

# PROCEEDINGS

## OF THE

# CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, January 15th, 1931, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

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

	Elected.	Died.
John Hodgkin .....	Nov. 16th, 1882.	Dec. 26th, 1930.
Rt. Hon. Lord Melchett .....	Feb. 17th, 1927.	Dec. 27th, 1930.
William Sloan Mills .....	Feb. 15th, 1905.	Dec. 30th, 1930.
Benjamin L. Murray .....	Feb. 17th, 1904.	Dec. 12th, 1930.
Edgar Sanders .....	Feb. 15th, 1923.	Oct. 13th, 1930.
William Hill Saunders .....	Dec. 2nd, 1920.	Jan. 3rd, 1931.
John Frederick F. Trotter .....	Dec. 4th, 1930.	Dec. 20th, 1930.
George Joseph Warner, .....	Dec. 7th, 1871.	Dec. 22nd, 1930.

The PRESIDENT announced that in accordance with Bye-Law VI, 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 :  
 Prof. H. B. Baker, Sir William J. Pope, and Sir James Walker.

Vice-Presidents who have not filled the office of President :  
 Dr. W. H. Mills and Prof. J. C. Philip.

Ordinary Members of Council :

(a) Town Members : Prof. W. A. Bone, Dr. H. King, Prof. J. L. Simonsen, Dr. S. Sugden, Mr. H. Terrey, and Dr. M. A. Whiteley.

(b) Country Members : Dr. W. M. Cumming and Dr. N. V. Sidgwick.

The PRESIDENT, who was elected last year to a further period of office of two years, has tendered his resignation, which has been accepted by the Council.

The following vacant places in the Council, therefore, fall due to be filled at the Annual General Meeting of the Society, to be held at Burlington House on Thursday, March 26th, 1931 :

President, one vacancy.

Vice-Presidents who have filled the office of President, three vacancies.

Vice-Presidents who have not filled the office of President, two vacancies.

Ordinary Members of Council :

(a) Town Members (*i.e.* those living within a radius of fifty miles from London), six vacancies.

(b) Country Members (*i.e.* those living beyond a radius of fifty miles from London), two vacancies.

The Council has nominated Prof. G. G. Henderson to the office of President.

The PRESIDENT also announced that a communication had been received from the British Association for the Advancement of Science, inviting the assistance of the Council and the Fellows of the Society in securing or providing private hospitality for Chemists, especially from the Dominions and foreign countries, attending the Centenary Meeting of the Association to be held in London from September 23rd to 30th, 1931. Offers of hospitality should be sent to the Secretaries, The British Association, Burlington House, Piccadilly, London, W.1, who will be glad to receive them, if possible, by Easter.

The following were formally admitted Fellows of the Chemical Society :

Messrs. E. G. Noble, R. A. Letch, C. H. Beale, and A. W. Middleton.

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

John Dewar, B.Sc., 32, Bishop Street, Rothesay, Bute.

John Frederick James Dippy, B.Sc., Lawrenny, St. Monica Avenue, Maindy, Cardiff.

Graham Edward Foster, Ph.D., A.I.C., Lyndene, Essex Road, Dartford.

Riki Horiuchi, *c/o* Takasago Perfumery Company, Ltd., Kamata, Tokyo-Fu.

Frederick William Kirkbride, 1a, Prospect Row, Cambridge.

William Jefferys Lesley, M.Sc., Ph.D., A.I.C., 11, Grove Road, E.11.

Edward Maurice Frederick Payne, B.A., B.Sc., 102, Musley Hill, Ware, Herts.

Thomas Murray Simpson, M.Sc., 223, Victoria Road, Woodstock, Cape Town.

Reece Henry Vallance, M.Sc., F.I.C., 11, Ashfield Road, King's Heath, Birmingham.

Albert Leslie Williams, B.Sc., A.R.C.S., 21, Raglan Road, Plumstead, S.E.18.

The following Forms of Recommendation for Fellowship have

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

Luigi Mascarelli, Prof. Dr., Istituto di Chimica Farmaceutica, R. Università,  
Corso Raffaello 31, Turin.

Enrique Moles, Prof. Dr., Laboratorios de Química Inorgánica y Teórica,  
S. Bernardo 49, Madrid.

Henri Moureu, Dr., 18, Rue Pierre Curie, Paris.

The following papers were read :

“10-Chloro-5 : 10-dihydrophenarsazine and its derivatives. Part XIV. Chloro-derivatives.” By L. A. ELSON and C. S. GIBSON.

“The essential oil of *Backhousia angustifolia*. Part III. The constitution of angustione and dehydroangustione.” By R. S. CAHN, C. S. GIBSON, A. R. PENFOLD, and J. L. SIMONSEN.

“Investigations of the olefinic acids. Part IV. The two types of tautomerism of itaconic acids. Observations on the connexion between configurational and tautomeric changes in alkali.” By R. P. LINSTEAD and J. T. W. MANN.

“Investigations of the olefinic acids. Part V. The influence of bases on the condensation of aldehydes with malonic acid ; and a note on the Knoevenagel reaction.” By S. E. BOXER and R. P. LINSTEAD.

At the next Ordinary Scientific Meeting to be held on Thursday, February 5th, 1931, at 8 p.m., the following papers will be read :

“Salt-forming characteristics of doubly and singly linked elements of the oxygen group. Part I. The carbonyl group in benzaldehyde and acetophenone.” By J. W. BAKER.

“Salt-forming characteristics of doubly and singly linked elements of the oxygen group. Part II. The nitration of benzaldehyde and acetophenone in sulphuric acid solution.” By J. W. BAKER and W. G. MOFFITT.

“The properties of the chlorides of sulphur. Part V. Metastable states.” By T. M. LOWRY and G. JESSOP.

“Polycyclic aromatic hydrocarbons. Part II. The non-existence of 1 : 2 : 7 : 8-dibenzanthracene.” By J. W. COOK.

“Polycyclic aromatic hydrocarbons. Part III. Derivatives of 1 : 2 : 5 : 6-dibenzanthracene.” By J. W. COOK.

“Polycyclic aromatic hydrocarbons. Part IV. Condensed derivatives of 1 : 2-benzanthracene.” By J. W. COOK.

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Telephone : The Society's Telephone Number is now Regent 6322.

## THE SECOND PEDLER LECTURE.

The Second Pedler Lecture, entitled "Studies in Biological Oxidation," will be delivered by Geh. Reg.-Rat Professor Dr. H. Wieland, of Munich, on Friday, March 6th, 1931, at 5.30 p.m., in the Meeting Hall of the Institution of Mechanical Engineers, Storey's Gate, Westminster, S.W.1 (by kind permission of the Council of that Institution). Tickets of admission will not be required.

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## THE 90TH ANNUAL GENERAL MEETING AND THE ANNIVERSARY DINNER.

The 90th Annual General Meeting will be held on Thursday, March 26th, 1931, at 4 p.m., and the Anniversary Dinner will take place the same evening at the Hotel Victoria, Northumberland Avenue, W.C.2. Further particulars will be circulated later.

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List of papers, or abstracts thereof, received between December 18th, 1930, and January 15th, 1931. (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 parachor and chemical constitution. Part XVI. Silicon compounds." By S. SUGDEN and H. WILKINS.
- "Catalytic influences in three-carbon tautomerism. Part II. The action of acid catalysts on ketones." By G. A. R. KON.
- "The analysis of mixtures of hydrogen, methane, and ethane." By O. J. WALKER and S. N. SHUKLA.
- "The intramolecular strain in substituted dihydroresorcinols. Part I." By L. E. HINKEL, J. F. J. DIPPY, E. E. AYLING, and T. H. ANGEL.
- "The properties of nicotine and its derivatives. Part III. Chloronicotine and methylnicotine." By T. M. LOWRY and H. K. GORE.
- "Ortho-esters of phenylacetic acid." By P. P. T. SAH, S. Y. MA, and C. H. KAO.
- "Equilibrium constants for the decomposition of ammonium bicarbonate." By W. K. HUTCHISON.
- "The viscosity and density of rubidium nitrate solutions." By H. G. SMITH, J. H. WOLFENDEN, and Sir H. HARTLEY.
- "The properties of the chlorides of sulphur. Part V. Metastable states." By T. M. LOWRY and G. JESSOP.
- "The preparation of aromatic acid amides." By C. H. KAO and S. Y. MA.
- "Co-ordinated compounds of the alkali metals. Part II." By F. M. BREWER.

- “The halogenation of optically active phenylmethylcarbinol in the presence and absence of pyridine by thionyl chloride and the chlorides and oxychloride of phosphorus.” By J. KENYON, H. PHILLIPS, and F. M. H. TAYLOR.
- “Some reactions of propenyl phenyl ketone with semicarbazides and thiosemicarbazides.” By A. Y. LIVINGSTONE and F. J. WILSON.
- “The lupin alkaloids. Part III.” By G. R. CLEMO, R. RAFFER, and C. R. S. TENNISWOOD.
- “Studies in electro-endosmosis. Part IV. The electro-endosmosis of some organic liquids against a glass surface.” By F. FAIRBROTHER and M. BALKIN.
- “Polycyclic aromatic hydrocarbons. Part II. The non-existence of 1 : 2 : 7 : 8-dibenzanthracene.” By J. W. COOK.
- “Polycyclic aromatic hydrocarbons. Part III. Derivatives of 1 : 2 : 5 : 6-dibenzanthracene.” By J. W. COOK.
- “Polycyclic aromatic hydrocarbons. Part IV. Condensed derivatives of 1 : 2-benzanthracene.” By J. W. COOK.
- “The chemistry of the glutaconic acids. Part XXII. Optically active  $\alpha\gamma$ -dimethylglutaconic acid.” By T. H. McCOMBS, J. PACKER, and J. F. THORPE.
- “ $\psi$ -Cyanine dyes containing pyridine or  $\beta$ -naphthaquinoline nuclei.” By (MISS) F. M. HAMER and (MRS.) M. I. KEELY.
- “Studies in the composition of coal. Methods for the rational analysis of coal.” By W. FRANCIS and R. V. WHEELER.
- “The compound uronic acids. Structure of the aldobionic acid from gum arabic.” By S. W. CHALLINOR, W. N. HAWORTH, and E. L. HIRST.
- “The catalytic action of hydrogen on the carbon monoxide flame.” By W. E. GARNER, D. A. HALL, and F. E. HARVEY.
- “The use of tetramethylene dibromide in the synthetical formation of closed carbon chains.” By L. J. GOLDSWORTHY.
- “Derivatives of 1 : 2-dihydroxythioxanthone.” By A. A. LEVI and S. SMILES.
- “The nitration of 6-methoxy-*m*-toluic acid. A correction.” By J. L. SIMONSEN.
- “A new method for the preparation of organo-thallium halides.” By F. CHALLENGER and (MISS) B. PARKER.
- “The glutaconic problem. Part I. The structure of the cyano-glutaconic esters.” By G. A. R. KON and H. R. NANJI.
- “Some substitution products of 2-nitro- and 2-acetamido-diphenyl ethers and the corresponding diphenylene oxides.” By H. McCOMBIE, W. G. MACMILLAN, and H. A. SCARBOROUGH.
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FORMS OF RECOMMENDATION FOR FELLOWSHIP. THE  
BALLOT WILL BE HELD AT THE ORDINARY  
SCIENTIFIC MEETING ON THURSDAY, FEBRUARY  
19th, 1931.

ASHTON, HERBERT WILLIAM, 37, Caversham Avenue, Palmer's Green, N. 13. British (English). Chemical Research Student. B.Sc. (2nd Class Chem., London, June 1930). (*Signed by*) J. R. Partington, W. H. Patterson, H. D. K. Drew, R. J. Winterton.

BRENT, MAURICE, "Frogmore," The Drive, Wembley Park, Middlesex. British. Research. A.R.C.S., B.Sc. To receive the Journals of the Society in order to keep abreast of modern developments in Chemistry. (*Signed by*) E. H. Farmer, G. A. R. Kon, M. A. Whiteley.

CARTER, GEOFFREY FRANK, 1B, Broadlands Road, Highgate, N. 6. British. Research Student. B.Sc. (Lond.), A.R.C.S. (Royal College of Science). At present engaged in Organic Chemistry research at the Imperial College. (*Signed by*) M. A. Whiteley, R. P. Linstead, H. L. Riley.

DESAI, MAHENDRA HARILAL, 24, Queensborough Terrace, Bayswater, W. 2. Hindu. Student. B.Sc. (1st Class), Bombay University. Research student in Organic Chemistry for Ph.D., Royal College of Science. (*Signed by*) E. H. Farmer, G. A. R. Kon, M. A. Whiteley.

DEWAR, JOHN, 32, Bishop Street, Rothesay, Bute. Lecture Assistant, Chemistry Dept., United College, University of St. Andrews. Graduated B.Sc. with 1st Class Honours in Chemistry at University of Glasgow in June 1930. Now on teaching staff of St. Andrews University; also engaged in research work for the degree of Ph.D. (*Signed by*) G. G. Henderson, John Read, J. C. Irvine.

DIPPY, JOHN FREDERICK JAMES, "Lawtenny," St. Monica Avenue, Maindy, Cardiff. British. Assist. Lecturer in Chemistry, Cardiff Technical College. B.Sc. with 1st Class Hons. in Chemistry (Wales), Swansea University College. At present a member of the lecturing staff of the Chemistry Dept., Cardiff Technical College. *J.C.S.*, 1930, 725 (J. F. J. Dippy and N. H. Hartshorne); *ibid.*, 1387 (L. E. Hinkel and J. F. J. Dippy). (*Signed by*) H. B. Watson, E. A. Rudge, W. J. Jones.

EVANS, THOMAS WILLIAM, 2, Ellesmere Road, Pemberton, Wigan. Welsh. Chief Chemist to Pemberton Colliery Co. for twenty-five years. Six years with the Brymbo Steel and Iron Co., Wrexham. M.I.Chem.E. (*Signed by*) Ernest B. Naylor, Wilfred Harrison, Samuel Hill.

FAITH, IVY KATHLEEN, "Bush Lodge," Southgate, N. 14. British. Student. B.Sc. at Bedford College, London. (*Signed by*) E. E. Turner, M. S. Lesslie, James F. Spencer.

FLOHREN, JOHN ALBERT CHARLES, 8, Conway Road, N. 15. British. Research Student. B.Sc. East London College, U.L.; Degree taken in Special Chemistry, 1929. Since engaged in research work in Organic Chemistry under Dr. A. Robertson. (*Signed by*) A. Robertson, J. R. Partington, D. C. Jones.

FOSTER, GRAHAM EDWARD, "Lyndene," Essex Road, Dartford, Kent. British. Research Chemist to Messrs. Burroughs, Wellcome & Co., Dartford. B.Sc. (Lond.), Ph.D. (Lond.), A.I.C. Research Student at King's College, London (1924-1927); Research Chemist to B. W. & Co. (1927 to present). Papers contributed with Arthur Fairbourne, M.A., M.Sc., F.I.C. *J.C.S.*, 1925 (2759); 1926 (3146 and 3148); 1930 (1275). (*Signed by*) Samuel Smiles, A. J. Allmand, S. Smith.

GAGNON, PAUL EDOUARD, Laval University, Quebec, Canada. British. Lecturer. B.A., Chemist Diploma. Licence-ès-sciences (Laval, Canada); D.-ès-Sc. (Paris, France). Student (1922-1926), Laval, Canada, Research (1926-1929), Paris; Research (1929-1930) R.C.S., London. *Ann. chim.* 1929, [10], 22, 296, and *Compt. rend.*, 1929, 189, 217. (*Signed by*) Jocelyn Thorpe, R. P. Linstead, M. A. Whiteley.

HOFFMAN, HERBERT VICTOR, 72, Wembley Park Drive, Wembley Park, Middlesex. British. Chemist. B.Sc., University College, London (2nd Class Hons. Chemistry). Research Student of Chemistry, University College, London. (*Signed by*) Henry Terrey, L. F. Gilbert, R. Winstanley Lunt.

HORIUCHI, RIKI, c/o Takasago Perfumery Company, Ltd., Kamata, Tokyo-Fu, Japan. Japanese. Director and Factory Manager of Takasago Perfumery Co., Ltd., and Lecturer of Chemistry, Waseda Univ., Tokyo. Graduate (Chemistry), Kyoto Imperial Univ. (1918); Doctor of Science, Kyoto Imperial Univ. (1928). Factory Manager of Takasago Perfumery Co., Ltd., since 1920. Published "On the Formation of Triphenyl *para*-Rosaniline Hydrochloride" in the Memoirs of the College of Science, Kyoto Imperial Univ., 1921; "On the Transformation of Aliphatic Terpenes—A Synthesis of Menthol" in the same journal, 1928; "Induced Reactions. I-V. On the Oxidation of Anethol, etc.," in the *Journ. Chem. Soc. Japan*, 1923-1928. (*Signed by*) Joji Sakurai, Toyokichi Takamatsu, Riko Majima.

HYMAS, FREDERICK CEOL, 15, Raleigh Road, Enfield, Middlesex. British. Assistant Analyst. B.Sc. (Hons.) (Lond.). A.I.C. Published work: "Tests for Impurities in Ether," Part I, *Analyst*, 1928, 53, 201; "The Oxidation of Ether: the Effect of Certain Gases," *Quart. J. Pharm.*, 1929, 2, 278 (with G. Middleton, B.Sc., A.I.C.); "Photo-chemical Methods of Testing Sources of Ultra-violet Radiation," *ibid.*, 1929, 2, 281; "The Determination of Ascaridole in Chenopodium Oil," *Analyst*, 1930, 55, 180 (with T. T. Cocking, F.I.C.). (*Signed by*) Charles Alex. Hill, Francis H. Carr, C. Edwd. Sage.

KIRKBRIDE, FREDERICK WILLIAM, 1A, Prospect Row, Cambridge. British. Research Student. B.A. (Cantab.). 1st Class in Part I, 2nd Class in Part II, of Natural Science Tripos, Cambridge. (*Signed by*) R. G. W. Norrish, J. G. A. Griffiths, C. G. Lyons.

KRETCHMAR, HARRY HARMAN, 5, Smith Street, Perth, Western Australia. British. Chemist in Works of Plaistowe & Co., Ltd., Perth, W.A. B.Sc., Univ. of Western Australia. Scholarship and Bursary holder during whole of Univ. and previous Public School courses. Temporary Senior Demonstrator in Dept. of Physics, Univ. of W.A., pending the appointment of Dr. Nimmo. Vacational experience (during Univ. course) with C.S.I.R. under Professor Wilsmore. (*Signed by*) N. T. M. Wilsmore, Edward S. Simpson, A. C. D. Rivett.

KURIYAN, KURUVILA ITTYERAH, 112, Gower Street, W.C.1. Indian. Research Student (Ph.D. Student Univ. College, London). B.A. (Madras); M.Sc. (Agra), India. (*Signed by*) C. K. Ingold, J. N. E. Day, Henry Terrey.

LAMBERT, ERNEST WILLIAM, 264, Ardgowan Road, Catford, S.E. 6. British. Teacher of Chemistry, Technical College, Shrewsbury, Shropshire. B.A., Camb. Science master, Grammar School, Thetford, Norfolk, 1928-1929. (*Signed by*) W. H. Mills, F. B. Kipping, R. G. W. Norrish.

LANGDON, HAROLD LESLIE, "Alleyn," Hopcote, Minehead, Somerset. British. Schoolmaster. B.Sc. (2nd Class Hons. Chem. Lond.). Teacher of Science for five years. (*Signed by*) J. R. Partington, D. C. Jones, W. H. Patterson.

LESLEY, WILLIAM JEFFERYS, 11, Grove Road, Wanstead, E. 11. English.

Technical Chemist. M.Sc. (1927) (Lond.); Ph.D. (1930) (Lond.), A.I.C. Publications: *Journ. Far. Soc.*, 1929, XXV, 570; 1930, XXVI, 69. (*Signed by*) Henry J. S. Sand, E. de Barry Barnett, A. M. Ward.

LOWE, ARTHUR REGINALD, "Falklands," Station Road, Felixstowe, Suffolk; (in term time) 7, Kempford Gardens, Earl's Court, S.W. 5. British. Chemist. B.Sc. (Lond.) (2nd Class Hons.), and Associate of the Royal College of Science. (*Signed by*) Jocelyn Thorpe, R. P. Linstead, G. A. R. Kon.

LUIS, ETHEL MARGARET, Taychreggan, Broughty Ferry, Angus. British. Research Student. B.Sc. (Lond.), 1st Class Hons. in Chemistry. Conjoint author of the paper "Sur Quelques Nouveaux Couples de Glycols Trisubstitués Stéréoisomères" (*Bull. Soc. chim.*, 1929, [iv], 45, 414), by McKenzie, Luis, Tiffeneau and Weill. (*Signed by*) Alex. McKenzie, Jas. R. Myles, Agnes G. Mitchell.

