927, 2757; 1928, 138. Lowry and Smith, *ibid.*, 1927, 2539; 1928, 666. Smith, *ibid.*, 1931, 3257. (*Signed by*) H. M. Dawson, R. Spence, W. A. Wightman.

SOWLER, JAMES, 34, Parkfield Road, Waterloo, Liverpool, 22. British. Chemist and Director, Bell & Sons, Ltd., Liverpool. Desire to receive the publications of the Society, to attend the meetings and to use the library. (*Signed by*) W. L. Thomson, Henry E. Watt, F. Southerden.

STOTT, EMMA, 57, Headingley Lane, Leeds, 6, Yorks. British. Research Assistant. B.Sc. (Leeds); Ph.D. (Leeds). Since July of 1929, when I completed my course for the B.Sc. Degree in Hons. Chemistry, I have been engaged in research work in the Textile Chemistry Department of Leeds University. Publications: *J. Text. Inst.*, 1931, XXII, 339r; 1933, XXIV, 273r. (*Signed by*) H. Burton, W. A. Wightman, C. W. Shoppee.

TASKER, HARDWICKE SLINGSBY, New College, Oxford. British. Undergraduate. Student. Date of birth Sept. 7th, 1913. (*Signed by*) J. C. Smith, F. M. Brewer, Allan F. Walden, H. L. Bowman, E. G. J. Hartley.

TAYLOR, ARTHUR WILLIAM CHARLES, 86, Boundary Road, Hove, Sussex. British. Research Student at University College, London. B.Sc. (London). (*Signed by*) C. F. Goodeve, H. Terrey, H. J. Evans.

TOD, HENRY, jun., Carnethy, Seafield, Roslin, Midlothian. Scotch. Biochemist, Royal Edinburgh Mental Hospital. B.Sc. (Hons.) Edinburgh; Ph.D., Edinburgh. Research with Dr. H. G. Rule, 1929-31; Assistant Biochemist, Royal Infirmary, Edinburgh, research with Dr. C. P. Stewart, 1931-32; Research Biochemist, Royal Edinburgh Mental Hospital, 1932 to present date; Walter Smith Kay Research Fellow in Psychiatry, 1932-33, 1933-34. *Journal of Mental Science*, April 1933. *J.C.S.*, 1931, p. 1929. (*Signed by*) H. Gordon Rule, James Kendall, J. A. V. Butler.

TOWNEND, DONALD THOMAS ALFRED, "Briar Mount," Kents Hill Road, South Benfleet, Essex. British. Chemist. D.Sc. (London), Ph.D. (London), D.I.C. Principally researches upon gaseous combustion at high pressures, the results of which have been published in a number of papers in the *Proceedings of the Royal Society* from 1923 onwards and also in book form. *J.C.S.* One in 1923. (*Signed by*) William A. Bone, G. Ingle Finch, L. G. Brett Parsons.

VICTORY, HARRY JOHN, 2, Brynhyfyrd Avenue, Newport, Mon. British. Student at University College, London. B.Sc., London. Desirous of using library and receiving publications. Date of birth April 30th, 1912. (*Signed by*) W. Rogie Angus, Henry Terrey, L. F. Gilbert.

WANG, ABEL BAO-LEN, China House, 91, Gower Street, W.C.1. Chinese. Research Student. B.Sc. South-eastern University, Nanking. Five years assistant and one year lecturer in South-eastern Univ. Publications: two papers in *National Central Univ. (China)—Science Report*; two papers in the *Transactions of the Science Society of China*; one paper in the *Journal of the Chinese Chemical Society*. (*Signed by*) G. A. R. Kon, A. N. Dey, R. P. Linstead.

WEBB, FREDERICK CHARLES, 47, Belmont Road, West Green, N. 15. British. Research Student. A.R.C.S. (1st Class Hons.). B.Sc. (London, 1st Class Hons.) (subject to completion of three years internal study, terminating June 1934). Pursuing a course of organic research for Ph.D. Degree. (*Signed by*) G. A. R. Kon, M. A. Whiteley, E. H. Farmer.

WILKINSON, THOMAS, 9, Grimsby Road, Cleethorpes, Lincs. British. Pharmacist. Membership of the Pharmaceutical Society, Registered Chemist and Druggist. Student of Chemistry, pure and as applied to pharmacy. (*Signed by*) R. Cuthill, C. Binns, C. G. Lyons.

WOODWARD, WILLIAM AARON, 28, Vancouver Road, Edgware, Middlesex. English. Hospital Pharmacist (St. Thomas's Hospital, London); M.P.S. (Reading and London Universities). Paper published: "The Stability of Aqueous Solutions of Gallotannic Acid with Especial Reference to the Treatment of Burns" (*Quart. J. Pharm. Pharmacol.*, 1933, (VI), 3, 363). Now engaged in research work in connection with the tannin contained in maté. Desirous of using the library. (*Signed by*) H. Lucas, J. Wicliffe Peck, Edward A. Andrews.

YOUNG, JAMES HUNTER, 7, Upper Hornsey Rise, N. 19. British. B.Sc. (London); A.I.C. Assistant Chemist in Industrial Laboratory. Date of birth April 20th, 1911. (*Signed by*) R. W. West, D. H. Richardson, H. J. S. King.

Forms of Recommendation for Fellowship accepted by the Council under Bye-Law I (2):

BERGMANN, DR. ERNST, Daniel Chaim Sieff-Institute, Reehoboth, Palestine. Research Chemist. D.Ph. Numerous papers about alkali-organic compounds, dipole-moments and

molecular structure, mechanism of polymerisation reactions, free radicals, Walden inversion, sexual hormones and related compounds, etc. *Textbook of Organic Chemistry* (together with Prof. Schlenk). Until May 1933, Lecturer at the University in Berlin. (*Signed by*) Harold Davies, Ch. Weizmann.

BOSE, SAILESH CHANDRA, P.O. Dhakeswari Mills, Narayanganj, Bengal, India. British subject. Textile Chemist and Colorist. Obtained a first-class certificate of merit from Die Hochere Fachschule Fuer Textil-Industrie, Berlin, in Textile Chemistry. Only Universities in Germany are empowered to issue degrees. In charge of the Chemical laboratory of the Dhakeswari Cotton Mills, Ltd., one of the biggest cotton mills in India (Bengal Presidency). Contributed an article entitled "Some Hints on Size-mixing" in the *Indian Textile Journal*, Bombay (1928-29). (*Signed by*) P. K. Dutt.

BROUÉ, ALBERT EDWARD, Sydney, Australia, and Auckland, N.Z. (66A, Darling Point Road, Edgecliff, Sydney). British. Chemical Engineer. Pass in Organic and Inorganic Chemistry, Kennedy's Grammar School, Goulburn, N.S.W., after Matriculation. Conduct of own Laboratory at Sydney, Australia. Desire to receive the publications and to use the Library. (*Signed by*) G. T. Morgan.

DANIEL, LIONEL LALOO, Eastern Main Road, St. Joseph (St. Augustine), Trinidad, B.W.I. British Indian. Assistant to Agricultural Chemist, Department of Agriculture, Government of Trinidad. Assist. to Agricultural Chemist since 1920. Assisted generally in work performed by Agricultural Chemist, chiefly soils and analysis of sugar-cane. Registered student, Institute of Chemistry, Great Britain and Ireland, 1927-30. Now studying to take the A.I.C. Examination in London. Desire admission into Society in order to keep in touch with the latest advance in chemical science, also with a desire to contribute articles to the *Journal*. (*Signed by*) Joseph de Verteuil.

KOETSCHET, JOSEPH, 6, Boulevard Suchet, Paris 16<sup>e</sup>. Swiss. Administrateur de la Société des Usines chimiques Rhône-Poulenc. (*Signed by*) W. J. Pope.

LIGHTENING, LIONEL STRATTON-, c/o Rhodesia Chrome Mines, Ltd., Railway Block, Selukwe, S. Rhodesia. British. Analytical Chemist and Assayer. Chief Chemist and Assayer, Rhodesia Chrome Mines, Ltd.; The African Chrome Mines, Ltd.; The Chrome Corp. of S.A., Ltd.; Charterland and General Exploration Co., Ltd.; Bechuanaland Exploration Co., Ltd. (*Signed by*) Geo. A. Pingstone.

LORTIE, LEON, University of Montreal, Montreal, Canada. Canadian. Assist.-Prof. of Inorganic Chemistry. B.A., Univ. of Montreal, Lic. Sc.Ch. (Montreal), D.Sc. (Paris). Assist. Prof. of Inorganic Chemistry since 1926. Papers in *C.R.*, 1928, T., **186**, 1543-6; *ibid.*, 1929, T., **188**, 915-16; *Ann. chim.*, 1930, (10), T., **14**, 407-60. (*Signed by*) N. V. Sidgwick.

SHAW, WILLIAM TENNENT, c/o The Gourepore Co., Ltd., Naihati, E.B. Rly., Bengal, India, British (Scots). Chemist, Oil Department of above company. Four years' apprenticeship with Messrs. Wallace and Clark, 266, St. Vincent Street, Glasgow, three and a half years' in charge Oil Refinery and Blending Department of Messrs. J. & D. Hamilton, Ltd., Glasgow, and four years in present position. Attendance on evening classes on Chemistry and allied subjects at The Royal Technical College, Glasgow. (*Signed by*) John H. Walker.

WEILL, PAUL BENJAMIN ADOLPHE, 66, Avenue de Versailles, Paris (16<sup>e</sup>), France. French. Assistant à la Faculté de Médecine. D.-ès-Sc. (*Signed by*) M. Tiffeneau.

ZINTL, EDUARD, Darmstadt, Chemisches Institut der Technischen Hochschule. German. Professor an der Technischen Hochschule, Darmstadt. Dr.phil. (München, 1923). (*Signed by*) Lothar Wöhler.

#### ADDITIONS TO THE LIBRARY.

##### I. Donations.

EPHRAIM, FRITZ. A text-book of inorganic chemistry. 2nd English edition. By PERCY CYRIL LESLEY THORNE. London 1933. pp. xii + 874. ill. 28s. net. (*Recd.* 29/12/33.)

From the Publishers: Messrs. Gurney & Jackson.

INSTITUTE OF CHEMISTRY OF GREAT BRITAIN AND IRELAND. Lecture on alchemists in art and literature. By RICHARD BERTRAM PIL-

CHER. London 1933. pp. 54. ill. (*Recd.* 21/12/33.)

From the Author.

MATTHIS, ALFRED R. De la consistance des vernis et autres fluides au point de vue de leurs applications industrielles. 1st supplement to "Les vernis isolants en électrotechnique." Paris 1924. pp. 78. ill.

— Deuxièmes notes sur les huiles pour transformateurs. 1st supplement to "Les huiles pour transformateurs et interrupteurs." Paris 1926. pp. 194. ill.

MATTHIS, ALFRED R., and BELINNE, CH. L. Les huiles pour transformateurs et interrupteurs. Paris [1919]. pp. 152. ill.

From Dr. E. W. Maddison.

UNITED STATES. *Department of the Interior*. Geological Survey. Circular 1, etc. Washington 1933 +. (*Reference*.) From the Director.

## II. By purchase.

ARNOT, F. L. Collision processes in gases. London 1933. pp. viii + 104. ill. 2s. 6d. net. (*Recd.* 28/12/33.)

ASTBURY, W. T. Fundamentals of fibre structure. London 1933. pp. xii + 188. ill. 8s. 6d. net. (*Recd.* 28/12/33.)

ASTON, FRANCIS WILLIAM. Mass-spectra and isotopes. London 1933. pp. xii + 248. ill. 15s. net. (*Recd.* 28/12/33.)

BOSWELL, PERCY GEORGE HAMNALL. On the mineralogy of sedimentary rocks: a series of essays and a bibliography. London 1933. pp. x + 394. 21s. net. (*Recd.* 21/12/33.)

BRAGG, SIR WILLIAM HENRY, and BRAGG, WILLIAM LAWRENCE. The crystalline state. Vol. I. A general survey. London 1933. pp. xiv + 352. ill. 26s. net. (*Recd.* 21/12/33.)

BUGBEE, EDWARD E. A textbook of fire assaying. 2nd edition. New York 1933. pp. xii + 300. ill. \$3. (*Recd.* 21/12/33.)

CAMERON, ALEXANDER THOMAS. A textbook of biochemistry. 4th edition. London 1933. pp. xii + 556. ill. 15s. net. (*Recd.* 21/12/33.)

— Recent advances in endocrinology. London 1933. pp. viii + 366. ill. 15s. net. (*Recd.* 21/12/33.)

CLARK, ALFRED JOSEPH. Applied pharmacology. 5th edition. London 1933. pp. x + 632. ill. 18s. net. (*Recd.* 28/12/33.)

DEBYE, PETER. (Editor.) Magnetismus. Leipziger Vorträge 1933. Leipzig 1933. pp. viii + 110. ill. M. 6. (*Recd.* 5/1/34.)

DURRANS, THOMAS HAROLD. Solvents. (Monographs on Applied Chemistry.) 3rd edition. London 1933. pp. xviii + 206. ill. 10s. 6d. net. (*Recd.* 28/12/33.)

GLASSTONE, SAMUEL. Recent advances in physical chemistry. 2nd edition. London 1933. pp. viii + 498. ill. 15s. net. (*Recd.* 21/12/33.)

GNAMM, HELMUT. Die Gerbstoffe und Gerbmittel. 2nd edition. (Chemie in Einzeldarstellungen, Vol. XII.) Stuttgart 1933. pp. xvi + 486. ill. M. 29.50. (*Recd.* 11/1/34.)

GREINER, EARL S., MARSH, J. S., and STOUGHTON, BRADLEY. The alloys of iron and silicon. New York 1933. pp. xii + 458. ill. \$5. (*Recd.* 21/12/33.)

HAND- UND JAHRBUCH DER CHEMISCHEN PHYSIK. Vol. I. Part 1. Theorien des Aufbaues der Materie. i. Die Grundlagen der Quantentheorie. By H. A. KRAMERS. Leipzig 1933. pp. 222. ill. (*Recd.* 14/12/33.)

MARTIN, DAVID JOHNSTON. An introduction to thermodynamics for chemists. London 1933. pp. viii + 344. ill. 16s. net. (*Recd.* 28/12/33.)

MELLOR, JOSEPH WILLIAM. Modern inorganic chemistry. 8th edition. London 1933. pp. xx + 1112. ill. 12s. 6d. net. (*Recd.* 28/12/33.)

MOTT, N. F., and MASSEY, H. S. W. The theory of atomic collisions. Oxford 1933. pp. xvi + 284. ill. 17s. 6d. net. (*Recd.* 21/12/33.)

SMITH, D. M. Metallurgical analysis by the spectrograph: being some experiences of the application of the spectrograph to the analysis of non-ferrous metals and alloys. London 1933. pp. xii + 114. ill. 10s. 6d. net. (*Recd.* 21/12/33.)

SMITH, KENNETH M. Recent advances in the study of plant viruses. pp. xii + 424. ill. 15s. net. (*Recd.* 21/12/33.)

(TATE, FRANCIS GEORGE HENRY.) Tables showing the relation between the specific gravity of spirits at  $\frac{80^{\circ}}{80^{\circ}}$  Fahrenheit, the corresponding percentage of proof spirit and the percentage of alcohol by weight. London 1933. pp. 47. (*Reference*.) 2s. 6d. net.

WOLFE, HERBERT J. The manufacture of printing and lithographic inks. New York 1933. pp. xiv + 295. ill. \$6. (*Recd.* 21/12/33.)

## III. Pamphlets.

BOUGY, E. Chimisme de quelques hybrides de betteraves. Bruxelles 1933. pp. iv + 76. ill.

BRITISH STANDARDS INSTITUTION. British standard specifications, No. 515—1933. Crude carbolic acids, 60's and 45's.

— — — No. 516—1933. Distilled carbolic acids, 60's and 45's.

— — — No. 517—1933. Cresylic acid of high orthocresol content.

— — — No. 521—1933. Cresylic acid (50/55 per cent. metacresol).

— — — No. 522—1933. Orthocresol, metacresol and paracresol.

— — — No. 523—1933. Phenol.

— — — No. 524—1933. Refined cresylic acids, grades A and B.

— British standard definitions. No. 526—1933. Gross and net calorific value.

**FORTHCOMING MEETINGS OUTSIDE LONDON.***BIRMINGHAM.*

Monday, March 5th, 1934, at 5.30 p.m., in the Chemistry Lecture Theatre of the University. Lecture entitled "Recent Work on Molecule Structure," by Dr. N. V. Sidgwick, O.B.E., M.A., F.R.S.

*Anniversary Meetings.*

Wednesday, March 21st, 1934, at 8 p.m. Civic Reception by the Lord Mayor and Corporation of the City of Birmingham.

Thursday, March 22nd, 1934. The 93rd Annual General Meeting at the University, Edgbaston, Birmingham. At 3 p.m., the business portion of the meeting (open to Fellows only); at 3.30 p.m. tea will be served in the Great Hall, and at 4 p.m. the Vice-Chancellor will welcome the Fellows and visitors present, and the President will deliver his Presidential Address. The Anniversary Dinner will be held the same evening at 7 for 7.30 p.m. at the Grand Hotel, the Right Honourable Sir Austen Chamberlain, K.G., P.C., M.P., being the principal guest of the evening.

*GLASGOW.*

Friday, February 9th, 1934, at 7.30 p.m., at the Royal Technical College. Lecture entitled "Diamonds" by Sir Robert Robertson, K.B.E., LL.D., F.R.S.

*MANCHESTER.*

Friday, February 23rd, 1934, at 7.30 p.m., in the Chemistry Lecture Theatre of the University. Lecture entitled "Chlorophyll," by Professor Dr. Hans Fischer.

*NEWCASTLE.*

Friday, February 2nd, 1934, at 6.30 p.m. in the Chemistry Lecture Theatre, Armstrong College. Bedson Lecture entitled "The Chemical and Physical State of the Upper Atmosphere," by Dr. G. C. Simpson, C.B., F.R.S., Director of the Meteorological Office.

Friday, March 2nd, 1934, at 6.30 p.m., in the Chemistry Lecture Theatre, Armstrong College. Bedson Lecture entitled "Elements, Old and New," by Professor J. Kendall, M.A., D.Sc., F.R.S.

*NORTH WALES.*

Friday, February 2nd, 1934, at 6 p.m., at the University College of North Wales, Bangor. Discussion of "The Early Training of the Chemist," to be opened by Professor T. C. James, M.A., D.Sc.

Friday, March 9th, 1934, at 6 p.m., at the University College of North Wales, Bangor. Lecture entitled "Film Reactions," by Professor E. K. Rideal, M.A., D.Sc., F.R.S.

*SHEFFIELD.*

Thursday, March 15th, 1934, at 7.30 p.m., at the University. Lecture entitled "Some Stereochemical Problems," by Dr. W. H. Mills, M.A., F.R.S. (Joint Meeting with University of Sheffield Chemical Society.)

**FORTHCOMING MEETINGS IN LONDON.**

Thursday, February 1st, 1934, at 8 p.m.

- Ordinary Scientific Meeting, at which the following papers will be read :
- “ Iridium hydroxopentammines.” By B. E. DIXON.
  - “ Researches in the menthone series. Part XII. Isolation and characterisation of the *neoisomenthols*.” By J. READ and W. J. GRUBB.
  - “ Researches in the carvone series. Part I. Some ketones and amines.” By J. READ and R. G. JOHNSTON.
  - “ Researches in the carvone series. Part II. Some unsaturated alcohols.” By R. G. JOHNSTON and J. READ.
  - “ The catalytic hydrogenation of diosphenol.” By J. WALKER and J. READ.
  - “ Catalytic hydrogenation of unsaturated compounds. Part II. The step-wise reduction of conjugated acids.” By E. H. FARMER and L. A. HUGHES.
  - “ Catalytic hydrogenation of unsaturated compounds. Part III. Selectivity of attack in relation to the nature of the catalyst.” By E. H. FARMER and L. A. HUGHES.

Thursday, February 15th, 1934, at 8 p.m.

Discussion on “ Some Aspects of the Electronic Theory of Valency,” to be opened by Professor J. E. Lennard-Jones, D.Sc., Ph.D., F.R.S.

Thursday, February 22nd, 1934, at 8 p.m.

Fourth Pedler Lecture entitled “ Chlorophyll,” by Professor Dr. Hans Fischer in the Lecture Theatre of the Royal Institution, Albemarle Street, London, W.1. (by the courtesy of the Managers).

Thursday, March 1st, 1934, at 8 p.m.

Ordinary Scientific Meeting.

Thursday, March 15th, 1934, at 8 p.m.

Ordinary Scientific Meeting.

Thursday, April 19th, 1934, at 8 p.m.

Lecture on the Periodic Law by the Right Honourable Lord Rutherford of Nelson, O.M., M.A., D.Sc., F.R.S. This meeting is being held in commemoration of the centenary of Mendeléeff, and further particulars will be announced.

PROCEEDINGS  
OF THE  
CHEMICAL SOCIETY.

A joint meeting of the Chemical Society and the University Chemical Society was held in the Chemistry Lecture Theatre of the University of Birmingham on Monday, 22nd January, 1934, at 5.30 p.m. The Chair was taken by Professor W. N. Haworth, F.R.S. The Chairman welcomed the visitors present and then called upon Professor R. Robinson, F.R.S., to deliver his lecture on "Some Recent Work in the Alkaloid Group." At the conclusion, a vote of thanks to the lecturer, proposed by Dr. W. Wardlaw and seconded by Dr. W. J. Hickinbottom, was carried with acclamation, Professor Robinson making acknowledgment.

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A meeting under the auspices of the Society was held on Thursday, January 25th, 1934, at 7.30 p.m. in the Chemistry Lecture Theatre, The University, Sheffield, Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., Vice-President, in the Chair.

A discussion on "The Ignition of Gases," arranged by Professor R. V. Wheeler, was held, and the following papers were read and discussed :

Dr. H. F. COWARD, "The ignition temperature of gases: 'Concentric Tube' experiments of the late Harold Baily Dixon."

Dr. T. F. WALL, "The ignition of gases by electric arcs."

Dr. J. D. MORGAN, "The feasibility of an electrical theory of spark ignition."

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A meeting under the joint auspices of the Society and the Bristol sections of the Institute of Chemistry and of the Society of Chemical Industry, was held on January 26th, 1934, in the Chemistry Lecture Theatre of the University of Bristol, Professor F. E. FRANCIS, D.Sc., Ph.D., in the Chair.

Mr. C. N. HINSHELWOOD, M.A., F.R.S., contributed a paper entitled "The Relation of Gas Reactions to Reactions in Solution," in the course of which he called attention to certain cases for which the velocity was far less in the liquid state than would be expected from the value of the activation energy of the process in the gaseous state. Suggestions for the possible explanation of this effect in terms of wave mechanics were put forward.

Professor W. E. GARNER, D.Sc., then discussed "The Induction Period in Solid Reactions." The acceleration of the rate of reactions such as the decomposition of lead azide is closely associated with the phenomenon of centre formation, and the causes of induction periods are to be sought in the manner in which these centres grow in number and in size. Importance is to be attached to the influence of discontinuities inherent in the "block" structure of crystalline solids on the growth of the centres.

A discussion followed, after which a vote of thanks to the Lecturers was proposed by Dr. E. B. Maxted and seconded by Mr. R. D. Littlefield.

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Ordinary Scientific Meeting, Thursday, February 1st, 1934, at 8 p.m., Professor G. T. MORGAN, O.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, on January 27th, 1934, of Mr. Richard Jackson Moss, who was elected a Fellow of the Society on January 19th, 1871.

Messrs. J. L. Gleave, James Walker, and J. S. Watt were formally admitted Fellows of the Society.

Forms of Recommendation were read for the first time in favour of :

Donald Kenneth Baird, B.Sc., 49, Allesley Old Road, Coventry.  
 George Edward Bishop, 38, Mauldeth Road, Withington, Manchester.  
 Herbert Clare Carrington, B.Sc., Barton, Bromley Lane, Kingswinford.  
 Joseph Mary John de Mata Estevez, 53, Talgarth Mansions, W. 14.  
 Arthur Geoffrey Grimwade, Rivington, Woodland Avenue, Wolstanton.  
 Kenneth Prichard Harrison, King's College, Cambridge.  
 John William Roe, 218, Nether Street, N. 3.  
 Kenneth Stewart, 10, Geraldine Road, S.W. 18.

Forms of Recommendation for Fellowship in favour of twenty-six Candidates were read for the second time.

The following papers were read :

- "Iridium hydroxopentammines." By B. E. DIXON.  
 "Researches in the menthone series. Part XII. Isolation and characterisation of the *neoisomenthols*." By J. READ and W. J. GRUBB.  
 "Researches in the carvone series. Part I. Some ketones and amines." By J. READ and R. G. JOHNSTON.  
 "Researches in the carvone series. Part II. Some unsaturated alcohols." By R. G. JOHNSTON and J. READ.  
 "The catalytic hydrogenation of diosphenol." By J. WALKER and J. READ.  
 "Catalytic hydrogenation of unsaturated compounds. Part II. The step-wise reduction of conjugated acids." By E. H. FARMER and L. A. HUGHES.  
 "Catalytic hydrogenation of unsaturated compounds. Part III. Selectivity of attack in relation to the nature of the catalyst." By E. H. FARMER and L. A. HUGHES.

A joint meeting of the Chemical Society and the University College of North Wales Chemical Society, was held on Friday, February 2nd, at the University College, Bangor, the Chair being taken by Professor J. L. Simonsen, D.Sc., F.R.S.

Professor Campbell James, D.Sc., opened a discussion on "The Early Training of the Chemist" and emphasized the need for a broader basis of instruction at the Higher School Certificate stage. Papers by Mr. S. J. Evans, O.B.E., M.A., and by Dr. A. E. Bradfield were then read, and Messrs. J. R. Morgan, H. R. Low, W. O. Hughes, and T. H. Jones contributed to the discussion, which was summarised by Professor J. E. Coates, O.B.E., D.Sc. The meeting was well attended.

A joint meeting of the Chemical Society and the Glasgow Sections of the Institute of Chemistry and the Society of Chemical Industry was held at the Royal Technical College on Friday evening, February 9th, 1934, when a lecture on "Diamonds" was given by Sir ROBERT ROBERTSON, K.B.E., D.Sc., F.R.S.