MCLAUGHLIN, ROLAND RUSK, 4, May Street, Toronto 5, Canada. Canadian Research Chemist. M.A.Sc., M.A., Ph.D. (Univ. of Toronto). Engaged in research in the Dept. of Chemical Engineering, Univ. of Toronto, 1922-1923, 1924-1929. Grocers' Company Research Fellow, Lister Institute, London, 1930. Papers: "The Constitution of Rubber," *Trans. Roy. Soc. Canada*, 1922, 16, III, 27-47; "The Chlorination of Methane," *Canadian Journ. of Research*, 1929, I, 240-255; "A Study of Some Factors Influencing the Activity of Aluminium and Ferric Chlorides in the Friedel and Crafts Reaction"; *ibid.*, 1929, I, 400-404. (*Signed by*) Arthur Harden, Robert Robison, S. S. Zilva.

MOUNTFORT, LOUIS FREDERIC, "Claverings," Montagu Road, Edmonton, N. 9. British. Resident Engineer and Manager, Edmonton Sewage Works. Chemical analysis for sewage disposal works. Interested in study of physical chemistry and allied subjects and desire advantage of library. (*Signed by*) P. G. Lloyd, W. H. Duckworth, James H. Kershaw.

NANNEY, PHYLLIS, 15, Moorland Road, Didsbury, Manchester. English. Teaching. B.Sc. (Manchester); M.Sc. (Manchester). Reason for wishing admission to the Society is to study further the development of Chemistry. (*Signed by*) Frederick Challenger, Arthur Lapworth, G. N. Burkhardt, Fred Fairbrother.

OFFER, WILFRED LOUIS, St. Mary's School House, Ealing Green, W. 5. British. Student. B.Sc. (Special), London Univ. (East London College). B.Sc. degree taken in Chemistry, June 1929. Engaged in research work in Organic Chemistry, under Dr. A. Robertson, since Sept. 1929. (*Signed by*) A. Robertson, J. R. Partington, D. C. Jones.

PAYNE, EDWARD MAURICE FREDERICK, 102, Musley Hill, Ware, Herts. British. B.A. Cambridge (Hons. Chemistry); B.Sc. (Hons. London). Desiring to keep in touch with the advance of and research in Chemistry. (*Signed by*) F. G. Mann, H. McCombie, R. G. W. Norrish.

PIGGOTT, HENRY ALFRED, 7, Maple Avenue, Cheadle Hulme, Cheshire. British. Chemist. Research student, Royal College of Science, 1921-1924. Chemist to British Dyestuffs Corp., Ltd., 1925 to date. *J.C.S.*, 1922, 2381, 2793; 1923, 1469, 2745; 1924, 168. (*Signed by*) E. H. Rodd, M. Lapworth, W. A. Silvester.

PIRIE, DOUGLAS JOHN CRUICKSHANK, 21, Park Avenue, Carnoustie, Angus. Scottish. Lecture Assistant. B.Sc. (St. Andrews), with 1st Class Hons. in Chemistry. Research Student. (*Signed by*) Alex. McKenzie, John D. M. Ross, Isobel A. Smith, Robert Roger.

QUBEL, THOMAS HENRY HALL, 51, Maids Causeway, Cambridge. British. Research Student. B.A. Cambridge. Natural Sciences Tripos, 1928, Part I,



Class I; 1929, Part II (Chemistry), Class I. (*Signed by*) W. J. Pope, W. H. Mills, P. Maitland.

RANDALL, SYDNEY STEWART, 7, Whitford Gardens, Mitcham, Surrey. British. Research Assistant in Dept. Path. Chemistry, U.C.H. Medical School. B.Sc., Hons. Chemistry, London. "Observations on Iodine containing Compounds of Thyroid Gland. Isolation of *dl*-3 : 5-Di-iodotyrosine," *Biochem. Journ.*, 1929, XXIII, No. 3; "Chemical Assay of Thyroid Gland," *Quart. Journ. of Pharmacy and Pharmacology*, 1929, Vol. II, No. 4. (*Signed by*) C. R. Harington, A. C. Chibnall, George Barger.

RICHARDS, OSWALD VICTOR, Sherborne, 1st Avenue, Leeds Road, Wakefield, Yorks. English. Research Student (Organic Chemistry). B.Sc. Leeds. Desirous of keeping in touch with advance in chemical science. (*Signed by*) Frederick Challenger, J. W. Baker, C. W. Shoppee.

SANDROCK, WILLIAM FREDERICK, 61, Buxton Road, Chingford, Essex, E. 4. British. B.Sc., East London College. I desire to become a member of the Chemical Society in order that I shall be able to become acquainted with the recent advances in chemical knowledge. (*Signed by*) A. Robertson, E. T. Jones, F. H. Curd, R. J. Stephenson.

SEN, HEMENDRA KUMAR, Calcutta, Science College, 92, Upper Circular Road, Calcutta, India. London address: c/o Thomas Cook & Son, Berkeley Street, London. Indian. Professor of Applied Chemistry, Calcutta University. M.A. (Calc.); D.I.C., D.Sc. (London.) "Synthesis of Tetrahydro-oxyquinolines," *J.C.S.*, 1915; "Condensation of Ketones with Phenols," *ibid.*, 1914; "Oxidation of Condensation Products from Above," *ibid.*, 1922; "Tetramethylammonium Hyponitrite," *ibid.*, 1911; "Synthesis of *iso*Quinoline and Tetrahydrophenanthridones and Tetrahydroacridones (Series in the *Journ. Ind. Chem. Soc.*); "Saccharification and Fermentation of Cellulose," *ibid.*; "Ignition Temperature of Gases," *ibid.* Author of "High-temperature Flames and their Thermodynamics" (Patria University Readership Lecture, shortly to be published); etc., etc. (*Signed by*) C. K. Ingold, O. L. Brady, George A. R. Kon.

SILCOX, ARTHUR LEONARD, Eastbourne, Langland Bay, Mumbles, Swansea. British. Research Student at Swansea Univ. Coll. B.Sc. (Wales); 1st Class Hons. in Chemistry. (*Signed by*) J. E. Coates, E. E. Ayling, N. H. Hartshorne.

SIMPSON, THOMAS MURRAY, 223, Victoria Road, Woodstock, Cape Town, South Africa. British. Demonstrator. M.Sc. (Cape Town) with distinction in Chemistry. Demonstrator, Chemistry Dept., University of Cape Town. (*Signed by*) E. Newbery, J. Smeath Thomas, C. S. Gibson.

SPEAKMAN, JAMES CLARE, St. Aidan's Vicarage, Park, Sheffield. British. Assistant Lecturer in Chemistry, Univ. of Sheffield. M.Sc. (Sheffield); Ph.D. (Sheffield). 1st Class Honours in Chemistry for B.Sc. (Sheffield). Research on the Electro-deposition of Cobalt-Nickel Alloys, *Trans. Faraday Soc.*, 1930, 26, 565; *Analyst*, 1930, 93. (*Signed by*) W. P. Wynne, G. M. Bennett, S. Glasstone.

VALLANCE, REECE HENRY, 11, Ashfield Road, King's Heath, Birmingham. English. Lecturer in Chemistry. M.Sc. (B'ham.), F.I.C. Science Master, Knox Institute, Haddington, 1910-1911; King's Norton Secondary School, 1911-1919; Lecturer in Chemistry, Central Technical College, Birmingham, since 1919. Various research papers, see *J. Soc. Chem. Ind.*, 1926, 45, 66T; *J. Inst. Metals*, 1924, 31, 75; also in *J.C.S.* (see below). Literary work: "Textbook of Inorganic Chemistry" (Friend), Vol. 7, Part 2; "Sulphur, Selenium and Tellurium" (with D. F. Twiss and A. R. Russell), Vol. 7, Part 3;

“Chromium and its Congeners” (with A. A. Eldridge), *J.C.S.*, 1922, 121, 466; 1927, 1328; 1929, 2326; 1930, 718. (*Signed by*) J. Newton Friend, J. Cooper Duff, R. M. D. Hodge.

WALKER, JAMES, 3, Walker Place, Arbroath, Angus. British. Research Student. B.Sc. (St. Andrews) with 1st Class Honours in Chemistry. (*Signed by*) John Read, Geo. J. Robertson, James Y. Macdonald, J. N. H. Oldham.

WHITBY, GEORGE STAFFORD, Private address: 226, Rideau Terrace, Ottawa, Ontario, Canada. (Business: National Research Council, Ottawa, Canada.) British. Director, Division of Chemistry, National Research Council, Canada. A.R.C.S. (Lond.); B.Sc. (Lond.); M.Sc. (McGill); Ph.D. (McGill); F.R.S. Can., etc. Recently Professor of Organic Chemistry, McGill University, Montreal; author of about sixty articles on Chemistry. Officier d'Academie; Colwyn Gold Medallist, Institution of the Rubber Industry. *J.C.S.*, 1910, 34 (with G. T. Morgan and F. M. G. Micklethwait); 1926, 1448 (with J. Dolid and F. H. Yorstin); 1926, 1458. (*Signed by*) Frank G. Wait, Frank T. Shutt, Alfred E. Macintyre.

WILLIAMS, ALBERT LESLIE, 21, Raglan Road, Plumstead, S.E. 18. English. Student. Physico-chemical research. A.R.C.S., B.Sc. (Royal College of Science, London). (*Signed by*) H. J. T. Ellingham, James C. Philip, H. F. Harwood.

WRIGHT, JAMES MATSON, c/o Mrs. Barnfather, 7, Kempsford Gardens, S.W. 5. British. Student. B.Sc. of the London Univ.; Associate of the Royal College of Science. (*Signed by*) G. A. R. Kon, R. P. Linstead, Arnold Stevenson.

WRIGHT, NORMAN CHARLES, Hannah Dairy Research Institute, Auchincruive, Ayr. British. Director of the above Institute. M.A. (Oxford), Ph.D. (Cambridge). Previously Assistant for Research in Chemistry at the National Institute for Research in Dairying, University, Reading. Publications: “The Action of Rennet and of Heat on Milk,” *Biochem. Journ.*, 1924; “The Action of Hypochlorites on Amino-acids and Proteins,” *ibid.*, 1926; “Membrane Equilibria and Selective Absorption,” *ibid.*, 1929, and other papers of a biochemical character. (*Signed by*) R. O. Orr McCrone, John Golding, H. A. D. Neville.

The following forms of recommendation have been authorised by the Council for presentation to ballot under Bye-Law I (2).

GAARDER, TORBJORN, Bergens Museum, Bergen, Norway. Norwegian. Director of the Biochemical Laboratory of the Bergen Museum. Dr. phil. cand. real. from the University in Oslo, Norway. Member of (1) Videnskapsakademiet in Oslo; (2) Selskapet til Videnskapernes Fremme, Bergen, (3) Norsk Kjemisk Selskap, Oslo; (4) ordinary member of Deutsche Chemische Gesellschaft, American Chemical Society. Former assistant in oceanography to the late Prof.-dr. Fr. Nansen. Has published several papers in chemical oceanography, biochemistry, physiology and agricultural chemistry. (*Signed by*) Jocelyn Thorpe.

GOLDSTEIN, HENRI. Place du Château 3, Lausanne, Switzerland. Swiss. Professor of organic chemistry at the University of Lausanne. Ingénieur-chimiste; Docteur-ès-sciences (Univ. Lausanne). Author of many papers in *Helv. Chim. Acta*: 2, 655 (1919); 9, 765, 772, 776, 783, 959 (1926); 10, 332, 334, 603, 607 (1927); 11, 245, 250, 239, 478, 486, 489 (1928); 13, 310 (1930). (*Signed by*) C. S. Gibson.

MASCARELLI, PROF. DR. LUIGI, Istituto Universitario di Chimica, Farma-

ceutica e Tossicologica, Corso Raffaello 31, *Torino* (116). Italiano. Laurea in chimica pura (*Torino*); diploma in Farmacia (*Bologna*). Diplomato in Scienze Naturali (*Torino*, 1898); laureato in Chimica pura (*Torino*, 1900); diplomato in Farmacia (*Bologna*, 1904); libero docente in Chimica Generale (*Bologna*, 1907); professore di Chimica Farmaceutica e Tossicologica R. Univ. Cagliari (1913-1918); *id. id.*, *Torino* (dal, 1918); incaricato dell'insegnamento di Ch. Bromatologica. Pubblicazioni di Ch. Generale, Ch.-fisica, Ch. organica, farmaceutica, bromatologica (in *Rend. R. Acc. Lincei*, *Gazz. ch. it.*, *Atti R. Acc. Scienze di Torino*, *Giornale di Ch. Industriale Milano*, *Notiziario chimico Torino*, *Giornale di Farmacia Torino*, *Enciclopedia Treccani Roma*, etc.) (*Signed by*) Prof. Dr. Mario Betti.

MOLES, ENRIQUE, Madrid, Spain. (Laboratorios de Química de la Facultad de Ciencias, S. Bernardo 49). Spanish. Professor of Physical and Inorganic Chemistry. Dr. Pharm. (Madrid, 1905); Dr. Sc. phys. (Geneva, 1916); Dr. Ciencias químicas (Madrid, 1920). President of the Span. Soc. of Chemistry and Physics; Lecturer of Inorganic Chemistry, 1910-1915 and 1918-1927 (Faculty of Pharmacy, Madrid); Lecturer of Physical Chemistry, Geneva, École de Chimie, 1916-1917; Professor of Physical and Inorganic Chemistry, Faculty of Science, Madrid, since 1927. Has published about 115 papers on stoichiometry, solutions, molecular and atomic weights, molecular volumes (Spanish, French, German, Italian) from 1910 to date, in *An. Soc. esp. Física y Química*; *Journ. Chim. Phys.*; *Zeit. anorg. allg. Chem.*; *Zeit. phys. Chem.* (*Signed by*) Jocelyn Thorpe, C. S. Gibson.

MOUREU, HENRI, 18 rue Pierre-Curie, Paris, V<sup>e</sup> (Collège de France, Paris, V<sup>e</sup>). Française. Sous-Directeur du Laboratoire de Chimie Minérale du Collège de France. Docteur-es-Sciences Physiques. *J.C.S.*, 1928, 3167. (*Signed by*) C. S. Gibson.

WHITMORE, FRANK CLIFFORD, 300, South Pugh Street, State College, Pennsylvania, U.S.A. American. Dean of School of Chemistry and Physics, Pennsylvania State College. A.B., A.M., and Ph.D. from Harvard Univ. Author of "Organic Compounds of Mercury," Chemical Catalogue Company, New York, 1921, A.C.S. Monograph Series. Also author of articles on organic chemistry in *Journ. Amer. Chem. Soc.* (*Signed by*) J. C. Drummond, C. S. Gibson.

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## ADDITIONS TO THE LIBRARY.

### I. Donations.

CHADWICK, JAMES. Radioactivity and radioactive substances. 3rd edition. London 1931. pp. xii + 116. ill. 2s. 6d. net. (*Recd.* 31/12/30.) From the Publishers: Sir Isaac Pitman & Sons.

EMPIRE MARKETING BOARD. The relative values of cod liver oils from various sources. By JACK CECIL DRUMMOND and THOMAS PERCY HILDITCH. London 1930. pp. 129. 1s. net. (*Recd.* 13/1/31.) From Professor J. C. Drummond.

FARADAY SOCIETY. Colloid science applied to biology. A general discussion. London 1930. pp. iv, 663 to 865. ill. 12s. 6d. net. (*Recd.* 10/1/31.) From the Society.

PARTINGTON, JAMES RIDDICK. A text-book of inorganic chemistry for university students. 3rd edition. London 1930. pp. viii + 1083. ill. 15s. net. (*Recd.* 14/1/31.) From the Author.

— A school course of chemistry. London 1930. pp. x + 388. ill. 4s. 6d. net. (*Recd.* 15/1/31.) From the Author.

TABLES ANNUELLES DE CONSTANTES ET DONNÉES NUMÉRIQUES. Table des Matières des Vols I à V. Années 1910 à 1922. Paris 1930. pp. lxiv + 382. (*Reference.*) 300 fr.

From the Comité International.

THOMS, HERMANN. [Editor.] Handbuch der praktischen und wissenschaftlichen Pharmazie. Vol. V, part vii. Berlin 1930. pp. 1349 to 1524. ill. M. 10. (*Recd.* 1/1/31.)

From the Publishers: Herren Urban & Schwarzenberg.

## II. By Purchase.

BACHRACH, MAX. Fur: a practical treatise. London 1930. pp. xiv + 677. ill. 21s. net. (*Recd.* 15/1/31.)

BENEDICKS, CARL, and LÖFQUIST, HELGE. Non-metallic inclusions in iron and steel. London 1930. pp. xii + 311. ill. 30s. net. (*Recd.* 15/1/31.)

HACKNEY, NORMAN. The quantitative analysis of inorganic materials. London 1930. pp. xvi + 378. ill. 30s. net. (*Recd.* 15/1/31.)

HURRY, JAMIESON BOYD. The woad plant and its dye. London 1930. xxviii + 328. ill. 21s. net. (*Recd.* 15/1/31.)

KIESEL, ALEXANDER. Chemie des Protoplasmas. (Protoplasma Monographien.) Berlin 1930. pp. viii + 302. ill. M. 20. (*Recd.* 15/12/30.)

MEYER, KURT H., and MARK, HERMANN. Der Aufbau der hochpolymeren organischen Naturstoffe auf Grund molekular-morphologischer Betrachtungen. Leipzig 1930. pp. viii + 264. ill. M. 18. (*Recd.* 15/12/30.)

NEW INTERNATIONAL ASSOCIATION FOR THE TESTING OF MATERIALS. First Communications. Vols. I and II. Zurich 1930. pp. xvi + 368, xvi + 282. ill. (*Reference.*)

NORTH, FREDERICK JOHN. Limestones: their origins, distribution, and uses. London 1930. pp. xxiv + 467. ill. 16s. net (*Recd.* 15/1/31.)

OSTWALD, WILHELM. Die Maltechnik jetzt und künftig. Leipzig 1930. viii + 160. ill. M 8.50. (*Recd.* 15/12/30.)

PLANCK, MAX. Einführung in die Theorie der Wärme. Zum Gebrauch bei Vorträgen, sowie zum Selbstunterricht. Leipzig 1930. pp. viii + 251. ill. M. 10. (*Recd.* 15/12/30.)

# PROCEEDINGS

OF THE

## CHEMICAL SOCIETY.

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Ordinary Scientific Meeting, Thursday, February 5th, 1931, at 8 p.m., Professor T. M. LOWRY, C.B.E., D.Sc., F.R.S., in the Chair.

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

	Elected.	Died.
William Adolf Fraymouth .....	2nd December, 1909.	10th January.
John Alexander Hogg .....	1st May, 1924.	20th January.
Henry Halliburton Robinson .....	16th November, 1882.	11th January.
Arthur William Rogers .....	20th December, 1883.	16th January.
Charles Leonard Royle.....	15th December, 1901.	19th January.

The CHAIRMAN announced that the thirty-sixth General Meeting of the Deutsche Bunsen Gesellschaft für angewandte physikalische Chemie, the leading association of research workers, scientists, and technologists in the important field of applied physical Chemistry will take place from the 25th to the 27th of May, 1931, in Vienna. The subject of the symposium will be : Recent progress in the science of metallurgy with particular reference to light metals. The arrangements have been undertaken by Geheimrat Prof. Dr. Dr.-Ing. h.c. Specketer, Director of the I.G. Farbenindustrie A.-G., Managing Director of the Griesheim Elektron works.

The following were formally admitted Fellows of the Chemical Society : Messrs. F. W. Hampshire and H. J. Moss.

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

- Henry Gibson Aitken, B.Sc., Gleneske, West Holmes Gardens, Musselburgh.
- Ernest Butterworth, M.Sc.(Tech.), Rostherne, Ballymena, Co. Antrim.
- Blick Crawley, M.A., A.I.C., Dobbin's Lane, Wendover.
- Glyn Rees Davies, B.Sc., Ph.D., 43, St. Winifred's Road, Teddington.
- Alec Edward Gawler, B.A., 12, St. George's Road, St. Margarets, Middlesex.
- Arthur Kenneth Goard, M.A., Ph.D., Marlborough College, Wilts.
- Harry Fletcher Lewis, M.S., Ph.D., The Institute of Paper Chemistry, Appleton, Wisconsin, U.S.A.

John Lockhart McKee, M.Sc., 11, Atney Road, Putney, S.W.15.  
 Frederick John Manning, B.Sc., Pannal Ash College, Harrogate.  
 Joseph Marshall, D.Sc., F.I.C., 44, Priory Road, W. Bridgford, Notts.  
 Thomas Harold Prater, A.M.I.Chem.E., 25, Invicta Road, Margate.  
 Katherine Isobel Ross, B.A., B.Sc., Halkhed, Berkhamsted.  
 John Walter Seekings, 17, Holden Road, Beeston, Notts.  
 Leslie Ernest Sutton, B.A., Lincoln College, Oxford.  
 Robert Hugh Wilson, B.A., 53, Carlyle Road, Cambridge.  
 Frank Wormwell, M.Sc., 18, Elmfield Avenue, Teddington.