The lecture was devoted mainly to an account of the two kinds of diamond, which differ markedly in their absorption of infra-red and ultra-violet light. Both kinds of diamond give the same Raman spectrum, and from the absorption measurements the modes of vibration of the carbon atoms can be deduced. Models were shown to demonstrate these vibrations.

The rarer kind of diamond is the more transparent to polarised light and shows the remarkable property of being activated by ultra-violet light of very short wave-length, so that it will conduct electricity when subsequently exposed to red light. This active condition is destroyed by ultra-violet light of about the highest frequency transmitted by glass.

The work described was carried out at the Government Laboratory, London, in conjunction with Dr. J. J. Fox and Dr. A. E. Martin, and most of it had been described before the Royal Society at a recent meeting.

There was an attendance of over 80.

Ordinary Scientific Meeting, Thursday, February 15th, 1934, at 8 p.m., Professor G. T. MORGAN, O.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death on January 29th, 1934, of Professor Dr. Fritz Haber, who was elected an Honorary Fellow on May 7th, 1931, and stated that the Council had passed the following resolution which would be communicated to the relatives of the late Professor Dr. Haber :

“ The President, Officers, and Council of the Chemical Society have learnt with profound regret of the death of their distinguished colleague, Professor Fritz Haber, Honorary Fellow of the Society, and desire to record their high appreciation of the eminent services rendered by Professor Haber to the Science of Chemistry. They offer to the relatives of the late Professor Haber their sincere sympathy in the irreparable loss they have sustained.”

The PRESIDENT also referred to the loss sustained by the Society, through death on February 7th, 1934, of Mr. Arthur George Everard, who was elected a Fellow on December 6th, 1888.

Messrs. J. E. Lennard-Jones, Philip J. Garner, D. J. C. Gamble, and F. D. Richardson were formally admitted Fellows of the Chemical Society.

Forms of Recommendation for Fellowship were read for the first time in favour of :

William Henry Banks, B.Sc., Ph.D., 59, Crescent Lane, Clapham Park, S.W. 4.  
John Scheffer McFadyen, B.Sc., 4, Bruce Road, Pollokshields, Glasgow.

The following forms of recommendation for Fellowship have been accepted by the Council under Bye-Law I (2) :

Surendra Chandra Dutt, M.B., B.Sc., Shillong, Assam.  
Prof. Robert E. Swain, A.B., M.S., Ph.D., LL.D., Department of Chemistry, Stanford University, Cal., U.S.A.

Forms of Recommendation for Fellowship in favour of eight Candidates were read for the second time.

Dr. H. E. Cox and Dr. J. G. A. Griffiths were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared elected:

Reginald George Robert Bacon, B.Sc., A.R.C.S.	Douglas Cecil Hibbit, B.Sc., A.R.C.S.
Rama Krishna Bahl, M.Sc.	Frederick Henry Highley.
Michael Philip Balfe, B.A., Ph.D.	John Francis Hopkins.
Paul Raywood Beaven, B.A.	Shing Kong Hsü, B.Sc.
Ernst Bergmann, D.Phil.	Hilda Ellen Johnston, B.Sc.
Kenneth Guy Blaikie, B.A., Ph.D., A.R.C.S.	Leslie John Jolley, A.R.C.S.
William Robert Boon, B.Sc.	John Idris Jones, B.Sc.
Sailesh Chandra Bose.	Victor Basil Jones.
Ernest George Boyce, B.Sc.	Küchiro Kakemi.
Albert Edward Broué.	Joseph Koetschet.
Bernard William Bryant, B.A., B.Sc.	Philibert Gérard L'Ecuyer, M.A.
Abraham Burawoy, Dr.Phil.	Walter Frederick Loates, A.I.C.
Kenneth Alfred John Chamberlain, B.Sc.	Diana Lockhart, B.Sc.
Abraham Cluer.	Léon Lortie, B.A., D.Sc.
James Colvin, B.Sc., Ph.D.	Joseph McLean Macdonald, B.Sc., Ph.D.
Dorothy Ellen Cook, B.Sc.	Alexander McGookin, B.Sc., Ph.D.
William James Mitchell Cook.	William Ralph Maxwell, B.Sc.
Norman Charles Crane.	Cecil Henry Miller, B.Sc., A.R.C.S.
Francis Raymond Cropper, B.Sc.	Kurt Moers, Dr.Phil.
Lionel Laloo Daniel.	Wilfred Samuel Nathan, B.Sc.
Kenneth King-Len Dzo, B.Sc.	Dudley Maurice Newitt, D.Sc., Ph.D., A.R.C.S.
Donald Percy Earp, B.Sc.	John Richard Percival O'Brien, M.A., B.Sc.
George Alan Earwicker, B.Sc.	Friedrich Adolph Paneth, Ph.D.
Frederick John Flowerdew, B.Sc.	Frank Howard Pearman.
Geoffrey Arthur Dering Haslewood, M.Sc.	Kesavapillay Sivaramakrishna Pillay, B.A.
Richard Henry Henriksen.	Donald Plews, B.Sc.
	Laurence Ernest Price.

Walter Ritchings, M.Sc., A.I.C.  
 Harold Valentine Walker Robinson, M.Sc.  
 Kathleen Margaret Rogers.  
 John Donald Rose, B.A., B.Sc.  
 Samuel Aaron Rosenthal, Ph.C.  
 Isao Satoda.  
 Edward Sharratt, B.Sc.  
 William Tennent Shaw.  
 Gilbert Freeman Smith, B.Sc., Ph.D.  
 James Sowler.  
 Emma Stott, B.Sc., Ph.D.  
 Lionel Stratton-Lightening.  
 Hardwicke Slingsby Tasker.

Arthur William Charles Taylor, B.Sc.  
 Henry Tod, jun., B.Sc., Ph.D.  
 Donald Thomas Alfred Townend, D.Sc., Ph.D.,  
 D.I.C.  
 Harry John Victory, B.Sc.  
 Abel Bao-Len Wang, B.Sc.  
 Frederick Charles Webb, B.Sc., A.R.C.S.  
 Paul Benjamin Adolphe Weill, D.-ès.-Sc.  
 Thomas Wilkinson.  
 William Aaron Woodard.  
 James Hunter Young, B.Sc., A.I.C.  
 Eduard Zintl, Dr.Phil.

A Discussion on "Some Aspects of the Electronic Theory of Valency" was opened by Professor J. E. Lennard-Jones, D.Sc., Ph.D., F.R.S., and continued by the President, Dr. N. V. Sidgwick, Professor T. M. Lowry, Dr. F. G. Mann, Professor S. Sugden, Dr. C. P. Snow, Dr. J. Tutin, and Dr. J. D. Bernal.

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#### THE INSTITUTE OF FUEL.

A meeting of the Institute of Fuel will be held in the Meeting Room of the Chemical Society on Wednesday, April 11th, 1934, at 6 p.m., when a paper entitled "Economic Flue Gas Scrubbing: Plant for the Efficient Removal of Dust and Sulphur from Flue Gases," by J. L. Pearson, G. Nonhebel, and H. Ulander, will be read. Fellows are invited to attend the meeting and advance proofs can be obtained on application to the Secretary of the Institute of Fuel, 58, Victoria Street, S.W. 1.

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#### III CONGRÈS INTERNATIONAL TECHNIQUE ET CHIMIQUE DES INDUSTRIES AGRICOLES.

The Third Technical and Chemical International Congress of the Agricultural Industries will be held in Paris from March 26th to 31st, 1934, under the Presidency of H.E. the Sénateur Ferdinand David.

The work of the Congress will be divided into five groups as follows:

- I. Scientific and economic studies, including determination of  $p_H$  and of the  $r_H$ ; water pollution; employment for new purposes, alimentary or otherwise, of agricultural goods produced in excess, and improvement of the sugar beet and sugar cane by genetic selection.
- II. Sugar manufacture, including clarification of sugar juices; crystallisation and conservation of sugar.
- III. Fermentation Industries, including study of fermentations, continued diffusion, and the unfermented wine industry.
- IV. Alimentary Industries, including qualities required in bread in different countries, properties of flour and wheat; equipment used in the vegetable oil industry; use of vegetable oils in motors; collection, transport and treatment of milk, and the manufacture of chocolate.
- V. Allied industries, including study of fuels based on alcohol and on their use, and wood distillation.

Subscriptions to the Congress are

- 100 francs for Ordinary Members,
- 500 francs for "Membres Donateurs,"
- 5000 francs for "Membres Bienfaiteurs."

Families of Members may become Associate Members on payment of 50 francs per member, and a Society, or a group of people, may become a "Membre Donateur" and as such has the right to appoint three delegates.

At the conclusion of the Congress, a tour through the wine-growing districts in France will be arranged in such a way that those members attending the IXth International Congress in Madrid will arrive in that city on April 5th.

Further particulars and forms of application can be obtained from Mr. S. E. Carr, the Chemical Society, Burlington House, London, W. 1.

Those desiring to attend the Congress should apply at once to the Secretary, IIIe Congrès International Technique et Chimique des Industries Agricoles, 156, Boulevard Magenta, Paris.

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List of Papers, or Abstracts thereof, received between January 18th and February 15th, 1934. (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.)

- "The rearrangement of ortho-hydroxysulphones. Part IV." By B. A. KENT and S. SMILES.
- "Hydroxy-carbonyl compounds. Part IX. Benzopyrones related to phloretin." By F. E. KING and A. ROBERTSON.
- "Physical properties and chemical constitution. Part I. Esters of normal dibasic acids and of substituted malonic acids." By A. I. VOGEL.
- "Absorption spectra in relation to the constitution of keto-enols." By R. A. MORTON, A. HASSAN, and T. C. CALLOWAY.
- "The synthesis of 5 : 6-dimethyl-1 : 2-benzanthraquinone, a degradation product of deoxycholic acid." By J. W. COOK and G. A. D. HASLEWOOD.
- "Studies in the composition of coal. The thermal decomposition of lignites." By J. E. ASHMORE and R. V. WHEELER.
- "The molecular polarisation of nitrobenzene in various solvents at 25° C." By H. O. JENKINS.
- "Arsonic and stibonic acids derived from quinoline and acridine. Part I." By (Miss) M. M. BARNETT, A. H. C. P. GILLIESON, and W. O. KERMACK.
- "The Walden inversion in cyclic compounds. Part I. *cis-trans* Isomerism in 1-hydroxyhydrindene-2-acetic acid and some  $\alpha$ -substituted derivatives." By D. H. PEACOCK and B. K. MENON.
- "Chromophoric groups. Part I. Ultra-violet absorption spectra of indene and certain of its derivatives." By R. A. MORTON and A. J. A. DE GOUVEIA.
- "Chromophoric groups. Part II. Absorption spectra of naphthalene, hydronaphthalenes and related compounds." By R. A. MORTON and A. J. A. DE GOUVEIA.
- "Studies in solvent action. Part VIII. Rotatory powers of the *l*-menthyl esters of *o*-nitro-, 2 : 4-dinitro-, and *p*-nitro-benzoic acids in relation to the solvent, concentration, temperature, and wave-length of light." By A. MCLEAN.
- "The influence of pressure on a number of organic reactions in the liquid phase." By E. W. FAWCETT and R. O. GIBSON.
- "The influence of pressure on the rate of formation of cetyl pyridinium halides." By E. W. FAWCETT and R. O. GIBSON.
- "Are the so-called elements intra-atomic compounds of hydrogen and helium? A hypothetical note suggesting that they are evolved from three other elements of less mass than hydrogen." By J. SENIOR.
- "The hydrolysis of acetoxime." By J. E. W. RHODES.
- "Conditions for the production of fog in the neutralisation of a volatile acid or alkali." By C. N. JACKSON and J. C. PHILIP.
- "Some properties of arced gases." By B. W. BRADFORD and G. I. FINCH.
- "Catalytic influences in three-carbon tautomerism. Part III. A review of possible mechanisms and further examination of catalysis by alkoxides." By R. P. LINSTEAD and E. G. NOBLE.
- "Catalytic influences in three-carbon tautomerism. Part IV. The tautomeric changes of unsaturated acids at high temperatures." By R. P. LINSTEAD and E. G. NOBLE.
- "Catalytic influences in three-carbon tautomerism. Part V. Acid catalysis in ketones and esters." By G. A. R. KON and K. S. NARGUND.
- "Ethyl  $\Delta^1$ -cyclopentenylmalonate." By G. A. R. KON and Z. T. LING.
- "Investigations of the olefinic acids. Part XII.  $\beta$ -Phenylhexenoic and  $\beta$ -methyl-pentenoic acids." By G. A. R. KON, R. P. LINSTEAD, and J. M. WRIGHT.

- "The synthesis of substituted benzoin and of deoxybenzoin." By R. ROGER and A. MCGREGOR.
- "The nuclear alkylation of aromatic bases. Part II. The action of methyl alcohol on the hydrochlorides of 2- and 4-aminodiphenyl." By D. H. HEY and E. R. B. JACKSON.
- "Synthesis of alkylphenanthrenes. Part VI. Attempts to synthesise the hydrocarbon 'C<sub>16</sub>H<sub>14</sub>' derived from strophanthidin." By R. D. HAWORTH, C. R. MAVIN, and G. SHELDRIK.
- "Maltal and 4- $\alpha$ -glucosidomannose." By W. N. HAWORTH, E. L. HIRST, and R. J. W. REYNOLDS.
- "Complex formation in salt solutions. Part I." By R. W. MONEY and C. W. DAVIES.
- "The solubility of barium oxalate in aqueous salt solutions." By R. W. MONEY and C. W. DAVIES.
- "The formation of carbinols in the condensation of aldehydes with hydrocarbons." By F. D. CHATAWAY and R. J. K. MUIR.
- "Further instances of the formation of chlorobenzene from phenylmagnesium bromide." By R. J. W. LE FÈVRE and P. J. MARKHAM.
- "The isotherms of some ternary systems of metallic perchlorates in aqueous solution at 30°." By R. M. CAVEN and G. BRYCE.
- "The absorption spectra of the nitrotoluidines and related substances." By R. A. MORTON and A. MCGOOKIN.
- "The effect of the nitro-group in three-carbon tautomerism." By H. B. FRASER and G. A. R. KON.
- "The absorption spectra of cobalt halide solutions." By R. J. MACWALTER and S. BARRATT.
- "The influence of poles and polar linkings on tautomerism in the simple three-carbon system. Part III. Experiments with  $\Delta^{\alpha}$ - and  $\Delta^{\beta}$ -benzylpropenyl sulphones." By E. ROTHSTEIN.
- "Substitution in the 2-methoxynitrodiphenyl ethers." By S. BUCHAN and H. A. SCARBOROUGH.
- "Addition of hydrogen bromide to double bonds. Undecenoic acid." By R. ASHTON and J. C. SMITH.
- "Note on the reaction of ethyl sodioacetoacetate with tetramethylene dibromide." By L. J. GOLDSWORTHY.
- "The catalytic reduction of organic halogen compounds: 5-bromo-5-alkylbarbituric acids." By G. K. HUGHES, A. K. MACBETH, and S. W. PENNYCUICK.
- "2-Hydroxy-6-methoxy-4-methylquinoline." By O. G. BACKEBERG and W. O. KERMACK.
- "Hofmann's ethylene bases. A synthesis of  $\beta\beta'$ -diaminodiethylamine and of  $\beta\beta'$ -diaminodiethylmethylamine." By F. G. MANN.
- "The constitution of complex metallic salts. Part II. The platinum derivatives of  $\beta\beta'$ -diaminodiethylamine." By F. G. MANN.
- "A study of the influence of various substituents on the mercuration of coumarins." By K. G. NAIK and A. D. PATEL.
- "Strychnine and brucine. Part XXV. Reduction of methylstrychnidinium salts by means of sodium amalgam in the presence of carbon dioxide." By (the late) W. H. PERKIN, jun., R. ROBINSON, and J. C. SMITH.
- "Strychnine and brucine. Part XXVI. Hofmann degradation of methyl-dihydrostrychnidinium-A carbonate. Isolation of a fourth isomeride of dihydrostrychnidine." By O. ACHMATOWICZ and R. ROBINSON.
- "Strychnine and brucine. Part XXVII. Methoxymethylchanodihydrostrychnone and the constitution of strychnidone." By L. H. BRIGGS and R. ROBINSON.
- "Strychnine and brucine. Part XXVIII. (A) Methoxymethylchanodihydrostrychnane. (B) The constitution of anhydrotetrahydromethylstrychnine-K<sup>5</sup>." By (Miss) T. M. REYNOLDS and R. ROBINSON.
- "Strychnine and brucine. Part XXIX. N(b)-Methyl-dihydrochanopseudostrychnine." By B. K. BLOUNT and R. ROBINSON.
- "The spectra and photochemical decomposition of metallic carbonyls. Part I. Spectral data." By H. W. THOMPSON and A. P. GARRATT.

**FORTHCOMING MEETINGS OUTSIDE LONDON.***BIRMINGHAM.*

Monday, March 5th, 1934, at 5.30 p.m., in the Chemistry Lecture Theatre of the University. Lecture entitled "Recent Work on Molecular Structure," by Dr. N. V. Sidgwick, O.B.E., M.A., F.R.S.

*Anniversary Meetings.*

Wednesday, March 21st, 1934, at 8 p.m. Civic Reception by the Lord Mayor and Corporation of the City of Birmingham.

Thursday, March 22nd, 1934. The 93rd Annual General Meeting at the University, Edgbaston, Birmingham. At 3 p.m., the business portion of the meeting (open to Fellows only); at 3.30 p.m. tea will be served in the Great Hall, and at 4 p.m. the Vice-Chancellor will welcome the Fellows and visitors present, and the President will deliver his Presidential Address. The Anniversary Dinner will be held the same evening at 7 for 7.30 p.m. at the Grand Hotel, the Right Honourable Sir Austen Chamberlain, K.G., P.C., M.P., being the principal guest.

*LIVERPOOL.*

Tuesday, March 13th, 1934, at 7.45 p.m. in the Chemistry Lecture Theatre of the University. Lecture entitled "The Experimental Study of some Gas Reactions," by Professor M. W. Travers, D.Sc., F.R.S.

*NEWCASTLE.*

Friday, March 2nd, 1934, at 6.30 p.m., in the Chemistry Lecture Theatre, Armstrong College. Bedson Lecture entitled "Elements, Old and New," by Professor J. Kendall, M.A., D.Sc., F.R.S.

*NORTH WALES.*

Friday, March 9th, 1934, at 6 p.m., at the University College of North Wales, Bangor. Lecture entitled "Film Reactions," by Professor E. K. Rideal, M.A., D.Sc., F.R.S.

*SHEFFIELD.*

Thursday, March 15th, 1934, at 7.30 p.m., at the University. Lecture entitled "Some Stereochemical Problems," by Dr. W. H. Mills, M.A., F.R.S. (Joint Meeting with University of Sheffield Chemical Society.)

*SOUTH WALES.*

Monday, March 12th, 1934, at 6 p.m. Lecture entitled "Some Families of Plant Products," by Professor R. Robinson, D.Sc., F.R.S., in the Chemistry Lecture Theatre at the University College, Swansea. (Joint meeting with the University College of Swansea Chemical Society.)

**FORTHCOMING MEETINGS IN LONDON.**

Thursday, March 1st, 1934, at 8 p.m.

Ordinary Scientific Meeting. The following papers will be read :

- “ Absorption spectra in relation to the constitution of keto-enols.” By R. A. MORTON, A. HASSAN, and T. C. CALLOWAY.
- “ Chromophoric groups. Part I. Ultra-violet absorption spectra in indene and certain of its derivatives.” By R. A. MORTON and A. J. A. DE GOUVEIA.
- “ Chromophoric groups. Part II. Absorption spectra of naphthalene, hydronaphthalenes, and related compounds.” By R. A. MORTON and A. J. A. DE GOUVEIA.
- “ The molecular polarisation of nitrobenzene in various solvents at 25° C.” By H. O. JENKINS.
- “ Conditions for the production of fog in the neutralisation of a volatile acid or alkali.” By C. N. JACKSON and J. C. PHILIP.

Thursday, March 15th, 1934, at 8 p.m.

Ordinary Scientific Meeting.

Thursday, April 19th, 1934, at 8 p.m.

To commemorate the centenary of the birth of Mendeléeff a Lecture on the Periodic Law will be delivered by the Right Honourable Lord Rutherford of Nelson, O.M., M.A., D.Sc., F.R.S. The Lecture will be held at the Royal Institution, Albemarle Street, London, W. 1. (by the courtesy of the Managers).

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 .

Extra Meeting held in the Lecture Theatre of the Royal Institution on Thursday, February 22nd, 1934, at 8 p.m.

The President, Professor G. T. MORGAN, O.B.E., D.Sc., F.R.S., was in the Chair.

In opening the proceedings, the PRESIDENT referred to the foundation of the Pedler Lectureship, and to the bequest of the late Sir Alexander Pedler which had enabled the Council to establish the Special Lectures Fund.

The PRESIDENT then introduced Professor Dr. Hans Fischer and called upon him to deliver the Fourth Pedler Lecture entitled "Chlorophyll."

At the conclusion of the lecture, a vote of thanks to Professor Dr. Hans Fischer, proposed by Professor J. F. Thorpe, and seconded by Professor G. Barger, was carried with acclamation, and acknowledged by Professor Fischer.

The PRESIDENT moved a vote of thanks to the Officers and Managers of the Royal Institution for granting the use of the Lecture Theatre. This was carried with acclamation.

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A meeting under the auspices of the Society was held on February 23rd, 1934, in the Chemistry Lecture Theatre of the University of Manchester, Professor I. M. HEILBRON, D.S.O., D.Sc., F.R.S., in the Chair. Professor Dr. Hans Fischer gave his lecture on "Chlorophyll." A vote of thanks was proposed by Professor J. Kenner and seconded by Professor H. S. Raper. There were over 300 present.

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Ordinary Scientific Meeting, Thursday, March 1st, 1934, at 8 p.m., Professor G. T. MORGAN, O.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.
William Barlow .....	May 6th, 1897.	Feb. 28th, 1934.
John Haworth .....	Dec. 1st, 1898.	Jan. 20th, 1934.
William Marshall .....	June 16th, 1887.	Jan. 16th, 1934.

The following list of nominations for vacant places on the Council was read from the Chair :

*Vice-Presidents*, who have filled the office of President (2 vacancies) :

\*PERCY F. FRANKLAND.

\*SIR JAMES WALKER.

*Vice-Presidents*, who have not filled the office of President (4 vacancies) :

\*E. F. ARMSTRONG.

\*T. S. MOORE.

\*A. HARDEN.

\*N. V. SIDGWICK.

†W. N. HAWORTH.

†R. WHYTLAW-GRAY.

†I. M. HEILBRON.

*Honorary Secretaries* (1 vacancy) :

\*H. J. T. ELLINGHAM.

*Ordinary Members of Council :*

*Town Members* (i.e. those resident within a radius of 50 miles from Charing Cross)  
(3 vacancies) :

\*O. L. BRADY.  
\*P. HAAS.

\*E. E. TURNER.

*Country Members* (i.e. those resident beyond a radius of 50 miles from Charing Cross)  
(2 vacancies) :

\*†E. J. BOWEN.  
†F. CHALLENGER.  
†G. R. CLEMO.  
†J. E. COATES.

†H. H. HODSON.  
\*W. WARDLAW.  
†F. J. WILSON.

\* Nominated by Council under Bye-Law VI.  
† Nominated by Fellows under Bye-Law VI.

Dr. H. E. Cox and Dr. H. D. K. Drew were appointed Scrutators to assist in the counting of votes recorded in the election of Vice-Presidents who have not filled the office of President and of Ordinary Members of Council (Country).

Messrs. A. Burawoy, N. C. Crane, A. W. C. Taylor, R. Branston Williams, F. R. Cropper, J. K. Lahiri, and Wilfred S. Nathan were formally admitted Fellows of the Society.

Forms of Recommendation for Fellowship were read for the first time in favour of :

Ronald William Bailey, Lincoln College, Oxford.  
Stanley Bairstow, B.A., 2, Westbury Terrace, West End, Halifax.  
Edward John Bond, B.Sc., A.I.C., 37, Carlton Road, Birkenhead.  
Rupert Stevenson Bradley, M.A., 24, Estcourt Terrace, Headingley, Leeds.  
Reginald Roberts Cawthorne, Lincoln College, Oxford.  
Griffith Vivian Davies, 2, Groll Avenue, Neath, S. Wales.  
Elizabeth Sedgley Edwards, Hill Farm, Ruislip.  
Bernard Albert Ellis, M.A., F.I.C., 57, Woodwarde Road, S.E. 22.  
Donald Mercer, B.Sc., 16, Hale Road, Wallasey, Cheshire.  
Arthur George Murray, Ph.D., 38, Thatch Leach Lane, Whitefield, Manchester.  
Giulio Natta, Prof. Dr. Ing., Istituto di Chimica Generale, R. Universita, Pavia, Italy.  
Percy Watson Perryman, B.Sc., 80, Stephens Road, Tunbridge Wells.  
Cecil Leeburn Wilson, M.Sc., 102, Novar Drive, Hyndland Road, Glasgow.  
Harold Wilson, B.Sc., Public Health Department, City Hall, Johannesburg.

Forms of Recommendation for Fellowship in favour of four Candidates were read for the second time.

The following papers were read :

- “ Absorption spectra in relation to the constitution of keto-enols.” By R. A. MORTON, A. HASSAN, and T. C. CALLOWAY.  
“ Chromophoric groups. Part I. Ultra-violet absorption spectra in indene and certain of its derivatives.” By R. A. MORTON and A. J. A. DE GOUVEIA.  
“ Chromophoric groups. Part II. Absorption spectra of naphthalene, hydronaphthalenes, and related compounds.” By R. A. MORTON and A. J. A. DE GOUVEIA.  
“ The molecular polarisation of nitrobenzene in various solvents at 25°.” By H. O. JENKINS.  
“ Conditions for the production of fog in the neutralisation of a volatile acid or alkali.” By C. N. JACKSON and J. C. PHILIP.

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On March 2nd, 1934, the 25th Bedson Lecture was delivered in the Chemistry Lecture Theatre, Armstrong College, Newcastle-on-Tyne, by Professor J. Kendall, M.A., D.Sc., F.R.S., on “ Elements, Old and New.” The Lecturer pointed out that the four elements of the Greek philosophers in some measure recapitulated the history of chemistry.