The following papers were read :

- “ Salt-forming characteristics of doubly- and singly-linked elements of the oxygen group. Part I. The carbonyl group in benzaldehyde and acetophenone.” By J. W. BAKER.
- “ Salt-forming characteristics of doubly- and singly-linked elements of the oxygen group. Part II. The nitration of benzaldehyde and acetophenone in sulphuric acid solution.” By J. W. BAKER and W. G. MOFFITT.
- “ The properties of the chlorides of sulphur. Part V. Metastable states.” By T. M. LOWRY and G. JESSOP.
- “ Polycyclic aromatic hydrocarbons. Part II. The non-existence of 1 : 2 : 7 : 8-dibenzanthracene.” By J. W. COOK.
- “ Polycyclic aromatic hydrocarbons. Part III. Derivatives of 1 : 2 : 5 : 6-dibenzanthracene.” By J. W. COOK.
- “ Polycyclic aromatic hydrocarbons. Part IV. Condensed derivatives of 1 : 2-benzanthracene.” By J. W. COOK.

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Ordinary Scientific Meeting, Thursday, February 19th, 1931, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

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

	Elected.	Died.
Alfred Holt .....	Dec. 4th, 1902.	Feb. 15th.
Alfred Southall .....	May 6th, 1875.	Feb. 6th.

The PRESIDENT announced that the fifth general meeting of the Deutsche Gesellschaft für chemisches Apparatewesen E.V. will take place with that of the Verein deutscher Chemiker in Vienna, on the 28th and 29th May, 1931. The subject chosen for the symposium is “The Separation of Solid and Liquid Substances.” Titles of communications should be sent not later than March 15th, 1931, to the head office of the Dechema, Seelze, b. Hannover.

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

Cecil Chapman, F.I.C., "Arran," Cuckoo Hill Road, Pinner.

Harry George Ernest Davis, M.A., Melrose, Hamworthy Junction, Dorset.

Charles Rodolphe Hall, 7, Avenue Road, South Tottenham, N. 15.

John Bramwell Miles, Ph.D., 9, Lochpark Road, Hawick.

Alfred Henry Marmaduke Purse, M.B.E., Elm Tree House, Ely Road, Llandaff, Cardiff.

Stanley Walter Read, B.Sc., A.R.C.S., 17, Seldown Lane, Poole, Dorset.

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

Francis Edward Cislak, M.S., Ph.D., P.O. Box 433, Indianapolis, U.S.A.

Frederick George Germuth, B.Sc., 17, Third Avenue, Lansdowne, Maryland, U.S.A.

Joseph Rosin, B.S.Ch., M.Ph., c/o Messrs. Merck & Co., Inc., Rahway, N.J., U.S.A.

Marcel Sommelet, Prof., 4, Avenue de l'Observatoire, Paris.

Mr. L. Bains and Dr. H. L. Riley were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared elected as Fellows :—

Herbert William Ashton, B.Sc.

Maurice Brent, B.Sc., A.R.C.S.

Geoffrey Frank Carter, B.Sc.,  
A.R.C.S.

Mahendra Harilal Desai, B.Sc.

John Dewar, B.Sc.

John Frederick James Dippy, B.Sc.

Thomas William Evans, M.I.Chem.E.

Ivy Kathleen Faith, B.Sc.

John Albert Charles Flohren, B.Sc.

Graham Edward Foster, Ph.D., A.I.C.

Torbjørn Gaarder, Dr. Phil.

Gagnon, Paul Edouard, B.A., D.-ès-Sc.

Herni Goldstein, D.-ès-Sc.

Herbert Victor Hoffman, B.Sc.

Riki Horiuchi, D.Sc.

Frederick Cecil Hymas, B.Sc., A.I.C.

Frederick William Kirkbride, B.A.

Harry Harman Kretchmar, B.Sc.

Kuruwila Ittyerah Kuriyan, B.A.,  
M.Sc.

Ernest William Lambert, B.A.

Harold Leslie Langdon, B.Sc.

William Jefferys Lesley, M.Sc.,  
Ph.D.

Arthur Reginald Lowe, B.Sc.,  
A.R.C.S.

Ethel Margaret Luis, B.Sc.

Luigi Mascarelli, Prof. Dr.

Roland Rusk McLaughlin, M.A.Sc.,  
M.A., Ph.D.

Enrique Moles, Prof. Dr.  
Louis Frederic Mountfort.

Henri Moureu, D.-ès-Sc.

Phyllis Nanney, M.Sc.

Wilfred Louis Offer, B.Sc.

Edward Maurice Frederick Payne,  
B.A., B.Sc.

Henry Alfred Piggott.

Douglas John Cruickshank Pirie, B.Sc.

Thomas Henry Hall Quibell, B.A.

Sydney Stewart Randall, B.Sc.

Oswald Victor Richards, B.Sc.

William Frederick Sandrock, B.Sc.

Hemendra Kumar Sen, M.A., D.Sc.,  
D.I.C.

Arthur Leonard Silcox, B.Sc.

Thomas Murray Simpson, M.Sc.

James Clare Speakman, M.Sc., Ph.D.

Reece Henry Vallance, M.Sc., F.I.C.

James Walker, B.Sc.

George Staffor Whitby, M.Sc., Ph.D.,  
A.R.C.S.

Frank Clifford Whitmore, A.M., Ph.D.

Albert Leslie Williams, B.Sc.,  
A.R.C.S.

James Matson Wright, B.Sc., A.R.C.S.

Norman Charles Wright, M.A., Ph.D.

The following papers were read :

- “ A new method for the preparation of organo-thallium halides.”  
By F. CHALLENGER and B. PARKER.
- “ The dissociation of salts in nitrobenzene.” By W. F. K. WYNNE-JONES.
- “ The formation of acyl-chloroamines from hypochlorous acid.” By D. R. PRYDE and F. G. SOPER.
- “ The direct interchange of chlorine in the interaction of *p*-toluenesulphonamide and *N*-chloroacetanilide.” By D. R. PRYDE and F. G. SOPER.

### THE SECOND PEDLER LECTURE.

The Second Pedler Lecture, entitled “ Studies on Biological Oxidation,” will be delivered by Geh. Reg.-Rat Professor Dr. H. Wieland, in the Meeting Hall of the Institution of Mechanical Engineers, Storey's Gate, Westminster, S.W. (by kind permission of the Council of that Institution) on Friday, March 6th, 1931, at 5.30 p.m. Tickets of admission will not be required.

### 90th ANNUAL GENERAL MEETING

The 90th Annual General Meeting will be held at Burlington House on Thursday, March 26th, 1931, at 4 p.m., when the President will deliver his address.

### ANNIVERSARY DINNER.

The Anniversary Dinner of the Society will be held in the Grand Hall, Hotel Victoria, Northumberland Avenue, W.C. 2, on Thursday, March 26th, 1931 (the day of the Annual General Meeting), at 7 for 7.30 p.m.

The price of the tickets will be Twelve Shillings and Sixpence (12s. 6d.) each, including gratuities to waiters.

Tickets can be obtained from the Assistant Secretary, Chemical Society, Burlington House, Piccadilly, W. 1, and a remittance for the number of tickets required, made payable to Mr. S. E. Carr, must accompany each application. Application should be made as soon as possible.

(List of papers, or abstracts thereof, received between January 15th and February 19th, 1930. 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.)



- “Capillary activity in aqueous solutions.” By H. MILLS and P. L. ROBINSON.
- “The configuration of the doubly-linked tervalent nitrogen atom. Part IV. The resolution of  $\beta$ -methyltrimethylene dithiocarbonate carboxyphenylhydrazone.” By W. H. MILLS and B. C. SAUNDERS.
- “Sulphuric acid-sludge disposal.” By C. HINDE.
- “New derivatives of *p*-arsanilic acid. Part I. Succinyl-*p*-arsanilic acid and related compounds.” By G. T. MORGAN and E. WALTON.
- “The use of the tungsten electrode in potentiometric titrations and  $p_H$  measurements.” By H. T. S. BRITTON and E. N. DODD.
- “Studies on hydrogen cyanide. Part III. The freezing points of hydrogen cyanide–water mixtures.” By J. E. COATES and N. H. HARTSHORNE.
- “The action of amines on 2-substituted semicarbazones.” By J. CHAPMAN and F. J. WILSON.
- “The reactions of nitrosulphonyl chlorides. Part II. The separation of nitrosulphonyl chlorides by means of hydrazine hydrate.” By W. DAVIES, F. R. STORRIE, and S. H. TUCKER.
- “The reactions of malonic esters with formaldehyde.” By K. N. WELCH.
- “Dyes derived from acenaphthenequinone. Part I. Azine and azonium derivatives.” By S. K. GUHA.
- “The basicity of periodic acid.” By N. RAE.
- “Syntheses of antiseptic derivatives of indan-1 : 3-dione. Part II. Interaction of alkylmalonyl chlorides with the methyl ether of *p*-cresol.” By T. K. WALKER, A. J. SUTHERS, L. L. ROE, and H. SHAW.
- “The synthesis of coumarins. Part I. 7-Hydroxy-3-phenylcoumarin and 7-hydroxy-3-phenyl-4-methylcoumarin.” By (MISS) T. DE KIEWIET and H. STEPHEN.
- “The condensation of some aromatic aldehydes with phenylacetonitrile.” By (MISS) T. DE KIEWIET and H. STEPHEN.
- “Note on the preparation of 2 : 4-dimethoxyacetophenone.” By (MISS) T. DE KIEWIET and H. STEPHEN.
- “The existence of solid polyiodides of potassium at 25°.” By N. S. GRACE.
- “The interaction of sulphonates and sulphonamides with piperidine.” By F. BELL.
- “The solubility of water in chloroform.” By C. W. GIBBY and J. HALL.
- “Synthesis of thioxins.” By H. A. STEVENSON and S. SMILES.

- “Syntheses of cyclic compounds and the influence of substituent atoms, groups, and ring systems on chemical and physical properties. Part VIII. The influence of polar and other factors on ring formation and on ring stability. I. The conversion of *r*- $\beta$ -methyladipic acid into *r*-3-methylcyclopentanone. II. The preparation of *r*-3-methylcyclopentane-1:1-diacetic acid.” By A. I. VOGEL.
- “Tertiary arylalkyl phosphines. Part II.” By I. K. JACKSON and W. J. JONES.
- “Physico-chemical studies of complex acids. Part V. The precipitation of tungstates.” By H. T. S. BRITTON and W. L. GERMAN.
- “The Beckmann transformation. Part I. The formation of amidines during the Beckmann transformation of ketoximes.” By W. BLELOCH and H. STEPHEN.
- “The Beckmann transformation. Part II. The mechanism of amidine formation.” By H. STEPHEN.
- “The hydrolysis of  $\gamma$ -ketonitriles of the type  $R\cdot CH(CN)\cdot CH_2\cdot CPh$ .” By (Miss) M. ROBERTSON and H. STEPHEN.
- “4-Aminophthalide and some derivatives.” By L. F. LEVY and H. STEPHEN.
- “The melting-point curves of the monobasic fatty acids.” By (Miss) A. M. KING and W. E. GARNER.
- “*Cannabis Indica* resin. Part II.” By R. S. CAHN.
- “Potassium permanganate as a reagent for the detection of lower oxides in phosphoric acid.” By J. W. SMITH.
- “The position of the nitroso-group among substituents capable of activating suitably placed halogens, etc., in aromatic nuclei.” By R. J. W. LE FÈVRE.
- “Oxonitin.” By T. A. HENRY and T. M. SHARP.
- “The chlorination of iodophenols. Part IV. The action of chlorine on derivatives of *p*-iodophenol.” By D. MATHESON and H. McCOMBIE.
- “The condensation of butyl chloral hydrate with aryl hydrazine.” By F. D. CHATTAWAY and H. IRVING.
- “Co-ordination compounds of the chloroplatinates of choline and its esters.” By H. W. DUDLEY.
- “A new synthesis of phthaliminoacetonitriles, and a note on aminoacetonitrile sulphates.” By H. STEPHEN.
- “Studies in the coumaranone series. Part III.  $\alpha$ - and  $\beta$ -Naphthafuran-1-ones and their condensation products with aromatic aldehydes.” By B. H. INGHAM, H. STEPHEN, and R. TIMPE.

- “Note on bisacetamide hydrochloride. Its preparation and use as an acetylating reagent.” By H. STEPHEN.
- “Note on the preparation of 4-chlorophthalic anhydride.” By H. STEPHEN.
- “The preparation of methylene dimalonic ester.” By K. N. WELCH.
- “The conversion of 2-naphthol isosulphide into 2-naphthol-1-sulphide.” By L. A. WARREN and S. SMILES.
- “The quantitative estimation of mixtures of isomeric unsaturated compounds. Part III. A review of the iodometric methods and a new bromometric method.” By R. P. LINSTEAD and J. T. W. MANN.
- “The reaction between carbon and oxygen at low pressures and room temperatures.” By H. I. BULL, M. H. HALL, and W. E. GARNER.
- “Quaterphenyl and the symmetrical diphenyldiphenyls.” By S. T. BOWDEN.
- “Piperonal-6-arsinic acid.” By I. E. BALABAN.
- “The reduction of potassium perrhenate.” By H. V. A. BRISCOE, P. L. ROBINSON, and E. M. STODDART.
- “The influence of moisture on the reaction between sulphur and silver.” By J. W. SMITH.
- “Studies of valency. Part XV. Absorption spectra of polyhalide ions.” By F. L. GILBERT, (Mrs.) R. R. GOLDSTEIN, and T. M. LOWRY.
- “The interaction of halogen-substituted *p*-tolylhydrazones with chloral.” By F. D. CHATTAWAY and T. E. W. BROWNE.
- “The constitution of phenolphthalein. Part III. A theory of halochromism.” By H. LUND.
- “Studies in chemotherapy (antimalarials). Part I.” By K. S. NARANG and J. N. RÂÝ.
- “A new reaction of certain diazosulphonates derived from  $\beta$ -naphthol-1-sulphonic acid. Part IV. The constitution of the condensation products of diazo-compounds with  $\beta$ -naphthol derivatives substituted in the 1-position.” By F. K. ROWE and A. T. PETERS.
- “A new reaction of certain diazosulphonates derived from  $\beta$ -naphthol-1-sulphonic acid. Part V. The 4'-nitro- and 4'-amino-derivatives of 4-methyl-3-phenylphthalaz-1-one.” By F. M. ROWE, (Miss) E. LEVIN, and A. T. PETERS.
- “A new reaction of certain diazosulphonates derived from  $\beta$ -naphthol-1-sulphonic acid. Part VI. Preparation of phthalazine, phthalazone, and phthalimidine derivatives from 2 : 6-dichloro-4-nitroaniline.” By F. M. ROWE and C. DUNBAR.

- “ A new reaction of certain diazosulphonates derived from  $\beta$ -naphthol-1-sulphonic acid. Part VII. Preparation of phthalazine, phthalazone, and phthalimidine derivatives from 2 : 6-didromo-4-nitroaniline.” By F. M. ROWE and N. H. WILLIAMS.
- “ The solubility of picric acid in mixed solvents. Part I. Water-alcohol and water-acetone mixtures. The effect of association on solubility.” By J. C. DUFF and E. J. BILLS.
- “ Symmetrical triad prototropic systems. Part VII. The analogy between symmetrical triad systems and aromatic side-chain reactivity, and the effect of *p*-substitution on mobility and equilibrium in the  $\alpha$ -diphenylmethyleniazomethine system.” By C. W. SHOPPEE.
- “ Properties of the  $\beta$ -chlorovinylarsines and their interaction with benzene in the presence of aluminium chloride. Production of 9 : 10-dimethylanthracene.” By C. S. GIBSON and J. D. A. JOHNSON.
- “ The thermal decomposition of methane. Part II. The homogeneous reaction.” By G. C. HOLLIDAY and W. J. GOODERHAM.
- “ The methylation of benzimidazoles.” By M. A. PHILLIPS.
- “ The 3-fluoro-2-, -4-, and -6-amino- and -2-, -4-, and -6-halogeno-anisoles.” By H. H. HODGSON and J. NIXON.
- “ The action of piperidine on acetonesemicarbazone.” By J. M. STRATTON and F. J. WILSON.
- “ The polysulphides of the alkali metals. Part III. Potassium.” By T. G. PEARSON and P. L. ROBINSON.
- “ Studies in dicyclic systems. Part I. The chemistry of  $\beta$ -substituted *cis*- and *trans*-hexahydrohydrindenes.” A. KANDIAH.
- “ Studies in dicyclic systems. Part II. The influence of *cis*- and *trans*-mexahydrohydrindene nuclei on the carbon tetrahedral angle.” A. KANDIAH.
- “ The reactions of substituted ammonium aryloxides and of related compounds. Part I. The preparation and thermal decomposition of some tetra-substituted ammonium aryloxides.” By (Miss) R. V. HENLEY and E. E. TURNER.
- “ The cinchona alkaloids and substances related to them. Introduction and Part I. Some piperidinomethylcarbinol hydrochlorides.” By (Miss) R. V. HENLEY and E. E. TURNER.

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## ADDITIONS TO THE LIBRARY.

### I. Donations.

BARY, PAUL. OÙ en est l'électrochimie ? Paris 1931. pp. viii + 200. ill. 30 fr. (*Recd.* 26/1/31.)

From the Publishers : MM. Gauthier-Villars et Cie.

RUSSIAN PHYSICAL AND CHEMICAL SOCIETY. Journal. Vol. LXI. Leningrad 1929. (*For circulation.*) From Dr. M. Nierenstein.

[UNITED STATES] NATIONAL RESEARCH COUNCIL. Industrial research laboratories of the United States, including consulting research laboratories. 4th edition. Compiled by CLARENCE JAY WEST and CALLIE HULL. (National Research Council Bulletin No. 81.) Washington 1931. pp. 267. (*Reference.*) \$2. net.

From the National Research Council.

## II. *By Purchase.*

AEBY, JULES. Dangerous goods. 1st supplement. Anvers 1930. pp. 96. (*Reference.*) 12s. net.

BAKER, JOHN WILLIAM. Natural terpenes. London 1930. pp. x + 169. 6s. net. (*Recd.* 17/1/31.)

BARKER, THOMAS VIPOND. Systematic crystallography: an essay on crystal description, classification and identification. London 1930. pp. xii + 115. ill. 7s. 6d. net. (*Recd.* 17/1/31.)

BELL, [SIR WILLIAM JAMES]. Sale of food and drugs. 8th edition. By R. A. ROBINSON. London 1931. pp. xxvi + 300 + 34. 15s. net. (*Recd.* 19/2/31.)

BROWN, GEORGE GRANGER. The volatility of motor fuels (Univ. Michigan Engineering Research Bulletin No. 14). Ann Arbor 1930. pp. viii + 299. ill. 4s. 6d. net. (*Recd.* 17/2/31.)

CAVEN, ROBERT MARTIN, and LANDER, GEORGE DRUCE. Systematic inorganic chemistry from the standpoint of the periodic law. London 1930. pp. xviii + 510. ill. 9s. net. (*Recd.* 17/1/31.)

CHITTENDEN, RUSSELL HENRY. The development of physiological chemistry in the United States. (American Chemical Society Monograph Series.) New York 1930. pp. 427. 19s. net. (*Recd.* 19/2/31.)

EIBNER, ALEXANDER. Das Oeltrocknen ein kolloider Vorgang aus chemischen Ursachen. Berlin (1930). pp. 242. ill. M. 18. (*Recd.* 5/2/31.)

FEITKNECHT, WALTER. Über topochemische Umsetzungen fester Stoffe in Flüssigkeiten. (Fortschritte der Chemie, Physik und physikalischen Chemie, Vol. XXI.) Berlin 1930.

HARRISON, A. W. C. The manufacture of lakes and precipitated pigments. London (1930). pp. xvi + 274. ill. 15s. net. (*Recd.* 19/2/31.)

HOLLEMAN, ARNOLD FREDERIK. A text-book of organic chemistry. 7th English edition. New York 1930. pp. xx + 594. ill. 17s. 6d. net. (*Recd.* 17/1/31.)

MAXIMOV, N. A. A textbook of plant physiology. Edited by A. E. MURNEEK and R. B. HARVEY. New York 1930. pp. xvi + 381. ill. 20s. net. (*Recd.* 19/2/31.)

MELDRUM, ANDREW NORMAN. The eighteenth century revolution in science—the first phase. Calcutta 1930. pp. x + 60. 4s. 6d. net. (*Recd.* 17/1/31.)

NEWMAN, F. H. Electrolytic conduction. London 1930. pp. xii + 441. ill. 25s. net. (*Recd.* 19/2/31.)

OSTWALD, [WILHELM], and LUTHER, [ROBERT THOMAS DIEDRICH]. Hand- und Hilfsbuch zur Ausführung physikochemischer Messungen. 5th edition. Edited by CARL DRUCKER. Leipzig 1931. pp. xx + 979. ill. M. 52. (*Recd.* 3/2/31.)

PRYDE, JOHN. Recent advances in biochemistry. 3rd edition. London 1931. pp. x + 393. ill. 12s. 6d. net. (*Recd.* 19/2/31.)