Thus, fire may be associated with the phlogiston period, air with the development of pneumatic chemistry, earth with the discovery of new metallic elements in the rocks, and water with the physico-chemical investigations of aqueous solutions. The Lecturer then alluded to the discovery of new elements in the Aristotlean elements; the rare gases of the atmosphere, and most recently the isolation of heavy water.

The meeting was attended by Fellows of the Chemical Society at the invitation of the Bedson Club.

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A joint meeting of the Chemical Society and the University College of North Wales Chemical Society was held on Friday, March 9th, at the University College, Bangor, when a lecture entitled "Film Reactions" was given by Professor E. K. Rideal, F.R.S.

The lecture dealt in particular with films of proteins on water, their behaviour under lateral pressure, and their attack by enzymes. There was an attendance of over 90.

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A meeting of the Chemical Society was held jointly with the Students' Chemical Society of the University College of Swansea, on Monday, March 12th, 1934, at 6 p.m., in the College Chemistry Lecture Theatre. The Chair was taken by Mr. D. E. JONES, President of the Students' Society. Professor Robert Robinson, F.R.S., delivered a lecture entitled "Some Families of Plant Products." He discussed the theories which have been advanced to explain the formation of various groups of plant products such as the fatty acids and the types of aromatic compounds derivable from the simple sugars. The importance of the amino-acid skeleton in connection with the alkaloids was also explained.

A vote of thanks to Professor Robinson was proposed by Dr. L. E. Hinkel, seconded by Dr. T. M. Walters, and supported by Professor J. E. Coates.

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A joint meeting of the Chemical Society and the University of Sheffield Chemical Society was held in the Chemistry Lecture Theatre of the University, Sheffield, on Thursday March 15th, at 8 p.m. About eighty members of various chemical organisations were present. The Chair was taken by Professor G. M. Bennett, who, after reading a message from the President and welcoming visitors, called on Dr. W. H. Mills, F.R.S., to address the meeting on "Some Stereochemical Problems." In the course of his lecture Dr. Mills described some unpublished work arising from the "obstacle theory" for the explanation of molecular disymmetry in peri-substituted naphthalene derivatives and in other compounds. A vote of thanks to the lecturer, proposed by Mr. W. Ritchings and seconded by Dr. A. W. Chapman, was carried with acclamation.

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Ordinary Scientific Meeting, Thursday, March 15th, 1934, at 8 p.m., Professor G. T. MORGAN, O.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, on February 8th, 1934, of Mr. Morris B. Fowler, who was elected a Fellow of the Society on May 3rd, 1900.

The PRESIDENT announced that the following gifts had been received by the Council :

- (a) £100 as a contribution to the Publications Fund Account from Mr. Sidney Melmore in memory of the late Mr. Pattinson B. Melmore.
- (b) A contribution of £3 per annum to the Library Fund from Sir Prafulla C. Rây.
- (c) A contribution of £10 from Dr. John A. Voelcker to mark the occasion of attaining his jubilee as a Fellow.
- (d) A bequest of a valuable collection of books on explosives from the late Sir Frederic Nathan.

Mr. G. Haslewood was formally admitted a Fellow of the Society.

Forms of Recommendation were read for the first time in favour of :

David Philip Evans, M.Sc., Ph.D., 17, Plantagenet Street, Riverside, Cardiff.  
 John Peter Ford, Public Schools Club, 61, Curzon Street, W. 1.  
 Leslie Wilfred Norman Godward, M.Sc., 231, Beehive Lane, Ilford.  
 Christopher Hollis Johnson, Ph.D., 41, Royal York Crescent, Clifton, Bristol.  
 George Harold Keats, Sunridge, Lovedean Corner, Horndean, Portsmouth.  
 Alan Goodridge Lidstone, 11, Collington Avenue, Bexhill-on-Sea.  
 Thomas Gibson Pearson, M.Sc., Ph.D., 2, Plotina Terrace, South Shields.  
 John Edward Brough Randles, B.Sc., 6, Trowels Lane, Derby.

The following forms of Recommendation for Fellowship have been accepted by the Council under Bye-Law I (2) :

Antonée Vasile Ablov, Dr., Laboratory of Inorganic Chemistry, The University, Jassy, Roumania.  
 Benito A. Buylla, Professor Dr., Instituto de Química Aplicada, Universidad, Oviedo, Spain.  
 Ambica Charan Mookerjee, B.A., Barakar, E.I.R., Bengal.  
 James Ferguson Sutherland, 17, Princep Street, Calcutta.  
 Nathaniel Beverley Tucker, B.S., M.A., Ph.D. 304, Letcher Avenue, Lexington, Va., U.S.A.

Forms of Recommendation for Fellowship in favour of fourteen candidates were read for the second time.

The following papers were read :

- “ Reactions of unsaturated compounds. Part II. Addition of arylamines to styrene.”  
 By W. J. HICKINBOTTOM.  
 “ Addition of hydrogen bromide to double bonds. Undecenoic acid.” By R. ASHTON  
 and J. C. SMITH.  
 “ Constitution of glycerophosphates. Part III.” By F. L. PYMAN and H. A. STEVENSON.  
 “ The synthesis of 5 : 6-dimethyl-1 : 2-benzanthraquinone, a degradation product of  
 deoxycholic acid.” By J. W. COOK and G. A. D. HASLEWOOD.”

List of Papers, or Abstracts thereof, received between February 15th and March 15th, 1934. (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.)

- “ Sulphur as an impurity in ethyl tartrate.” By T. S. PATTERSON and A. H. LAMBERTON.  
 “ The properties of the chlorides of sulphur. Part VII. Changes of density in heated and irradiated sulphur dichloride. Part VIII. Changes of density in sulphur monochloride.” By A. H. SPONG.  
 “ Hypochlorites and ozone.” By A. T. MASTERMAN.  
 “ The effect of pressure on the melting points of *o*-, *m*-, and *p*-xylene.” By J. C. SWALLOW and R. O. GIBSON.  
 “ The bromination of camphorquinone.” By W. C. EVANS, J. L. SIMONSEN, and (in part) M. B. BHAGVAT.  
 “ The problem of chemical linkage. Part I. An interpretation of valency on the basis of wave mechanics and band spectra.” By R. F. HUNTER and R. SAMUEL.  
 “ Optically inactive bornyl fumarates.” By A. MCKENZIE and E. B. ABBOTT.  
 “ Investigations in the diphenylene oxide series. Part IV.” By N. M. CULLINANE, H. J. H. PADFIELD, and H. G. DAVEY.  
 “ The chemistry of the glutamic acids. Part XXIV. The catalytic effect of alkalis on the rate of racemisation of *l-trans- $\alpha$* -dimethylglutamic acid.” By (Miss) J. E. BULL, J. S. FITZGERALD, J. PACKER, and J. F. THORPE.  
 “ Perylene and derivatives.” By G. T. MORGAN and J. G. MITCHELL.  
 “ A rearrangement of *o*-aminodiphenyl ethers. Part I.” By K. C. ROBERTS and C. G. M. DE WORMS.

- " Physico-chemical studies of complex formation involving weak acids. Part VIII. The optical rotation of solutions of tartaric acid, tartaric acid during neutralisation, and of neutral tartrates, with a note on the effect of sodium chloride." By H. T. S. BRITTON and (Miss) K. O. P. JACKSON.
- " The dismutation of some disulphides. Part III. Molecular rearrangements following dismutation." By R. G. BARTLETT and E. W. McCLELLAND.
- " The constitution and reactions of thiocarbonyl tetrachloride. Part I. Introduction and reaction with arylamines." By J. M. CONNOLLY and G. M. DYSON.
- " New derivatives of xylose." By G. J. ROBERTSON and T. H. SPEEDIE.
- " Adsorption at the surface of solutions. Part III. The surface structure of solutions of the lower aliphatic alcohols." By J. A. V. BUTLER, A. WIGHTMAN, and W. H. MACLENNAN.
- " Adsorption at the surface of solutions. Part IV. Adsorption constants in solutions containing two solutes." By F. R. HIMSWORTH and J. A. V. BUTLER.
- " The chlorination of isoprene." By W. J. JONES and H. G. WILLIAMS.
- " Continuous extraction head for use with light solvents." By E. M. MEADE.
- " The replacement of 'obstacle' groups in optically active diphenyls." By F. BELL.
- " The catalytic and electrical properties of metallic surfaces. Part I. A silver surface catalysing the combustion of carbonic oxide." By B. W. BRADFORD.
- " The mechanism of the deamination of amino-alcohols. Part I. Amino-alcohols derived from  $\alpha$ -aminohydrochalcone hydrochloride." By A. K. MILLS.
- " Volume effects of alkyl groups in aromatic compounds. Part III. The dinitration of 3-chloro- and bromo- $\beta$ -cymenes." By S. N. GANGULY and R. J. W. LE FÈVRE.
- " The oxidation of 4-*n*-propylphenol to 2-*n*-propylquinol." By G. BADDILEY and J. KENNER.
- " The decomposition of the nitrites of some primary aliphatic amines." By D. W. ADAMSON and J. KENNER.
- " The freezing points of some benzene solutions." By C. R. BURY and H. O. JENKINS.
- " The resinols. Part II. The oxidation of  $\alpha$ - and  $\beta$ -amyrins with chromic anhydride." By F. S. SPRING and T. VICKERSTAFF.
- " Improved methods for the separation of chloride from bromide by means of ammonia." By T. B. SMITH.
- " Acid salts in systems of the type: monobasic acid-alkaline earth salt-water." By L. J. DUNN and J. C. PHILIP.

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FORMS OF RECOMMENDATION FOR FELLOWSHIP. THE BALLOT WILL BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, MAY 3rd, 1934.

BAILEY, RONALD WILLIAM, Lincoln College, Oxford. British. Student. "Beryllium Benzoylacetate," *J.C.S.*, 1933, 1546, with F. M. Brewer and H. M. Powell. Date of birth 28th April, 1912. (*Signed by*) N. V. Sidgwick, Frederick M. Brewer, D. Ll. Hammick.

BAIRD, DONALD KENNETH, 49, Allesley Old Road, Coventry, Warwicks. British. Research Student and Demonstrator, Univ. of B'ham. B.Sc. (Hons. Chemistry), Birmingham. Qualified M.Sc. (combined Ph.D. course). "Synthesis of *d*- and *l*-Ascorbic Acid and of Analogous Substances" [with R. G. Ault, H. Carrington, W. N. Haworth, R. Herbert, E. L. Hirst, E. Percival, F. Smith, and M. Stacey], *J.C.S.*, 1933, 1419. "Ascorbic Acid and Synthetic Analogues" [with W. N. Haworth, R. W. Herbert, E. L. Hirst, F. Smith, and M. Stacey] (in the Press). (*Signed by*) W. N. Haworth, E. L. Hirst, W. J. Hickinbottom, Wm. Wardlaw.

BAIRSTOW, STANLEY, 2, Westbury Terrace, West End, Halifax, Yorks. British. Research Chemist, L.M.S. B.A., Oxford. "The Homogeneous Catalysis of Gaseous Reactions by Iodine. The Decomposition of Propionic Aldehyde and a General Discussion," Bairstow and Hinshelwood, *Proc. Roy. Soc.*, 1933, *A*, 142, 77. "Catalysis of Gaseous Reactions by Chlorine," Bairstow, *Trans. Faraday Soc.*, 1933, XXIX, 1227. Bairstow and Hinshelwood, *J.C.S.*, 1933, 1147, 1155. (*Signed by*) C. N. Hinshelwood, J. H. Wolfenden, E. J. Bowen.

BANKS, WILLIAM HENRY, 59, Crescent Lane, Clapham Park, S.W. 4. English. Physical Chemist. B.Sc., Ph.D. (Lond.), Battersea Polytechnic, S.W. 11. Publications in collaboration with others: "Extent of Dissociation of Electrolytes," *Trans. Faraday Soc.*, 1931, 27, 621. "Calculation of Degrees of Dissociation," *J.C.S.*, 1931, 3341. "Dissociation of Acetic Acid," *Nature*, Feb. 1933. Ph.D. thesis to London University, March 1933: "A Conductimetric Study of Dissociation Equilibria in some Weak Electrolytes." Date of birth 30th Sept., 1910. (Signed by) J. Kenyon, C. W. Davies, F. Bell.

BISHOP, GEORGE EDWARD, 38, Mauldeth Road, Withington, Manchester. British. 2nd Class in Part I Nat. Sci. Tripos (Cambridge). Student for Part II Chem. Nat. Sci. Tripos. Desirous of using Society's Library. Date of birth 22nd Nov., 1912. (Signed by) A. E. Wansbrough-Jones, W. G. Palmer, A. J. Berry.

BOND, EDWARD JOHN, 37, Carlton Road, Birkenhead, Cheshire. British. Research Chemist. B.Sc. (Lond.), A.I.C. Four years Chemist, Messrs. Peter Hooker, Ltd., Walthamstow, Engineers. Three years Chemist, Madderton & Co., Loughton, Colour Manufacturers. Eight years Chemist, Lewis Berger & Sons, Ltd., Homerton, Paint, Varnish, and Colour Manufacturers. Goodlass Wall and Lead Industries, Ltd., Liverpool, Paint, Varnish and Colour Manufacturers. (Signed by) Louis A. Jordan, D. R. Duncan, G. H. Cheesman, J. Outram Cutter.

BRADLEY, RUPERT STEVENSON, 24, Estcourt Terrace, Headingley, Leeds 6 (also, University, Leeds). British. Demonstrator in Inorganic Chemistry. M.A., Cambridge. Teaching experience at Leeds University. Various papers. (Signed by) H. S. Patterson, W. Lowson, R. Whytlaw-Gray.

CARRINGTON, HERBERT CLARE, "Barton," Bromley Lane, Kingswinford, Staffs. British. Research Assistant. B.Sc. (1st Class Honours, Chemistry), University of Birmingham. "Sucrose and Other Disaccharides," H. C. Carrington, W. N. Haworth, and E. L. Hirst, *J. Amer. Chem. Soc.*, 1933, 55, 1084. "Synthesis of *d*- and *l*-Ascorbic Acid and of Analogous Substances," *J.C.S.*, 1933, 1419, R. G. Ault, D. K. Baird, H. C. Carrington, W. N. Haworth, R. Herbert, E. L. Hirst, E. G. V. Percival, F. Smith, and M. Stacey. (Signed by) W. N. Haworth, E. L. Hirst, W. J. Hickinbottom, Wm. Wardlaw.

CAWTHORNE, REGINALD ROBERTS, Lincoln College, Oxford. British. Student. Undergraduate. (Signed by) D. Ll. Hammick, N. V. Sidgwick, R. Robinson, T. W. J. Taylor, W. Baker.

DAVIES, GRIFFITH VIVIAN, 2, Gnoll Avenue, Neath, S. Wales, c/o Shell Mex & B.P., Ltd. [T & R Dept.], Shell Mex House, W.C. British. Petroleum Technologist. Associateship in Mech. and Elect. Engineering, Sheffield University. Six years as Chemist with A.P. Oil Co., prior to taking up Engineering, with a view to qualifying as Chem. Engineer. Desire to join Society to keep in touch with Study of Applied Chemistry. Have had paper published in *Sheffield Mining Magazine* on the "Oil Industry." (Signed by) W. H. Cadman, A. E. Dunstan, J. Kewley.

EDWARDS, ELIZABETH SEDGLEY, Hill Farm, Ruislip, Middlesex. British. Student. To attend meetings, and to use the Library. Date of birth 27th April, 1913. (Signed by) O. L. Brady, J. N. E. Day, R. J. W. Le Fèvre.

ELLIS, BERNARD ALBERT, 57, Woodwarde Road, E. Dulwich, S.E. 22. British. Senior Chemist at the Government Laboratory. M.A. (Cantab.), F.I.C. (Signed by) R. Robertson, J. J. Fox, A. G. Francis.

ESTEVEZ, JOSEPH MARY JOHN DE MATA, 53, Talgarth Mansions, Barons Court, W. 14. English. Student at University College, London. To receive *Journal*, attend meetings and use Library. Date of birth 8th Feb., 1911. (Signed by) L. F. Gilbert, Henry Terrey, O. J. Walker.

EVANS, DAVID PHILIP, 17, Plantagenet Street, Riverside, Cardiff, Glam. British. Assistant Lecturer in Chemistry, Technical College, Cardiff. B.Sc. (1st. Hons.), M.Sc., Ph.D. (University of Wales). "The Lower Trialkyl Orthophosphates," *J.C.S.*, 1930, 1310. "The Viscosities of Phosphoric Esters," *ibid.*, 1932, 985. (Signed by) S. T. Bowden, H. B. Watson, J. F. J. Dippy, W. J. Jones.

FORD, JOHN PETER, Public Schools Club, 61, Curzon Street, W. 1. British. Student. Taking Nat. Sci. Tripos (Cambridge), June 1934. Temporary Science Master at Wrekin College (Summer, 1932). Experience in Manufacturing Chemistry with Thames Hard Rubber Corp., 147, Grosvenor Road, S.W. 1. Wish to keep in touch with Industrial and Research Chemistry. Date of birth 20th Feb., 1912. (Signed by) H. W. Melville, E. B. Ludlam, Harold A. Scarborough.

GODWARD, LESLIE WILFRED NORMAN, 231, Beehive Lane, Ilford, Essex. British. Science Master, "Central Park" School, East Ham. Assistant in work on Walden Inversion with Dr. J. Kenyon, at Battersea Poly. M.Sc. Dissertation, "Stereochemistry of Metallic Compounds," June 1933. Am now carrying out investigations on the Chemistry and Stereochemistry of Ruthenium Complexes, at Sir J. Cass Institute with Dr. A. M. Ward. *J.C.S.*, 1931, 2282. (Signed by) A. M. Ward, Henry J. S. Sand, F. G. Kny-Jones.

GRIMWADE, ARTHUR GEOFFREY, "Rivington," Woodland Avenue, Wolstanton, Stoke-on-Trent. British. Undergraduate at Cambridge University. Natural Sciences Tripos, 1933, Part I, Class I. Qualified for the B.A., degree, but unable to take degree until conditions of residence are satisfied. Date of birth 15th July, 1912. (Signed by) L. A. Borradaile, H. McCombie, A. J. Berry.

HARRISON, KENNETH PRICHARD, King's College, Cambridge. English. 1st Class Natural Sciences Tripos, Part I (1933). Desire to attend meetings and receive the *Journal*. Date of birth 26th Oct., 1912. (Signed by) W. J. Pope, W. H. Mills, H. McCombie.

JOHNSON, CHRISTOPHER HOLLIS, 41, Royal York Crescent, Clifton, Bristol. English. University Lecturer. B.Sc. (Lond.), Ph.D. (Lond.). Published work: "Flames and Gaseous Explosions," *Phil. Mag.*, 1927 and 1928; *J.C.S.*, 1928. "Ultrasonic Radiation," *J. Amer. Chem. Soc.*, 1928 and 1928; *Journal of Physiology*, 1929. "Optical Activity," *Trans. Faraday Soc.*, 1932 and 1933. Instructor at University of California, 1927-29; Assistant Lecturer at Bristol University, 1929 onwards. *J.C.S.*, 1928, 280. (Signed by) E. B. Maxted, M. W. Travers, W. E. Garner.

KEATS, GEORGE HAROLD, "Sunridge," Lovedean Corner, Horndean, Portsmouth. British. Student at Pembroke College, Cambridge. Date of birth 12th May, 1913. (Signed by) Harold A. Scarborough, T. H. H. Quibell, A. E. Wansbrough-Jones.

LIDSTONE, ALAN GOODRIDGE, 11, Collington Avenue, Bexhill-on-Sea. British. Student. Exhibitioner of Downing College, Cambridge. 1st Class in Natural Sciences Tripos, Part I. I desire to receive the *Journal* to keep in touch with the development of Chemistry. Date of birth 21st Feb., 1912. (Signed by) F. B. Kipping, W. H. Mills, W. J. Pope.

McFADYEN, JOHN SCHEFFER, 4, Bruce Road, Pollokshields, Glasgow, S. 1. British. Research Student, Organic Chemistry Dept., Glasgow University. B.Sc. (1st Class Hons. in Chemistry), Glasgow University. (Signed by) T. S. Stevens, F. R. Storrie, Andrew Kent.

MERCER, DONALD, 16, Hale Road, Wallasey, Cheshire. English. Research Student. B.Sc. (Hons.), Liverpool. Honours student, at present engaged in research. Date of birth 10th Feb., 1913. (Signed by) A. Robertson, R. A. Morton, E. C. C. Baly.

MURRAY, ARTHUR GEORGE, 38, Thatch Leach Lane, Whitefield, Manchester. British. Chemist. Ph.D., B.Sc. (Chemistry), London University. Two years' research work under Prof. Kipping, University College, Nottingham. Five years' experience in Research Laboratories of British Dyestuffs Corporation, Ltd., Blackley, Manchester. Kipping and Murray, *J.C.S.*, 1927, 2734; 1928, 1427; 1929, 360. Kipping, Murray, and Maltby, *ibid.*, 1929, 1180. (Signed by) E. H. Rodd, A. W. Baldwin, Stanley J. Green.

NATTA, GIULIO, Direttore dell' Istituto di Chimica Generale della R. Università di Pavia, Via S. Epifanio 6 (Italy). Italian. Chief-Director of the University Laboratory of General Chemistry at Pavia (Italy). Dr.-Ing. (Chimico), Milano, 1924. "Researches on Structure of Crystalline Substances with X-Rays and Electron-Rays." "Industrial Synthesis of Methanol and Higher Alcohols from Carbon Oxide and Hydrogen" (see Abstracts in *Brit. Chemical Abstracts*). (Signed by) G. Bruni, L. Cambi, G. R. Levi.

PEARSON, THOMAS GIBSON, 2, Plotina Terrace, South Shields. British. Demonstrator in Chemistry Department, Royal College of Science. M.Sc., Ph.D., Durham University. Previously demonstrator at Armstrong College, University of Durham. Conjoint Researches on Sulphides, Polysulphides, and Carbonyls, *J.C.S.* Free Hydroxyl, *Z. physikal. Chem.*, 1931, 14, 1. Atomic Hydrogen, *Proc. Roy. Soc.*, 1933, 142, 275, etc. *J.C.S.*, 1928, 814; 1930, 1473; 1931, 413, 1304, 1983; 1932, 652, 660; 1933. (Signed by) James C. Philip, P. L. Robinson, L. S. Theobald, R. H. Purcell.

PERRYMAN, PERCY WATSON, 80, Stephens Road, Tunbridge Wells, Kent. English. Assistant to Clinical Pathologist. B.Sc. (Special Chemistry), University College, London. Research on some colloidal systems. Date of birth 1st June, 1912. (Signed by) N. K. Adam, Henry Terrey, F. G. Donnan.

RANGLES, JOHN EDWARD BROUGH, 6, Trowels Lane, Derby. British. Student. B.Sc., London. Major Scholar Jesus College, Cambridge. 1st Class Natural Science Tripos, Pt. I. Date of birth 26th Aug., 1912. (Signed by) Harold A. Scarborough, W. J. Pope, W. H. Mills.

ROE, JOHN WILLIAM, 218, Nether Street, Finchley, N. 3. British. Student (at University College, London). I wish to join the Society in order to attend the meetings, receive the publications and to use the library. Date of birth 13th May, 1915. (*Signed by*) O. L. Brady, R. J. W. Le Fèvre, Henry Terrey.

STEWART, KENNETH, 10, Geraldine Road, Wandsworth, S.W. 18. English. Imperial College of Science and Technology. Inter B.Sc., Higher School Exam. 1932, Battersea Grammar School. I am a student at Royal College of Science, completing the B.Sc. degree this year. I wish to learn all present advancements on chemistry, and to come in touch with people studying my own branch of research, most probably photochemistry. Date of birth 22nd Sept., 1913. (*Signed by*) H. J. T. Ellingham, James C. Philip, H. F. Harwood.

WILSON, CECIL LEEBURN, *c/o* Mrs. Hanson, 102, Novar Drive, Hyndland Road, Glasgow. British. Research Student. B.Sc. (1st Hons., Q.U.B.), 1932, M.Sc. (Queen's Univ., Belfast), 1933. Post-Grad. Research Studentship, held at Q.U.B., 1932-33. Musgrave Research Studentship, held at Glasgow Univ., 1933-34. Date of birth 11th May, 1912. (*Signed by*) G. G. Henderson, R. Wright, G. Thomson.

WILSON, HAROLD, Public Health Dept., City Hall, Johannesburg, S. Africa. English. City Biochemist. B.Sc. (Lond.), A.M.C.T. 1902-1913, Assistant Chemist, Wolverhampton Corporation Sewage Works. 1919-1925, Assistant Chemist, Manchester Corporation Sewage Works (Daryholme). 1925-1931, Chemist in charge Sewage Disposal Works, Reading. 1931- to present, City Biochemist, Johannesburg, S.A. (*Signed by*) J. A. Wilkinson, Henry Stephen, O. G. Backeberg.

Forms of Recommendation for Fellowship accepted by the Council under Bye-Law I (2).

ABLOV, ANTONÉE VASILE, Laboratory of Inorganic Chemistry, University of Jassy, Jassy, Roumania. Roumanian. Assistant. Chemistry Doctor, graduated in Jassy; Chemistry Engineer, Faculty of Science, Jassy. "Influence des Substituants sur l'Indice de Coordination d'un Métal," *Annales Scientifiques de l'Université de Jassy*, 1930, **16**, 515. *Ibid.*, 1931, **17**, 149. *Ibid.*, 1931, **17**, 173. *Ibid.*, 1933, **18**, 297. "Contribution à l'Étude des Sels Complexes de la  $\gamma$ -Oxyquinoléine," *Bull. Soc. Chim. France*, 1933, **53**, 234. (*Signed by*) G. T. Morgan.

BUYLLA, BENITO 'A., Instituto de Química aplicada, Universidad de Oviedo. Oviedo, España. Catedrático de Química orgánica. Dr. of Sc. (Madrid). Director del Instituto de Química aplicada de la Universidad de Oviedo. 'Autor de Trabajos de investigación acerca de Combustibles sólidos. (*Signed by*) Fernando Calvet.

DUTT, SURENDRA CHANDRA, Shillong, Assam, India. Jorhat, Assam, India. British subject (Indian). Public Analyst to the Government of Assam, India. B.Sc., 1918, M.B., 1923. Calcutta University. D.P.H., 1926, School of Tropical Medicine and Hygiene. As Public Analyst, I have been doing all the Chemical and Bacteriological Analysis as required by the Provincial Govt. of Assam, India. At present I have been determining the (1) Phosphactic Content ( $P_2O_5$ ) of Varieties of "Rices," and (2) trying to find out an easy means for determining the Protein Percentage of "Milks" by (a) Tyrosin and Folin's Phenol Reagent, (b) Phosphotungstic Acid and HCl (Con.), and by parallel determinations of the Proteins Content by Kjeldahl's Method. (*Signed by*) H. K. Sen, J. C. Bardhan.

MOOKERJEE, AMBICA CHARAN, Barakar, E.I.R., Bengal. Hindu (Brahmin). Chief Chemist, The Bengal Iron Co., Ltd., Kulti, E.I.R., Bengal. B.A., Calcutta University, 1915. Chief Chemist; for sixteen years Analytical Chemist in Bengal Iron Co.'s Laboratory, in addition to being Lecturer in Chemistry (Analytical and Theoretical) in the Technical School for apprentices of the Bengal Iron Co., Ltd., Kulti, Bengal. (*Signed by*) Charles Forrester.

SUTHERLAND, JAMES FERGUSON, 17, Princep Street, Calcutta, India. British. Merchant (Director, Messrs. Martin & Harris, Ltd.). Chemist and Druggist, Edinburgh. After obtaining my Degree as a Chemist and Druggist I came to India and was attached to Messrs. Smith Stanistreet & Co., Ltd., in their manufacturing dept. for a period of six years. (*Signed by*) H. Cooper.

SWAIN, ROBERT ECKLER, 634, Mirada Avenue, Stanford University, California. United States of America. Professor and Executive Head, Dept. of Chemistry, Stanford University. A.B. (Stanford); M.S. (Yale); Ph.D. (Yale); LL.D. (College of Pacific). (*Signed by*) James W. McBain.

TUCKER, NATHANIEL BEVERLEY, 304, Letcher Avenue, Lexington, Virginia U.S.A. American. Assistant Professor of Chemistry. B.S., Virginia Military Institute; M.A., Ph.D., Johns Hopkins University. Student Assistant, Johns Hopkins, Dupont Fellow, 1931-32. Dissertation, *J.A.C.S.*, 1933, 55, 775. 1933 to date: Assistant Professor in charge Organic Chemistry, Virginia Military Institute. (*Signed by*) Jas. Lewis Howe.

## ADDITIONS TO THE LIBRARY

### I. Donations.

AMERICAN INSTITUTE OF PHYSICS. The Journal of Chemical Physics. Vol. I, etc. Lancaster, Pa. 1933 +. (*For circulation.*)

From the Bureau of Chemical Abstracts.

BAKER, JOHN WILLIAM. Tautomerism. London 1934. pp. viii + 332. 25s. net. (*Recd.* 16/2/34.) From the Author.

BRITISH PLASTICS YEAR BOOK 1934. The handbook and guide to the plastics industry. London 1934. pp. 566. ill. (*Reference.*) 7s. 6d. net. From the Editor.

FARADAY SOCIETY. Free radicals: a general discussion held . . . September 1933. London [1934]. pp. iv + 248. ill. 12s. 6d. net. (*Recd.* 23/2/34.) From the Society.

FEDERATED MALAY STATES. *Institute for Medical Research*. Annual Report for the year 1931, etc. Kuala Lumpur 1932 +. (*Reference.*) From the Director.

KELVIN, WILLIAM THOMSON, BARON. Mathematical and physical papers. 6 vols. Cambridge 1882-1911. ill.

From the Faraday Society.

LONDON COUNTY COUNCIL. Oxidation-reduction potentials in bacteriology and biochemistry. By LESLIE FRANK HEWITT. 2nd edition. London 1933. pp. 81. ill. 2s. net. (*Recd.* 2/2/34.)

From the London County Council.

LUNGE, George. Technical gas analysis. Revised and rewritten by HENRY REASON AMBLER. London 1934. pp. xvi + 410. ill. 21s. net. (*Recd.* 14/3/34.) From the Publishers: Messrs. Gurney & Jackson.

MEDICAL RESEARCH COUNCIL. Special Report Series, No. 194. The chemistry of antigens and antibodies. By JOHN RICHARDSON MARRACK. London 1934. pp. 135. ill. (*Reference.*) 2s. 6d. net. From the Council.

NYROP, J. E. A treatise on the catalytic action of surfaces. Copenhagen 1934. pp. 75. (*Recd.* 6/2/34.) From the Author.

O'SULLIVAN, CORNELIUS. *See* O'SULLIVAN, HUMPHREY DONNELL.

O'SULLIVAN, HUMPHREY DONNELL. The life and work of C. O'Sullivan, F.R.S. Guernsey [1934] pp. 235. (Two copies.) (*Recd.* 30/1/34.) From the Author.

PHARMACEUTICAL FORMULAS. P.F. Vol. II, being the chemists' recipe book of formulas.

10th edition. By GEORGE PETERS FORRESTER. London 1934. pp. xx + 983. (*Reference.*) 15s. net. From the Editor.

RAYLEIGH, JOHN WILLIAM STRUTT, BARON. Scientific papers 1861-1910. 5 vols. Cambridge 1899-1912. ill.

From the Faraday Society.

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From the Executive Committee.

### II. By Purchase.

BREZINA, ERNST. Die gewerblichen Vergiftungen und ihre Bekämpfung. Stuttgart 1932. pp. viii + 288. M. 19. (*Recd.* 16/1/34.)

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ERRERA, J. Polarisation diélectrique. Réfraction des radiations depuis les rayons X jusqu'aux ondes Hertiennes. Paris 1928. pp. 172. ill. 35 fr. (*Recd.* 26/2/34.)

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KRÜGER, D. Zelluloseazetate und die anderen organischen Ester der Zellulose. Dresden 1933. pp. viii + 391. *M.* 21.50. (*Recd.* 5/3/34.)

MARX, ERICH. [Editor.] Handbuch der Radiologie. Vol. VI. Quantenmechanik der Materie und Strahlung. Part ii. Moleküle. Leipzig 1934. pp. viii + 604. ill. *M.* 56. (*Recd.* 19/2/34.)

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HILL, WILLIAM H., KING, H. M., and LAIRD, D. G. Some further studies on the etiology of bovine *Haematuria vesicalis* (Red Water) in British Columbia. (From *Sci. Agric.*, 1933, 13.)

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— Lecture on "Electrometric methods in physical and analytical chemistry." By SAMUEL GLASSSTONE. London 1934. pp. 39. ill.

— The chemist as a directing force in industry. By HERBERT LEVINSTEIN. 5th S. M. Gluckstein Memorial Lecture, 1933. London 1934. pp. 22.

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Mendeléeff. Complete bibliography. Moscow 1932. pp. 64. [In Russian.]

MINES DEPARTMENT. *Safety in Mines Research Board*. Paper No. 81. The prevention of ignition of firedamp by the heat of impact of coal-cutter picks against hard rocks. By MAURICE JOHN BURGESS and RICHARD VERNON WHEELER. London 1933. pp. 14. ill.

— — Paper No. 82. The movement of flame in firedamp explosions. By HUBERT FRANK COWARD and RICHARD VERNON WHEELER. London 1934. pp. 59. ill.

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— — Report of Pharmaceutical Chemistry Sub-Committee. London 1933. pp. 51.

— — Report of Action and Uses Sub-Committee. London 1933. pp. 14.

— — Report of Pharmacognosy Sub-Committee. London 1933. pp. 20.

— — Report of Pharmacy Sub-Committee. London [1933]. pp. 49.

READ, JOHN. Alchemy and alchemists. (From *Folk-Lore*, 1933.)

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. *Building Research Board*. Report of the Reinforced Concrete Structures Committee, with recommendations for a code of practice for the use of reinforced concrete in buildings. London 1933. pp. iv + 69.

— — Technical Paper No. 15. Temperature rise in hydrating concrete. By N. DAVEY and E. N. FOX. London 1933. pp. viii + 69.

— — *Food Investigation*. Special Report No. 43. The storage of meat in small refrigerators. By R. B. HAINES and E. C. SMITH. London 1933. pp. vi + 30. ill.

— — *Fuel Research*. Physical and chemical survey of the national coal resources, No. 30. The Yorkshire, Nottinghamshire, and Derbyshire coalfield. Nottinghamshire and Derbyshire area. The Deep Hard seam. London 1933. pp. vi + 77. ill.

— — Physical and chemical survey of the national coal resources, No. 31. The Yorkshire, Nottinghamshire, and Derbyshire coalfield. South Yorkshire area. Analysis of commercial grades of coal—part II. London 1934. pp. vi + 37. ill.

UNITED STATES. *Department of Agriculture*. Circular No. 304. Windrowing qualities of Co. 281 and other varieties of sugarcane under Louisiana conditions. By R. T. BALCH and J. I. LAURITZEN. Washington 1933. pp. 14.

— — Technical Bulletin No. 399. A study of claypan soils. By IRVIN C. BROWN, T. D. RICE, and HORACE G. BYERS. Washington 1933. pp. 42.

**FORTHCOMING MEETINGS IN LONDON.**

Thursday, April 19th, 1934.

A Lecture entitled: "The Periodic Law of Mendeléef and its Interpretation," in commemoration of the centenary of the birth of Mendeléef, will be delivered by the Rt. Hon. Lord Rutherford of Nelson, O.M., M.A., D.Sc., F.R.S. The Lecture will be held at the Royal Institution, Albemarle Street, London, W. 1. (by the courtesy of the Managers). Admission for Fellows and Visitors will be by ticket only. Each Fellow has the privilege of introducing two Visitors, for whom tickets will be issued as accommodation allows. Applications for tickets should be made to the Assistant Secretary, The Chemical Society, Burlington House, Piccadilly, London, W. 1, by Monday, 16th April.

**FORTHCOMING MEETINGS OUTSIDE LONDON.***NEWCASTLE.*

Friday, May 18th, 1934, at 6.30 p.m. in the Chemistry Lecture Theatre, Armstrong College. Bedson Lecture entitled "Gutta Percha, Balata, and Caoutchouc," by Professor G. G. Henderson, M.A., D.Sc., F.R.S.

# PROCEEDINGS

OF THE

## CHEMICAL SOCIETY.

A joint meeting of the Chemical Society and the University of Birmingham Chemical Society was held in the Chemistry Lecture Theatre of the University of Birmingham on Monday, March 5th, 1934, at 5.30 p.m. The Chair was taken by Professor W. N. Haworth, D.Sc., F.R.S., who, after welcoming the visitors present, called upon Dr. N. V. Sidgwick to deliver his lecture on "Recent Work on Molecular Structure." At the conclusion, a vote of thanks to the Lecturer was proposed, seconded, and carried with acclamation, Dr. Sidgwick making acknowledgment.

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A meeting of the Chemical Society was held at the University of Liverpool on Tuesday, March 13th, 1934, at 7.45 p.m., Professor W. C. McC. Lewis, M.A., D.Sc., F.R.S., being in the Chair. A lecture entitled "The Experimental Study of some Gas Reactions" was given by Professor M. W. Travers, and at the conclusion of the lecture, a vote of thanks to the Lecturer, proposed by Professor E. C. C. Baly and seconded by Dr. F. W. Kay, was carried with acclamation. The lecture was well attended by members of various chemical organisations.

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The Anniversary Dinner of the Society was held at the Grand Hotel, Birmingham, on Thursday, March 22nd, 1934, at 7.30 p.m. The President, Professor G. T. MORGAN, O.B.E., D.Sc., F.R.S., presided, the number present being 235. The Rt. Hon. Sir Austen Chamberlain, K.G., P.C., M.P., was the principal guest of the evening, and among the other guests present were Mr. Walter Barrow (Pro-Chancellor, University of Birmingham) and Mrs. Barrow, the Lord Mayor of Birmingham and the Lady Mayoress, Sir William Waters Butler and Lady Butler, Mr. W. A. S. Calder (Chairman, Reception Committee), Dr. J. T. Dunn (President, the Society of Chemical Industry), Mr. John Evans (President, the Society of Public Analysts), Professor A. G. Green (President, the Society of Dyers and Colourists) and Mrs. Green, Mr. John Keall (President, the Pharmaceutical Society) and Mrs. Keall, Mr. W. Macnab (President, the Institution of Chemical Engineers), Mr. Wilfred C. Mathews (President, Birmingham Law Society) and Mrs. W. C. Mathews, Sir Charles Rafter and Lady Rafter, Sir Charles Grant Robertson (Vice-Chancellor, University of Birmingham), Professor R. Robison (Chairman of Executive Committee of the Biochemical Society) and Mrs. Robison, Dr. N. V. Sidgwick (President, the Faraday Society), Professor J. F. Thorpe (President, the Institute of Chemistry) and Mrs. Thorpe.

After the loyal toasts had been honoured, the following toasts were proposed :

The City of Birmingham. By Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., Past-President. Response by the Rt. Worshipful the Lord Mayor of Birmingham, Alderman H. E. GOODBY, J.P.

The Chemical Society. By the Right Honourable SIR AUSTEN CHAMBERLAIN, K.G., P.C., M.P. Response by the President, Professor G. T. MORGAN, O.B.E., D.Sc., F.R.S.

The University of Birmingham. By Dr. N. V. Sidgwick, O.B.E., M.A., F.R.S., Vice-President. Response by the Vice-Chancellor and Principal of the University of Birmingham, Sir CHARLES GRANT ROBERTSON, C.V.O., M.A., LL.D.

The Guests. By Professor W. N. HAWORTH, D.Sc., F.R.S., Vice-President. Response by Dr. J. T. DUNN, President, the Society of Chemical Industry.

Ordinary Scientific Meeting, Thursday, April 19th, 1934, at 8 p.m., held at the Royal Institution, Albemarle Street, W. 1, Professor G. T. MORGAN, O.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, on March 18th, of Professor Camille Matignon, who was elected an Honorary Fellow on November 2nd, 1933, and of the following Fellows :

	Elected.	Died.
George Gray .....	Dec. 7th, 1882.	Feb. 23rd, 1934.
Andrew Norman Meldrum .....	Feb. 15th, 1905.	Mar. 12th, 1934.
Bertram Vincent Storr .....	Feb. 15th, 1900.	Apr. 6th, 1934.
John Taylor .....	Feb. 18th, 1915.	Sept. 1933.

The PRESIDENT announced that :—

1. The Council had appointed Professor G. Ingle Finch to fill the vacancy among the Ordinary Members of Council (Town Members) caused by the retirement of Professor A. J. Allmand.

2. A contribution of £5 to the funds of the Society had been received from Dr. H. E. Cox.

3. Mr. A. Bracher and Professor H. E. Stapleton had presented volumes of the *Journal*.

Lord Rutherford and Professor Gilbert N. Lewis were formally admitted Honorary Fellows and Messrs. Gilbert Palmer, E. G. Boyce, and F. Paneth were formally admitted Fellows of the Society.

Forms of Recommendation for Fellowship were read for the first time in favour of :

Gad Tawadrous Abd-el-Messih, Sanieh Secondary School, Sayeda Zeinab, Cairo, Egypt.  
 David James Bell, B.Sc., Ph.D., A.I.C., 33, High Street, Old Aberdeen.  
 George Henry Frazer, Ph.D., Ellerslie, Upper Park Road, Manchester, 14.  
 George Charlesworth Hampson, B.A., B.Sc., 51, Portland Road, Oxford.  
 William Kenneth Harper, 11, Walton Vale, Walton, Liverpool, 9.  
 Reginald William Herbert, Ph.D., Chemistry Department, The University, Edgbaston, Birmingham, 15.  
 Alfred Nigel Parker, Foldsdown, Thursley, Godalming, Surrey.  
 René Armand Romann, Prof., Institut de Chimie, Rue Goethe, Strasbourg.  
 Seth Taylor, West View, Wilson Road, Mirfield, Yorks.  
 Cyril James Thomas, M.R.C.S., L.R.C.P., West Riding Mental Hospital, Wakefield, Yorks.

The following form of recommendation for Fellowship has been accepted by the Council under Bye-Law I (2) :

Wilfred Lowe, Les Silenes, Avenue de la Tour Lascaris, Nice.

Forms of Recommendation for Fellowship in favour of thirteen candidates were read for the second time.

The PRESIDENT stated that the meeting was being devoted to a celebration of the centenary of the birth of Dmitri Ivanovitch Mendeléeff, and called upon Lord Rutherford to deliver his lecture entitled "The Periodic Law of Mendeléeff, and its Interpretation."

At the conclusion of the lecture, a vote of thanks to Lord Rutherford was proposed by Dr. Alexander Scott, seconded by Dr. N. V. Sidgwick, and supported by Professor G. N. Lewis and Professor H. E. Armstrong. This was carried with acclamation, Lord Rutherford making brief acknowledgment.

A vote of thanks to the Managers of the Royal Institution for granting the use of the Lecture Theatre was moved from the Chair and carried with acclamation.

List of Papers, or Abstracts thereof, received between March 15th and April 19th, 1934, (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.)

- “The resolution of *dl*-menthyl (–)mandelate.” By A. MCKENZIE and (Miss) E. M. LUIS.
- “Selenium dioxide. A new oxidising agent. Part IV. The preparation and properties of ethyl ketohydroxysuccinate.” By S. ASTIN and H. L. RILEY.
- “The condensation of 1 : 8-naphthalyl chloride with *m*-ethylcarbonatodimethylaniline.” By W. R. BROWN and F. A. MASON.
- “Physicochemical studies of complex formation involving weak acids. Part IX. Complex formation between boric and tartaric acids.” By H. T. S. BRITTON and (Miss) K. O. P. JACKSON.
- “The mercuration of nitrotoluidines.” By A. E. GODDARD.
- “The rearrangement of the alkyl anilines. Part VI. Mechanism of the rearrangement.” By W. J. HICKINBOTTOM.
- “The electrolytic properties of hydrogen. Part I. Hydrogen as an anodic depolariser. Part II. Effect of anodic polarisation of the platinum electrodes.” By J. A. V. BUTLER and G. ARMSTRONG.
- “Constitutional factors controlling prototropic changes in carbonyl compounds. Part VI. The mechanism of the catalysed change, and the prototropy of the phenylacetones.” By L. L. LAURIE, W. S. NATHAN, and H. B. WATSON.
- “The nitration of anisole.” By P. H. GRIFFITHS, W. A. WALKEY, and H. B. WATSON.
- “Volume effects of alkyl groups in aromatic compounds. Part IV. The dinitration of 2-chlorocymene.” By S. N. GANGULY and R. J. W. LE FÈVRE.
- “The dinitration of *p*-dimethylaminoacetanilide.” By H. H. HODGSON and J. H. CROOK.
- “The lattice dimensions of zinc oxide.” By G. I. FINCH and H. WILMAN.
- “Surface reaction between acetylene and iodine.” By C. P. ELLIS.
- “The nitration of some aryloxy-2- and 4-methylquinolines. Syntheses of substances having possible antimalarial action.” By (Miss) R. M. MURRAY and E. E. TURNER.
- “The absorption spectra of some polyatomic molecules containing methyl and ethyl radicals.” By H. W. THOMPSON.
- “On the colour changes in light and darkness of ammonium sulphocyanide solutions.” By B. S. V. RAGHAVA-RAO.
- “The alkaloids of ergot. Part V. The nature of ergine.” By S. SMITH and G. M. TIMMIS.
- “Alternation in long-chain compounds. Part II. An X-ray and thermal investigation of the triglycerides.” By C. E. CLARKSON and T. MALKIN.
- “The absorption spectrum of acetone and the mechanism of photochemical decomposition of aldehydes and ketones.” By H. W. THOMPSON.
- “The dipole moments of liquids.” By F. R. GOSS.
- “Experiments on the synthesis of anthocyanins. Part XVIII. Cyanidin 3-xyloside and 3 : 7- and 5 : 7-diglucosides.” By R. H. MACDOWELL, R. ROBINSON, and A. R. TODD.
- “Experiments on the synthesis of anthocyanins. Part XIX. 5-Glucosidylapigeninidin, believed to be identical with gesnerin, an anthocyanin of *gesnera fulgens*.” By (Mrs.) G. M. ROBINSON, R. ROBINSON, and A. R. TODD.

- “Experiments on the synthesis of anthocyanins. Part XX. Synthesis of malvidin 3-galactoside and its probable occurrence as a natural anthocyanin.” By (Miss) J. C. BELL and R. ROBINSON.
- “The unsaturation and tautomeric mobility of heterocyclic compounds. Part IV. Semi-cyclic triad systems containing the benzoxazole ring system.” By R. D. DESAI, R. F. HUNTER, and A. R. K. KHALIDI.
- “The organic compounds of gold. Part III. Monoethyldibromogold (monoethylgold dibromide).” By A. BURAWOY and C. S. GIBSON.
- “The constitution of tannins. Part II. The synthesis of bis-(5 : 7 : 3' : 4'-tetrahydroxy)-flavpinacol, with a note on eriodictyol.” By A. RUSSELL and J. TODD.
- “Polysaccharides. Part XVII. The constitution and chain length of levan.” By S. W. CHALLINOR, W. N. HAWORTH, and E. L. HIRST.
- “An instance of the reversed field effect of the methyl group.” By J. KENNER and F. MORTON.
- “Ionic interchange in sulphur sols. Part III. The mechanism of coagulation.” By T. R. BOLAM and J. J. MUIR.
- “Some substitution products of 2-methoxy-2'-nitro- and 2-methoxy-2' : 4'-dinitro-diphenyl ethers.” By H. A. SCARBOROUGH and J. L. SWEETEN.
- “Diethylenetriamine.” By D. H. PEACOCK and N. C. DUTTA.
- “Synthetical experiments in the chromone group. Part XII. A synthesis of 7-hydroxy-isoflavone and of  $\alpha$ - and  $\beta$ -naphthaisoflavone.” By H. S. MAHAL, H. S. RAI, and K. VENKATARAMAN.
- “The manganohalides of pyridine and quinoline.” By F. S. TAYLOR.
- “The synthesis of compounds related to the sterols, bile acids, and œstrus-producing hormones. Part III. 7-Methoxy-1 : 2-cyclopentenophenanthrene, a dehydrogenation product of œstrin and equilenin.” By A. COHEN, J. W. COOK, C. L. HEWETT, and (in part) A. GIRARD.
- “The dissociation constants of organic acids. Part IX. Some ‘amic’ acids.” By G. H. JEFFERY and A. I. VOGEL.
- “The action of halogens upon the arylazoacetylacetones.” By F. D. CHATTAWAY and D. R. ASHWORTH.
- “The energetics of catalysis. Part III. Further studies of the poisoning coefficients of hydrogenation processes.” By E. B. MAXTED and V. STONE.
- “Fused carbon rings. Introduction and Part I. The fusion of five-membered rings in the *cis*- and *trans*-positions. The synthesis of  $\beta$ -0 : 3 : 3-bicyclooctanones and related compounds.” By R. P. LINSTED and E. M. MEADE.
- “Fused carbon rings. Part II. The synthesis of *cis*- $\alpha$ -0 : 3 : 3-bicyclooctanone and related compounds.” By A. H. COOK and R. P. LINSTED.
- “Fused carbon rings. Part III. The synthesis of *cis*- and *trans*-cyclopentane-1-carboxy-2-acetic acids and the stability of their anhydrides.” By A. H. COOK and R. P. LINSTED.
- “The action of inhibitors on the decomposition of hydrogen peroxide.” By D. RICHTER.
- “The initiation of the detonation wave in solid explosives.” By W. E. GARNER.
- “Optical activity in relation to tautomeric change. Part IV. Comparison of the rates of racemisation and of bromination of a ketone.” By C. K. INGOLD and C. L. WILSON.
- “Stereoisomerism of disulphoxides and related substances. Part IX. Disulphoxides in the thianthrene series.” By H. BAW, G. M. BENNETT, and (Miss) P. DEARNS.
- “The catalytic hydrogenation of simple molecules by heavy hydrogen.” By H. W. MELVILLE.
- “The unsaturation and tautomeric mobility of heterocyclic compounds. Part V. The methylation and bromination of a series of 2-*p*-substituted anilinothiazoles.” By R. F. HUNTER and E. R. PARKEN.
- “Some remarks on the interpretation of the parachor.” By R. F. HUNTER and R. SAMUEL.
- “The reaction of atomic hydrogen with metallic copper.” By F. A. MCMAHON and P. L. ROBINSON.

- "The action of Grignard reagents on 4-diphenyl piperidinomethyl ketone and on *N*-methylcinchotoxine." By (Miss) B. R. CARPENTER and E. E. TURNER.
- "A contribution to the chemistry of the Knoevenagel and similar reactions." By L. H. SMITH and K. N. WELCH.
- "A new addition compound of phenol with hexamethylenetetramine." By L. H. SMITH and K. N. WELCH.
- "The preparation of *p*-dimethylaminobenzyl alcohol." By L. H. SMITH and K. N. WELCH.

### ADDITIONS TO THE LIBRARY.

#### I. Donations.

APOTHEEK, DE. Maandelijksch bijblad van het Pharmaceutisch Weekblad. Vol. I, etc. Amsterdam 1933 +. (*Reference.*)

CARON, HUBERT, and RAQUET, DÉsirÉ. Analyse chimique quantitative à l'aide de liqueurs titrées. Paris 1934. pp. iv + 304. 40 fr. (*Recd.* 9/4/34.)

From the Publishers: Librairie Vuibert.

IBN UMAIL AT-TAMĪMĪ, ABŪ 'ABDALLĀH MUḤAMMAD. Three Arabic treatises on alchemy. Edition of the texts by M. TURĀB 'ALĪ. Excursus on the writings and date of Ibn Umail with edition of the Latin rendering of the *Mā' al-Waraqī* by HENRY ERNEST STAPLETON and M. HIDĀYAT ḤUSAIN. (From the *Mem. Asiatic Soc. Bengal*, 1933, 12.) pp. 213. ill. Rs. 9. (*Recd.* 13/4/34.)

From Professor H. E. Stapleton.

ITALY. Le acque minerali d'Italia. Part I. Lazio. Roma 1933. pp. viii + 243. ill. (*Recd.* 14/4/34.) L. 100.

From the Associazione Italiana di Chimica. PHYSICA. Vol. I, etc. The Hague 1933 +. (*Reference.*)

From the Publisher: Heer Martinus Nijhoff.

TONGUE, HAROLD. The design and construction of high pressure chemical plant. London 1934. pp. x + 420. ill. 30s. net. (*Recd.* 22/3/34.)