RUTHERFORD, SIR ERNEST, CHADWICK, JAMES, and ELLIS, CHARLES DRUMMOND. Radiations from radioactive substances. Cambridge 1930. pp. xii + 588. ill. 25s. net. (*Recd.* 19/2/31.)

SCHAY, GÉZA. Hochverdünnte Flammen. (Fortschritte der Chemie, Physik und physikalischen Chemie. Vol. XXI.) Berlin 1930.

SMYTH, HENRY FIELD, and OBOLD, WALTER LORD. Industrial microbiology. The utilization of bacteria, yeasts and molds in industrial processes. [Baltimore] 1930. pp. x + 313. ill. 27s. net. (*Recd.* 19/2/31.)

TAYLOR, HUGH STOTT. [Editor]. A treatise on physical chemistry. 2nd edition. 2 vols. New York 1931. pp. xvi + 852 + 48, xii, 901 to 1766 + 48. ill. 60s. net. (*Recd.* 19/2/31.)

WASHINGTON, HENRY STEPHENS. The chemical analysis of rocks. 4th edition. New York 1930. pp. xvi + 296. 20s. net. (*Recd.* 19/2/31.)

### III. Pamphlets.

AKEN, JOHANNES STEPHANUS ANTONIUS JOSEPH MARIA VAN. Kalk-suiker. Melasseontsuikeren met kalk. Kalk-suiker als kolloïdaal systeem. Delft 1930. pp. 184. ill.

ARKEI, CORNELIA GERARDA VAN. *Oleum Jecoris Aselli cum Jodeto ferraso*. Amsterdam 1929. pp. viii + 46.

ASSOCIATION OF BRITISH CHEMICAL MANUFACTURERS. The Dyestuffs Act. Views of the chemical industry. London [1930]. pp. 24.

BLUMBERGER, JOSÉ STEPHEN PETRUS. Studies in de katalytische ontleding van diazoverbindingen. Delft 1929. pp. x + 167. ill.

BOER, SIEBE RIEKELE DE. Respiration of *Phycomyces*. (From the *Rec. Trav. bot. néerl.*, 1928, 25.)

BOS, ABRAHAM ARIE. Bijdrage tot de kennis van de ligno-sulfozuren. Amsterdam 1930. pp. x + 88. ill.

BRITISH ENGINEERING STANDARDS ASSOCIATION. British standard specification for the sampling and analysis of coal for export. London 1930. pp. 34. ill.

— Report on the sampling of small fuel up to 3 in. embodying some general principles of sampling. By E. S. GRUMELL and A. C. DUNNINGHAM. London 1930. pp. 53. ill.

DOORN, NICOLAAS WILHELMUS. Absolute intensiteitsmetingen in het spectrum van chromosfeer en corona der zon, gedurende de totale verduistering op 29 Juni 1927. Amsterdam 1929. pp. viii + 53. ill.

DUBSKY, J. V., and RABAS, A. Contribution à l'étude de la faculté de la glycocolle de former des sels. (*Publ. Fac. Sci. Univ. Masaryk*, 1930, No. 123.) [In Czecho-Slovakian. French summary.]

HAMBURGER, RUDOLF JACOBUS. Over den invloed van insuline op de permeabiliteit der weefsels voor glucose. Groningen 1930. pp. viii + 55.

IMAI, HIROSHI, and OBINATA, ICHJI. Ueber die Natur der  $\beta$ -Umwandlung der Kupfer-Zinnlegierungen. I. (From the *Mem. Ryojun Coll. Eng.*, 1930, 3.)

INSTITUTE OF CHEMISTRY OF GREAT BRITAIN AND IRELAND. Food fakes : ancient and modern. By ERNEST GABRIEL JONES. London 1930. pp. 24. ill.

— Some notes on the Cinchona industry. By BERNARD FARMBOROUGH HOWARD. Streatfeild Memorial Lecture, 1930. London 1931. pp. 22. ill.

KOBAYASHI, TORAO. Einige Versuche ueber den Einfluss der Temperatur auf die Kerbzaehigkeit von Aluminiumlegierungen. (From the *Mem. Ryojun Coll. Eng.*, 1930, 3.)

KOENIG, PAUL. Die Gewinnung natürlich-nikotinfreier, nikotin-ärmer und nikotinreicher Tabake. (From *Die Umschau*, 1930.)

— Natürlich nikotinfreier und -ärmer Tabak. (From *Forschungen und Fortschritte*, 1930.)

KORVEZEE, ANTONIA ELISABETH. Koperchloride als katalysator voor het Deacon-proces. Delft 1930. pp. 134. ill.

KRÄNZLEIN, GEORG. Aluminiumchlorid in der organischen Chemie. (Systematische Übersicht.) Berlin 1930. pp. 47.

KURRIS, FRANCISCUS JOANNES JOSEPHUS HUBERTUS. Evenwichten van vast calcium en magnesium carbonaat met koolzuuroplossingen. Maastricht 1930. pp. 94. ill.

LEK, JOHANNES BARTHELOMEUS VAN DER. Onderzoekingen over de butylalkoholgisting. Delft 1930. pp. viii + 143.

LIER, HEIN. Het caseïnesol. Amsterdam 1924. pp. viii + 113. ill.

MENDLIK, FERENCZ. Over de structuur van yohimbine. Rotterdam 1930. pp. viii + 94.

MIHOLIC, STANKO STANKOV. Odredjivanje magnezija kao magnezijev pirofosfat. (From *Glasnika Hemiskog Društva*, 1930, **1**.)

MINES DEPARTMENT. *Safety in Mines Research Board*. Paper No. 62. The ignition of firedamp by the heat of impact of hand picks against rocks. By MAURICE JOHN BURGESS and RICHARD VERNON WHEELER. London 1930. pp. 21. ill.

— — Paper No. 63. The propagation of combustion in powdered coal. By HAROLD EARLE NEWALL and FRANK STURDY SINNATT. London 1930. pp. 58. ill.

MULDER, CORNELIS HARMANUS KLAAS. Arsoncarbonsuren. Groningen 1929. pp. viii + 103. ill.

READ, JOHN. Chemistry as a career. (From the *Alumnus Chronicle*, 1931.)

SCHMITT, N. *Derris elliptica* Benth., ein vegetabilischer und ungiftiger Insecticidliferant. (From *Angew. Bot.*, 1930, **12**.) ill.

SCHURINK, HENDRIK BEBEND JOHANNES. Spirocyclische Verbindungen. Groningen 1929. pp. viii + 188. ill.

SULLIVAN, MICHAEL XAVIER, HESS, W. C., and JONES, DAVID BREESE. Studies on the biochemistry of sulphur. IV, VI and VII. (*U.S. Public Health Reports*, 1930, Supplements Nos. 78, 82, and 86.)

TUSSENBROEK, MARINUS JOHANNES VAN. Eenige technische adsorptieprocessen en hierbij. Optredende chemische omzettingen elektrische kleurmeting. Delft 1929. pp. 143. ill.

UNITED STATES. *Department of Agriculture*. Circular No. 138. Development and use of baking powder and baking chemicals. By LORIN H. BAILEY. London 1930. pp. 15.

— — Circular No. 139. Method and procedure of soil analysis used in the Division of Soil Chemistry and Physics. Washington 1930. pp. 19.

— *Department of Commerce*. Bureau of Mines. Bulletin 291. Tabulated analyses of representative crude petroleum of the United States. By N. A. C. SMITH and E. C. LANE. Washington 1928. pp. ii + 69.

— — — Bulletin 296. Iron oxide equilibria: a critique from the standpoint of the phase rule and thermodynamics. [By OLIVER C. RALSTON.] Washington 1929. pp. x + 326. ill.

— — — Bulletin 300. Coal-washing investigations: methods and tests. By H. F. YANCEY and THOMAS FRASER. Washington 1929. pp. viii + 259. ill.



# PROCEEDINGS

OF THE

## CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, March 5th, 1931, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, on October 5th, 1930, of Mr. Jnan Ranjan Sanyal, who was elected on December 5th, 1929.

The PRESIDENT announced that as the number of nominations did not exceed the number of vacancies on the Council, the necessity for a ballot did not arise this year.

The following nominations have been made, and the Fellows thus nominated will, in accordance with the Bye-Laws, be declared duly elected at the Annual General Meeting to be held in the Society's Rooms on Thursday, March 26th, 1931, at 4 p.m.

*President* : G. G. HENDERSON.

*Vice-Presidents*, who have filled the office of President (3 vacancies) :

J. F. THORPE, H. E. ARMSTRONG.

(Become Vice-Presidents by virtue of Bye-Law VIII.)

*Vice-Presidents*, who have not filled the office of President (2 vacancies) :

†F. A. FREETH, \*R. H. PICKARD.

*Ordinary Members of the Council* :

*Town Members* (*i.e.* those resident within a radius of fifty miles from Charing Cross) (6 vacancies) :

†C. R. BAILEY, \*C. R. HARINGTON, †J. KENYON, †G. A. R. KON, \*I. S. MACLEAN, \*J. DAVIDSON PRATT.

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

†W. N. HAWORTH, †F. M. ROWE.

The following were formally admitted Fellows of the Chemical Society : Messrs. M. Brent, H. W. Ashton, G. MacLennan, G. F. Carter, S. S. Randall, M. H. Desai, K. I. Kuriyan.

\* Nominated by Council under Bye-Law VI.

† Nominated by Fellows under Bye-Law VI.

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

Stephen Arnold Bryant, B.A., 8, Milwain Avenue, Wingrove, Newcastle-on-Tyne.

Moinuddin Syed Kazi, M.Sc., 112, Gower Street, W.C. 1.

Joseph Beswick Stocks, Kaladana, Kildwick Road, Crosshills, Keighley, Yorks.

The following papers were read :

“Studies of valency. Part XV. Absorption spectra of polyhalide ions.” By F. L. GILBERT, MRS. R. R. GOLDSTEIN, and T. M. LOWRY.

“The reactions of substituted ammonium aryloxides and of related compounds. Part I. The preparation and thermal decomposition of some tetra-substituted ammonium aryloxides.” By MISS R. V. HENLEY, and E. E. TURNER.

“A synthesis of unsymmetrical diphenyl derivatives.” By J. KENNER and H. SHAW.

“Arsinic acids of the fluorene series.” By G. T. MORGAN and MISS J. STEWART.

Extra Meeting held at the Institution of Mechanical Engineers on Friday, March 6th, 1931, at 5.30 p.m., the President, Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., in the Chair.

The PRESIDENT called upon Geh. Reg.-Rat Professor Dr. H. Wieland to deliver the Second Pedler Lecture entitled “Studies in Biological Oxidation.” At the conclusion of the lecture, a vote of thanks to Professor Wieland was proposed by Professor A. Harden. This was seconded by Professor J. C. Drummond and carried with acclamation, Professor Wieland making brief acknowledgment.

Ordinary Scientific Meeting, Thursday, March 19th, 1931, at 8 p.m., the President, Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., in the Chair.

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

	Elected.	Died.
Otto Wallach (Honorary Fellow) ...	Oct. 17th, 1929.	March 1st, 1931.
Edward E. Berry .....	Dec. 7th, 1882.	Jan. 29th, 1931.
James Arthur Formoy .....	March 4th, 1886.	March 8th, 1931.
William Houlding .....	March 17th, 1887.	Jan. 20th, 1930.
David Lennox .....	Dec. 1st, 1887.	Feb. 26th, 1931.
Kishen Lal Malhotra .....	Dec. 4th, 1930.	Dec. 18th, 1930.
Frederick Arnold Stead .....	Feb. 21st, 1924.	Oct. 8th, 1930.
John Watt .....	Dec. 3rd, 1908.	June 16th, 1930.

It was announced that :

1. The following had been proposed by the Council as Honorary Fellows of the Society and that a ballot for their election would be held at the next Ordinary Scientific Meeting on May 7th :

Professor F. Haber (Berlin), Professor M. Delépine (Paris), Professor R. Nasini (Pisa), Professor J. Sakurai (Tokio), and Professor F. Swarts (Ghent).

2. Professor Percy F. Frankland had presented to the Society a plaster replica of a medallion-portrait of Sir Edward Frankland, by Mr. Frank Bowcher, which had been executed for the Sir Edward Frankland Medal awarded annually by the Institute of Chemistry.

The following were formally admitted Fellows of the Chemical Society : Messrs. James M. Wright, Arthur R. Lowe, and H. K. Sen.

Certificates were read for the first time in favour of :

George Christopher Clayton, C.B.E., Ph.D., F.I.C., Crabwall Hall, Chester.

Kenneth John Cable McLennan, 16, Ashburnham Gardens, Upminster.

John Edwin Oakley Mayne, B.Sc., A.R.C.S., 21, Lansdowne Road, Luton.

Durgadas Mitra, B.Sc., M.B., 77a, Pataldanga Street, Calcutta.

Adam Taylor, 16, Woodcroft Avenue, Broomhill, Glasgow.

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

Hilmi Isaac Said, B.Sc., Abbassieh Secondary School, Alexandria, Egypt.

Fidel Enrique Raurich Sas, Lagasca 97, Madrid.

The following papers were read :

“ A new reaction of certain diazosulphonates derived from  $\beta$ -naphthol-1-sulphonic acid. Part IV. The constitution of the condensation products of the diazo-compounds with  $\beta$ -naphthol derivatives substituted in the 1-position.” By F. M. ROWE and A. T. PETERS.

“ A new reaction of certain diazosulphonates derived from  $\beta$ -naphthol-1-sulphonic acid. Part V. The 4'-nitro- and 4'-amino-derivatives of 4-methyl-3-phenylphthalaz-1-one.” By F. M. ROWE, (Miss) E. LEVIN, and A. T. PETERS.

“ A new reaction of certain diazosulphonates derived from  $\beta$ -naphthol-1-sulphonic acid. Part VI. Preparation of phthalazine, phthalazone, and phthalimidine derivatives from 2 : 6-dichloro-4-nitroaniline.” By F. M. ROWE and C. DUNBAR.

“ A new reaction of certain diazosulphonates derived from  $\beta$ -naphthol-1-sulphonic acid. Part VII. Preparation of phthalazine, phthalazone, and phthalimidine derivatives from 2 : 6-dibromo-4-nitroaniline.” By F. M. ROWE and N. H. WILLIAMS.

- “Strychnine and brucine. Part XII. The constitution of dinitrostrycholcarboxylic acid.” By K. N. MENON and R. ROBINSON.
- “The cinchona alkaloids and substances related to them. Introduction and Part I. Some piperidinomethylcarbinol hydrochlorides.” By (Miss) R. V. HENLEY and E. E. TURNER.
- “The optical resolution of 3 : 5-dinitro-6- $\alpha$ -naphthylbenzoic acid.” By (Miss) M. S. LESSLIE and E. E. TURNER.

### RESEARCH FUND COMMITTEE.

A meeting of the Research Fund Committee will be held in June next. Applications for grants, to be made on forms obtainable from the Assistant Secretary, must be received on or before Monday, June 1st, 1931. Applications from Fellows will receive prior consideration.

All persons who received grants in June 1930, or in June of any previous year, whose accounts have not been declared closed by the Council, are reminded that reports must be returned by June 1st.

Attention is drawn to the fact that the income arising from the Donation of the Worshipful Company of Goldsmiths is to be more or less especially 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.

List of Papers, or Abstracts thereof, received between February 19th and March 19th, 1931. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

- “Studies in dicyclic systems. Part I. The chemistry of  $\beta$ -substituted *cis*- and *trans*-hexahydrohydrindenes.” By A. KANDIAH.
- “Studies in dicyclic systems. Part II. The influence of *cis*- and *trans*-hexahydrohydrindene nuclei on the carbon tetrahedral angle.” By A. KANDIAH.
- “Optical activity and the polarity of substituent groups. Part XVII. *l*-Menthyl hydrogen naphthalate, its alkali salts and methyl ester.” By H. G. RULE and A. McLEAN.
- “Optical activity and the polarity of substituent groups. Part XVIII. Influence of polar solvents on the rotatory power of methyl *l*-menthyl naphthalate.” By H. G. RULE and A. McLEAN.

- “Explosions in closed cylinders. Part IV. Correlation of flame-movement and pressure development in methane-air explosions.” By W. A. KIRKBY and R. V. WHEELER.
- “Ionisation in gaseous explosions. Part I. Experimental method. Part II. The relation between ionisation and after-burning.” By W. A. KIRKBY.
- “Synthetical experiments in the chromone group. Part II. Naphthapyrones.” By A. S. BHULLAR and K. VENKATARAMAN.
- “The stereoisomeric 2 : 3 : 5 : 6-tetramethylpiperazines. Part II. The configuration of the so-called  $\beta$ -isomeride.” By F. B. KIPPING.
- “Mobile anion tautomerism. Part VI. The activation of the three-carbon anionotropic system by polynuclear aryl groups.” By H. BURTON.
- “Studies in the composition of coal. The soluble constituents of coals and their ‘rank.’” By C. COCKRAM and R. V. WHEELER.
- “The chemistry of alkylcyclopentanones. Part I. Derivatives of *r*-3-methylcyclopentanone.” By R. D. DESAI.
- “The use of 2 : 4-dinitrophenylhydrazine as a reagent for carbonyl compounds.” By O. L. BRADY.
- “The nitrosation of phenols. Part XI. The constitution of 3-chloro-4-nitrosophenol.” By H. H. HODGSON.
- “Dealkylation of phenolic ethers by pyridine and piperidine.” By R. S. CAHN.
- “Higher aliphatic compounds. Part I. The systems ethyl palmitate-ethyl stearate and hexadecyl alcohol-octadecyl alcohol.” By J. C. SMITH.
- “Thioquinols.” By L. A. WARREN and S. SMILES.
- “The reduction products of certain cyclic methylene amines.” By J. GRAYMORE.
- “The methylurethanes of  $\alpha$ -4-methoxy-3-hydroxyphenylethyldimethylamine and  $\alpha$ -3-methoxy-4-hydroxyphenylethyldimethylamine and their mitotic activities.” By E. STEDMAN and (MRS.) E. STEDMAN.
- “Polysaccharides. Part VI. Trimethyl cellulose.” By W. N. HAWORTH, E. L. HIRST, and H. A. THOMAS.
- “Polysaccharides. Part VII. Isolation of octamethyl cellobiose, hendecamethyl cellotriose, and a methylated cellodextrin (cellotetrose?) as crystalline products of the acetolysis of trimethyl cellulose.” By W. N. HAWORTH, E. L. HIRST, and H. A. THOMAS.
- “The parachor of tervalent iodine.” By N. V. SIDGWICK and E. D. P. BARKWORTH.

- “Triazole compounds. Part IV. The constitution of the methyl-1 : 2 : 3-benzotriazole *N*-oxides and the action of methyl sulphate on nitro-1-hydroxy-1 : 2 : 3-benzotriazoles.” By O. L. BRADY and C. V. REYNOLDS.
- “The distribution of saturated and unsaturated higher fatty acids in mixed synthetic glycol esters.” By R. BHATTACHARYA and T. P. HILDITCH.
- “Note on the nitration of benzylpiperidine.” By R. ROBINSON and J. S. WATT.
- “The dissociation constants of organic acids. Part III. The routine preparation of ‘equilibrium’ water and of moderate grade conductivity water.” By A. I. VOGEL and (in part) G. H. JEFFERY.
- “The structure of glucal.” By E. L. HIRST and C. S. WOOLVIN.
- “The use of arylcarbimides in identifying hydroxylic compounds.” By G. T. MORGAN and A. E. J. PETTET.
- “The nitration of brominated 3-hydroxybenzaldehydes and the bromination of nitrated 3-hydroxybenzaldehydes with cases of group migration.” By H. H. HODGSON and E. W. SMITH.
- “Hydroxy-carbonyl compounds. Part I. A synthesis of scopoletin.” By F. S. H. HEAD and A. ROBERTSON.
- “Hydroxy-carbonyl compounds. Part II. The benzylation of ketones derived from phloroglucinol.” By F. W. CANTER, F. H. CURD, and A. ROBERTSON.
- “Hydroxy-carbonyl compounds. Part III. The preparation of coumarins and benzo-1 : 4-pyrones from phloroglucinol and resorcinol.” By F. W. CANTER, F. H. CURD, and A. ROBERTSON.
- “Identification of the supposed 3 : 4-benzphenanthrene.” By J. W. COOK.
- “The reaction between thallic chloride and potassium thiocyanate.” By I. K. TAIMNI.
- “The estimation of phosphorus in organic compounds.” By W. C. DAVIES and D. R. DAVIES.
- “The solution tension of sodium in solvents other than water.” By F. K. V. KOCH.
- “An electrochemical method for the approximate determination of the constitution of complexes in solution. Application to some complex copper and complex nickel ions.” By F. K. V. KOCH.
- “The nitration of 2 : 4 : 6-trimethylbenzaldehyde.” By L. E. HINKEL, E. E. AYLING, and W. H. MORGAN.
- “The catalytic production of polynuclear compounds. Part II.” By G. R. CLEMO, J. G. COCKBURN, and R. SPENCE.
- “The translation motion of molecules in the adsorbed phase on solids.” By D. H. BANGHAM and N. FAKHOURY.