From the Publishers: Messrs. Chapman & Hall.

UNION OF SOCIALIST SOVIET REPUBLICS. *Academie des Sciences*. Comptes Rendus. Vol. I, etc. Leningrad 1933 +. (*Reference.*)

From the Academy.

[UNITED STATES.] *National Safety Council*. National Safety News. Vol. XXV. Chicago 1932. (*Reference.*)

From the Association of British Chemical Manufacturers.

WRIGHT, CHARLES HAROLD. Soil analysis: a handbook of physical and chemical methods. London 1934. pp. viii + 236. ill. 12s. 6d. net. (*Recd.* 4/4/34.)

From the Author.

#### II. By purchase.

FRIEND, JOHN NEWTON. [Editor.] A text-book of inorganic chemistry. Vol. VI. Part ii. Phosphorus. By EDMUND BRYDGES RUDHALL PRIDEAUX. London 1934. pp. xxviii + 238. (Two copies.) 18s. net.

LIDDELL, DONALD M., and DOAN, GILBERT E. The principles of metallurgy. New York 1933. pp. viii + 626. ill. \$5.50. (*Recd.* 11/4/34.)

#### III. Pamphlets.

INDIAN LAC CESS COMMITTEE. Annual Report of the Special Officer Lac Inquiry for the financial year 1932-33. London 1934. pp. 9.

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. *Water Pollution Research*. Technical Paper No. 4. The action of water on lead with special reference to the supply of drinking water. Summary of existing knowledge. By H. INGLESON. London 1934. pp. vi + 115.

UNITED STATES. *Department of Agriculture*. Miscellaneous Publication No. 176. Bibliography of chloropicrin, 1848-1932. By R. C. ROARK. Washington 1934. pp. 88.



**FORTHCOMING MEETINGS OUTSIDE LONDON.***NEWCASTLE.*

Friday, May 18th, 1934, at 6.30 p.m. in the Chemistry Lecture Theatre, Armstrong College. Bedson Lecture entitled "Gutta Percha, Balata, and Caoutchouc," by Professor G. G. Henderson, M.A., D.Sc., F.R.S.

**FORTHCOMING MEETINGS IN LONDON.**

Thursday, May 3rd, 1934, at 8 p.m.

Discussion on "Unicellular Chemistry" to be opened by Dr. J. Vargas Eyre, F.I.C., and continued by Dr. E. F. Armstrong, Dr. W. G. Bennett, Professor J. C. Drummond, Dr. H. B. Hutchinson, Miss M. Stephenson, and others.

Thursday, May 17th, 1934, at 8 p.m.

Ordinary Scientific Meeting.

Thursday, June 7th, 1934, at 3 p.m.

Discussion entitled: "Chemical Syntheses under Pressure" to be held at the Chemical Research Laboratory, Department of Scientific and Industrial Research, Teddington, and visit to the laboratories by the invitation of the President. Contributions to the Discussion will be made by Mr. R. Taylor, Dr. D. V. N. Hardy, and Dr. D. D. Pratt. Further particulars will be announced.

PROCEEDINGS  
OF THE  
CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, May 3rd, 1934, at 8 p.m., Professor A. HARDEN, D.Sc., F.R.S., Vice-President, in the Chair.

The CHAIRMAN referred to the loss sustained by the Society, through death on January 30th, 1934, of Mr. Henry White, who was elected a Fellow of the Society on December 3rd, 1891.

It was announced that the following Committees for 1934—1935 had been appointed by the Council :

*Finance and General Purposes Committee* : E. F. Armstrong, F. P. Dunn, G. T. Moody, R. H. Pickard, Sir William J. Pope, W. Rintoul, Sir Robert Robertson, N. V. Sidgwick, the Officers, and the Chairman of the Library Committee and of the Publication Committee. The President as Chairman, Treasurer as Vice-Chairman, and the Assistant Secretary as Secretary.

*Library Committee* : C. R. Bailey, H. Bassett, O. L. Brady, T. A. Henry (Chairman), C. K. Ingold, W. H. Mills, H. Terrey, J. C. Withers, and the Officers, together with representatives of contributing Societies, with the Librarian as Secretary.

*Publication Committee* : H. E. Armstrong, H. M. Dawson, H. W. Dudley, F. P. Dunn, A. C. G. Egerton, G. I. Finch, J. J. Fox, W. E. Garner, C. R. Harington, W. N. Haworth, I. M. Heilbron, C. K. Ingold, J. Kendall, J. Kenner, R. P. Linstead, T. M. Lowry, W. H. Mills, T. S. Moore (Chairman), J. R. Partington, E. K. Rideal, F. M. Rowe, T. W. J. Taylor, J. F. Thorpe, E. E. Turner, W. Wardlaw, H. B. Watson, J. H. Wolfenden, and the Officers, with the Editor as Secretary.

*Research Fund Committee* : J. E. Coates, F. E. Francis, I. M. Heilbron, J. Kendall, T. M. Lowry, J. R. Partington, R. Robinson, J. F. Thorpe, R. Whytlaw-Gray, and the Officers. The President as Chairman and the Assistant Secretary as Secretary.

Messrs. W. R. Boon and A. Weissberger were formally admitted Fellows of the Chemical Society.

Forms of Recommendation for Fellowship were read for the first time in favour of :

Allan Adair, B.A., D.Ph., Chard School, Chard, Somerset.

Ludwig Anschütz, Prof., Dr.Phil., Deutsche Technische Hochschule, Neugebäude, Jodokstr. 10, Brünn, Czechoslovakia.

Jabez Ernest Blake, A.M.I.E.E., 33, Elmfield Road, Bromley, Kent.

Raphael Cohen, B.Sc., 100, Oldfield Road, Stoke Newington, N. 16.

Owen Lewis Hughes, B.A., Crafnant, Llanfairfechan, Caernarvonshire.

Vinayak Anant Patwardhan, B.A., M.Sc., Indian Students' Union, 112, Gower Street, W.C. 1.

James Arthur Reavell, M.I.Chem.E., M.I.Mech.E., Waylands, The Knoll, Beckenham, Kent.

Harold Warburton, 4, Falmouth Gardens, Redbridge Lane, Ilford.

Forms of Recommendation for Fellowship in favour of eleven candidates were read for the second time.

Dr. F. M. Hamer and Mr. H. Paget were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared elected :

Antonée Vasile Ablov.

Ronald William Bailey.

Donald Kenneth Baird, M.Sc.

Stanley Bairstow, B.A.

William Henry Banks, B.Sc., Ph.D.

George Edward Bishop.

Edward John Bond, B.Sc., A.I.C.

Rupert Stevenson Bradley, M.A.

Benito 'A. Buylla, D.Sc.  
 Herbert Clare Carrington, B.Sc.  
 Reginald Roberts Cawthorne.  
 Griffith Vivian Davies.  
 Surendra Chandra Dutt, B.Sc., M.B., D.P.H.  
 Elizabeth Sedgley Edwards.  
 Bernard Albert Ellis, M.A., F.I.C.  
 Joseph Mary John de Mata Estevez.  
 David Philip Evans, M.Sc., Ph.D.  
 John Peter Ford.  
 Leslie Wilfred Norman Godward, M.Sc.  
 Arthur Geoffrey Grimwade.  
 Kenneth Prichard Harrison.  
 Christopher Hollis Johnson, B.Sc., Ph.D.  
 George Harold Keats.  
 Alan Goodridge Lidstone.

John Scheffer McFadyen, B.Sc.  
 Donald Mercer, B.Sc.  
 Ambica Charan Mookerjee, B.A.  
 Arthur George Murray, B.Sc., Ph.D.  
 Giulio Natta, Dr.-Ing.  
 Thomas Gibson Pearson, M.Sc., Ph.D.  
 Percy Watson Perryman, B.Sc.  
 John Edward Brough Randles, B.Sc.  
 John William Roe.  
 Kenneth Stewart.  
 James Ferguson Sutherland.  
 Robert Eckler Swain, A.B., M.S., Ph.D., LL.D.  
 Nathaniel Beverley Tucker, B.S., M.A., Ph.D.  
 Cecil Leeburn Wilson, M.Sc.  
 Harold Wilson, B.Sc., A.M.C.T.

A Discussion on "Unicellular Chemistry" was opened by Dr. J. Vargas Eyre, and continued by Dr. H. B. Hutchinson, Dr. E. F. Armstrong, Sir Frederick Keeble, Miss M. Stephenson, and Prof. J. C. Drummond.

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Ordinary Scientific Meeting, Thursday, May 17th, 1934, at 8 p.m., Professor G. T. MORGAN, O.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT announced that Mrs. John Haworth had presented volumes of the *Journal*, and that Dr. G. T. Moody had sent the eleventh contribution of £5 to the Publications Fund.

The following were formally admitted Fellows of the Chemical Society: G. E. Bishop, A. G. Grimwade, H. J. Victory, E. S. Edwards, P. W. Perryman, Edna M. F. Roe, Hilda E. Johnston, Alfred Rubenstein, T. G. Pearson, Constance M. McDowell, and R. C. Murray.

Forms of Recommendation for Fellowship were read for the first time in favour of:  
 William Joseph Cratchley, M.A., B.Sc., Larcombe House, Chessel Street, Bristol.  
 Arnold Schedler, Ph.D., Ashfield, Palatine Road, West Didsbury, Manchester.

Forms of Recommendations for Fellowship in favour of eight Candidates were read for the second time.

The following papers were read:

- "Separation of the isotopes of hydrogen by the chemical decomposition of water, and some remarks on the mechanisms underlying the reducing action of dissolving metals." By E. D. HUGHES, C. K. INGOLD, and C. L. WILSON.
- "On some reactions with heavy water." By A. H. HUGHES, J. YUDKIN, I. KEMP, and E. K. RIDEAL.
- "The catalytic hydrogenation of simple molecules by heavy hydrogen." By H. W. MELVILLE.
- "The isotope ratio in hydrogen: a general survey by precise density comparisons upon water from various sources." By H. J. EMELÉUS, F. W. JAMES, A. KING, T. G. PEARSON, R. H. PURCELL, and H. V. A. BRISCOE.

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On May 18th the Twenty-Sixth Bedson Lecture was delivered by Professor G. G. Henderson at Armstrong College, Newcastle. The first part of the subject, as dealt with by the lecturer, has already appeared in the *Journal* (*J.*, 1932, 386), the remainder is as yet unpublished. Hydrogenation of gutta-percha, balata, or caoutchouc in *cyclohexane* with a palladium catalyst disclosed in each case the presence of one double bond to each isoprene unit. Molecular weight 600 as a minimum value. For corroboration the hydrochlorides were prepared and refluxed with metallic zinc in ethylene dichloride under carbon

dioxide. In this case, however, substances were obtained of empirical formula  $C_5H_8$ , but having one unsaturated linkage for each two such units, and formed, most probably, by a process of cyclisation.

The dibromide addition products of the three original materials condensed readily with phenols in the presence of anhydrous ferric chloride, in the position *para*- to the hydroxyl group, with production of coloured substances with properties suitable for employment as indicators.

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#### ATOMIC WEIGHTS, 1934.

Copies of the Table of Atomic Weights for 1934 (appearing in the Journal for April, page 512), printed on cards, can be obtained from the Assistant Secretary, price 2*d.* each or 1*s.* 6*d.* a dozen, post free.

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List of Papers, or Abstracts thereof, received between April 19th and May 17th, 1934. (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.)

- "Volume effects of alkyl groups in aromatic compounds. Part V. The monosulphonation of *p*-cymene." By R. J. W. LE FÈVRE.
- "Electronic versus ionic mechanisms for intramolecular rearrangements." By F. C. WHITMORE and G. H. FLEMING, jun.
- "The mechanism of aromatic side-chain reactions with special reference to the polar effects of substituents. Part II. Kinetic studies of the interaction of benzyl bromides with (1) pyridine, (2) aqueous alcohol, and (3) silver nitrate." By J. W. BAKER.
- "The action of bases on nitrophenylhydrazines: 2 : 4-dinitrophenylhydrazine." By A. K. MACBETH and J. R. PRICE.
- "Oxacyanines." By (Miss) N. I. FISHER and (Miss) F. M. HAMER.
- "The kinetics of the alkaline hydrolysis of the halogen-substituted acetates." By H. M. DAWSON and E. R. PYCOCK.
- "The parachor of hydrogen bromide." By T. G. PEARSON and P. L. ROBINSON.
- "The 3-halogeno-, 1-nitro-, 1-amino-, and 1-hydroxy-naphthalenes." By H. H. HODGSON and R. L. ELLIOTT.
- "The action of optically active alcohols on ketoketens." By A. MCKENZIE and E. W. CHRISTIE.
- "Isomerides of 4-covalent palladium and platinum." By F. W. PINKARD, E. SHARRATT, W. WARDLAW, and (in part) E. G. COX.
- "The heterogeneous catalysis of stereoisomeric change in oximes." By T. W. J. TAYLOR and (Miss) E. M. W. LAVINGTON.
- "A note on the takadiastase method for determining starch." By J. J. CHINOY, F. W. EDWARDS, and H. R. NANJI.
- "A new iodine method for determining starch. Part I. Soluble starch." By J. J. CHINOY, F. W. EDWARDS, and H. R. NANJI.
- "A new iodine method for determining starch. Part II. Natural starches and flour." By J. J. CHINOY, F. W. EDWARDS, and H. R. NANJI.
- "Syntheses of cyclic compounds. Part XI. The thermal decomposition of *trans*-hexahydrohydrindene- and of *trans*-decahydronaphthalene-2 : 2-diacetic acids." By R. J. TUDOR and A. I. VOGEL.
- "The skeleton of the sterols and bile acids." By J. D. A. JOHNSON.
- "The action of Grignard reagents on desyl chloride." By R. ROGER and A. MCGREGOR.
- "Primary photochemical reactions. Part IV. The decomposition of methyl ethyl ketone and methyl butyl ketone." By R. G. W. NORRISH and (Miss) M. E. S. APPELYARD.
- "The non-existence of cadmous compounds." By (Miss) W. R. A. HOLLENS and J. F. SPENCER.
- "Synthesis of alkylphenanthrenes. Part VII. 7-Hydroxy-1 : 2-dimethylphenanthrene." By R. D. HAWORTH and G. SHELDRIK.

- “ On the factors determining the velocity of reactions in solution. Molecular statistics of the benzoylation of amines.” By E. G. WILLIAMS and C. N. HINSHELWOOD.
- “ Energy capacity and conjugated systems.” By A. BURAWOY.
- “ Rhenium trimethyl.” By J. G. F. DRUCE.
- “ The dissociation of the selenates of zinc and cadmium in water.” By W. H. BANKS.
- “ The oxidation of arsenic in nitrous oxide and in oxygen.” By A. G. H. DAMERELL and H. J. EMELÉUS.
- “ Physico-chemical studies of complex formation involving weak acids. Part X. Complex formation between tartaric acid and (a) arsenic acid, (b) arsenious acid, (c) antimonious hydroxide, in acid and alkaline solutions. The dissociation constants of arsenious and arsenic acids.” By H. T. S. BRITTON and (Miss) K. O. P. JACKSON.
- “ Experiments on the synthesis of anthocyanins. Part XXI. 3- $\beta$ -Glucosidyl delphinidin chloride.” By (Miss) T. M. REYNOLDS and R. ROBINSON.
- “ Dimorphism of rotenone.” By R. S. CAHN.
- “ Researches on residual affinity and co-ordination. Part XXXIV. 2:2'-Dipyridyl platinum salts.” By G. T. MORGAN and F. H. BURSTALL.
- “ Complex compounds of the olefins with metallic salts. Part I. Zeise's salt.” By J. S. ANDERSON.

FORMS OF RECOMMENDATION FOR FELLOWSHIP. THE BALLOT WILL BE HELD AT THE ORDINARY SCIENTIFIC MEETING ON THURSDAY, JUNE 7TH, 1934.

ABD-EL-MESSIH, GAD TAWADROUS, Sanieh Secondary School, Sayeda Zeinab, Cairo, Egypt. Egyptian. Teacher, Government Secondary Schools, Egypt. Higher Training College, Scientific Side, 1925, Egypt. Inter. B.Sc. (London), 1928. Teacher of Chemistry, Government Secondary Schools, Egypt. Interested in Chemical Researches. (*Signed by*) R. H. Purcell, J. N. Sugden, R. S. Thakur, H. J. Emeléus.

ADAIR, ALLAN, Chard School, Somerset. British. Schoolmaster. Oxford, B.A., D.Ph. Desire to attend meetings, receive publications. *J.C.S.*, 1931, 1925; 1933, 1488. (*Signed by*) F. D. Chattaway, G. D. Parkes, E. Hope.

ANSCHÜTZ, PROFESSOR DR. LUDWIG, Brünn (Czechoslovakia), Deutsche Technische Hochschule, Neugebäude, Jodokstr. 10. Staatsangehöriger der Tschechoslowakischen Republik Deutscher Nationalität. Professor und Vorstand des Organ.-chem. Instituts der Deutschen Techn. Hochschule in Brünn. Dr. phil. Professor der organischen Chemie an der Deutschen Techn. Hochschule in Brünn. Veröffentlichungen in *Liebig's Annalen der Chemie* (439, 265; 454, 71; 482, 25; 493, 241), in den *Berichten der Deutschen Chem. Ges.* (59, 1791, 2844, 2848; 61, 1264; 62, 826), in *Journ. f. prakt. Chem.* (2), (115, 379; 133, 65, 817), u. in anderen *Zeitschriften*. (*Signed by*) A. Šimek, Alex. McKenzie, G. Baborovský.

BELL, DAVID JAMES, 33, High Street, Old Aberdeen, Scotland. Scottish. Assistant (Carnegie Teaching Fellow) in Physiology, University of Aberdeen. B.Sc. (Glasgow), Ph.D. (St. Andrews), A.I.C. “ Wood Cellulose,” I—IV, *Biochem. J.*, 26, 590, 598, 609, 1772. “ Hexose-phosphate in Muscle,” *ibid.*, 26, 1601. “ Chemistry of Glycogen,” in the press. (*Signed by*) Alex. Findlay, R. B. Strathdee, R. Craven.

BLAKE, JABEZ ERNEST, A.M.I.E.E., 33, Elmfield Road, Bromley, Kent. English. Chartered Electrical Engineer. Desires to attend the meetings, receive the publications and use the Library. (*Signed by*) G. T. Morgan, Emile Mond, H. J. T. Ellingham.

COHEN, RAPHAEL, 100, Oldfield Road, Stoke Newington, N. 16. British. Student. B.Sc. (London), First Class Hons. in Chemistry. Research in Organic Chemistry since 1932, working on substitution in the Naphthalene Series (at Battersea Polytechnic). Part-time teacher at Battersea Polytechnic. *J.C.S.*, 1933, p. 1290; 1934, p. 243 (jointly with Dr. F. Bell). Date of birth, May 26th, 1911. (*Signed by*) J. K. Kenyon, E. H. Rodd, F. Bell.

FRAZER, GEORGE HENRY, “ Ellerslie,” Upper Park Road, Manchester, 14. British. Patent Agency. B.Sc. (1st Class Hons. Chemistry), Ph.D. (both of Liverpool University). Two and a half years' research work under Prof. E. C. C. Baly, F.R.S., F.C.S. Practical experience in the patenting of chemical inventions. (*Signed by*) E. C. C. Baly, R. A. Morton, T. P. Hilditch, P. C. H. West.

HAMPSON, GEORGE CHARLESWORTH, 51, Portland Road, Oxford. English. Research student. B.A., B.Sc. (Oxford). *Proc. Roy. Soc.*, [A] Vol. 1933, 140, 143; *J.C.S.*, 1932, p. 171. Date of birth, Nov. 3rd, 1909. (*Signed by*) D. Ll. Hammick, T. W. J. Taylor, Ralph J. B. Marsden.

HARPER, WILLIAM KENNETH, 11, Walton Vale, Walton, Liverpool, 9. British. Analytical chemist. Student, taking A.I.C. shortly. (*Signed by*) A. E. Findley, Eli Finklestone, John D. Johnson.

HERBERT, REGINALD WILLIAM, Chemistry Dept., The University, Edgbaston, Birmingham, 15. British. Demonstrator. B.Sc. and Ph.D. (Birmingham). Research work in connection with the Constitution and Synthesis of Ascorbic Acid (Vitamin-C) and the Constitution of 2 : 3 : 4-Trimethyl Glucose. *J.C.S.*, Charlton, Haworth, and Herbert, 1931, 2855; Herbert, Hirst, Percival and Smith, 1933, 1270; Ault, Baird, Haworth, Herbert, Hirst, Percival, Reynolds, Smith, Stacey, 1933, 1419; Herbert, Hirst, and Wood, 1933, 1564; Baird, Haworth, Herbert, Hirst, Smith, and Stacey, 1934, 62. (*Signed by*) W. N. Haworth, Wm. Wardlaw, E. L. Hirst.

HUGHES, OWEN LEWIS, Crafnant, Llanfairfechan, Caernarvonshire. British. Scientific Research. B.A. (Oxford). Collaboration in *J.C.S.*, 1929, 2282; 1933, 658, 1207. (*Signed by*) J. H. Wolfenden, Ronald P. Bell, H. Hartley.

PARKER, ALFRED NIGEL, Foldsdown Thursley, Godalming, Surrey. Scottish. Student at Harrow School. Date of birth, Sept. 19th, 1915. (*Signed by*) W. H. Barrett, G. H. Lockett, C. N. Hinshelwood.

PATWARDHAN, VINAYAK ANANT, Indian Students' Union, 112, Gower Street, W.C. 1. Indian. Research Student, University College. B.A., M.Sc. (Bombay University), A.I.I.Sc. (Bangalore). Wish to receive the publications of the Society, to attend its meetings and to take advantage of its Library. (*Signed by*) O. L. Brady, S. V. Anantkrishnan, E. D. Hughes.

REAVELL, JAMES ARTHUR, Waylands, The Knoll, Beckenham, Kent. English. Chemical Engineer. M.I.Chem.E., M.I.Mech.E. Author of a great many papers, *J.S.C.I.* (*Signed by*) G. T. Morgan, Wm. Macnab, R. Robertson.

ROMANN, RENÉ ARMAND, Institut de Chimie, Rue Goethe, Strasbourg, France. Française. Professeur de Chimie-physique à l'Institut de Chimie de l'Université de Strasbourg. (*Signed by*) L. Hackspill, F. G. Donnan, C. F. Goodeve.

TAYLOR, SETH, West View, Wilson Road, Mirfield, Yorks. British. Chemist at L. B. Holliday & Co. To obtain *J.C.S.* and the use of the library to help on my studies. Date of birth, June 22nd, 1913. (*Signed by*) H. H. Hodgson, Charles K. Crosland, J. H. Crook.

THOMAS, CYRIL JAMES, West Riding Mental Hospital, Wakefield, Yorkshire. British. Medical Director, West Riding Mental Hospital. M.R.C.S. (England), L.R.C.P. (Lond.), D.P.M. Director of the Pathological Laboratories, West Riding Hospital, Wakefield. "Urochrome," *Proc. Phys. Soc.*, Jan. 31, 1920. "CO<sub>2</sub> and Alkali of Blood" (with Prof. J. Mellanby), *Journal Physiol.*, Vol. LIV., No. 3, 1920. "Boltz Acetic Anhydride Test," *Journ. Ment. Science*, April 1930, etc. (*Signed by*) J. C. Withers, Robert H. Pickard, R. G. Fargher.

WARBURTON, HAROLD, 4, Falmouth Gardens, Redbridge Lane, Ilford. British. Superintendent Chemist. Member Pharmaceutical Society, Fellow Spectacle Makers' Co., Manufacturing Chemist for ten years. (*Signed by*) F. B. Hirst, H. Lucas, B. Rushworth.

Form of Recommendation for Fellowship accepted by the Council under Bye-Law I (2):—

LOWE, WILFRID, Les Silènes, Avenue de la Tour Lascaris, Nice, France (Alps. Mar.). British. Chemist. Honours, Chemistry, Manchester Sch. Tech. Synthesis Indigo. Ether. One year Bayer Lab., Elberfeld. Assisted L. G. Radcliffe, Safflower Research, and Ed. Knecht, Ph.D., Mercerisation Woollen Fabrics. Emulsification Hydrocarbons for Wool Scouring carried out at Apothecaries Hall Lab. for late Sir T. Coghlan. Moth Proofing. Pat. 9561 accepted 22/8/33. Protection of Books from Attack by Insects (Gold Coast). Desires to receive the publications, attend the meetings, and to use the Library. (*Signed by*) Robert Pettigrew, John Allan, G. T. Morgan.

## ADDITIONS TO THE LIBRARY.

I. *Donations.*

AUSTIN, REGINALD GEORGE. Aids to qualitative inorganic analysis. London 1933. pp. x + 204. ill. 4s. 6d. net. (*Recd.* 8/5/34.) From the Author.

EGYPT. *Ministry of Finance.* Report on the work of the Chemical Department in the financial year 1931-32. Cairo 1933. pp. 63. (*Reference.*) P.T. 5. From the Controller.

MENSCHUTKIN, BORIS NIKOLAEVITSCH. Chief periods in the development of chemistry in the last one hundred and fifty years. 2nd edition. Leningrad 1933. pp. 119. (*Recd.* 8/5/34.) From the Author.

RAE, WILLIAM NORMAN, and REILLY, JOSEPH. Physico-chemical practical exercises. London 1934. pp. xvi + 276. ill. 7s. 6d. net. (*Recd.* 8/5/34.) From the Publishers: Messrs. Methuen & Co.

II. *By Purchase.*

HOU, TE-PANG. Manufacture of soda with special reference to the ammonia process. A practical treatise. (American Chemical Society Monograph Series.) New York 1933. pp. 365. ill. \$8. (*Recd.* 18/4/34.)

KALICHEVSKY, VLADIMIR A., and STAGNER, BERT ALLEN. Chemical refining of petroleum. The action of various refining agents and chemicals on petroleum and its products. (American Chemical Society Monograph

Series.) New York 1933. pp. 451. ill. \$7. (*Recd.* 18/4/34.)

RIEGEL, EMIL RAYMOND. Industrial chemistry. [2nd edition.] New York 1933. pp. 784. ill. \$6. (*Recd.* 18/4/34.)