FORMS OF RECOMMENDATION FOR FELLOWSHIP. THE  
BALLOT WILL BE HELD AT THE ORDINARY  
SCIENTIFIC MEETING ON THURSDAY, MAY 7th, 1931.

AITKEN, HENRY GIBSON, Gleneske, West Holmes Gardens, Musselburgh, Scotland. British. Teacher of Science (Chemistry). B.Sc. (2nd Class Hons., Edin. 1927). Have given many public lectures on popular chemistry, and at present am engaged on a study of tautomerism (keto  $\rightarrow$  enolic). (*Signed by*) James Walker, H. G. Rule, Ernest B. Ludlam.

BRYANT, STEPHEN ARNOLD, 8, Milwain Avenue, Wingrove, Newcastle-on-Tyne. English. Demonstrator. B.A. (Oxford). (With S. G. P. Plant) paper on "The Action of Nitric Acid on Polycyclic Indole Derivatives, Part IX," *J.C.S.*, 1931, 93. (*Signed by*) G. R. Clemo, R. D. Haworth, Richard Raper, Grace C. Leitch.

BUTTERWORTH, ERNEST, Rostherne, Ballymena, Co. Antrim. British. Head of Research Dept. B.Sc. (Hons.) (Vict.), M.Sc. (Tech.) (Vict.). Asst., Research Dept., Messrs. Tootal, Broadhurst, Lee Co., Ltd., 1922-27. Head of Colloid Dept., The Linen Industry Research Assoc., 1927-30. Research Manager, Messrs. Frazer & Houghton, Ltd., 1930 to date. (*Signed by*) W. Honneyman, J. Carroll Culbert, W. H. Gibson.

CHAPMAN, CECIL, "Arran," Cuckoo Hill Road, Pinner, Middlesex. British. Chemist (Technical Adviser). F.I.C. "Notes on Vertical Retort Tar," Manchester Tar Conference, 1926, *J. Soc. Chem. Ind.*; "Storage of Sulphate of Ammonia," *Gas Journal*, 1927. (*Signed by*) R. Leslie Collett, J. Davidson Pratt, R. Murdin Drake.

CRAWLEY, BLICK, Dobbin's Lane, Wendover, Bucks. English. Chemist. M.A. (Oxon.), A.I.C. Formerly natural science scholar of Balliol College, Oxford. Research laboratory, Gas Light & Coke Company, since 1929. (*Signed by*) Francis H. Carr, C. N. Hinshelwood, Arthur Smithells.

DAVIES, GLYN REES, 43, St. Winifred's Road, Teddington, Middlesex. British. Research Chemist. B.Sc. (London), Ph.D. (Birmingham). Papers on Antimonials (with Prof. G. T. Morgan), *Proc. Roy. Soc.*, 1926, **A**, 110, 623; *ibid.*, 1930, **A**, 127, 1. "Diazo-derivatives of Mesitylene," *J.C.S.*, 1923, 123, 228 (with G. T. Morgan, F.R.S.). (*Signed by*) G. T. Morgan, R. Taylor, D. D. Pratt.

DAVIS, HARRY GEORGE ERNEST, Melrose, Hamworthy Junction, Dorset. British. Schoolmaster. Senior Science Master, Poole Grammar School. M.A. (Cantab.). (*Signed by*) H. A. D. Jowett, Sydney Smith, C. S. Gibson.

GAWLER, ALEC EDWARD, 12, St. George's Road, St. Margarets, Middlesex. British. Secretary, Magadi Soda Co., Ltd. B.A. (Cambridge). (*Signed by*) L. J. Barley, F. A. Freeth, R. A. Punter.

GOARD, ARTHUR KENNETH, Marlborough College, Wilts. British. Schoolmaster. M.A. (Cantab.), Ph.D. (Cantab.). Papers: "Measurement of Potentials" (Goard and Rideal), *Trans. Faraday Soc.*, XIX. 1924; "Catalytic and Induced Reactions" (Goard and Rideal), *Proc. Roy. Soc.*, 1924, **A**, 105, 135, and 148. In *J.C.S.* (see below). Sublector, Trinity College, Cambridge, 1923-25; Demonstrator, Chemical Laboratories, Cambridge, 1922-25. At present Head of Science Department, Marlborough College. "Surface Tensions of Aqueous Phenol Solutions" (Goard and Rideal), Part I, *J.C.S.*, 1925, 127, 780; Part II, *ibid.*, 1668; "Negative Adsorption" (Goard), *ibid.*, 361. (*Signed by*) T. M. Lowry, Eric K. Rideal, R. G. W. Norrish.

HALL, CHARLES RODOLPHE, 7, Avenue Road, South Tottenham, N. 15. English. Headmaster of St. Ann's Boys' School, South Tottenham, N. 15. Science Master, St. Ann's Boys' School, N. 15, 1904-22. Student of chemical science. Am desirous of keeping in touch with modern advances in chemical knowledge. (*Signed by*) George Fowles, George J. Francis, Chas. W. Truelove.

KAZI, MOINUDDIN SYED, 112, Gower Street, W.C. 1. Indian. Research Student (Organic Chemistry), University College, London. B.Sc. (Bombay), M.Sc. (Osmania University, Hyderabad Deccan). (*Signed by*) C. K. Ingold, R. J. W. Le Fèvre, S. Anwar Ullah.

LEWIS, HARRY FLETCHER, The Institute of Paper Chemistry, Appleton, Wisconsin, U.S.A. American. Professor of Organic Chemistry. B.S., M.S., Wesleyan University (Conn.); Ph.D., Illinois University. Colour Investigation Laboratory, Washington, D.C., 1917-18; Assoc. Professor of Chemistry, University of Maine, 1918-19; Research Chemist, National Aniline and Chemical Company, Buffalo, New York, 1919-21; Professor of Chemistry, Cornell College (Iowa), 1921-28; Professor of Chemistry, Ohio Wesleyan University, 1928-30; Professor of Organic Chemistry, Institute of Paper Chemistry, Appleton, Wisconsin, 1930 to date. (*Signed by*) W. A. Hamor, H. T. Clarke, M. L. Crossley.

McKEE, JOHN LOCKHART, 11, Atney Road, Putney, S.W. 15. British. Research Student. M.Sc. (Queen's University of Belfast). After the usual 3 yrs. course, graduated B.Sc. with 1st Class Hons. in Chemistry at Queen's University of Belfast in June 1929, and M.Sc. in June 1930 after 1 year's research at Belfast in organic chemistry. Now researching on the chemical constitution of coal under the direction of Prof. W. A. Bone, F.R.S., at Imperial College, London. (*Signed by*) William A. Bone, Frank Bryans, L. G. Brett Parsons.

MANNING, FREDERICK JOHN, Pannal Ash College, Harrogate, Yorks. English. Science Master. B.Sc., Hons. Physics, Manchester (Subsidiary Chemistry). Teaching chemistry to Open Scholarship Standard. (*Signed by*) Arthur Lapworth, Colin Campbell, G. N. Burkhardt.

MARSHALL, JOSEPH, 44, Priory Road, W. Bridgford, Notts. British. Research Chemist. D.Sc. (Leeds) (1918), F.I.C. (1919). Student at Yorkshire College, 1901-5; Research Student at Munich University, 1905-7; Demonstrator in Organic Chemistry, Leeds University, 1907-16; Research Chemist, Boots Pure Drug Co., Ltd., Nottingham, 1916 to date. *J.C.S.*, 1914, 527; 1915, 509; 1925, 2185, and several papers in collaboration with others. (*Signed by*) Frank Lee Pyman, H. B. Holthouse, Robert Forsyth.

MILES, JOHN BRAMWELL, 9, Lochpark Road, Hawick, Scotland. Scottish. Student in Edinburgh Provincial Training College for Teachers. B.Sc., Ph.D. (Edin.). 5 Years' training in chemistry for B.Sc. degree (1922-27); 2½ years' research experience in organo-physical chemistry (paper below); 4 months as an Asst. Chemist in The Rowett Research Institute, Bucksburn, Aberdeenshire. *J.C.S.*, 1929, 2274 (part). (*Signed by*) H. G. Rule, James Kendall, Ernest B. Ludlam, J. A. V. Butler, Sydney A. Kay.

PRATER, THOMAS HAROLD, 25, Invicta Road, Margate, Kent. British. Chartered Gas Engineer. M.I.GasE. (by Diploma). Thesis published in 1924-25 Transactions. A.M.I.Chem.E., Member Inst. of Fuel, Member Society Chemical Industry, President of London and Southern District Junior Gas Association, 1930-31. (*Signed by*) G. Warburton, Ernest M. Hawkins, Fred C. Smith.

PURSE, ALFRED HENRY MARMADUKE, M.B.E., Elm Tree House, Ely Road, Llandaff, Cardiff. British. Pharmacist Superintendent, N.H.I. Prescription Establishment (Wales). Pharmaceutical Adviser to Welsh National



Memorial Association in connection with Drug Supplies to their Hospitals and Sanatoria. Qualified Pharmacist (London). Late Senior Assistant at Messrs. Squires (Sir P. W. Squire, Oxford St., Chemist on the establishment of H.M. the King), where a fair amount of chemico-pharmaceutical research was done and analytical work. Responsible for the compilation of N.H.I. Medical Formulary used by all panel medical practitioners and chemists in Wales and Monmouthshire. Chemist to the Committee now compiling the Welsh National Medical Association Pharmacopœia for use in their Hospitals and Sanatoria. Closely associated with Mr. H. J. Evans, B.Sc., F.I.C., F.C.S., in the scheme for testing medicines supplied to insured persons in Wales and Monmouthshire. M.B.E. conferred by H.M. the King last year in recognition of services to Health Insurance (Ministry of Health). (*Signed by*) H. J. Evans, James Smith, C. Durham Garbutt.

READ, STANLEY WALTER, 17, Seldown Lane, Poole, Dorset. English. Research Student (Physical Chemistry). B.Sc. (Hons.), A.R.C.S. (Royal College of Science). (*Signed by*) James C. Philip, R. H. Purcell, H. L. Riley.

ROSS, KATHERINE ISOBEL, Halkhed, Berkhamsted, Herts. British. Demonstrator and Assistant Lecturer, Royal Holloway College (in Chemistry). B.A., B.Sc. (Oxon.). Research on aporphine alkaloids with Dr. J. M. Gulland (unpublished). (*Signed by*) T. G. Moore, M. Boyle, J. Masson Gulland.

SEEKINGS, JOHN WALTER, "Ingleuek," 17, Holden Road, Beeston, Notts. British. Wholesale and Export Dept. of Fine Chemical Manufacturers. Member of Pharmaceutical Society, 1921; for several years associated with British Fine Chemicals, Research Chemicals, Dye Intermediates, etc. Desirous of having access to Society's Library and Publications, thus keeping in touch with latest advances in chemistry. (*Signed by*) John Wicliffe Peck, Charles A. Allgood, Frederick Hayter, G. Baty Scott.

STOCKS, JOSEPH BESWICK, Kaladana, Kildwick Road, Crosshills, via Keighley, Yorks. English. Chemist and Pharmacist. M.P.S. (Edinburgh Branch of Pharmaceutical Soc. of Gt. Britain); Student of Bradford Grammar School and Bradford Technical College with Lond. Matric. from former and Inter. B.Sc. course and M.P.S. from latter. Later Analytical Chemist to The Yorkshire Sugar Co., Selby. (*Signed by*) Wilfred H. Linnell, Eric F. Hersant, Jerry Robertson.

SUTTON, LESLIE ERNEST, Lincoln College, Oxford. British. Research Student. B.A., University of Oxford. *J.C.S.*, 1930, pp. 1323, 1461, 1876. (*Signed by*) N. V. Sidgwick, Robert Robinson, D. Ll. Hammick, T. W. J. Taylor.

WILSON, ROBERT HUGH, 53, Carlyle Road, Cambridge. British. Research Student. B.A., Cambridge. (*Signed by*) W. H. Mills, F. H. Brain, W. G. Palmer.

WORMWELL, FRANK, Tudor Cottage, 18, Elmfield Avenue, Teddington, Middlesex. British. Research Chemist. B.Sc., 1st Class Hons. Chemistry; M.Sc. (Manchester); B.Sc., 2nd Class Hons. Chemistry (London External). 2 Years' research at Manchester University. For the past 2 years engaged in research on the corrosion of metals at the Chemical Research Laboratory, Teddington. Fairbrother and Wormwell, *J.C.S.*, 1928, 1991; Stuart and Wormwell, *ibid.*, 1930, 85. (*Signed by*) Guy D. Bengough, W. H. J. Vernon, G. T. Morgan, D. D. Pratt.

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

CISLAK, FRANCIS EDWARD, The Reilly Chemical Company, P.O. Box 433, Indianapolis, Ind., U.S.A. American. Research Chemist and Teacher. B.S., University of Chicago, 1925; M.S., University of Chicago, 1926; Ph.D., North-western University, 1929. "Reduction of 2-Nitrofluorene," Cislak, Eastman, and Senior, *J.A.C.S.*, 1927, **49**, 2318; "Method of Determining Arsenic Content of Organic Arsenicals," Cislak and Hamilton, *ibid.*, 1930, **52**, 638; "Some Arsonic Acids of Fluorene and its Derivatives," Cislak and Hamilton, *ibid.*, **53**, Jan. or Feb. (1931) (to be published). Director of Organic Research Division, The Reilly Chemical Co., Indianapolis, Ind., U.S.A. Lecturer in Chemistry, Butler University, Indianapolis, Ind., U.S.A. (*Signed by*) Jocelyn Thorpe.

GERMUTH, FREDERICK GEORGE, 117, Third Avenue, Lansdowne, Maryland, U.S.A. American. Research Chemist. Head, Division of Research, Municipal Bureau of Standards. City of Baltimore. Blue Ridge College, 1914, B.Sc. in Chemistry. Johns Hopkins University, 1921-23. University of Maryland, 1924-25 (equivalent to Ph.D.). Author of 35 published researches in medicinal, biological, organic, and analytical chemistry, appearing in *Ind. Eng. Chem.*, *J.A.C.S.*, *J. Amer. Pharm. Assoc.*, *Indian Med. Gaz.*, *Amer. J. Pharm.*, etc. (1925 to date). Abstractor: Chemical Abstracts and Biological Abstracts. Consulting Chemist. Member, American Chem. Soc., A.A.A.S., Maryland Academy of Sciences, Franklin Institute of Pennsylvania. Original investigations on hæmatoporphyrin production induced by hypnotics of the sulfone series (*Amer. J. Pharm.*, *J. Amer. Pharm. Assoc.*). Honorary Member, American International Academy. (*Signed by*) Maximilian Toch, H. V. Army.

ROSIN, JOSEPH, c/o Merck & Co., Inc., Rahway, N.J., U.S.A. American. Chemist. B.S., Ch., University of Pennsylvania; M.Ph., Philadelphia College of Pharmacy and Science (Honorary). Have been Chief Chemist, Powers-Weightman-Rosengarten Co., Manufacturing Chemists, Philadelphia. Now Chemical Director and Vice-President of Merck & Co., Inc., Rahway, N.J. Author of a paper on "The Determination of Phosphoric Acid," *Journ. Amer. Chem. Soc.*, July 1911, p. 1099. Also published several papers on other analytical subjects in the *Journ. Amer. Pharm. Assoc.* Co-author (with Dr. W. Schnellbach) of two papers on Solubility of U.S.P. Chemicals, published in the *Journ. Amer. Pharm. Assoc.*, Vol. 18, pp. 762-71 (August 1929), *ibid.*, pp. 1230-35 (December 1929). (*Signed by*) H. V. Army.

SAID, HILMI ISAAC, Abbassieh Govt. Secondary School, Alexandria, Egypt. Egyptian. Teacher of Chemistry, Abbassieh Govt. Sec. School, Alexandria. B.Sc. with Honours (Chemistry), Bristol, England. I want to keep in touch with the progress of Chemistry. (*Signed by*) A. K. Wahbi, A. H. Ahmad.

SAS, FIDEL-ENRIQUE RAURICH, Madrid, Lagasca-97, entr. drcha. Spanish. Professor Analyt. Chemistry. Dr. of Pharmacy (Faculty of Madrid, 1919). Lecturer of Inorganic Chemistry, 1919-1925 (Faculty of Pharmacy, Barcelona). Professor of Analyt. Chemistry, 1925-1928 (Faculty of Pharmacy, Santiago de Compostela). Chemist of the "Instituto Técnico de Comprobación," Madrid. Assistant of Inorganic Chemistry, 1931 (Faculty of Pharmacy, Madrid). Has published seven papers on Analysis of Medicaments from 1924 to date, in *An. Soc. esp. Físico y Química*. (*Signed by*) E. Moles.

SOMMELET, MARCEL, 4, Avenue de l'Observatoire, Paris, VI<sup>e</sup>. Français. Professeur à la Faculté de Pharmacie; Docteur-ès-Sciences (Paris); Pharmacien. Nombreuses publications aux Comptes Rendus de l'Académie des Sciences de Paris et au Bulletin de la Société chimique de France. (*Signed by*) Jocelyn Thorpe, C. S. Gibson.

## ADDITIONS TO THE LIBRARY.

I. *Donations.*

BARR, GUY. A monograph of viscometry. London 1931. pp. xiv + 318. ill. 30s. net. (*Recd.* 26/2/31.)

From the Publisher: Mr. Humphrey Milford.

BRANDÃO, ALVARO SOARES. Trabalhos praticos de chimica. S. Paulo (1930). pp. 314. ill. (*Recd.* 17/3/31.)

From the Author.

GILDEMEISTER, EDUARD, and HOFFMANN, FRIEDRICH. Die ätherischen Öle. 3rd edition. Vol. III and Register. Miltitz bei Leipzig 1931. pp. xxxii + 1072. 124. ill. (*Recd.* 19/2/31.)

From the Publishers: Herren Schimmel & Co.

[HOPKIN & WILLIAMS, LTD.] Analytical reagents, standards and tests. London 1931. pp. xii + 135. ill. (*Reference.*)

From Messrs. Baird & Tatlock.

MULLER, ERICH. A laboratory manual of electrochemistry. Translated from the 4th edition by HARRY JOHANN THOMAS ELLINGHAM. London 1931. pp. xiv + 363. ill. 15s. net. (*Recd.* 13/3/31.) From the Publishers: Messrs. George Routledge & Sons.

ONSLow, MURIEL WHELDALE. The principles of plant biochemistry. Part I. Cambridge 1931. pp. viii + 326. ill. 16s. net. (*Recd.* 2/3/31.)

From the Syndics of the Cambridge University Press.

SIMONSEN, JOHN LIONEL. The terpenes. Vol. I. The simpler acyclic and monocyclic terpenes and their derivatives. Cambridge 1931. pp. xvi + 420. 25s. net. (*Recd.* 17/3/31.)

From the Syndics of the Cambridge University Press.

VOGEL, HANS, and GEORG, ALFRED. Tabellen der Zucker und ihrer Derivate. Berlin 1931. pp. xii + 663. (*Reference.*) M. 120.

From Professor W. N. Haworth, F.R.S.

WILSON, WILLIAM. Theoretical physics. Vol. I. Méchanics and heat. Newton-Carnot. London 1931. pp. x + 332. ill. 21s. net. (*Recd.* 9/3/31.)

From the Publishers: Messrs. Methuen & Co.

II. *By Purchase.*

BECKURTS, HEINRICH. Die Methoden der Massanalyse. 2nd edition. Edited by RICHARD BERG and RICHARD DIETZEL. Braunschweig 1931. pp. x + 730. ill. M. 56. (*Recd.* 19/3/31.)

BORGSTROM, PARRY, BOST, R. W., and BROWN, D. F. Bibliography of organic sulfur compounds (1871—1929). pp. vi + 187. (*Reference.*) 18s. net.

CHEMISCH-TECHNISCHE REICHSANSTALT. Jahresbericht VIII, 1929, etc. Berlin 1930 +. (*Reference.*)

ELLIS, CARLETON. Hydrogenation of organic substances including fats and fuels. 3rd edition. New York 1930. pp. xxiv + 986. ill. 70s. net. (*Recd.* 19/3/31.)

FEIGL, FRITZ. Qualitative Analyse mit Hilfe von Tüpfelreaktionen. Theoretische Grundlagen und praktische Ausführung. Leipzig 1931. pp. xii + 387. ill. *M.* 28. (*Recd.* 2/3/31.)

FINDLAY, ALEXANDER. Practical physical chemistry. 5th edition. London 1931. pp. xii + 312. ill. 7s. 6d. net. (*Recd.* 24/2/31.)

FRIEND, JOHN NEWTON. A text-book of inorganic chemistry. Vol. VII. Part ii. Sulphur, selenium and tellurium. By REECE HENRY VALLANCE, DOUGLAS FRANK TWISS, and ANNIE ROBERTS RUSSELL. London 1931. pp. xxviii + 420. ill. 25s. net. (Two copies.)

HELLER, GUSTAV. Über Isatin, Isatyd, Dioxindol und Indophenin. (Sammlung, New Series. Vol. I.) Stuttgart 1931. pp. 173. (*Reference.*)

HOLTZ, JOHN CROMWELL. The origin and decomposition of organic sulfur compounds under gas making conditions with particular reference to the role of the carbon-sulfur complex. Baltimore 1930. pp. iv + 83. ill. 4s. 6d. net. (*Recd.* 9/3/31.)

METZGER, HANS. Starrpunkt und Viskosität bituminöser Stoffe. Halle (Saale) 1930. pp. viii + 59. ill. *M.* 7. (*Recd.* 5/3/31.)

PIRANI, MARCELLO VON. [Editor.] Elektrothermie. Die elektrische Erzeugung und technische Verwendung hoher Temperaturen. Berlin 1930. pp. viii + 293. ill. *M.* 36. (*Recd.* 19/3/31.)

PLÜCKER, WILHELM. Tabellen- und Rechenbuch für Nahrungsmittelchemiker. Berlin 1931. pp. iv + 231. *M.* 22. (*Recd.* 19/3/31.)

— Untersuchung der Nahrungs- und Genussmittel. Allgemeine Methoden. Berlin 1931. pp. xii + 1046. ill. *M.* 59. (*Recd.* 19/3/31.)

RIECHE, ALFRED. Alkylperoxyde und Ozonide. Studien über peroxydischen Sauerstoff. Dresden 1931. pp. viii + 172. ill. *M.* 10. (*Recd.* 2/3/31.)

STERNER-RAINER, LUDWIG. Die Edelmetall-Legierungen in Industrie und Gewerbe. Leipzig 1930. pp. 154. ill. *M.* 8.75. (*Recd.* 2/3/31.)

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 .  
A N N I V E R S A R Y D I N N E R .

The Anniversary Dinner was held in the Grand Hall of the Hotel Victoria, Northumberland Avenue, W.C. 2, on Thursday, March 26th, 1931, at 7.30 p.m. The President, Professor G. G. Henderson, M.A., D.Sc., F.R.S., was in the Chair, and the company numbered 212. The foreign guests present were Professor J. A. de Artigas (Presidente of the Federación Española de Sociedades Química), Professor Einar Biilman (President, Union Internationale de Chimie), Professor Ernst Cohen (Utrecht University), Professor M. Delépine (Président, La Société Chimique de France), and Professor F. Swarts (Ghent University). Among other guests present were the Rt. Hon. Lord Blanesburgh, G.B.E., Mr. J. H. Nelson-Curtis (Prime Warden, The Dyers Company), Dr. E. F. Armstrong (Chairman, The Association of British Chemical Manufacturers), Mr. W. A. S. Calder (President, The Institution of Chemical Engineers), Lt.-Col. E. Kitson Clark (President, The Institution of Mechanical Engineers), Dr. G. C. Clayton (President, The Institute of Chemistry), Dr. J. T. Dunn (President, The Society of Public Analysts), Dr. A. E. Dunstan (President, The Institution of Petroleum Technologists), Mr. Cyril Eastman (President, The Society of Dyers and Colourists), Mr. Percy Gates (President, The Institute of Brewing), Mr. Noel Heaton (President, Oil and Colour Chemists' Association), Dr. T. A. Henry (Chairman of Executive Committee, Biochemical Society), Professor J. G. Lawn (President, The Institution of Mining and Metallurgy), Dr. H. Levinstein (Chairman of Council, The Society of Chemical Industry), Mr. Eric Macfadyen (President, The Institution of the Rubber Industry), Sir David Milne-Watson (President, The Institute of Fuel), Mr. H. Eustace Mitton (President, The Institution of Mining Engineers), Sir William J. Pope, F.R.S. (President, The Federal Council for Chemistry), and Dr. R. Seligman (President, The Institute of Metals).

The following Toasts were proposed :

1. The King.
2. The Queen, The Prince of Wales, and the other Members of the Royal Family.

By the Right Honourable Lord Blanesburgh, G.B.E.

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

By Sir William J. Pope, K.B.E., D.Sc., F.R.S., Past-President.

4. "The Guests," coupled with the names of :

- (a) Professor Dr. Ernst Cohen, For.Mem.R.S.
- (b) Professor Marcel Delépine, Président, La Société Chimique de France.
- (c) W. A. S. Calder, Esq., F.I.C., President of the Institution of Chemical Engineers.

Professor J. A. de Artigas, Presidente of the Federación Española de Sociedades Química, also spoke at the invitation of the President.

Ordinary Scientific Meeting, Thursday, May 7th, 1931, at 8 p.m., Professor JAMES C. PHILIP, O.B.E., D.Sc., F.R.S., in the Chair.

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

	Elected.	Died.
Thomas Vipond Barker .....	Dec. 3rd, 1903.	April 15th, 1931.
Rowland Lewis Goold .....	June 15th, 1911.	April 23rd, 1931.
Thornton Charles Lamb .....	Dec. 15th, 1892.	Mar. 21st, 1931.
Robert Law .....	Feb. 6th, 1890.	July 22nd, 1930.
John Albert Miller .....	Dec. 1st, 1887.	Jan. 13th, 1931.
Henry William Potts .....	Dec. 3rd, 1896.	Feb. 10th, 1931.
Thomas Rigby .....	Dec. 7th, 1905.	July 15th, 1929.
Thomas Harrison Winstanley...	May 15th, 1913.	June 22nd, 1930.
Lewis Thompson Wright .....	Feb. 21st, 1878.	April 29th, 1931.

It was announced that the Second International Congress of the History of Science and Technology would be held from June 29th to July 3rd, 1931, and that the Headquarters would be at the Science Museum, South Kensington, S.W. 7. The present Congress will comprise morning sessions for papers and discussions, which will centre round the three following themes :

1. The sciences as an integral part of general historical study.
2. Historical and contemporary inter-relationship of the physical and biological sciences.
3. Inter-dependence of pure and applied science.

Visits to places of historical and scientific interest will be arranged for the afternoons, and receptions will be held during the evenings. Full particulars can be obtained from the Hon. Secretary at Headquarters.

Dr. L. Hunter and Dr. R. G. W. Norrish were elected Scrutators, and a ballot for the election of Honorary Fellows was held. The following were declared elected :

Geh. Reg.-Rat. Professor Dr. Fritz Haber (Berlin).	Professor Joji Sakurai (Tokio).
Professor Marcel Delépine (Paris).	Professor Fréd. Swarts (Ghent).

A ballot for the election of Fellows was also held, and the following were declared elected :

Henry Gibson Aitken, B.Sc.	John Bramwell Miles, B.Sc., Ph.D.
Stephen Arnold Bryant, B.A.	Thomas Harold Prater, M.I.Gas.E., A.M.I.Chem.E.
Ernest Butterworth, B.Sc., M.Sc.Tech.	Alfred Henry Marmaduke Purse, M.B.E.
Cecil Chapman, F.I.C.	Stanley Walter Read, B.Sc., A.R.C.S.
Francis Edward Cislak, M.S., Ph.D.	Joseph Rosin, B.S.Ch., M.Ph.
Blick Crawley, M.A., A.I.C.	Katherine Isobel Ross, B.A., B.Sc.
Glyn Rees Davies, B.Sc., Ph.D.	Hilmi Isaac Said, B.Sc.
Harry George Ernest Davis, M.A.	Fidel-Enrique Raurich Sas, Dr.Pharm.
Alec Edward Gawler, B.A.	John Walter Seekings.
Frederick George Germuth, B.Sc.	Marcel Sommelet, D.-ès-Sc.
Arthur Kenneth Goard, M.A., Ph.D.	Joseph Beswick Stocks.
Charles Rodolphe Hall.	Leslie Ernest Sutton, B.A.
Moinuddin Syed Kazi, M.Sc.	Robert Hugh Wilson, B.A.
Harry Fletcher Lewis, M.S., Ph.D.	Frank Wormwell, M.Sc.
John Lockhart McKee, M.Sc.	
Frederick John Manning, B.Sc.	
Joseph Marshall, D.Sc., F.I.C.	

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

Tinkari Basu, B.Sc., 28, Shampukur Street, Calcutta, India.  
 Edward Alexander Robert Bousfield, B.Sc., A.I.C., 131, Bedford Hill, S.W. 12.  
 Suresh Chandra Das Gupta, B.Sc., 32, Sukea Street, Calcutta, India.  
 Rowland Nicholas Johnson, M.Sc., 9, Lansdowne Road, Croydon.  
 Sakujiro Kimura, 41, Nozato Shimokatsura, Katsura Mura, near Kyoto, Japan.  
 Sir David Milne-Watson, M.A., LL.D., D.L., 73, Eccleston Square, S.W. 1.  
 John Stanley White, M.R.C.S., L.R.C.P., 50, Beak Street, Regent Street, W. 1.

The following papers were read :

- “Orientation effects in the diphenyl series. Part IX. The nitration of 4-chloro-4'-fluoro- and 4-bromo-4'-fluorodiphenyl.”  
 By (MISS) E. E. J. MARLER and E. E. TURNER.
- “Influence of poles and polar linkings on tautomerism in the simple three-carbon system. Part II. Prototropy in bis-quaternary

$\alpha$ -propenylene-diammonium salts." By C. K. INGOLD and E. ROTHSTEIN.

"The photodecomposition of ozone in presence of chlorine." By A. J. ALLMAND and J. W. T. SPINKS.

"The effect of intensive drying on the rate of distillation and on the vapour pressure of ethyl bromide." By J. W. SMITH.

Ordinary Scientific Meeting, Thursday, May 21st, 1931, at 8 p.m., Professor G. G. HENDERSON, M.A., 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.
Charles Alfred Allgood .....	June 20th, 1929.	May 4th.
John Cavendish Molson .....	Feb. 16th, 1899.	May 15th.

It was announced that :

1. The following Committees for 1930-1931 had been appointed by the Council :

*Finance Committee* : E. S. Mond, G. T. Moody, J. C. Philip, R. H. Pickard, F. L. Pyman, W. Rintoul, J. F. Thorpe, and the Officers (Treasurer as Chairman), with the Assistant Secretary as Secretary.

*House Committee* : A. J. Allmand, H. McCombie, Sir William J. Pope, Sir Robert Robertson, R. Robinson, J. F. Thorpe, and the Officers, with the Assistant Secretary as Secretary.

*Library Committee* : T. A. Henry (Chairman), J. J. Fox, C. K. Ingold, S. W. Smith, J. F. Spencer, H. Terrey, and the Officers, together with representatives of contributing Societies, with the Librarian as Secretary.

*Publication Committee* : J. C. Philip (Chairman), G. M. Bennett, H. V. A. Briscoe, H. M. Dawson, H. W. Dudley, A. C. G. Egerton, A. J. Greenaway, W. E. Garner, W. N. Haworth, I. M. Heilbron, J. T. Hewitt, C. N. Hinshelwood, C. K. Ingold, J. Kenyon, H. King, W. H. Mills, J. R. Partington, E. K. Rideal, R. Robinson, F. M. Rowe, J. L. Simonsen, S. Smiles, S. Sugden, and the Officers, with the Editor as Secretary.

*Research Fund Committee* : A. J. Allmand, J. E. Coates, W. N. Haworth, I. M. Heilbron, C. K. Ingold, A. Lapworth, T. M. Lowry, Sir Robert Robertson, R. Robinson, and the Officers, with the Assistant Secretary as Secretary.



2. The Council of the Institute of Fuel will hold on Wednesday, October 7th, 1931, at 7 p.m., a joint meeting of all those Technical Societies to which the subject of low-temperature carbonisation and hydrogenation of coal is of interest.

The meeting will be held in the Lecture Theatre of the Institution of Electrical Engineers (Savoy Place, Victoria Embankment, W.C. 2), Sir David Milne-Watson, LL.D., D.L. (President), being in the Chair. A paper dealing with the present position and future prospects of the conversion of coal into oil and smokeless fuel will be presented by Dr. W. R. Ormandy and opened for discussion.

Advance copies of papers to be read will probably be available 14 days before the meeting, and those Fellows desiring to attend the meeting and to receive advance copies of papers are requested to notify the Assistant Secretary, the Chemical Society, Burlington House, Piccadilly, W. 1, on or before Monday, September 14th.

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

Jack Pollard, 1, Brunel Street, Burnley, Lancs.  
Harold Wheeler, 31, Burghley Road, Hornsey, N. 8.

The following forms of recommendation have been authorised by the Council for presentation to Ballot under Bye-Law I (2) :

Oliver Kamm, M.S., Ph.D., 571, Washington Road, Grasse Pointe, Mich., U.S.A.

Bijan Kumar Sen, M.Sc., 61, Lyons Range, Calcutta.

Maurice Craig Taylor, B.S., c/o The Mathieson Alkali Works, Inc., Niagara Falls, N.Y., U.S.A.

The following papers were read :

“Stereoisomerism of disulphoxides and related substances. Part VII. Some further pairs of isomeric dioxides.” By G. M. BENNETT and F. S. STATHAM.

“Stereoisomerism of disulphoxides and related substances. Part VIII. Isomeric tetrabromides of a disulphide.” By G. M. BENNETT and F. S. STATHAM.

“Studies in the penthian series. Part IV. The four stereoisomeric oxides of benzoylaminobenzpenthene.” By G. M. BENNETT and W. B. WADDINGTON.

“Derivatives of the aliphatic glycols. Part III. Chlorohydrins of some higher glycols.” By G. M. BENNETT and A. N. MOSSES.

“The influence of the sulphur atom on the reactivity of adjacent atoms or groups. Part V. Comparative reactivities of nine

- homologous phenyl  $\omega$ -hydroxyalkyl sulphides with hydrobromic acid." By G. M. BENNETT and A. N. MOSSES.
- "Studies in complex salts. Part IV. The effect of alkyl substitution on the tendency of the aminoacetate ion to co-ordinate with copper." By H. L. RILEY and V. GALLAFENT.
- "The electrolytic dissociation of transitional metal salts. Part I. Copper, zinc, and nickel malonates." By D. J. G. IVES and H. L. RILEY.

List of Papers, or Abstracts thereof, received between March 19th and May 21st, 1931. (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.)

- "An approximate determination of the molecular depression of the freezing point for bromyl chloride; a note on the recorded values of the same constant for camphor." By R. J. W. LE FÈVRE and W. H. A. WEBB.
- "Metallic hydroxy-acid complexes. Part VI. Complexes of tartaric acid with trivalent metals." By E. E. WARK and I. W. WARK.
- "The preparation and some properties of nickelous oxide." By M. PRASAD and M. G. TENDULKAR.
- "The action of sulphuric acid on nickel-copper matte." By M. PRASAD and M. G. TENDULKAR.
- "The rearrangement of the alkylanilines. Part IV. The formation of olefins from the alkylaniline hydrobromides." By W. J. HICKINBOTTOM and S. E. A. RYDER.
- "Nitrous acid as a nitrating agent. Part III. The so-called  $\beta$ -3 : 4-dinitrodimethylaniline." By H. H. HODGSON and E. W. SMITH.
- "The nuclear alkylation of aromatic bases. Part I. The action of methyl alcohol on the hydrochlorides of *ortho*- and *para*-toluidine, mesidine, and dimethyl-mesidine." By D. H. HEY.
- "Styrylpyrylium salts. Part XIII. The reactivity of methyl  $\beta$ -phenylethyl and methyl  $\gamma$ -phenylpropyl ketones." By I. M. HEILBRON, R. N. HESLOP, F. IRVING, and J. S. WILSON.
- "Synthesis of alkyl naphthalenes. Part III. 1 : 6 : 7-Trimethylnaphthalene." By D. G. WILKINSON.
- "The structure of carbohydrates and their optical rotatory power. Part VI. 4-Glucosido-mannose and its methylated derivatives." By W. N. HAWORTH, E. L. HIRST, and H. R. L. STREIGHT.

- “The structure of carbohydrates and their optical rotatory power. Part VII. 4-Galactoside-mannose and its methylated derivatives.” By W. N. HAWORTH, E. L. HIRST, and M. M. T. PLANT.
- “Polysaccharides. Part VIII. Evidence of continuous chains of  $\alpha$ -glucopyranose units in starch and glycogen.” By W. N. HAWORTH and E. G. V. PERCIVAL.
- “Complex acid tungstates.” By R. H. VALLANCE.
- “Universal buffer mixtures and the dissociation constant of veronal.” By H. T. S. BRITTON and R. A. ARMSTRONG.
- “The electrical energy of dipole molecules in solution, and the solubilities of ammonia, hydrogen, chloride, and hydrogen sulphide in various solvents.” By R. P. BELL.
- “Physico-chemical studies of complex acids. Part VI. The precipitation of molybdates.” By H. T. S. BRITTON and W. L. GERMAN.
- “The homogeneity of methylene iodide.” By A. N. CAMPBELL.
- “Nicotine. Freezing-point, solubility, and salt addition compounds.” By H. BARRON and W. H. PATTERSON.
- “Organic derivatives of silicon. Part XLIV. The formation of trichlorosilane or of silicon dichloride from phenylsilicon trichloride.” By F. S. KIPPING, J. C. BLACKBURN, and J. F. SHORT.
- “The condensation of  $\alpha$ -formylphenyl-acetonitriles with phenols.” By I. C. BADHAR, W. BAKER, B. K. MENON, and K. VENKATARAMAN.
- “Aromatic arsenic compounds containing sulphur groups attached to the nucleus. Part III. 3:3'-diamino-4:4'-dithiolarsenobenzene, the thiol analogue of salvarsan.” By H. J. BARBER.
- “Sorption of ammonia on chabazite.” By M. G. EVANS.
- “Synthesis of substances analogous to bile acid degradation products. Part I. Preliminary investigation of methods of attachment of carboxylated side-chains to the cyclopentane nucleus.” By J. W. BAKER.
- “The distribution of ammonia between chloroform and water at 25° C.” By V. J. OCCLESHAW.
- “Organic antimonial compounds. Part III.” By (MISS) M. E. BRINNAND, W. J. C. DYKE, and W. J. JONES.
- “Studies of the glucosides. Part IV. Aesculin.” By A. K. MACBETH.
- “The stability of organic molecular compounds.” By T. S. MOORE, (MISS) F. SHEPHERD, and (MISS) E. GOODALL.
- “The solubility of sodium fluosilicate in aqueous sodium sulphate solutions and the activity coefficients of sodium fluosilicate and

- the fluosilicate ion." By (MISS) A. G. REES and L. J. HUDLESTON.
- "Cyclic esters of sulphuric acid. Part I. The reactions of methylene sulphate." By W. BAKER.
- "The hydrolysis of aryl thioarsinites." By H. J. BARBER.
- "Co-ordination compounds of phosphorus and antimony pentachlorides." By J. H. HUTTON and H. W. WEBB.
- "The structure of diisoeugenol." By R. D. HAWORTH and C. R. MAVIN.
- "Constitutional studies in the monocarboxylic acids derived from sugars. Part V. Hexonic and pentonic acid amides. The action of sodium hypochlorite on the isomeric trimethyl arabanamides." By R. W. HUMPHREYS, J. PRYDE, and E. T. WATERS.
- "1 : 4-*iso*Propyl- $\Delta^2$ -cyclohexenone." By R. S. CAHN, A. R. PENFOLD, and J. L. SIMONSEN.
- "The constitution of the sulphates of molybdenum." By H. SAENGER and W. WARDLAW.
- "Studies in electro-endosmosis. Part V. The electro-endosmosis and surface conductivity against a glass surface of solutions of hydrogen chloride in benzene and other solvents." By F. FAIRBROTHER and M. BALKIN.
- "The intermediate compound theory of heterogeneous catalysis. An attempt at a quantitative investigation of the range of validity of this theory for the reaction  $2\text{H}_2 + \text{O}_2 \longrightarrow 2\text{H}_2\text{O}$  on a copper catalyst." By F. J. WILKINS and S. H. BASTOW.
- "The oxidation of *n*-methylhydroxylamine by iodine." By O. L. BRADY and Miss M. D. PORTER.
- "The sulphides and selenides of rhenium." By H. V. A. BRISCOE, P. L. ROBINSON, and E. M. STODDART.
- "Some reactions of *ortho*-derivatives of aldehydes and ketones." By W. COCKER, A. LAPWORTH, and A. T. PETERS.
- "Experiments on the synthetic preparation and isolation of some of the simpler amino-acids." By W. COCKER and A. LAPWORTH.
- "Reactions of  $\omega$ -substituted acetophenone derivatives. Part I. The action of acetyl nitrate on  $\omega$ -halogeno-*n*-nitroacetophenones." By J. W. BAKER.
- "Bases derived from some substituted propenylbenzenes, with a note on the preparation of pure methylamine." By T. M. SHARP and W. SOLOMON.
- "A simple method of conductometric titration." By W. N. RAE.
- "Conductivity titrations." By W. N. RAE.
- "The kinetics of the oxidation of hydrogen sulphide. Part I." By H. W. THOMPSON and N. S. KELLAND.