III. *Pamphlets.*

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research.* Bulletin No. 77. Studies on the phosphorus requirements of sheep. I. By SIR CHARLES JAMES MARTIN and A. W. PEIRCE. Melbourne 1934. pp. 44. ill.

HORSSEN, WIJNAND BASTIAAN VAN. Nitratie van benzanilide en derivaten. Leiden 1934. pp. xvi + 117.

ROODVOETS, ADRIAAN CORNELIS WILLEM. Het ontstaan van begrip valentie. Utrecht 1934. pp. xii + 144. ill.

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. *Building Research.* Bulletin No. 12. The durability of slates for roofing. 2nd edition. By CYRIL MERCER WATKINS. London 1934. pp. vi + 14. ill.

— — Special Report No. 21. Sand-lime bricks. By GEORGE EDWARD BESSEY. London 1934. pp. vi + 62. ill.

— *Fuel Research.* Physical and chemical survey of the national coal resources, No. 32. The Lancashire coalfield. Miscellaneous seams of the lower coal measures. London 1934. pp. vi + 80. ill.



**FORTHCOMING MEETING IN LONDON.**

Ordinary Scientific Meeting, Thursday, June 7th, 1934, at 3 p.m.

The last Ordinary Scientific Meeting of this session will be held, by invitation of the President, at the Chemical Research Laboratory of the Department of Scientific and Industrial Research, Teddington, Middlesex, on Thursday, June 7th, 1934.

At 3 p.m., a discussion on "Chemical Syntheses under Pressure" will be held, to which papers will be contributed as follows :

Mr. R. Taylor : "Catalytic Syntheses with Carbon Monoxide and Hydrogen under Pressure."

Dr. D. V. N. Hardy : "Interaction of Methyl Alcohol and Carbon Monoxide : Synthesis of Acetic Acid."

Dr. D. D. Pratt : "Condensations and Aminations under Pressure."

A ballot for the election of Fellows will be held.

At the conclusion of the meeting, tea will be served and visits to the laboratories arranged.

# PROCEEDINGS

OF THE

## CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, June 7th, 1934, at 3 p.m., held, by invitation of the President, at the Chemical Research Laboratory of the Department of Scientific and Industrial Research, Teddington. Professor G. T. MORGAN, O.B.E., D.Sc., F.R.S., was in the Chair.

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

	<i>Elected.</i>	<i>Died.</i>
William Dalrymple Borland .....	April 17th, 1884.	May 20th, 1934.
Allan Thomas Cocking .....	Dec. 7th, 1893.	May 18th, 1934.
Robert English .....	Dec. 5th, 1901.	May 24th, 1934.
Arthur Leonard Harry Garside .....	April 21st, 1898.	April 22nd, 1934.
Albert Ivatt .....	Nov. 19th, 1885.	May 29th, 1934.

The following were formally admitted Fellows of the Society : D. V. N. Hardy, D. D. Pratt, W. H. J. Vernon, F. Wormwell, R. N. Johnson, J. W. Roe, J. Stewart, E. Leighton Holmes, G. R. Davies, E. Walton, E. A. Coulson, F. H. Burstall, S. Holt, and Edwin E. Jelley.

Forms of Recommendation for Fellowship were read for the first time in favour of :

Kenneth Elliott Gibson, B.Sc., 18, Melford Street, Hurlstone Park, N.S.W., Australia.  
 Maurice Eugene Decimus Jarrett, B.Sc., 59, Danes Road, St. Davids, Exeter.  
 Richard Herbert Parker, M.Sc., 56, Milroy Avenue, Kensington, Sydney, N.S.W.  
 Alexander Schönberg, Ph.D., Department of Medical Chemistry, The University, Edinburgh.  
 Hugh Macdonald Sinclair, B.A., B.Sc., Lady Place, Sutton Courtenay, Berks.  
 Charles Sydney Wood, 86, Granville Street, Barnsley, Yorks.

Forms of Recommendation for Fellowship of two candidates were read for the second time and of nineteen candidates for the third time.

Dr. W. H. J. Vernon and Dr. G. R. Davies were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared elected :

Gad Tawadrous Abd-el-Messih.	Owen Lewis Hughes, B.A.
Allan Adair, B.A., D.Ph.	Wilfrid Lowe.
Ludwig Anschutz, Dr.phil.	Alfred Nigel Parker.
David James Bell, B.Sc., Ph.D.	Vinayak Anant Patwardhan, B.A., M.Sc.
Jabez Ernest Blake, A.M.I.E.E.	James Arthur Reavell, M.I.Chem.E., M.I.Mech.E.
Raphael Cohen, B.Sc.	René Armand Romann.
George Henry Frazer, B.Sc., Ph.D.	Seth Taylor.
George Charlesworth Hampson, B.A., B.Sc.	Cyril James Thomas, M.R.C.S., L.R.C.P.
William Kenneth Harper.	Harold Warburton.
Reginald William Herbert, B.Sc., Ph.D.	

A Discussion on "Chemical Synthesis under Pressure" was held, and the following papers were read :

"Catalytic Syntheses with Carbon Monoxide and Hydrogen under Pressure." By R. TAYLOR.

"Interaction of Methyl Alcohol and Carbon Monoxide : Synthesis of Acetic Acid." By D. V. N. HARDY.

"Condensations and Aminations under Pressure." By D. D. PRATT.

Fellows were entertained at tea by the President and were subsequently conducted over the buildings by members of the Staff, who described the investigations in progress and exhibited apparatus and plant.

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**THE LIBRARY.**

The Library will be closed for stocktaking from Monday, August 6th, until Saturday, August 18th (inclusive). During the following four weeks (August 20th to September 15th) the Library will close daily at 5 p.m.

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**VAN'T HOFF FUND FOR THE ENDOWMENT OF RESEARCH IN PURE AND APPLIED CHEMISTRY.**

A communication has been received from the Committee of the Van't Hoff Fund for the endowment of research in pure and applied chemistry. The amount from this fund available for distribution during 1935 is about 1200 Dutch florins (approximately £162).

A Committee, consisting of Professor A. F. Holleman (President), Professor F. M. Jaeger, Professor A. Smits, and Professor J. P. Wibaut (Secretary), has been appointed to award grants. Applications should be sent before November 1st, 1934, by registered post to: "Het Bestuur der Koninklijke Akademie van Wetenschappen, bestemd voor de Commissie van het 'van't Hoff-fonds,' Trippenhuis, Kloveniersburgwal, Amsterdam, C." Every applicant is requested to submit a detailed account of the manner in which he proposes to expend the grant and to state the reasons for which he makes his application. Papers embodying the results of the research may be published in any journal, but acknowledgment must be made of the source of the grant. Copies of papers containing the results of the research must be forwarded to the Committee.

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List of papers, or Abstracts thereof, received between May 17th and June 14th, 1934. (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.)

- "Thio-*o*-toluidine. Its preparation by synthesis and by the action of sulphur on *o*-toluidine in the presence of litharge." By H. H. HODGSON and H. V. FRANCE.
- "The phase-volume theory and the homogenisation of concentrated emulsions. Part II." By J. B. PARKE.
- "Reactions between hexamethylenetetramine and phenolic compounds. Part II. Formation of phenolic aldehydes. Distinctive behaviour of *p*-nitrophenol." By J. C. DUFF and E. J. BILLS.
- "Studies in the composition of coal. A method of estimating the decomposition points of bituminous coals." By H. W. HIBBOTT and R. V. WHEELER.
- "The reaction between potassium *o*-tolyloxide and aliphatic esters in aqueous alcoholic solutions." By L. J. SUMMERBELL.
- "The relative strengths of certain monohydric phenols in aqueous alcoholic solution." By L. J. SUMMERBELL.
- "Viscosities of aqueous solutions of electrolytes. Part I. Sodium sulphate solutions over the temperature range 25—40°." By H. M. GLASS and W. M. MADGIN.
- "Physico-chemical studies of complex formation involving weak acids. Part XI. Complex formation between tartaric acid and (*a*) molybdic acid, (*b*) tungstic acid." By H. T. S. BRITTON and (Miss) K. O. P. JACKSON.
- "Studies in stereochemical structure. Part VII. The rotatory powers and racemisations of the optically active benzoin." By R. ROGER and A. MCGREGOR.
- "The preparation and constitution of the thiostannates. Part II. Tetra- and octa-sodium dioxypentathiostannates." By E. E. JELLEY.

- "The phthalocyanines, a new type of synthetic colouring matters. Part I." By R. P. LINSTEAD.
- "The phthalocyanines, a new type of synthetic colouring matters. Part II. The preparation of phthalocyanines and some metallic derivatives from *o*-cyanobenzamide and phthalimide." By G. T. BYRNE, R. P. LINSTEAD, and A. R. LOWE.
- "The phthalocyanines, a new type of synthetic colouring matters. Part III. Preliminary experiments on the preparation of phthalocyanines from phthalonitrile." By R. P. LINSTEAD and A. R. LOWE.
- "The phthalocyanines, a new type of synthetic colouring matters. Part IV. Copper phthalocyanines." By C. E. DENT and R. P. LINSTEAD.
- "The phthalocyanines, a new type of synthetic colouring matters. Part V. The molecular weight of magnesium phthalocyanine." By R. P. LINSTEAD and A. R. LOWE.
- "The phthalocyanines, a new type of synthetic colouring matters. Part VI. The structure of the phthalocyanines." By C. E. DENT, R. P. LINSTEAD, and A. R. LOWE.
- "Synthetical experiments in the chromone group. Part XIII. Hydroxy-2-styrylchromones." By K. C. GULATI, S. R. SETH, and K. VENKATARAMAN.
- "The synthesis of coeroxonones." By F. E. KING.
- "The mechanism of anionotropic change and the fate of the mobile anion." By H. BURTON.
- "The synthesis of 2 : 3 : 6-tribenzoyl  $\alpha$ -methylglucoside." By D. J. BELL.
- "Periodic acid and periodates. Part I. Analytical determination of periodic acid." By J. R. PARTINGTON and R. K. BAHL.
- "Periodic acid and periodates. Part II." By J. R. PARTINGTON and R. K. BAHL.
- "Periodic acid and periodates. Part III." By J. R. PARTINGTON and R. K. BAHL.
- "The calibration of Ostwald viscosimeters." By C. R. BURY.
- "Cryoscopy and association in *p*-chlorotoluene." By R. P. BELL, E. C. BAUGHAN, and M. W. VAUGHAN-JACKSON.
- "The nitration of phenyl derivatives of mercury, thallium, lead, bismuth, tin, and iodine." By F. CHALLENGER and E. ROTHSTEIN.
- "Addition compounds of the carbohydrates. Part I. Potassium hydroxide-glucose and related compounds." By E. G. V. PERCIVAL.
- "The dipole moments of vapours. Part I." By L. G. GROVES and S. SUGDEN.
- "Primary photochemical reactions. Part V. The spectroscopy and photochemical decomposition of acetone." By R. G. W. NORRISH, H. G. CRONE, and (MISS) O. D. SALT-MARSH.
- "The system  $\text{CdSO}_4\text{-CoSO}_4\text{-H}_2\text{O}$ ." By H. BASSETT and (MISS) I. SANDERSON.
- "Notes on the system lime-water and on the estimation of calcium." By H. BASSETT.
- "Sodium paratungstate." By R. H. VALLANCE and E. G. K. PRITCHETT.
- "The preparation of thallium triethyl, triisobutyl, and triphenyl." By S. F. BIRCH.
- "The reaction between hydrogen chloride and acetone." By C. J. M. FLETCHER, A. G. OGSTON, and O. GATTY.
- "Studies in the pyrone series. Part I. Alkyl benzo- $\gamma$ -pyrones and  $\alpha$ -naphtha- $\gamma$ -pyrones." By I. M. HEILBRON, D. H. HEY, and A. LOWE.
- "The unsaponifiable matter from the oils of elasmobranch fish. Part X. The structure of batyl alcohol and the synthesis of  $\beta$ -octadecyl glyceryl ether." By W. H. DAVIES, I. M. HEILBRON, and W. E. JONES.
- "Physico-chemical studies of complex acids. Part XII. The constitution of quinquivalent and quadrivalent vanadium solutions, with a note on their respective reduction and oxidation." By H. T. S. BRITTON.
- "The action of maleic anhydride upon some anthracene derivatives." By E. DE B. BARNETT, N. F. GOODWAY, A. G. HIGGINS, and C. A. LAWRENCE.
- "The photo-oxidation of rubrene." By E. J. BOWEN and F. STEADMAN.
- "Syntheses of 2-phenyl-naphthalenes." By F. S. SPRING.
- "Some derivatives of 4 : 4'-tetramethyldiaminodiphenylmethane." By D. C. RHYS JONES and F. A. MASON.

- "A resolution of benzoïn." By A. B. CRAWFORD and F. J. WILSON.  
 "Application of thallium compounds in organic chemistry. Part X. Dimethylthallium methoxide." By R. C. MENZIES and A. R. P. WALKER.  
 "Note on some derivatives of normeconine." By R. ROBINSON and H. R. L. STREIGHT.  
 "The electric moments of alicyclic monocarboxylic and diacetic esters in relation to the valency-deflexion hypothesis. Part II." By N. J. H. WALLIS.  
 "Note on the preparation of *isostilbene*." By T. W. J. TAYLOR and C. E. J. CRAWFORD.  
 "The conductivity of methoxides and ethoxides." By G. E. M. JONES and O. L. HUGHES.  
 "The reduction of permanganate in buffered solution. Potentiometric titration with hydrogen peroxide." By W. PUGH.

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 ADDITIONS TO THE LIBRARY.

## I. Donations.

AUSTRALIAN CHEMICAL INSTITUTE. Journal and Proceedings. Vol. I, etc. Melbourne 1934+. (*Reference.*) From the Institute.

FEARON, WILLIAM ROBERT. An introduction to biochemistry. London 1934. pp. x + 313. 10s. 6d. net. (*Recd.* 23/5/34.)

From Mr. A. L. Bacharach.

FOWLER, GILBERT JOHN. An introduction to the biochemistry of nitrogen conservation. London 1934. pp. viii + 280. ill. 12s. 6d. net. (*Recd.* 29/5/34.)

From the Publishers: Messrs. Edward Arnold & Co.

GREGG, SIDNEY JOHN. The adsorption of gases by solids. London 1934. pp. viii + 120. ill. 2s. 6d. net. (*Recd.* 25/5/34.)

From the Publishers: Messrs. Methuen & Co.

LONG, H. C. Weed suppression by fertilizers and chemicals. Surbiton 1934. pp. 56. ill. 2s. net.

From the Publisher: Mr. H. C. Long.

PERKIN, WILLIAM HENRY, JUNR., and KIPPING, FREDERIC STANLEY. Organic Chemistry. New edition. By F. S. and F. B. KIPPING. Part III. London 1934. pp. viii, 615 to 967, xliii. 6s. net. (*Recd.* 23/5/34.)

From the Publishers: Messrs. W. & R. Chambers.

RICHTER, VICTOR VON. Organic chemistry or chemistry of the carbon compounds. 3rd English edition. Translated and revised from the 12th German edition by ERIC NEWMARCH ALLOT. London 1934. pp. xiv + 790. ill. (*Reference.*) 35s. net. From the Publishers: Messrs. Kegan Paul, Trench, Trubner & Co.

RIESENFELD, ERNST HERMANN. Lehrbuch der anorganischen Chemie. pp. xxiv + 698. ill. M. 15. (*Recd.* 12/6/34.)

From Dr. P. C. L. Thorne.

ROYAL COMMISSION ON SEWAGE DISPOSAL. Reports, etc. London 1901-1913.

From Dr. George McGowan.

SOUTH KENSINGTON. *Science Museum*. A five year bibliography of the theory of re-

frigeration, refrigerants and appliances 1929-1933. Compiled by H. T. PLEDGE. London 1934. pp. 97. (*Reference.*) 2s. net.

From the Director.

THORPE, SIR EDWARD. Dictionary of applied chemistry. Supplement. By JOCELYN FIELD THORPE and MARTHA ANNIE WHITELEY. Vol. I. London 1934. pp. xxii + 680. ill. (*Reference.*) 60s. net.

From Professor J. F. Thorpe, C.B.E.

TUTIN, JOHN. The atom. London 1934. pp. 109. 6s. net. (*Recd.* 1/6/34.) From the Publishers: Messrs. Longmans, Green & Co.

## II. By purchase.

AMERICAN PUBLIC HEALTH ASSOCIATION and AMERICAN WATER WORKS ASSOCIATION. Standard methods for the examination of water and sewage. 7th edition. New York 1933. pp. xxii + 180. 9s. 6d. net. (*Recd.* 17/5/34.)

ASHWORTH, JAMES REGINALD. Smoke and the atmosphere: studies from a factory town. Manchester 1933. pp. xii + 131. ill. 7s. 6d. net. (*Recd.* 23/5/34.)

BRIDGMAN, PERCY WILLIAMS. The thermodynamics of electrical phenomena in metals. New York 1934. pp. viii + 200. ill. \$3.75. (*Recd.* 21/6/34.)

BURKHARD, ARNOLD. Qualitative mikroskopische Analyse. (Mikroskopisch-chemischer Nachweis der wichtigsten Kationen und Anionen.) Zürich 1933. pp. vi + 49 + 13 tables. (*Reference.*) M. 5.50.

CHEMIE-INGENIEUR, DER. Vol. I. Part iv. Elektrische und magnetische Materialtrennung [und] Materialvereinigung. By ARNOLD EUCKEN [and others]. Leipzig 1934. pp. viii + 309. ill. M. 31. (*Recd.* 23/5/34.)

CUSHNY, ARTHUR ROBERTSON. A textbook of pharmacology and therapeutics. 10th edition. By CHARLES W. EDMUNDS and JAMES ANDREW GUNN. London 1934. pp. x, 17 to 786. ill. 25s. net. (*Recd.* 21/6/34.)

PROCEEDINGS  
OF THE  
CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, October 18th, 1934, at 8 p.m., held at the Royal Institution, Albemarle Street, W. 1, Professor G. T. MORGAN, O.B.E., D.Sc., LL.D., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, on July 4th, of Madame Marie Curie, who was elected an Honorary Fellow on May 18th, 1904, and of the following Fellows :

	Elected.	Died.
Robert Addie .....	1896	1st July
Frederick W. Branson .....	1882	30th November
John Joseph Bryant .....	1919	8th January
Robert Martin Caven .....	1898	16th July
Juan P. C. Chandrasena.....	1918	10th June
George Fry .....	1904	27th June
Victor John Harding .....	1909	3rd July
John William Heath .....	1891	24th July
M. Thein Kin .....	1903	6th April
Miss Ivy W. E. Rogers .....	1926	27th June
James Alexander Schofield .....	1892	31st May
Sam Smith .....	1888	28th May
Alfred Walter Stokes .....	1879	24th July
Max Herbert Tagg .....	1914	11th August
William Henry Watson .....	1876	19th May
Edward Escott Wood.....	1911	20th June
William Francis John Wood.....	1903	26th June
Francis Samuel Young .....	1897	2nd September

The PRESIDENT announced that :

1. The following Address of Congratulation had been presented to the University of Catania on the occasion of the Celebration of the 500th Anniversary of its Foundation on the 15th to 17th October, 1934, the Society's Representatives being Mr. A. H. Bennett and Professor G. G. Cristaldi :

THE CHEMICAL SOCIETY  
to the  
RECTOR AND SENATE  
of the  
UNIVERSITY OF CATANIA.

The Chemical Society offers sincere congratulations on the Celebration of the Five Hundredth Anniversary of the Foundation of the University of Catania.

The Fine Arts have flourished in your country from remote ages and for five centuries your University has pointed the way of learning to the people, and played a prominent part in the development of the culture of your Illustrious Country and of Europe. It is our earnest wish that the lamp of learning kindled so long ago in your venerable University by its Royal Founder and tended throughout the ages by many learned men, may burn with ever-increasing radiance in the centuries to come.

The Council and Fellows of the Chemical Society welcome this opportunity of recording their high appreciation of the inestimable services rendered by the University of Catania

to the advancement of knowledge and gratefully join with other kindred institutions from all over the world in laying before you their homage and their tribute of praise.

Signed on behalf of the Council of the Chemical Society,

G. T. MORGAN	<i>President.</i>
EMILE MOND	<i>Treasurer.</i>
S. SUGDEN	} <i>Honorary</i> <i>Secretaries.</i>
J. MASSON GULLAND	
H. J. T. ELLINGHAM	

Sealed in Council this Twenty First Day of June,  
One Thousand Nine Hundred and Thirty Four.

2. The Council had expressed thanks for the following gifts :

- (a) A donation of £23 4s. 10d. to the Library Fund from the Birmingham Reception Committee, the surplus of the Fund collected to defray expenses of the Anniversary Meetings held in Birmingham,
- (b) Valuable sets of the publications of the Society from Mr. C. R. Beck, Mr. E. Grant Hooper, and Mr. Thomas McLachlan.
- (c) The Keith Gold Prize Medal of the Royal Society of Edinburgh awarded to the late Dr. Robert Traill Omond, and a cameo of Dr. Joseph Black, the work of J. Tassie, presented by Mr. Arnold Stevenson.

The following were formally admitted Fellows of the Chemical Society: Ronald W. Bailey, Kenneth Stewart, Alan G. Lidstone, Leslie W. Godward, George H. Keats, and A. B. Densham.

Forms of Recommendation for Fellowship were read for the first time in favour of :

Frederic Anderton Askew, B.A., B.Sc., 11, Fordington Road, Highgate, N. 6.  
 Panchanada Ramaswami Ayyar, M.A., 44, Margosa Avenue Road, Malleswaram P.O., Bangalore, India.  
 Gilbert Arthur Benford, B.Sc., 27, Wembley Hill Road, Wembley.  
 Alastair Renwick Bonar, B.Sc., 24, Park Road, Stretford, Manchester.  
 Phanibhusan Chatterji, Prof., M.A., Victoria College, Cooch Behar, Bengal, India.  
 Ernest Walter Claydon, B.Sc., 11, Southend Lane, Catford, S.E. 6.  
 Freda Gertrude Clubb, Ph.D., Royal Holloway College, Englefield Green, Surrey.  
 Herbert James Ambrose Dartnall, B.Sc., 520, High Road, Leytonstone, E. 11.  
 Edmund Drew, B.Sc., Milburn Orchard, Bigbury, Kingsbridge, Devon.  
 Adalbert Farkas, Dipl.-Ing., Dr. phil. nat., Dr. techn., 53, Chesterton Road, Cambridge.  
 George Firth, B.Sc., c/o African Explosives & Industries, Ltd., Umbogintwini, Natal, S. Africa.  
 James Stewart Fitzgerald, M.Sc., 40, Grove Avenue, Muswell Hill, N. 10.  
 Barry Bruce Foster, B.Sc., A.R.C.S., 57, Onslow Gardens, Wallington, Surrey.  
 William Jackson Grant, B.Sc., 104, Lauriston Road, E. 9.  
 John Barber Haley, B.Sc., 51, Torrington Square, W.C. 1.  
 James Ash Halsby, M.A., B.Sc., 30, Southwood Avenue, Highgate, N. 6.  
 Geoffrey Audus Nicholson Hirst, Granby Hotel, Harrogate.  
 Lionel Brook Holliday, O.B.E., T.D., Oaklands, Kirkburton, Yorks.  
 Konstantin John Jannis, Ph.D., 6, Allingham Court, Haverstock Hill, N.W. 3.  
 William Charles Johnson, 17, Manor Way, Harrow.  
 Ewart Ray Herbert Jones, B.Sc., Plas Menai, Bangor.  
 George King, M.Sc., F.I.C., 108, Mostyn Road, Merton Park, S.W. 19.  
 John Langford Knight, M.Sc., 13, Rochester Road, Canterbury, E. 7, Victoria, Australia.  
 Henry Kenneth Lambert, Frigorifico Anglo del Uruguay, Fray Bentos, Uruguay.  
 Alexander Hugh Lamberton, B.Sc., Warnock's Thornton, Thorntonhall, Glasgow.  
 Carl Emil Lauer, B.Sc., c/o The Texas Company, Port Arthur, Texas.  
 William Hulme, Viscount Leverhulme, M.A., 39, Upper Brook Street, W. 1.  
 Francis Arthur Lyne, Littledean, Gloucestershire.  
 Sir Harry McGowan, K.B.E., LL.D., Imperial Chemical House, Millbank, S.W. 1.  
 John Patrick McDermott, The Becket School, West Bridgford, Notts.  
 Alfred Frank Millidge, B.Sc., 205, Carisbrooke Road, Newport, I.O.W.  
 Herbert Marcus Powell, M.A., B.Sc., 6B, Northmoor Road, Oxford.  
 William Bryce Proudfoot, Ph.C., B.Pharm., 41, East Haddon Road, Dundee.

William Sage Rapson, M.Sc., Dyson Perrins Laboratory, South Parks Road, Oxford.  
 Anne Ratcliffe, B.Sc., 47, Western Avenue, East Acton, W. 3.  
 Ignacio Ribas, Prof. Dr., Facultad de Ciencias, Salamanca, Spain.  
 Max Morris Rindl, Prof., Dr. Ing., Grey University College, Bloemfontein, S. Africa.  
 Kathleen Winifred Robertson, 50, Grosvenor Park Road, Walthamstow, E. 17.  
 Mohamed Tagi Siahpoosh, B.Sc., c/o Midland Bank, 15, Oxford Road, Manchester.  
 Eric Russell Smith, B.Sc., 84, St. Katharine's Way, E. 1.  
 Collurayana Srikantia, Prof., B.A., D.Sc., University Medical College, Mysore, India.  
 William Pearson Thistlethwaite, B.Sc., 76, Franklin Road, Harrogate.  
 Harry Vine, 109, Castellain Mansions, Maida Hill, W. 9.  
 Archibald John Edmund Welch, 19, Lincoln Gardens, The Drive, Ilford.  
 Herbert John Williams, Greenway, Tyn-y-parc Road, Whitchurch, S. Wales.

The following Forms of Recommendation for Fellowship have been accepted by the Council under Bye-Law I (2) :

Moses Goodman Bane, B.A., Koffiefontein, Orange Free State.  
 Ragnar Ericson, Chem. Eng., Ph.D., D.I.C., Marma-Langrörs A.B., Söderhamn, Sweden.  
 Khwaja A. Hamied, M.A., Ph.D., A.I.C., 12, Rampart Row, Fort, Bombay.  
 Donald Robert Jackson, Upnor House, Jameson Street, Bulawayo, S. Rhodesia.  
 Lawrence Leong, 21, Broadwood Road, Hong Kong.

Forms of Recommendation for Fellowship of six candidates were read for the second time.

The PRESIDENT then called upon Professor P. M. S. Blackett, M.A., F.R.S., to deliver his Lecture entitled "Induced Radioactivity." At the conclusion of the Lecture, a vote of thanks, proposed by Professor F. G. Donnan, and seconded by Professor E. K. Rideal, was carried with acclamation.

A vote of thanks to the Officers and Managers of the Royal Institution for the use of the Lecture Theatre, moved by the President, was carried unanimously.

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#### ANNUAL REPORTS.

Applications for the Annual Reports for 1934 at the reduced price of 5s. 6d. should reach the Assistant Secretary by January 15th, 1935.

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#### SPECIAL OFFER TO FELLOWS OF SETS OF PUBLICATIONS OF THE SOCIETY.

The Council has decided to offer to Fellows for a strictly limited period the following publications of the Society at specially reduced prices :

*Journal and Abstracts, 1900-1910, and 1912-1931 (31 years).*

Not less than ten years at 10s. per annum, post free.

Not less than five years at 15s. per annum, post free.

*Annual Reports, Volumes I (1904) to XX (1923) (except Vol. VIII).*

Price £2 the set, post free, or 3s. per volume, post free.

*Collective Indexes.*

Volumes I (1841-1872), II (1873-1882), III (1883-1892), IV (1893-1902) price 5s. the set, postage extra. Volume VI (1913-1922) (published price £3 5s.) at £1, post free.

*Faraday Volume.*

(Containing the Faraday Lectures delivered before the Society from 1869 to 1928.)

Price 2s. per copy, post free.

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## BRITISH CHEMICAL ABSTRACTS "A" FOR 1935.

(Printed on one side of the page only.)

*Abstracts "A" (Pure Chemistry)* for 1935, printed on one side of the page only, will be supplied to Fellows who make application by December 31st, 1934. The price is £1 10s. A remittance for this amount must accompany each application, and Fellows should state whether they desire their copy to be gummed or ungummed.

## PUBLICATIONS OF OTHER SOCIETIES.

Fellows of the Chemical Society, who are not members of the Society of Chemical Industry, or of the American Chemical Society, may procure the publications for 1935 at the following reduced prices :

*Society of Chemical Industry.*

- (a) *Abstracts in Applied Chemistry* (exclusive of Index)..... £1 10s. post free  
 (b) *Annual Reports of the Progress of Applied Chemistry for 1934* ..... 10s. ,,  
 (c) *Abstracts in Applied Chemistry* (printed on one side of the page only) £2 10s. ,,

Application should be made direct to the General Secretary, Society of Chemical Industry, 46 and 47, Finsbury Square, London, E.C. 2, and should reach him by December 31st, 1934. Fellows resident abroad should apply by return of mail. A remittance must accompany each application.

*American Chemical Society.*

	*Price to Public.	Postage.
(1) <i>Journal of the American Chemical Society</i> .....	\$8.50	\$1.50
(2) <i>Chemical Abstracts</i> .....	\$12.00	\$2.10
(3) <i>Industrial and Engineering Chemistry</i> :		
(a) Industrial Edition .....	\$5.00	\$1.20
(b) News Edition .....	\$1.50	\$0.60
(c) Analytical Edition .....	\$2.00	\$0.30
(a) and (c) together .....	\$6.00	\$1.50
(a), (b), and (c) together .....	\$7.50	\$2.10

Application should be made direct to the Secretary, American Chemical Society, Mills Building, Washington, D.C., U.S.A., and should reach him by December 31st, 1934.

A discount of 10 per cent. is allowed for any two journals or all three so long as (3) is ordered complete.

\* A special discount of 10 per cent. off all the above prices is allowed to Fellows of the Chemical Society who are not Members of the American Chemical Society.

Fellows residing in Canada pay one-third postage rates and for those residing in countries in the Pan-American Union and Spain there is no charge for postage.

*Chemical Reviews* ..... \$4.00 \$0.50

Application should be made to the Williams and Wilkins Company, Mount Royal and Guilford Avenues, Baltimore, Md., U.S.A.

**RESEARCH FUND.**

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 Saturday, December 1st, 1934. Applications from Fellows will receive prior consideration.

All persons who have received grants, and whose accounts have not been declared closed by the Council, are reminded that reports must be returned by December 1st.

Attention is drawn to the fact that the income arising from the Donation of the Worshipful Company of Goldsmiths is principally devoted to the encouragement of research in Inorganic and Metallurgical Chemistry, and that the income from the Perkin Memorial Fund is to be applied to investigations relating to problems connected with the Coal Tar and Allied Industries.

**BRITISH STANDARDS INSTITUTION.**

Copies of Draft Specifications, Numbers 3918 and 3919, dealing with British Standard Methods for the Ultimate Analysis of Coal and Coke and of Coal and Coke Ash have been sent to the Society for technical comment and criticism. These have been placed in the Library for reference, and copies may be obtained free of charge on application to the Secretary, British Standards Institution, 28, Victoria Street, S.W. 1.

**THE BRITISH FILM INSTITUTE.**

The Scientific Research Panel of the Advisory Council to the Institute desires to obtain information of the extent the cinematograph has been used by scientific research workers, details of difficulties encountered, and particulars of the way such difficulties have been met. The Panel further desires to compile a list of the films made by individuals, especially in connection with scientific observations and experiments that have not been circulated through commercial channels.

Fellows are invited to communicate with the Secretary, British Film Institute, 4, Great Russell Street, London, W.C. 1.

List of Papers, or Abstracts thereof, received between June 14th and October 18th, 1934. (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 preparation and kationoid reactivity of dichlorodinitromethane.” By E. DOWNING and W. B. ORR.
- “1-Naphthylacetic acid.” By (Miss) A. HIGGINBOTTOM and W. F. SHORT.
- “Note on the temperature coefficient of the solubility of hydrogen in acetic acid.” By E. B. MAXTED and V. STONE.
- “Periodic acid and periodates. Part IV. The reactions of disodium paraperiodate with soluble salts of manganese, zinc, and metals of the alkaline earths.” By J. R. PARTINGTON and R. K. BAHL.
- “Iron derivatives of organic acids.” By N. J. HARRAR and F. E. E. GERMANN.
- “The dicarbazyls. Part VI. Synthesis of 1:1'-dicarbazyl.” By (Miss) H. G. DUNLOP, T. F. MACRAE, and S. H. TUCKER.
- “Studies in chemical kinetics. Part I. The decomposition of the silicohexafluoride ion in simple aqueous solution.” By (Miss) A. G. REES and L. J. HUDLESTON.
- “A new factor controlling certain chelations, with special reference to disubstitution in the resorcinol nucleus.” By W. BAKER.
- “Optical rotatory dispersion in the carbohydrate group. Part IV. Tetramethyl  $\gamma$ -mannonolactone.” By T. L. HARRIS, E. L. HIRST, and C. E. WOOD.
- “The function of sulphuric acid in nitration.” By D. I. JAMES.

- "The spectra and photochemical decomposition of metallic carbonyls. Part II. Photochemical data." By H. W. THOMPSON and A. P. GARRATT.
- "The thermal decomposition and oxidation of nickel carbonyl." By A. P. GARRATT and H. W. THOMPSON.
- "*m*-Toluidine-6-sulphonic acid." By M. S. SHAH, C. T. BHATT, and D. D. KANGA.
- "Amphoteric aromatic substitution. Part I. Reactions of sodium benzenediazoate and nitrosoacetanilide." By W. S. M. GRIEVE and D. H. HEY.
- "Even and odd co-ordination numbers." By R. C. MENZIES.
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CHINESE CHEMICAL SOCIETY. Journal. Vol. I, etc. Peiping 1933 +. (*Reference.*) From the Bureau of Chemical Abstracts.

DAVIS, A. C. Portland cement. London (1934). pp. xii + 400. ill. 30s. net. (*Recd.* 7/7/34.) From the Author.

DESCH, CECIL H. The chemistry of solids. Ithaca 1934. pp. xiv + 213. ill. 11s. 6d. net. (*Recd.* 5/10/34.) From the London Publisher: Mr. Humphrey Milford.

DEUTSCHE GESELLSCHAFT FÜR MINERALÖLFORSCHUNG. Öl und Kohle. Zeitschrift für das gesamte Gebiet der Mineralöle, Bitumen und verwandten Stoffe. Vol. I, etc. Berlin 1933 +. (*Reference.*)

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HINTON, C. L. A summary of food laws and regulations. Edited by T. W. JONES. London 1934. pp. viii + 90. (Two copies.) 21s. net.

From the Publishers: The Nema Press.

INTERNATIONAL TIN RESEARCH AND DEVELOPMENT COUNCIL. First general report, etc. London 1934 +. (*Reference.*)

From the Council.

KERKWIJK, CLASINE PETRONELLA VAN. Antoine Paul Nicolas Franchimont, 1844-1919. Leiden 1934. pp. xiv + 169. ill.

From the Author.

NICCOL, ROBERT. Essay on sugar, and general treatise on sugar refining, as practised in the Clyde refineries. London 1865. pp. iv + 63. ill. From Mr. Hugh Main.

PEKING, NATIONAL UNIVERSITY OF. The Science Quarterly. Vol. IV, etc. Peiping 1934 +. (*Reference.*) From the University.

RANDALL, J. T. The diffraction of X-rays and electrons by amorphous solids, liquids, and gases. London 1934. pp. xii + 290. ill. 21s. net. (*Recd.* 25/7/34.) From the Publishers: Messrs. Chapman & Hall.

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— — — D.T.D. 213. Aluminium-manganese alloy sheets and strips. London 1933. pp. 3.

AIR MINISTRY. Material specification. D.T.D. 223. Glycerin (for use in radiators). London 1933.

— *Aeronautical Research Committee*. Reports and memoranda, No. 1513. Heats of formation of nitrous oxide and carbon dioxide. By J. H. AWBERY (and others). London 1933. pp. 43 + 12 plates.

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BOMBAY PRESIDENCY. *Department of Industries*. Bulletin No. 9. The possibility of the use of magnesium chloride in the sizing process of handloom weavers. By P. N. JOSHI and J. F. VALLADARES. Bombay 1934. pp. ii + 13.

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DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH. Co-operative industrial research. Report of a conference. London 1934. pp. iv + 27.

— *Building Research*. Bulletin No. 11. The effect of building materials on paint films. (Revised edition.) By H. M. LLEWELLYN. London 1934. pp. iv + 8.

## FORTHCOMING MEETINGS OUTSIDE LONDON.

## BIRMINGHAM.

Monday, November 5th, 1934, at 5 p.m. Lecture entitled: "The Development of Chemical Kinetics," by Mr. C. N. Hinshelwood, M.A., F.R.S. To be held in conjunction with the University Chemical Society in the Chemistry Lecture Theatre of the University at Edgbaston.

## GLASGOW.

Friday, December 7th, 1934, at 6.45 p.m. The Ramsay Chemical Dinner, Central Hotel, Glasgow, Principal Sir James Irvine, C.B.E., D.Sc., F.R.S., in the Chair. At the conclusion of the speeches there will be dancing until 2 a.m. Tickets, price 14s. 6d. each (or 20 Students' tickets at 10s. 6d. each), can be obtained from Mr. Hugh C. Moir, c/o Messrs. William Beattie, Ltd., 116, Paton Street, Glasgow, E. 1.

## LIVERPOOL.

Saturday, November 3rd, 1934, at 3 p.m. Joint meeting of the Chemical Society and the Science Masters' Association to discuss the "Teaching of Chemistry." Mr. S. V. Brown, Chairman of the Science Masters' Association Committee, will open the discussion. The Discussion will be continued after tea (to be served at 4 p.m.).

## MANCHESTER.

An Ordinary Scientific Meeting of the Society will be held in the Chemistry Lecture Theatre of the University of Manchester at 2 p.m., on Friday, November 9th, 1934, and will be continued at 10 a.m. on Saturday, November 10th, 1934, when a discussion will be held on "Applications of X-Rays and Spectroscopy to the Elucidation of Chemical Structure."

The following will contribute to the discussion:

*Friday, November 9th.*

Professor W. L. Bragg, F.R.S. (Manchester), Mr. W. T. Astbury (Leeds), Dr. J. M. Robertson (London), and Dr. E. G. Cox (Birmingham).

*Saturday, November 10th.*

Professor T. M. Lowry, F.R.S. (Cambridge), Professor I. M. Heilbron, Mr. A. E. Gillam, and Dr. H. W. Thompson (Manchester), Dr. J. W. Cook, Dr. J. M. Gulland, and Dr. E. R. Holiday (London), and Dr. R. A. Morton (Liverpool).

By the kind invitation of the Director, Dr. R. H. Pickard, F.R.S., a visit will be made on Friday morning, November 9th, to the Shirley Institute, the Headquarters of the British Cotton Industry Research Association.

Fellows wishing to take part in this visit should notify Dr. F. Fairbrother or Dr. E. H. Rodd as soon as possible. The party will be limited to 100.

Past and present members of the Department of Chemistry of the University of Manchester will hold a reunion dinner in the Whitworth Hall of the University, at 7.30 p.m. for 7.45 p.m. on Friday, November 9th.

All Fellows of the Chemical Society attending the Discussion are cordially invited. The presence of ladies will be welcomed. The price of the tickets is 8s. 6d. each, exclusive of wines. Evening Dress will be worn.

Application for tickets, accompanied by remittance, should be made to Dr. G. N. Burkhardt or Dr. C. E. H. Bawn, Chemistry Department, The University, Manchester.

## NEWCASTLE AND DURHAM.

Friday, December 7th, 1934, at 6.30 p.m. in the Chemistry Lecture Theatre, Armstrong College. Bedson Lecture entitled "Problems of Stereochemistry," by Dr. W. H. Mills, M.A., F.R.S.

## NORTH WALES.

Joint meetings of the Chemical Society and the University College of North Wales (Bangor) Chemical Society:

Friday, November 16th,\* 1934, at 6 p.m., in the Physics Lecture Theatre of the University College, Bangor. Lecture entitled "Science and the Oil Industry," by Mr. W. H. Cadman, B.Sc., F.I.C., Anglo-Persian Oil Co., Ltd.

Monday, November 26th, 1934, at 6 p.m. in the Chemistry Lecture Theatre of the University College, Bangor. Lecture entitled "A General Review of Polysaccharide Structure," by Professor W. N. Haworth, D.Sc., F.R.S.

#### SHEFFIELD.

Thursday, November 15th, 1934, at 5.30 p.m. in the Chemistry Lecture Theatre of the University. Discussion on "The Surface of Glass," to be opened by Professor W. E. S. Turner, O.B.E., D.Sc.

#### FORTHCOMING MEETINGS IN LONDON.

##### Thursday, November 1st, 1934, at 8 p.m.

Ordinary Scientific Meeting, at which the following papers will be read :

- "The epindoline group. Part I. Trial of various methods for the synthesis of epindol-  
idiones." By A. D. AINLEY and R. ROBINSON.
- "Addition compounds of the carbohydrates. Part I. Potassium hydroxide-glucose and  
related compounds." By E. G. V. PERCIVAL.
- "A new factor controlling certain chelations, with special reference to disubstitution in  
the resorcinol nucleus." By WILSON BAKER.
- "The phthalocyanines, a new type of synthetic colouring matters. Parts I—VI." By  
R. P. LINSTEAD, A. R. LOWE, C. E. DENT, and G. T. BYRNE.

##### Thursday, November 15th, 1934, at 8 p.m.

Discussion on "Chemical Problems in Agricultural Science," to be opened by Sir John Russell, O.B.E., D.Sc., F.R.S. The following have agreed to take part in the discussion:—

Dr. L. R. Bishop, Dr. Winifred E. Brenchley, Dr. E. M. Crowther, Mr. A. N. Gray, Dr. A. G. Norman, Mr. H. J. Page, Professor J. A. Prescott, and Dr. T. Wallace.

##### Thursday, December 6th, 1934, at 8 p.m.

Ordinary Scientific Meeting.

##### Thursday, December 20th, 1934, at 8 p.m.

Ordinary Scientific Meeting.

#### ANNUAL CHEMICAL DINNER.

The Annual Chemical Dinner will be held at the Wharnccliffe Rooms, Great Central Hotel, N.W. 1, on Tuesday, December 18th, 1934, at 7 for 7.30 p.m. Sir Harold Hartley, M.C., C.B.E., F.R.S., will preside, and the chief guest will be Sir Bernard Spilsbury. Dancing will follow the dinner.

Tickets, price 12s. 6d. each, can be obtained from Mr. F. A. Greene, 2, Whitehall Court, London, S.W. 1.

\* Note.—Altered from November 9th to 16th.

PAGES MISSING FROM 65 to 80

# PROCEEDINGS

OF THE

## CHEMICAL SOCIETY.

A Joint Meeting with the Science Masters' Association was held at the University of Liverpool on November 3rd, 1934, to discuss matters of common interest under the general title "The Teaching of Chemistry." Professor E. C. C. BALY, C.B.E., F.R.S., was in the Chair, and Mr. S. V. Brown, Chairman of the Science Masters' Association Committee, opened the discussion. The CHAIRMAN and many members of both societies contributed to a valuable exchange of views.

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A meeting under the auspices of the Society was held in the Chemistry Lecture Theatre, The University, Sheffield, on Thursday, November 15th, 1934, at 5.30 p.m. The following papers were read and discussed :—

- "Glass as a Material of Construction for Chemists and Physicists." By Professor W. E. S. TURNER, O.B.E., D.Sc.
- "The Relationship between Glass Surface Corrosion and Chemical Composition." By MISS V. DIMBLEBY, M.Sc.

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Ordinary Scientific Meeting, Thursday, December 6th, 1934, at 8 p.m., Professor G. T. MORGAN, O.B.E., D.Sc., LL.D., 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.
John Walter Leather .....	1891	Nov. 14th, 1934.
Sven L. A. Odén .....	1921	Jan. 16th, 1934.
James A. Wilkinson .....	1904	Sept. 30th, 1934.

Mr. M. H. Hey was formally admitted a Fellow of the Chemical Society.

Forms of Recommendation for Fellowship were read for the first time in favour of :

John Joseph Albert Allnutt, 193, Brixton Road, S.W. 9.  
Clement Henry Bamford, B.A., Trinity College, Cambridge.  
Henry Brunner, B.Sc., A.R.C.S., 270, Kentish Town Road, N.W. 5.  
David Ernest Coome, B.Sc., 11, Victoria Road, Alexandra Park, N. 22.  
Louis Ellis, Ph.D., 27, Northfield Terrace, Leeds, 7.  
Frederick Hilton, B.Sc., A.R.C.S., 16, Pall Mall, S.W. 1.  
Cecil John House, B.Sc., A.R.C.S., F.I.C., Government Laboratory, Bangkok, Siam.  
Alfred John Howard, 156, Chesterton Road, Cambridge.  
Edward Herbert Trevor Jukes, B.A., B.Sc., 2, The Croft, Barnet, Herts.  
Richard Frederick Key, B.Sc., A.I.C., 49, Arcadian Gardens, Wood Green, N. 22.  
Boonyium Meesook, St. John's College, Cambridge.  
William Copeman Newell, B.Sc., A.R.C.S., 25, Pickford Lane, Bexley Heath, Kent.  
Edmund Stanley Paice, B.Sc., A.R.C.S., Imperial College Union, South Kensington, S.W. 7.  
William George Sharland Parker, 74, The Drive, Loughton, Essex.  
Denis Cheselden Quin, B.A., B.Sc., Boar's Hill House, Boar's Hill, Oxford.  
Norman Francis Sarsfield, B.Sc., A.R.C.S., 9, Wallace Terrace, Ryton-on-Tyne.  
Wilfred Archibald Sexton, Ph.D., 63, Stanley Road, Broughton Park, Salford, 7.  
John Ferguson Snell, Prof., B.A., Ph.D., Macdonald College, Quebec, Canada.

Alexander Howard Stewart, 75, Belgrave Road, S.W. 1.  
 Edward Sunderland, A.R.C.S., 2, Talbot Street, Legrams Lane, Bradford.  
 William Taylor, M.Sc., Tanglely Cottage, Pickhurst Rise, West Wickham, Kent.  
 Richard Wild, B.Sc., The Vineries, Sipson, West Drayton, Middlesex.  
 Ludwig Wolf, Prof., Dr.phil., Dr.Eng., Andhra University, Waltair, India.

and for the second time in favour of nine Candidates.

Dr. Jessie Stewart and Dr. F. B. Kipping were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared elected :

Ronald Ashton, B.A., B.Sc.	Henry Kenneth Lambert.
Frederick Anderton Askew, B.A., B.Sc.	Alexander Hugh Lambertson, B.Sc.
(Vaiyacheri) Panchanada Ramaswami Ayyar, M.A.	Carl Emil Lauer, B.S.
Moses Goodman Bane, B.A.	William John Lee-Bird.
Paul Anthony Barrett, B.Sc., A.R.C.S.	Lawrence Leong.
Gilbert Arthur Benford, B.Sc.	Viscount Leverhulme, M.A.
Stanley Blackburn.	Robert Edward Lishmund, B.Sc.
William Martin Blanchard, Prof. A.M., Ph.D.	Francis Arthur Lyne.
Alastair Renwick Bonar, B.Sc.	John Patrick McDermott.
Phanibhusan Chatterji, M.A.	Sir Harry McGowan, K.B.E., LL.D.
Ernest Walter Claydon, B.Sc.	Harold Percy William McQueen, B.Sc.
Freda Gertrude Clubb, B.Sc., Ph.D.	David Mathias.
William Joseph Cratchley, M.A., B.Sc.	Alfred Frank Millidge, B.Sc.
Charles Latham Cutting, B.Sc.	Eric Sylvester Narracott, A.R.C.S.
Herbert James Ambrose Dartnall, B.Sc.	Leslie William James Newman, B.Sc., A.R.C.S.
Edmund Drew, B.Sc.	Richard Herbert Parker, M.Sc.
Leonard Joseph Dunn, Ph.D., A.R.C.S., D.I.C.	Ratilal Prabhudas Patel, M.Sc.
Ragnar Ericson, Chem. Eng., Ph.D., D.I.C.	Kenneth Welch Pepper, B.Sc.
Adalbert Farkas, Dr. phil. nat., Dr. techn.	Herbert Marcus Powell, M.A., B.Sc.
Stanley Nicholas Farmer, B.Sc., A.R.C.S.	William Bryce Proudfoot, Ph.C., B.Pharm.
George Firth, B.Sc.	William Sage Rapson, M.Sc.
Ernst Adolf Fischer, Dr. phil.	Anne Ratcliffe, B.Sc.
James Stewart Fitzgerald, M.Sc.	Ignacio Ribas, Prof. Dr.
Barry Bruce Foster, B.Sc., A.R.C.S.	Max Morris Rindl, Dr. Ing.
Kenneth Elliott Gibson, B.Sc.	Kathleen Winifred Robertson.
Stanley Charles Goddard, B.Sc.	George Simpson Rolph.
William Jackson Grant, B.Sc.	Benjamin Saunders, B.Sc., A.R.C.S.
William John Green, B.Sc.	Arnold Schedler, Ph.D.
John Barber Haley, B.Sc.	Alexander Schonberg, Ph.D.
James Ash Halsby, M.A., B.Sc.	Mohamed Tagi Siahpoosh, B.Sc.
Khwaja A. Hamied, B.Sc., M.A., Ph.D.	Hugh Macdonald Sinclair, B.A., B.Sc.
Geoffrey Audus Nicholson Hirst.	Godfrey Sixsmith, B.A., B.Sc.
Lionel Brook Holliday, O.B.E., T.D.	Eric Russell Smith, B.Sc.
John Herbert Humphrey.	Collurayana Srikantia, Prof., B.A., D.Sc.
Donald Robert Jackson.	Geoffrey Swann, B.Sc.
Konstantin John (Hatzijannis) Jannis, Ph.D.	William Pearson Thistlethwaite, B.Sc.
Maurice Eugene Decimus Jarrett, B.Sc.	Harry Vine.
William Charles Johnson.	Archibald John Edmund Welch.
Ewart Ray Herbert Jones, B.Sc.	Herbert John Williams.
George King, M.Sc., F.I.C.	Thomas Idris Williams.
John Langford Knight, M.Sc.	Philip Alan Winsor, A.R.C.S.
	Charles Sydney Wood.

The following papers were read :

- “ Basic copper carbonate and green patina.” By W. H. J. VERNON.  
 “ The thermochemistry of solutions. Part I. A calorimeter for use with non-aqueous solvents.” By F. A. ASKEW, N. S. JACKSON, O. GATTY, and J. H. WOLFENDEN.  
 “ The thermochemistry of solutions. Part II. Heats of solution of electrolytes in non-aqueous solvents.” By F. A. ASKEW, E. BULLOCK, H. T. SMITH, R. K. TINKLER, O. GATTY, and J. H. WOLFENDEN.  
 “ The thermochemistry of solutions. Part III. Heats of dilution of electrolytes in non-aqueous solvents.” By N. S. JACKSON, A. E. C. SMITH, O. GATTY, and J. H. WOLFENDEN.

- “Complex compounds of the olefins with metallic salts. Part I. Zeise’s salt.” By J. S. ANDERSON.  
 “The preparation of thallium triethyl, triisobutyl, and triphenyl.” By S. F. BIRCH.

Ordinary Scientific Meeting, Thursday, December 20th, 1934, at 8 p.m., Professor G. T. MORGAN, O.B.E., D.Sc., LL.D., 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.
Daniel John O’Mahony .....	1889	December 1st.
Evan Williams .....	1895	May 7th.

The PRESIDENT announced that the Council had accepted with much regret the resignation of Dr. H. McCombie as Local Representative, and had conveyed its thanks to him for his valuable services. Dr. R. G. W. Norrish has accepted the invitation of the Council to act as Local Representative for the Cambridge area in the place of Dr. McCombie.

Messrs. S. C. Goddard, G. King, and A. J. E. Welch were formally admitted Fellows of the Society.