- “The absorption spectra of phenanthripyridine alkaloids.” By A. GIRARDET.
- “A new synthesis of *dl*-pilopic acid.” By K. N. WELCH.
- “The condensation of dichloroacetaldehyde with *p*-hydroxybenzoic acid.” By F. D. CHATTAWAY and L. H. FARINHOLT.
- “The chemistry of the three-carbon system. Part XXVI. Some substituted acrylic acids.” By G. A. R. KON, E. LETON, R. P. LINSTEAD, and L. G. B. PARSONS.
- “The melting points and heats of crystallisation of the normal long-chain hydrocarbons.” By W. E. GARNER, (MISS) K. VAN BIBBER, and (MISS) A. M. KING.
- “*cyclo*Hexane-*spiro-cyclobutanone*.” By G. A. R. KON.
- “Experiments on the synthesis of *isoquinoline* derivatives. Part I.” By G. S. AHLUWALIA, K. S. NARANG, and J. N. RAY.
- “Optical activity and the polarity of substituent groups. Part XVIII. *l*-Menthyl and *d*- $\beta$ -octyl esters of picolinic, quinaldinic, nicotinic, and cinchoninic acids.” By H. G. RULE, J. B. MILES, G. SMITH, and (MISS) M. M. BARNETT.
- “Optical activity and the polarity of substituent groups. Part XIX. *l*-Menthyl esters of benzenesulphonic acids, and of benzoic acids with sulphur-containing *o*-substituents.” By H. G. RULE and G. SMITH.
- “Syntheses of cyclic compounds. Part IX. The reduction of ethyl 3-methylcyclopentylidene-1-cyanoacetate with moist aluminium amalgam and its bearing upon the configuration of the 3-methylcyclopentane ring.” By A. I. VOGEL.
- “Studies in stereochemical structure. Part III. Glycols derived from D(-)mandelic acid.” By R. ROGER and W. B. MCKAY.
- “The structures of the oxalates of sexavalent molybdenum.” By H. M. SPITTLE and W. WARDLAW.
- “Caesium tetrabromide.” By W. N. RAE.
- “The synthesis and orientation of trichloranthraquinones and amino-disulphonates of anthraquinone. Part I.” By A. A. GOLDBERG.
- “The constitution and synthesis of embelic acid (embelin), the active principle of *embelia ribes*.” By K. H. HASAN and E. STEDMAN.
- “Oxidation by permanganate of an unsaturated substance, cinamic acid.” By E. M. STODDART.
- “The condensation of dichloroacetaldehyde with anisic acid and with *p*-nitroanisole.” By F. D. CHATTAWAY and L. H. FARINHOLT.
- “Studies in the coumarin series. Part II. The conversion of substituted coumarins into benzopyrylium salts.” By I. M. HEILBRON, D. W. HILL, and H. N. WALLS.

- “ A sensitive colour reaction for quinones.” By R. CRAVEN.
- “ 2 : 4 : 6-Trichlorophenylhydrazine.” By F. D. CHATTAWAY and H. IRVING.
- “ Sensitive direct-reading mercury manometer.” By H. W. MELVILLE.
- “ Adsorption of nitrogen by condensed atomic platinum.” By S. H. BASTOW.
- “ Substituted aromatic aldehydes in Hantzsch’s pyridine condensation. Part II. Methyl- and nitro-benzaldehydes.” By L. E. HINKEL, E. E. AYLING, and W. H. MORGAN.
- “ New derivatives of *p*-arsanilic acid. Part II. *p*-Arsonomalonanilic acid and related compounds.” By G. T. MORGAN and E. WALTON.
- “ A study of the polyhalides. Part I. Methods of preparation.” By H. W. CREMER and D. R. DUNCAN.
- “ The direct formation of quinones from 2 : 6-disubstituted derivatives of 4-nitrophenol.” By E. C. S. JONES and J. KENNER.
- “ Natural glucosides. Part III. The position of the biose residue in hesperidin.” By F. E. KING and A. ROBERTSON.
- “ Natural glucosides. Part IV. The constitution of euxanthic acid.” By A. ROBERTSON and R. B. WATERS.
- “ A note on the conversion of 7-hydroxy-3 : 4-dimethylcoumarin into 2 : 4-dimethoxy- $\alpha\beta$ -dimethylcinnamic acid.” By F. W. CANTER and A. ROBERTSON.

FORMS OF RECOMMENDATION FOR FELLOWSHIP. THE  
BALLOT WILL BE HELD AT THE ORDINARY  
SCIENTIFIC MEETING ON THURSDAY, JUNE 4th, 1931.

BASU, TINKARI, 28, Shampukur Street, Calcutta, India. Hindu. Assistant Chemist, Industrial Research Laboratory Department of Industries, Bengal. B.Sc., University of Calcutta, 1917. Carried out and published in collaboration with Dr. R. L. Datta, D.Sc., F.R.S.E. researches in Applied Chemistry, viz. on the bleaching of the splints of *Excoecaria Agallocha*, the preparation of a solution containing phosphoric acid directly from bone ash for impregnation of match splints, and on the oils of *Calophyllum Inophyllum*, *Amoora Rohituka*, *Melia Azadirachta*, and *Pongamia Glabra* as raw materials for soap manufacture. All the researches have been printed by the Government of Bengal as Bulletins of the Department of Industries. [*Bulletins* Nos. 18, 27, 43, 46-48]. Also joint author with Dr. Datta of a Monograph on Shellac Manufacture. [*Vide* Imperial Institute *Bulletin* (No. 1 of 1929), Vol. XXVII, Abstract, pp. 112-14.] (*Signed by*) J. N. Mukherjee, P. C. Ray, J. C. Bardhan.

BOVSFIELD, EDWARD ALEXANDER ROBERT, 131, Bedford Hill, S.W. 12. British. Consulting Analytical and Research Chemist. B.Sc. London (Birkbeck College). Associate of Institute of Chemistry. Works Chemist to Milton Proprietary, Ltd., since August 1919, to present day, and practising

privately as Consultant Chemist at above address. (*Signed by*) W. R. Bousfield, Arthur S. Carlos, S. Sugden.

CLAYTON, GEORGE CHRISTOPHER, Crabwall Hall, Chester. British. Ph.D., Heidelberg; F.I.C. Director, Imperial Chemical Industries. President, Institute of Chemistry. (*Signed by*) Jocelyn Thorpe, C. S. Gibson, T. Slater Price.

DAS GUPTA, SURESH CHAUDRA, 32, Sukea Street, Calcutta, India. Bengali, Indian. Chief Chemist East India Manganese Co., Ltd. B.Sc. (Hons.), Calcutta University. (1) Asst. under Prof. Haralal Das Gupta, M.A., F.C.S.; (2) Holder of Government stipendiary scholarship for 2 years as student; (3) Chemist Indian Manganese Co., Nagpur (India); (4) Chief Chemist East India Manganese Co., Ltd., Ghatsila (India). (*Signed by*) P. B. Ganguly, H. L. Das Gupta, R. C. Ray, C. B. Roy.

JOHNSON, ROWLAND NICHOLAS, 9, Lansdowne Road, Croydon. British. Research Chemist. M.Sc. (London). Scientific Investigator, Dental Investigation Committee of Department of Scientific & Industrial Research. "Chlorosulphonyl Derivatives of Aromatic Amines," with Samuel Smiles, *J.C.S.*, 1923, 2384. (*Signed by*) C. S. Gibson, J. D. Johnson, L. A. Elson, B. Levin.

KIMURA, SAKUJIRO, 41, Nozato Shimokatsura, Katsura Mura, near Kyoto, Japan. Japanese. Dr. of Science obtained at Kyoto Imperial University. "Studies on Catalytic Action. XVIII. Catalytic Reduction of Naphthol" The Sexagint Dedicated to Prof. Y. Osaka, 217 (1927), *British Chemical Abst.*, 1928, 285; "Stereochemical Studies on Hydronaphthalenes. I. Catalytic Reduction of  $\beta$ -Naphthol at High Temperature and Pressure," *J.C.S. Japan*, 1930, 51, 208; "Studies on Sesquiterpenes. II. Sesquiterpene and Sesquiterpene Alcohol from Japanese Cedar-oil," *J.C.S. Japan*, 1930, 51, 518; "Stereochemical Studies on Hydronaphthalenes. II. Catalytic Oxidation and Reduction of Hydronaphthalenes and Sesquiterpenes," *J.C.S. Japan*, 1930, 51, 527. (*Signed by*) R. Nodzu, S. Araki, Robert Robinson.

MCLENNAN, KENNETH JOHN CABLE, 16, Ashburnham Gardens, Upminster. British. Director Messrs. Burgoyne Burbidges, Ltd., Manufacturing Chemists, East Ham, E. Member of the Pharmaceutical Society of Great Britain. (*Signed by*) E. D. Griffiths, W. T. Clough, L. J. Couzens.

MAYNE, JOHN EDWIN OAKLEY, 21, Lansdowne Road, Luton, Beds. British. Research Chemist. A.R.C.S., B.Sc. (2nd Honours), Imperial College, South Kensington. Junior Assistant Safety in Mines Research Board. Wire Rope Section, City & Guilds Eng. College, S.W. 7. (*Signed by*) H. B. Baker, M. A. Whiteley, James C. Philip.

MILNE-WATSON, (SIR) DAVID MILNE, Kt., D.L., 73, Eccleston Square, S.W. 1. British. Governor The Gas Light & Coke Company. M.A., LL.B. (Edinburgh), LL.D. (Leeds). (*Signed by*) Jocelyn Thorpe, C. S. Gibson, Francis H. Carr, H. Hollings, J. G. Clark, Walter A. Voss.

MITRA, DURGA DAS, 77A, Pataldanga Street, Calcutta, India. Bengalee. Medical Practitioner. B.Sc. (Calcutta University), M.B. (Cal.). Seven years' theoretical and practical past experience as a student in the Medical and other Colleges in Inorganic, Organic, Physical and Physiological Chemistry. (*Signed by*) J. P. Bose, Sudhamoy Ghosh, P. Neogi.

TAYLOR, ADAM, 16, Woodcraft Avenue, Broomhill, Glasgow, W. 1. British. Chief Pharmacist, Western Infirmary, Glasgow. I am anxious to join the Chemical Society in order to have access to the library, to have the use of the Journals, and to attend at lectures while in London. (*Signed by*) G. F. Merson, Archibald Macpherson, G. Baty Scott, W. D. Wallace.

WHITE, JOHN STANLEY, 50, Beak Street, Regent Street, W. 1. British.

Medical Expert to Messrs. Parke, Davis & Co., London. M.R.C.S. (Eng.), L.R.C.P. (Lond.). Pharmaceutical Chemist. Publications, Meetings, Library. (*Signed by*) Rupert Woolby Brooke, T. W. Jones, H. Lucas.

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

KAMM, OLIVER, 571, Washington Road, Grosse Pointe, Michigan, U.S.A. French-Swiss. Chemist. Scientific Director, Parke, Davis & Co., Detroit. B.S., M.S., and Ph.D., University of Illinois. Recent publications : "The Dialysis of Pituitary Extracts," *Science*, 1928, **67**, 199; "The Active Principles of Posterior Lobe of the Pituitary Gland," *J. Amer. Chem. Soc.*, 1928, **50**, 573, with T. B. Aldrich, I. W. Grote, E. P. Bugbee, and L. W. Rowe; "Recent Progress in the Investigation of the Posterior Lobe of the Pituitary Gland," *Endocrinology*, 1928, **12**, 671, with E. P. Bugbee. Book : "Qualitative Organic Analysis," Spanish Edition, 1930. "The Possibility of Inter-conversion of the Pituitary Hormones and the Formation of 'Derived Hormones' from the Beta Hormone of the Posterior Lobe," article being presented at the April 1931 (Montreal) meeting of Amer. Soc. Biol. Chem. (*Signed by*) James Kendall.

SEN, BIJAN KUMAR, c/o Shalimar Paint, Colour & Varnish Co., Ltd., 61, Lyon's Range, Calcutta. Indian. Assistant in the Paint Works. M.Sc. in Chemistry, 1st Class (Calcutta University). Formerly Professor of Chemistry, St. James' College, Calcutta. Experience in the manufacture and production of paint, etc. Joint author of a paper entitled "Benzidine Rearrangement in Heterocyclic Series" (*J.I.C.S.*, Vol. V, issue 5 of 1928). (*Signed by*) Nani Gopal Chakravarti, J. C. Bardhan.

TAYLOR, MAURICE CRAIG, c/o The Mathieson Alkali Works, Inc., Niagara Falls, N.Y., U.S.A. American. Chemist. B.S., Purdue University, Lafayette, Ind. Present position, Chief Research Chemist with the Mathieson Alkali Works. Published work on hypochlorites : *J. Amer. Chem. Soc.*, **47**, 395-403; *J. Ind. Eng. Chem.*, **14**, 632-635 (U.S. patents : 1,481,040, 1,781,039, 1,609,328, 1,650,054, 1,716,014, 1,718,284). Other published work : "Chromous Chloride," *J. Amer. Chem. Soc.*, **44**, 612-614; "Peroxidase," *J. Dairy Science*, **7**, 234-244. (*Signed by*) L. F. Goodwin.

## ADDITIONS TO THE LIBRARY.

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CHEMICAL ENGINEERING AND CHEMICAL CATALOGUE. 7th edition. Edited by DUDLEY MAURICE NEWITT. London [1931]. pp. 364 + lix. ill. (*Reference.*) 15s net.

From the Publishers : Messrs. Leonard Hill.

DHAR, NIL RATAN. The chemical action of light. London 1931. pp. xiv + 512. ill. 25s. net. (*Recd.* 11/4/31.)

From the Publishers : Messrs. Blackie & Son.

EGYPT. Département de l'Hygiène Publique. Notes et Rapports des Laboratoires. No. 7. Les eaux d'Égypte. 3 Vols. By A. AZADIAN. Cairo 1930. pp. xxxviii + 523 + 33 plates. ill. (*Recd.* 21/3/31.)

From the Director.



FOOD INDUSTRIES MANUAL. A technical and commercial compendium on the manufacture, preserving, packing and storage of all food products. Edited by HARRY BRENNAN CRONSHAW. London (1931). pp. 399. ill. (*Reference.*)

From the Publishers : Messrs. Leonard Hill.

LUNGE, GEORGE and KEANE, CHARLES ALEXANDER. Technical methods of chemical analysis. 2nd edition. Edited by C. A. KEANE and PERCY CYRIL LESLEY THORNE. Vol. III. London 1931. pp. xx + 678. ill. (*Reference.*) 63s. net.

From the Publishers : Messrs. Gurney & Jackson.

SHERMAN, HENRY CLAPP, and SMITH, SYBIL LAURA. The vitamins. 2nd edition. (American Chemical Society Monograph Series.) New York 1931. pp. 575. ill. \$6 net. (*Recd.* 15/4/31.)

From the Publishers : The Chemical Catalog Company, Inc.

## II. *By Purchase.*

BIANCHI, CALISTO. Celluloseesterlacke. German edition by ADOLF WEIHE. Berlin 1931. pp. xii + 329. ill. *M.* 22.50. (*Recd.* 15/4/31.)

GOARD, A. K. Chemical composition : an account of the methods by which atomic weights and molecular formulæ have been determined. London 1931. pp. viii + 304. 5s. net. (*Recd.* 24/3/31.)

GRAY, A. N. Phosphates and superphosphates. London 1930. pp. 275. 8s. net. (*Recd.* 30/3/31.)

PARKINSON, S. T., and FIELDING, W. L. The microscopic examination of cattle foods. Ashford 1930. pp. viii + 97. ill. 6s. 6d. net. (*Recd.* 24/3/31.)

KUNZMANN, TH. Die Bedeutung der wissenschaftlichen Tätigkeit Friedrich Wöhlers für die Entwicklung der deutschen chemischen Industrie. Berlin 1930. pp. 90. *M.* 4. (*Recd.* 15/4/31.)

RABALD, ERICH. Werkstoffe : physikalische Eigenschaften und Korrosion. 2 vols. Leipzig 1931. pp. xxii + 976, x + 392. ill. *M.* 135. (*Recd.* 14/4/31.)

SINGER, DOROTHEA WALEY, assisted by ANNIE ANDERSON and ROBINA ADDIS. Catalogue of Latin and vernacular alchemical manuscripts in Great Britain and Ireland dating from before the XVI century. Vols. I and II. Brussels 1928-30. pp. xxvii + 328, viii, 329 to 756. (*Reference.*)

VEREIN DEUTSCHER CHEMIKER. Von den Kohlen und den Mineralölen. Ein Jahrbuch für Chemie und Technik der Brennstoffe und Mineralöle. Vol. I, 1928, etc. Berlin 1929 +. (*Reference.*)

III. Pamphlets presented by Dr. R. E. W. Maddison.

ALBERTS, ELSA (MARIA). Über die Einwirkung von Gasströmen wie Kohlensäure, Ammoniak, Salzsäure, Chlor, Brom, Tetrachlorkohlenstoff auf Sulfate und Sulfide. Heidelberg 1920. pp. 49.

ANDREJEW, NICOLAUS. Theoretische und experimentelle Untersuchungen über den Einfluss der Temperatur auf die Dispersion des Lichtes. Basel 1909. pp. 43.

BERTIN, A. Principaux emplois chimiques du bois. Paris 1924. pp. vi + 126. ill.

BOTTLER, MAX. Bleich-, Reinigungs-, Wasch-, Detachiermittel, Bleichverfahren und Bleichapparate der Neuzeit für Gespinnstfasern und Gewebe. 2nd edition. Wittenberg 1924. pp. 216. ill.

BUSVOLD, NILS. Ueber die quantitative Bestimmung, sowie Trennung von Chlor und Chlorwasserstoff in Gasgemischen. Zürich-Selnau 1909. pp. 76. ill.

DICKHAUS, GUSTAV. Einfluss der Temperatur auf die Leitfähigkeit von Elektrolyten in wässriger Lösung. Bonn 1912. pp. 40.

GEISLER, HERMANN. Zur anomalen Dispersion des Lichtes in Metalldämpfen. Leipzig 1909. pp. 29. ill.

HECHT, (RICHARD) LEOPOLD. Über die Natur des Sulfammoniums und ein Beitrag zur spektrometrischen Untersuchung eines Gemisches mehrerer lichtabsorbierender Stoffe. (Berlin) 1910. pp. 58. ill.

LUTZ, H. F. Viticulture and brewing in the ancient Orient. Leipzig 1922. pp. viii + 166. ill.

MEIER, (AUGUST) WILLI (ALBERT). Untersuchungen über Dispersion und Absorption bei Metallen für das sichtbare und ultraviolette Spektrum. Leipzig 1909. pp. 70. ill.

MOLES, E. Solubilidad de gases en soluciones acuosas de glicerina y ácido isobutírico. (From the *An. Junta amp. est. inv. científicas*, 1911, 4.) ill.

NOWAK, ALFRED. Ueber die chemische Wirkung dunkler elektrische Entladungen auf Kohlenoxyd und kohlenoxydhaltige Gasgemenge. München 1910. pp. 69. ill.

OTT, FRIEDRICH. Elektrolytische Reduktion der Niobsäure. München 1911. pp. vi + 73. ill.

PAULI, WILHELM EDWARD. Über ultraviolette und ultrarote Phosphoreszenz. (From the *Sitz. Heidelberger Akad. Wiss.*, 1911, i.)

PLATOU, EILIF. Calorimetrische Untersuchungen über Stickoxydbildung aus Luft mittels Hochspannungswechselstromentladungen verschiedener Frequenz. Karlsruhe 1910. pp. 73. ill.

REINKOBER, (FRANZ FRIEDRICH WILHELM) OTTO. Über Absorp-

tion und Reflexion ultraroter Strahlen durch Quarz, Turmalin und Diamant. Leipzig 1910. pp. 38. ill.

SACHS, STANISLAUS. Über die Wirkung des ultravioletten Lichtes auf Gase und über die dabei erzeugten Nebelkerne. Heidelberg 1910. pp. 47. ill.

TITLESTAD, NICOLAY. Photo-Volta-Ketten mit Urano-Uranyl-sulfat. Leipzig 1910. pp. 55. ill.

#### IV. *Miscellaneous Pamphlets.*

AERONAUTICAL RESEARCH COMMITTEE. Reports and Memoranda. Nos. 1037, 1285, and 1287. Mechanical properties of pure magnesium and certain magnesium alloys in the wrought state. By SIDNEY LEONARD ARCHBUTT [and others]. London 1926-30. pp. 13, 9, 16. ill.

— — — No. 1318. Detonation and lubricating oil. By R. O. KING and H. MOSS. London 1930. pp. 23. ill.

— — — No. 1324. Experiments on the ignition of gases by sudden compression. By R. W. FENNING and F. T. COTTON. London 1930. pp. 43. ill.

AMERICAN PUBLIC HEALTH ASSOCIATION. *Committee on Lead Poisoning*. Report. New York 1930. pp. 37.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS. Georges Claude, 50th anniversary medallist from France. (From the *Official Program 50th Anniv. A.S.M.E.*, 1930.)

BOARD OF TRADE. *Dyestuffs Industry Development Committee*. Report on the present position and development of the dyestuffs manufacturing industry in Great Britain. London 1930. pp. iv + 88.

BRITISH SCIENCE GUILD. Science and modern industry. By SIR WILLIAM JACKSON POPE. Being the 6th annual Norman Lockyer lecture. London 1930. pp. 19.