Forms of Recommendation for Fellowship were read for the first time in favour of :

John William Croom Crawford, B.Sc., Ph.D., 21, Pinewood Road, Eaglescliffe, Co. Durham.  
 Edna Ferrell, B.Sc., 52, Beaconsfield Street, Blyth, Northumberland.  
 Michael Anton Klochko-Bendezky, 73, Bolshaia Kaluzhskaia, Moscow.  
 Leonard Newton Owen, B.Sc., Nentsbury, Selly Hill, Birmingham.  
 Thomas Arthur Hardy Peacocke, B.A., B.Sc., Oratory School, Caversham Park, Reading.  
 William Howard Rapson, B.A.Sc., 6, Edgewood Gardens, Toronto, Canada.  
 Alexander Ritchie, B.Sc., 57, Cleghorn Street, Dundee, Angus.  
 Uriel Georges Shapiro, 86, The Avenue, Brondesbury, N.W. 6.  
 Kenneth Clive Webster, B.Sc., 166, Ulverley Green Road, Olton, Birmingham.

Forms of Recommendation have been accepted by the Council under Bye-Law I (2) from the following :—

Bala Krishna Menon, M.Sc., University College, Rangoon, Burma.  
 Lyde Stuart Pratt, A.B., Ph.D., 12, Marion Avenue, Glen Falls, New York.  
 Nicolas Antonovitch Pushin, Molerova ul. 54, Belgrade.  
 Gabra Soliman, M.Sc., Egyptian University, Cairo.  
 Wadei Tadros, B.Sc., 12, Sharia Nashati, Choubra, Cairo.

Forms of Recommendation for Fellowship in favour of 23 Candidates were read for the second time.

The following papers were read :

- “Researches on residual affinity and co-ordination. Part XXXV. 2 : 2’ : 2’’-Tripyridyl platinum salts.” By G. T. MORGAN and F. H. BURSTALL.  
 “ $\beta$ -Santonin.” By G. R. CLEMO.  
 “The mechanism of the deamination of amino-alcohols. Part I. Amino-alcohols derived from  $\alpha$ -amino-hydrochalkone hydrochlorides.” By A. K. MILLS.  
 “The mechanism of the deamination of amino-alcohols. Part II. Amino-alcohols derived from  $\alpha$ -amino-propioiphenone hydrochloride.” By A. K. MILLS and J. GRIGOR.  
 “The action of some aromatic aldehydes on benzene and toluene in the presence of aluminium chloride.” By D. H. HEY.

The Council has made the following grants from the Research Fund :

	£	s.	d.
A study of the thermal decompositions of some gases and vapours with special reference to the effect of surface. E. I. Akeroyd. (Cambridge Univ.) ...	7	0	0

	£	s.	d.
The polymerisation products of butadienoid compounds. R. G. R. Bacon. (Imperial Coll.) ... ..	6	0	0
An investigation into certain aspects of chelation, and into the stabilisation of Kekulé forms in chelate benzene derivatives. W. Baker. (Oxford Univ.) ... ..	12	0	0
Optical properties of organic compounds, with special reference to the Schumann region down to 500 A. units. W. C. G. Baldwin. (Cambridge Univ.) ...	15	0	0
Photochemical decomposition of organic compounds. C. H. Bamford. (Cambridge Univ.) ... ..	8	0	0
Synthesis of dicyclic ketones. J. W. Barrett. (Imperial Coll.) ... ..	10	0	0
The constitution of certain alkaloids. B. K. Blount. (Oxford Univ.) ... ..	15	0	0
Absorption spectra at low temperatures. F. P. Bowden. (Cambridge Univ.) ...	8	0	0
Investigation of sesquiterpenes and derivatives. A. E. Bradfield. (Univ. Coll., Bangor) ... ..	8	0	0
Polymerisation of hydrocarbons. H. Brunner. (Imperial Coll.) ... ..	5	0	0
Primary photochemical processes and oxidations. J. E. Carruthers. (Cambridge Univ.) ... ..	7	0	0
Synthetical experiments in the group of alkaloids. S. N. Chakravarti. (Annamalai Univ., S. India) ... ..	12	0	0
Complex salts of chromium and iron ( <i>continued</i> ). D. R. Chesterman. (Woolwich Poly.) ... ..	12	0	0
The detection of chelation occurring in certain ortho-substituted benzene derivatives by the determination of mutual liquid solubility. E. Claydon. (Queen Mary Coll.) ... ..	12	0	0
The determination of activity coefficients from solubility measurements. D. E. Coome. (Queen Mary Coll.) ... ..	3	0	0
Influence of substituents on chemical and physical properties of organic compounds ( <i>continued</i> ). D. M. Cowan. (Woolwich Poly.) ... ..	12	0	0
Dielectric polarisation. E. G. Cowley. (Queen Mary Coll.) ... ..	15	0	0
The electronic effect of alkyl groups of differing length and complexity in chemical reaction. F. R. Cropper. (Univ. Coll., London) ... ..	5	0	0
Substitution in heterocyclic systems. N. M. Cullinane. (Univ. Coll., Cardiff) ...	8	0	0
The thickness of surface films. C. L. Cutting. (Queen Mary Coll.) ... ..	12	0	0
Vitamin-A content of some Australian fish-liver oils. W. Davies. (Melbourne Univ.) ... ..	10	0	0
The formation of phosphorus compounds. W. C. Davies. (Univ. Coll., Cardiff) ...	8	0	0
The reactions of thiocarbonyl perchloride. G. M. Dyson. (Loughborough Coll.)	10	0	0
The constitution of strophanthidin. S. N. Farmer. (Imperial Coll.) ... ..	7	0	0
Adsorption on tungsten by the interfacial potential method. J. Field. (Cambridge Univ.) ... ..	8	0	0
The structure of the $\alpha$ -methyl- and $\alpha$ -ethyl-substituted glutamic acids and esters. J. S. Fitzgerald. (Imperial Coll.) ... ..	5	0	0
The formation of ketones from cyclic adipic acids. B. B. Foster. (Imperial Coll.)	5	0	0
Some hydrocarbons related to the sterols, bile acids, and cardiac aglucones. D. J. C. Gamble. (Imperial Coll.) ... ..	5	0	0
Studies on heterocyclic nitrogen ring systems of a new type. S. C. Goddard. (Queen Mary Coll.) ... ..	5	0	0
The dipole moments of liquids. F. R. Goss. (Leeds Univ.) ... ..	10	0	0
Syntheses of oxygen containing polycyclic compounds ( <i>continued</i> ). S. H. Harper. (Imperial Coll.) ... ..	5	0	0
Formation of alicyclic compounds. D. C. Hibbit. (Imperial Coll.) ... ..	5	0	0
Chlorine monoxide as an additive reagent. F. Hilton. (Imperial Coll.) ... ..	4	0	0
Studies on hydrogen cyanide. L. E. Hinkel. (Univ. Coll., Swansea) ... ..	8	8	0
An investigation of the dipole moments and susceptibilities of metallic derivatives of acetyl acetone and benzoyl acetone. (Miss) W. R. A. Hollens. (Bedford Coll.) ... ..	10	0	0
The benzoyl derivatives of indigotin. E. Hope. (Oxford Univ.) ... ..	6	0	0
(a) The alkaloids of <i>Veratrum Album</i> . (b) The preparation of demethylated alkaloids of the benzylisoquinoline and aporphine series and other derivatives. H. R. Ing. (Univ. Coll., London) ... ..	12	0	0
The electrolytic reduction of organic compounds. E. Isaacs. (Univ. Coll., London)	10	0	0
The chlorination of phenolic ethers. B. Jones. (Sheffield Univ.) ... ..	9	0	0
Overpotential in non-aqueous solvents. H. W. Keenan. (Cambridge Univ.) ...	7	0	0
Further investigations into the validity of Antonow's Rule. R. F. Key. (Queen Mary Coll.) ... ..	8	0	0
Physical properties and chemical constitution. H. P. W. McQueen. (Woolwich Poly.) ... ..	12	0	0

	£	s.	d.
The nitration of halogeno-dimethyl diphenyls. (Miss) E. E. J. Marler. (Bedford Coll.) ... ..	6	0	0
(a) The possibility of induced radioactivity in europium ... ..	6	0	0
(b) The application of dimethylphosphate fractionation to the purification of holmium. J. K. Marsh. (Oxford Univ.) ... ..	6	0	0
The determination of the dissociation constants of polybasic acids by electrometric titration. W. R. Maxwell. (Queen Mary Coll.) ... ..	6	0	0
Application of the Diels-Alder reaction to the synthesis of polycyclic substances. A. F. Millidge. (Imperial Coll.) ... ..	6	0	0
The mechanism of the deamination of amino-alcohols. A. K. Mills. (Reading Univ.) ... ..	10	0	0
Structure of the sterols. Alternative position of attachment of one of the methyl groups. E. S. Narracott. (Imperial Coll.) ... ..	5	0	0
The mechanism of quaternary salt formation in various media, with special reference to the action of neutral salts. W. S. Nathan. (Leeds Univ.) ... ..	8	0	0
The isomerism of some unsaturated alcohols and their derivatives. L. W. J. Newman. (Imperial Coll.) ... ..	5	0	0
The determination of the molecular weights of certain possibly chelated ring compounds. K. W. Pepper. (Queen Mary Coll.) ... ..	8	0	0
Acceleration of the electrodeposition of hydrogen and oxygen by ultra-violet light. L. E. Price. (Cambridge Univ.) ... ..	8	0	0
Investigation of sesquiterpene structure. G. R. Ramage. (Univ. Coll., Bangor) ... ..	12	0	0
A rearrangement of <i>o</i> -aminodiphenyl ethers. K. C. Roberts. (King's Coll.) ... ..	6	0	0
Influence of poles in the simple three-carbon system ( <i>continued</i> ). E. Rothstein. (Leeds Univ.) ... ..	12	0	0
Synthesis of polycyclic compounds. F. C. J. Ruzicka. (Imperial Coll.) ... ..	5	0	0
Studies in the substituted glutaric acids. K. Sams. (Imperial Coll.) ... ..	8	0	0
A re-investigation of the synthesis of Diels' hydrocarbon. B. Saunders. (Imperial Coll.) ... ..	5	0	0
A study of the oxidations caused by the enzyme peroxidase. B. C. Saunders. (Cambridge Univ.) ... ..	8	0	0
The stereo-orientation of aliphatic substitution. A. D. Scott. (Univ. Coll., London) ... ..	12	0	0
Condensation of sodium derivatives of $\beta$ -diketones and $\beta$ -diketonic esters with anilide-imido-chlorides. R. C. Shah. (Bombay Inst. of Science) ... ..	10	0	0
Dynamics of the hydrolysis of alkyl halides. U. G. Shapiro. (Univ. Coll., London) ... ..	12	0	0
Cyclic derivatives of phorone. C. W. Shoppee. (Leeds Univ.) ... ..	8	0	0
Oxidation-reduction potentials in non-aqueous solutions. J. W. Skeen. (Queen Mary Coll.) ... ..	8	0	0
The chemistry of cerium compounds. F. G. Soper. (Univ. Coll., Bangor) ... ..	8	0	0
Reactions of gaseous formaldehyde. R. Spence and W. Wild. (Leeds Univ.) ... ..	20	0	0
The relation between chemical constitution and physical properties (electric moments). H. C. Stephens. (Woolwich Poly.) ... ..	12	0	0
Study of radical migration and related problems. T. S. Stevens. (Glasgow Univ.) ... ..	5	0	0
Partial reduction of compounds containing a 2:4-dinitrophenyl radical. F. R. Storrle. (Glasgow Univ.) ... ..	5	0	0
Stereochemistry of heterocyclic compounds. (Miss) M. C. Thompson. (Bedford Coll.) ... ..	10	0	0
The stereochemistry of carbazole derivatives. S. H. Tucker and (Miss) H. G. Dunlop. (Glasgow Univ.) ... ..	5	0	0
(a) Thermal decomposition of substituted dibasic acids ( <i>continued</i> ). (b) Isolation of strainless forms of cyclohexane and substituted derivatives ( <i>continued</i> ). A. I. Vogel. (Woolwich Poly.) ... ..	12	0	0
Coupling of diazonium salts with derivatives of cyclic $\beta$ -keto-acids. A. B. Wang. (Imperial Coll.) ... ..	5	0	0
The spatial structure of cycloparaffins. W. A. Wightman. (Leeds Univ.) ... ..	10	0	0
The mechanism of the Kolbe-Schmidt reaction. R. Wild. (Univ. Coll., London) ... ..	8	0	0
Synthesis of substituted cyclopentane-1:2-dicarboxylic acids. P. A. Winsor. (Imperial Coll.) ... ..	6	0	0
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## ANNUAL REPORTS.

Fellows are reminded that applications for the Annual Reports for 1934, Volume XXXI, at 5s. 6d. per copy, must be received by January 15th, 1935.

List of papers, or abstracts thereof, received between November 15th and December 20th, 1934. (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.)

- "A method for purifying helium." By R. M. BARRER.
- "Reactions of *o*-hydroxybenzylidenediacetophenones. Part II. Conversion into pyrylium and benzopyrylium salts." By D. W. HILL.
- "Studies in the phenylsuccinic acid series. Part XI. Interaction of the optically active and the inactive diphenylsuccinic anhydrides with butyl alcohols and aniline." By H. WREN and G. L. MILLER.
- "The kinetics of the reaction between hydrogen and sulphur at temperatures from 265° to 350° and pressures of hydrogen in the region of 290—820 mm." By E. E. AYNSLEY, T. G. PEARSON, and P. L. ROBINSON.
- "Some physical properties of the alkyl compounds of mercury, tin, and lead." By W. J. JONES, D. P. EVANS, T. GULWELL, and D. C. GRIFFITHS.
- "Iminazole series. Part I. The synthesis of thiohistidine." By A. N. DEY.
- "Reactions of *o*-hydroxybenzylidenediacetophenones. Part III. Formation of a 4-phenacylidene-flavene during the preparation of 4'-methoxyflavylium chloride." By D. W. HILL and R. R. MELHUISE.
- "(-)Phenylmethoxyacetonitrile." By (Miss) I. A. SMITH.
- "A rearrangement of *o*-aminodiphenyl ethers. Part II." By K. C. ROBERTS, C. G. M. DE WORMS, and (Miss) H. B. CLARK.
- "Action of nitric acid on *p*-hydroxyphenyltrimethylammonium iodide." By K. C. ROBERTS.
- "The formation of dithionate by the oxidation of sulphurous acid and sulphites." By H. BASSETT and A. J. HENRY.
- "The oxidation of 2- and 4-nitro-4'-methyl-diphenyl with chromyl chloride." By W. S. M. GRIEVE and D. H. HEY.
- "A rearrangement of *o*-acetamidodisulphones and sulphides." By W. J. EVANS and S. SMILES.
- "Reactions of methyl  $\Delta^{\beta}$ -propene- $\alpha\alpha\beta$ -tricarboxylate. An example of three-carbon ring-chain prototropy involving a simple cyclopropane ring." By J. W. BAKER.
- "Physicochemical studies of complex formation involving weak acids. Part XIII. The complex anions of cuprous and auric cyanides." By H. T. S. BRITTON and E. N. DODD.
- "The cathodic combustion of hydrogen and carbonic oxide." By G. I. FINCH.
- "The kinetics of the depolymerisation of bisnitrosoisopropylacetone." By K. D. ANDERSON and D. L. HAMMICK.
- "Bimolecular reactions in solution. Part I. Bromine and cinnam-*p*-chloroanilide." By N. T. CLARE and P. W. ROBERTSON.
- "The chemistry of insects. Part I. The wax of the felted beech coccus." By B. K. BLOUNT.
- "The action of titanous chloride on nitrophenylhydrazones: *p*-nitro- and 2:4-dinitrophenylhydrazones." By A. K. MACBETH and J. R. PRICE.
- "Benzanthrone-11-carboxylic acid and dicarboxydibenzanthrone from 8-bromo-1-naphthoic acid." By H. G. RULE, W. PURSELL, and (in part) A. J. G. BARNETT.
- "The cyclisation of 11-carboxybenzanthrone to 1:11-ketobenzanthrone, and of dicarboxydibenzanthrone to diketodibenzanthrone." By L. A. BIGELOW and H. G. RULE.
- "The interaction of alkyl iodides and sodium *m*-4-xylyloxyde in ethyl alcohol." By P. J. HARDWICK.

- "The constituents of guaiacum resin. Part III. Synthesis of *dl*-guaiaretic acid diethyl ether." By R. D. HAWORTH and T. RICHARDSON.
- "Terpene compounds. Part I. Preliminary synthetical investigations in the cadinene group." By J. C. BARDHAN and S. K. BANERJI.
- "The organic compounds of gold. Part IV. *n*-Propyl compounds." By A. BURAWOY and C. S. GIBSON.
- "Tribromogold." By A. BURAWOY and C. S. GIBSON.
- "Pyridylnitropyrazole. Part II. Derivatives of 4-nitro-5-pyridylpyrazole." By H. LUND.
- "Light filters for the mercury lamp." By E. J. BOWEN.
- "The preparation of diazomethane and its homologues." By D. W. ADAMSON and J. KENNER.
- "The influence of variations in structure on the reactivity of an alcohol with hydrobromic acid." By G. M. BENNETT and F. M. REYNOLDS.
- "The spatial configuration of *cyclohexylideneacetic acid* and the redetermination of the dipole moment of 1:4-*cyclohexadione*." By (Mrs.) C. G. LE FÈVRE and R. J. W. LE FÈVRE.
- "The dipole moment of *p*-benzoquinone." By (Mrs.) C. G. LE FÈVRE and R. J. W. LE FÈVRE.
- "The valency angle of the ketone group." By R. J. W. LE FÈVRE.
- "The solubility of non-electrolytes. Part I. The free energy of hydration of some aliphatic alcohols." By J. A. V. BUTLER, C. M. RAMCHANDANI, and D. W. THOMSON.
- "Investigations of the olefinic acids. Part XVI. Additive reactions and tautomeric changes of some cyclic unsaturated acids, and analogous observations on  $\alpha$ -methyl-pentenonic acids." By E. J. BOORMAN and R. P. LINSTAD.
- "The constitution of apocinchene and syntheses of its methyl and ethyl ethers." By J. KENNER and F. S. STATHAM.
- "A new synthesis of methacrylic acid and its derivatives." By J. W. C. CRAWFORD.
- "Studies in solvent action. Part IX. Rotatory powers of the *l*-menthyl esters of *m*-nitro- and 3:5-dinitro-benzoic acids in relation to the solvent, concentration, temperature, and wave-length of light." By A. McLEAN.
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BRITTON, HUBERT T. S. Conductometric analysis. Principles, technique, applications. (Monographs on Applied Chemistry.) London 1934. pp. xii + 178. ill. 12s. 6d. net. (*Recd.* 5/12/34.)

From the Publishers: Messrs. Chapman & Hall.  
CHEMIST, THE. 2 vols. London 1824-25. (*Reference.*) From Mr. E. Horton.

CLARK, C. H. DOUGLAS. The electronic structure and properties of matter: an introductory study of certain properties of matter in the light of atomic numbers, being Vol. I of a comprehensive treatise of atomic and molecular structure. London 1934. pp. xxvi + 374. ill. 21s. net. (*Recd.* 16/11/34.) From the Publishers: Messrs. Chapman & Hall.

GAERTNER, VIKTOR. Elektrochemie. Ein Lehr- und Hilfsbuch für Studierende, Techniker und Fabrikanten. Wien 1934. pp. x + 409. ill. M. 20. (*Recd.* 20/11/34.)

From the Publishers: Deutscher Verlag für Jugend und Volk.

McKAY, H., and McKAY, H. A. C. The ideas of physical chemistry. London 1934. pp. x + 301. ill. 7s. 6d. net. (*Recd.* 20/11/34.)

From the Publishers: Messrs. William Heinemann.

MOOR, C. G., and PARTRIDGE, WILLIAM. Aids to the analysis of food and drugs. 5th edition. Revised and partly re-written by JOHN RALPH NICHOLLS. London 1934. pp. viii + 322. 5s. net. (*Recd.* 15/11/34.)

From Mr. J. R. Nicholls.

SOCIETY OF DYERS AND COLOURISTS. Report on the work of its Fastness Committee in fixing standards for light, perspiration and washing. Bradford 1934. pp. 52. ill. 7s. 6d. net. (*Recd.* 26/11/34.)

From the Bureau of Chemical Abstracts.

II. *By Purchase.*

ROSENDAHL, FRITZ. Steinkohlenteer. Dresden 1934. pp. x + 194. ill. M. 14. (*Recd.* 3/12/34.)

III. *Pamphlets.*

BRITISH GUIANA. *Department of Agriculture.* Sugar Bulletin No. 2. Field experiments with sugar cane, II. By C. H. B. WILLIAMS and R. R. FOLLETT-SMITH. Georgetown, Demerara 1933. pp. viii + 50. ill.

BRITISH STANDARDS INSTITUTION. British standard specifications, No. 571—1934. Distillation flasks.

— — — No. 572—1934. Interchangeable conical ground glass joints.

— — — No. 573—1934. Dibutyl phthalate.

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— — — No. 580—1934. Trichlorethylene (trichloroethylene) (technical and stabilised).

HVISTENDAHL, BROR. Das Zymosphosphat und die alkoholische Gärung. Mariestad 1934. pp. 43.

INDIAN LAC RESEARCH INSTITUTE. Bulletin No. 19. The heat curing of shellac. Part II. "Depolymerisation." By M. RANGASWAMI and R. W. ALDIS. Calcutta 1934. pp. 10.

— Research Note No. 17. A further means of dispersing "polymerised" shellac. By M. VENUGOPALAN and R. W. ALDIS. Namkum 1934.

— Research Note No. 18. Some effects of hydrochloric acid on shellac varnish. By R. W. ALDIS. Namkum 1934.

MINES DEPARTMENT. *Safety in Mines Research Board.* Paper No. 88. The pressure wave sent out by an explosive. Part III. By W. PAYMAN and D. W. WOODHEAD. London 1934. pp. 23 + 9 plates.

UNITED STATES. *Department of Agriculture.* Miscellaneous Publication No. 206. The naval stores station of the Bureau of Chemistry and Soils. By F. P. VEITCH. Washington 1934. pp. 11. ill.

WACKERS, MARIA LOUISE. Derivaten van 2.4.6.trinitro- en 2.4.dinitrophenyl- $\alpha$ .methylhydrazine. Leiden 1934. pp. xii + 83.

WALKER, W. CAMERON. A portrait of Joseph Priestley and some of its associations. (From the *Proc. Leeds Phil. Soc.*, 1934, 2.) ill.

— The beginnings of the scientific career of Joseph Priestley. (From *Isis*, 1934, 21.) ill.

## FORTHCOMING MEETINGS OUTSIDE LONDON.

*BIRMINGHAM.*

Tuesday, January 29th, 1935, at 5 p.m. in the Department of Chemistry, The University, Edgbaston, Birmingham. Lecture on "Surface Reactions," by Professor E. K. Rideal, M.B.E., D.Sc., F.R.S.

*GLASGOW.*

Friday, February 1st, 1935. Fellows are invited to attend a lecture under the auspices of the Glasgow Section of the Society of Chemical Industry, to be delivered by Professor T. P. Hilditch, D.Sc., F.I.C., in the Royal Technical College, at 7.30 p.m., entitled "The Fats:—New Lines in an Old Chapter of Organic Chemistry."

*LIVERPOOL.*

Friday, January 25th, 1935, at 7.30 p.m. Lecture on "Some Researches on Long-chain Compounds," by Dr. J. C. Smith, M.A., M.Sc.

Wednesday, February 27th, 1935, at 7.30 p.m., in the Chemistry Lecture Theatre of the University. Lecture on "Solid Reactions and Explosive Decomposition," by Professor W. E. Garner, D.Sc.

These meetings will be held in the Chemistry Lecture Theatre of the University.

*MANCHESTER.*

Thursday, January 24th, 1935, at 7 p.m., in the Chemistry Lecture Theatre of the University. A meeting for the reading of papers.

Thursday, February 14th, 1935, at 7 p.m. Joint meeting with the Manchester Section of the Institute of Chemistry. Lecture entitled: "Chemistry in the Service of Medicine," by Dr. J. F. Wilkinson, F.I.C. (To be held at the Queen's Hotel.)

*NEWCASTLE AND DURHAM.*

Friday, February 8th, 1935, at 6.30 p.m., in the Chemistry Lecture Theatre, Armstrong College. Bedson Lecture entitled "The Biochemistry of the Thyroid Gland," by Professor C. R. Harington, M.A., Ph.D., F.R.S. Fellows are invited to attend.

*NORTH WALES.*

Joint meeting of the Chemical Society and the University College of North Wales (Bangor) Chemical Society:

Friday, January 18th, 1935, at 6 p.m., in the Chemistry Lecture Theatre of the University College, Bangor. Lecture entitled: "Alchemy and the Alchemists," by Professor J. Read, M.A., Sc.D.

*ST. ANDREWS.*

Joint meetings of the Chemical Society and the St. Andrews University Chemical Society, to be held in the Chemistry Lecture Theatre of the University.

Friday, January 11th, 1935, at 4 p.m. Lecture on "Some Problems in relation to Complex Metallic Salts," by Dr. F. G. Mann, F.I.C.

Friday, February 15th, 1935, at 4 p.m. Lecture on "Orientation of Substitutions in the Benzene Series," by Professor R. Robinson, D.Sc., F.R.S.

*SHEFFIELD.*

Friday, February 1st, 1935, at 5.30 p.m., in the Chemistry Lecture Theatre of the University. Lecture on "Some Recent Developments in the Study of Chemical Reaction Mechanism," by Mr. C. N. Hinshelwood, M.A., F.R.S.

*SOUTH WALES.*

Monday, January 21st, 1935, at 6 p.m., at University College, Swansea. Lecture on "Isothermal Sol-Gel Transformation, or Thixotropy," by Professor Dr. H. Freundlich.

**FORTHCOMING MEETINGS IN LONDON.**

Thursday, January 17th, 1935, at 8 p.m.

Ordinary Scientific Meeting.

Thursday, February 7th, 1935, at 8 p.m.

Discussion on "Intermetallic Compounds," to be opened by Professor C. H. Desch, D.Sc., F.R.S.

Thursday, February 14th, 1935, at 5.30 p.m.

Fifth Liversidge Lecture entitled "The Process of Coagulation in Smoke," by Professor R. Whytlaw-Gray, O.B.E., Ph.D., F.R.S., to be held in the Meeting Hall of the Institution of Mechanical Engineers, Storey's Gate, Westminster, S.W. 1.

Thursday, February 21st, 1935, at 8 p.m.

Ordinary Scientific Meeting.