CANADA. *Department of the Interior*. National Development Bureau. The ceramic industry of Canada with special reference to the manufacture of white ware. Ottawa 1931. pp. 46. [In mimeograph form.]

DE VANEY, F. D., and COOKE, S. R. B. Laboratory concentration of the Missouri iron ores of Iron Mountain and Pilot Knob. (From the *Bull. Sch. Min. Met. Univ. Missouri*, 1928, 11.) ill.

FAUST, GEORGE T. Notes on crystal etchings. (From the *Bull. Wagner Inst. Sci.*, 1930, 5.)

FISCHER, FREDERICK KAPP. An investigation of the magnetic and electrical properties of some iron chromium alloys. (*Rensselaer Poly. Inst. Bull., Eng. Sci. Ser.* No. 28.) 1930. pp. 32. ill.

HOME OFFICE. Report on effects of asbestos dust on the lungs and dust suppression in the asbestos industry. By EDWARD ROWLAND ALWORTH MEREWETHER and C. W. PRICE. London 1930. pp. 34.

— List of authorised explosives. London 1931. pp. 8.

INSTITUTE OF CHEMISTRY OF GREAT BRITAIN AND IRELAND. The transmutation of the chemist. By ALBERT ERNEST DUNSTAN. pp. 22.

KRISHMAN, M. S., and MAHADEVAN, C. Pleochroic "giant" halos. (From the *Indian J. Physics*, 1931, 5.) ill.

LABBÉ, HENRI. Le cacao et le chocolat au point de vue alimentaire et hygiénique. Bruxelles 1930. pp. 24.

MEDICAL RESEARCH COUNCIL. Special Report Series, No. 146. The antiscorvy vitamin in apples. By MARY F. BRACEWELL, EDWARD HOYLE, and SYLVESTER SOLOMON ZILVA. London 1930. pp. 45. ill.

MIHOLIĆ, STANKO STANKOV. Odredjivanje magnezija kao magnezijev pirofosfat. (From the *Bull. Soc. Chim. Yougoslav.*, 1930, 1.) ill.

MINES DEPARTMENT. *Safety in Mines Research Board*. Paper No. 64. The inflammation of coal dusts: the effect of the presence of firedamp. By T. N. MASON and RICHARD VERNON WHEELER. London 1931. pp. 32. ill.

— — Paper No. 65. A flame safety-lamp of high candle-power. By DONALD WHITLEY WOODHEAD. London 1931. pp. 15. ill.

MINISTRY OF AGRICULTURE AND FISHERIES. *Standing Committee on River Pollution*. River pollution and fisheries. A non-technical report of the work during 1926, 1927 and 1928. London 1930. pp. 69.

MINISTRY OF HEALTH. *Departmental Committee on Ethyl Petrol*. Final report. London 1930. pp. 91.

— *Joint Advisory Committee on River Pollution*. Second report. The reception of trade effluents into the sewers of the local sanitary authorities. London 1930. pp. 29.

MINISTRY OF TRANSPORT and MINISTRY OF AGRICULTURE AND FISHERIES. *Joint Committee on Damage to Fisheries*. Detailed biological and chemical reports on tars used for road-surfacing. London 1930. pp. 171. ill.

MIYAGAWA, ICHIRO. Pyritic oxidation in relation to spontaneous combustion of coal. (From the *Mem. Coll. Eng. Kyushu Imp. Univ.*, 1930, 5.)

MIYAGAWA, ICHIRO, YAMADA, M., and INABA, J. The spontaneous combustion of coal. (From the *J. Fuel Soc. Japan*, 1929, 8.)

# PROCEEDINGS

## OF THE

# CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, June 4th, 1931, at 8 p.m.,  
 Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., Past-President, in  
 the Chair.

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

	Elected.	Died.
Horace Woodward Crowther .....	Dec. 1st, 1887.	March 20th.
Charles Thomas Heycock .....	June 21st 1883.	June 3rd.

Professor Thorpe stated that Mr. Heycock had been Goldsmith Reader in Metallurgy at the University of Cambridge; he had been associated with Mr. F. H. Neville in research on the lowering of the freezing point of metals by the addition of other metals which ultimately led to an extension of the phase-rule investigation into the non-ferrous alloys, especially those of gold, and had contributed many papers to the Transactions. Mr. Heycock had served on the Council as a Vice-President and as an Ordinary Member, and his death will be deplored as a loss not only to this Society, but to Chemistry generally.

The CHAIRMAN announced that a communication had 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 1932 is about 1200 Dutch guilders.

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, 1931, by registered post to: "Het Bestuur der Koninklijke Akademie van Wetenschappen, bestemd voor de Commissie van het van 't Hoff-funds, Trippenhuis, Klovenierburgwal, Amsterdam. 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.

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

Brinley Griffith, B.Sc., "Gwynfa," Edward Close, Brentwood Road, Romford.  
Frank Eric Lavalette, M.Sc., c/o St. James College, 165, Lower Circular Road, Calcutta.

Parameswar Velayudhan Nair, B.A., M.Sc., Dyson Perrins Laboratory, Oxford.  
Gertrude Margaret Clare Watkins, B.Sc., 39, Upland Road, Sutton, Surrey.

Dr. R. K. Callow and Dr. A. I. Vogel were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared elected as Fellows :—

Tinkari Basu, B.Sc.	John Edwin Oakley Mayne, B.Sc., A.R.C.S.
Edward Alexander Robert Bousfield, B.Sc., A.I.C.	Sir David Milne Milne-Watson, Kt., M.A., LL.D., D.L.
George Christopher Clayton, C.B.E., Ph.D., F.I.C.	Durga Das Mitra, B.Sc., M.B.
Suresh Chandra Das Gupta, B.Sc.	Bijan Kumar Sen, M.Sc.
Rowland Nicholas Johnson, M.Sc.	Adam Taylor.
Oliver Kamm, M.S., Ph.D.	Maurice Craig Taylor, B.S.
Sakujiro Kimura.	John Stanley White, M.R.C.S., L.R.C.P.
Kenneth John Cable McLennan.	

The following papers were read :—

- "Synthesis of substances analogous to bile acid degradation products. Part I. Preliminary investigation of methods of attachment of carboxylated side chains to the *cyclopentane* nucleus." By J. W. BAKER.
- "Reactions of  $\omega$ -substituted acetophenone derivatives. Part I. The action of acetyl nitrate on  $\omega$ -halogeno-*m*-nitroacetophenones." By J. W. BAKER.
- "The constitution and synthesis of embelic acid (embelin), the active principle of *Embelia Ribes*." By K. H. HASAN and E. STEDMAN.
- "Adsorption of nitrogen by condensed atomic platinum." By S. H. BASTOW.
- "The direct formation of quinones from 2 : 6-disubstituted derivatives of 4-nitrophenol." By E. C. S. JONES and J. KENNER.
-

The Council have made the following Grants from the Research Fund :—

	£	s.	d.
The contact and function of solid surfaces. F. P. Bowden. (Cambridge Univ.) ... ..	10	0	0
Behaviour of boron in union with organic radicals ( <i>cont'd.</i> ). F. Challenger. (Leeds Univ.)... ..	7	10	0
New types of organo-metallic compounds. F. Challenger. (Leeds Univ.) ... ..	7	10	0
Chemistry of santonin and related problems. G. R. Clemo. (Armstrong Coll.) ... ..	7	10	0
Conductivity of sparingly soluble electrolytes. C. W. Davies. (Battersea Polytechnic.) ... ..	6	0	0
Influence of configurational and cyclising factors on the additive mode of butadienoid compounds. M. H. Desai. (Imperial Coll.) ... ..	7	10	0
Effect of the methylcyclohexane ring on the carbon tetrahedral angle. R. D. Desai. (Imperial Coll.) ... ..	8	0	0
Synthetical studies in Jaborandi alkaloids. A. N. Dey. (Imperial Coll.) ... ..	8	0	0
Nature of the active form of hydrogen produced in ozoniser discharges. G. A. Elliott. (Perth Univ.) ... ..	25	0	0
Electro-endosmosis. F. Fairbrother. (Manchester Univ.) ...	12	0	0
Three-carbon tautomerism. H. B. Fraser. (Imperial Coll.) ...	7	10	0
Investigation of cinchonoid substances ( <i>cont'd.</i> ). (Miss) R. V. Henley. (Bedford Coll.) ... ..	10	0	0
Hydrogenation of butadiene systems. C. G. B. Hose. (Imperial Coll.) ... ..	7	10	0
Stereochemistry of diphenyl compounds. (Miss) M. S. Lesslie. (Bedford Coll.) ... ..	6	0	0
Diphenyl compounds ( <i>cont'd.</i> ). (Miss) E. E. J. Marler. (Bed- ford Coll.) ... ..	6	0	0
Properties of conjugated compounds. F. C. B. Marshall. (Imperial Coll.) ... ..	5	0	0
The glutaconic problem. H. R. Nanji. (Imperial Coll.) ...	7	10	0
Investigation of substitution in the diphenyl series. (Miss) F. R. Shaw. (Bedford Coll.) ... ..	5	0	0
Physico-chemical properties of mixtures. (Miss) V. C. G. Trew. (Bedford Coll.) ... ..	7	10	0
Synthesis of cyclic compounds ( <i>cont'd.</i> ). A. I. Vogel. (Univ. Coll., Southampton) ... ..	10	0	0
Physical properties of organic mixtures. (Miss) G. M. C. Wat- kins. (Bedford Coll.) ... ..	7	10	0
Kinetics of chlorination of anilides and benzamides. G. Wil- liams. (Deeside Central School, Shotton) ... ..	5	0	0
(a) The tautomeric changes of geometrical isomerides.			
(b) The lactonisation of substituted unsaturated acids. J. M. Wright. (Imperial Coll.) ... ..	7	10	0
	<u>£191</u>	<u>0</u>	<u>0</u>

## THE LIBRARY.

The Library will be closed for stocktaking from Monday, August 3rd, until Saturday, August 15th (inclusive). During the following four weeks (August 17th to September 12th) the Library will close daily at 5 p.m.

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## THE INSTITUTE OF FUEL.

The Council of the Institute of Fuel will hold on Wednesday, October 7th, 1931, at 7 p.m., a joint meeting of all those Technical Societies to which the subject of low-temperature carbonisation and hydrogenation of coal is of interest.

The meeting will be held in the Lecture Theatre of the Institution of Electrical Engineers (Savoy Place, Victoria Embankment, W.C. 2), Sir David Milne-Watson, LL.D., D.L. (President), being in the Chair. A paper dealing with the present position and future prospects of the conversion of coal into oil and smokeless fuel will be presented by Dr. W. R. Ormandy, and opened for discussion.

Advance copies of papers to be read will probably be available 14 days before the meeting, and those Fellows desiring to attend the meeting are requested to notify the Assistant Secretary, the Chemical Society, Burlington House, Piccadilly, W. 1, on or before Monday, September 14th.

List of Papers, or Abstracts thereof, received between May 21st and June 4th, 1931. (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 note on the calculation of the true adsorption.” By K. S. G. DOSS.
- “ 2-(2-Aminobenzyl)pyridine.” By R. H. WILSON.
- “ The configurations of the  $\alpha$ -oximino-ketones.” By T. W. J. TAYLOR.
- “ The labile nature of the halogen atom in organic compounds. Part XIV. The reactivity of halogen derivatives of 5-alkylbarbituric acids.” By A. B. COX, A. K. MACBETH, and S. W. PENNYCUICK.
- “ The dissociation constants of organic acids. Part IV. The mobilities of the sodium, potassium, and hydrogen ions at 25°, and the determination of cell constants at 25°.” By G. H. JEFFERY and A. I. VOGEL.
- “ The vapour pressure of hydrogen selenide and hydrogen telluride.” By N. O. STEIN.



- “Quinoline compounds containing arsenic. Part III. Synthesis of *o*-5'-nitro-8'-quinolylaminophenylarsonic acid, 12-chloro-10-nitro-5:12-dihydroquinbenzarsazine and 10-nitroquinbenzarsazonic acid.” By R. H. SLATER.
- “The condensation of aromatic aldehydes with malonanilic acid and its derivatives.” By G. S. AHLUWALIA, M. A. HAQ, and J. N. RÂY.
- “Thermal chlorination reactions in the gaseous phase, with short heating periods.” By J. MASON and T. S. WHEELER.
- “The reactions of divinyl sulphide, sulphoxide, and sulphur.” By J. R. ALEXANDER and H. MCCOMBIE.
- “The selenates of neodymium and their solubilities in water and acid solutions.” By J. A. N. FRIEND.
- “The molecular lowering of freezing point for camphor.” By R. J. W. LE FÈVRE and (Miss) C. G. TIDMAN.
- “The dimorphism of certain higher aliphatic compounds.” By J. W. C. PHILLIPS and S. A. MUMFORD.
- “Influence of directing groups on nuclear reactivity in oriented aromatic substitutions. Part II. Nitration of toluene.” By C. K. INGOLD, A. LAPWORTH, E. ROTHSTEIN, and D. WARD.
- “The action of chlorine upon chloro-substituted hydrazones.” By F. D. CHATTAWAY, T. DEIGHTON, and A. ADAIR.
- “A new reaction of certain diazosulphonates derived from  $\beta$ -naphthol-1-sulphonic acid. Part VII. The 3'-nitro- and 3'-amino-derivatives of 3-phenyl-4-methylphthalaz-1-one, and the nitro-3-phenyl-1-methylphthalaz-4-ones.” By F. M. ROWE and A. T. PETERS.

## ADDITIONS TO THE LIBRARY.

### I. *Donations.*

(a) *Presented by Mr. William Macnab, C.B.E.*

CHALON, PAUL FRÉDÉRIC. *Les explosifs modernes.* 3rd edition. Paris 1911. pp. iv + 789. ill.

JAHRBUCH DER ELEKTROCHEMIE. Years II—VII. Halle a.S. 1896—1901. (*For circulation.*)

MÉMORIAL DES POWDRES ET SALPÊTRES. Vols. I—XVII. Paris 1882—1914.

VENNIN, L., and CHESNEAU, GABRIEL. *Les poudres et explosifs et les mesures de sécurité dans les mines de houille.* Paris 1914. pp. xx + 573. ill.

### (b) *Miscellaneous Donations.*

ABDERHALDEN, EMIL. [Editor.] *Handbuch der biologischen Arbeitsmethoden.* Abt. I. *Chemische Methoden.* Teil 2, II

Hälfte, Heft 8. Berlin 1931. pp. 2971 to 3078. *M.* 5.50. (*Recd.* 18/5/31.) From the Publishers : Herren Urban & Schwarzenberg.

BRIGGS, DENNIS BROOK. Chemical change. London 1931. pp. viii + 166. ill. 5s. net. (*Recd.* 6/5/31.) From the Author.

CHAMOT, ÉMILE MONNIN, and MASON, CLYDE WALTER. Handbook of chemical microscopy. Vol. II. Chemical methods and inorganic qualitative analysis. New York 1931. pp. x + 411. ill. 22s. 6d. net. (*Recd.* 7/5/31.)

From the London Publishers : Messrs. Chapman & Hall.

CHARTROU, JEAN J. Pétroles naturel et artificiels. Paris 1931. pp. iv + 206. ill. 10 fr. 50. (*Recd.* 30/5/31.)

From the Publisher : M. Armand Colin.

CHIKASHIGE, MASUMI. Anniversary volume . . . by his pupils in celebration of his sixtieth birthday. Kyoto 1930. pp. x + 348. ill. (*Recd.* 30/5/31.) From the Editor.

COCHRANE, J. A. Lavoisier. pp. xiv + 264. ill. 7s. 6d. net. (*Recd.* 20/5/31.) From the Publishers : Messrs. Constable & Co.

CORBIÈRE, JACQUES. Sur la fixation des matières grasses émulsionnées par les fibres textiles. Lyon 1931. pp. x + 125. ill. (Two copies.) (*Recd.* 2/5/31.)

From the Publishers : Imprimerie A. Rey.

FARBE UND LACK. Centralblatt der deutschen Farben- und Lackindustrie. Anzeiger für die chemische Industrie. Hannover 1931 +. (*Reference.*)

FARBEN-CHEMIKER, DER. Zeitschrift über Herstellung und Gewinnung von Farblacken, Lackfarben, Erdfarben, Spezialfarben und Lacken usw. Year II, etc. Berlin 1931 +. (*Reference.*)

From the Bureau of Chemical Abstracts.

GABILLION, ROBERT. Soies artificielles et matières plastiques. Paris 1931. pp. iv + 204. ill. 10 fr. 50. (*Recd.* 30/5/31.)

From the Publisher : M. Armand Colin.

GRAY, JAMES. A text-book of experimental cytology. Cambridge 1931. pp. x + 516. ill. 25s. net. (*Recd.* 28/5/31.)

From the Syndics of the Cambridge University Press.

KRCZIL, FRANZ. Untersuchung und Bewertung technischer Adsorptionsstoffe. Leipzig 1931. pp. x + 504. ill. *M.* 30. (*Recd.* 28/5/31.) From Professor F. M. Rowe.

KÜHL, HANS. Cement chemistry in theory and practice. Translated by JOSEPH WILLIAM CRISTELOW. London [1931]. pp. vi + 64. ill. 7s. 6d. net. (*Recd.* 4/6/31.)

From the Publishers : Messrs. Concrete Publications.

MAERZ, A., and PAUL, M. REA. A dictionary of color. New York 1930. pp. 207. ill. (*Reference.*) \$12.

From Professor F. M. Rowe.

ORGANIC SYNTHESSES. An annual publication of satisfactory methods for the preparation of organic chemicals. Vol. XI. New York 1931. pp. viii + 106. 8s. 6d. net. (*Recd.* 29/4/31.)

From the London Publishers : Messrs. Chapman & Hall.

SCHEELE, CARL WILHELM. Collected papers. Translated from the Swedish and German originals by LEONARD DOBBIN. London 1931. pp. xvi + 367. ill. 10s. net. (*Recd.* 4/6/31.)

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

SEN, HEMENDRA KUMAR. High temperature flames and their thermodynamics. Calcutta 1931. pp. x + 135. ill. (*Recd.* 18/5/31.)

From the Author.

THOMAS, HERMANN. [Editor.] Handbuch der praktischen und wissenschaftlichen Pharmazie. Vol. V. Part viii. Berlin 1931. pp. 1525 to 1702, 280, viii. ill. M. 20. (*Recd.* 19/5/31.)

From the Publishers : Herren Urban & Schwarzenberg.

TSCHITSCHIBABIN, ALEXEJ EUGUENIEVITSCH. Fundamental principles of organic chemistry. 3rd edition. Moscow 1931. pp. xxiv + 727. ill. [In Russian.] (*Recd.* 22/5/31.)

From the Author.

UNION INTERNATIONALE DE CHIMIE. Dixième conférence, Liège 1930. Rapports sur les hydrates de carbone (glucides). Paris [1931.] pp. 287. ill. (*Reference.*) 50 fr. From the Union Internationale.

WELDON, WALTER. On the ratios one to another of the atomic weights of the elements. Chapter I.—The glucinum family. London 1885. pp. 37. (*Reference.*) From Dr. O. Rosenheim, F.R.S.

## II. By Purchase.

BASSETT, HENRY NORMAN. The chemical technology of steam-raising plant. London 1931. pp. viii + 240. ill. 12s. 6d. net. (*Recd.* 23/5/31.)

BEYTHIEN, ADOLF. Laboratoriumsbuch für den Nahrungsmittelchemiker. Dresden 1931. pp. xxiv + 589. ill. M. 40. (*Recd.* 12/6/31.)

BRIEGLER, G., and WOLF, K. L. Lichtzerstreuung, Kerreffekt und Molekülstruktur. (Fortschritte der Chemie, Physik und physikalischen Chemie, Vol. XXI.) Berlin 1931.

FLURY, FERDINAND, and ZERNIK, FRANZ. Schädliche Gase, Dämpfe, Nebel, Rauch- und Staubarten. Berlin 1931. pp. xii + 637. ill. M. 69. (*Recd.* 12/6/31.)

GREGORY, JOSHUA CRAVEN. A short history of atomism from Democritus to Bohr. London 1931. pp. viii + 258. 10s. 6d. net. (*Recd.* 22/5/31.)

HOUSE, A. G. Bacteriological control of milk : a practical guide for media preparation and milk testing. Reading 1931. pp. xii + 59. ill. 3s. 6d. net. (*Recd.* 27/5/31.)

JORDAN, EDWIN OAKES. Food poisoning and food-borne infection. 2nd edition. Chicago 1931. pp. xii + 286. ill. 11s. 6d. net. (*Recd.* 23/5/31.)

KOWALKE, O. L., HOUGEN, O. A., and WATSON, H. M. Transfer coefficients of ammonia in absorption towers. (*Bull. Univ. Wisconsin Eng. Exper. Stat.*, Ser. No. 68.) Madison 1915. pp. 86. ill. 3s. net. (*Recd.* 24/4/31.)

LIPPMANN, EDMUND OSKAR VON. Entstehung und Ausbreitung der Alchemie. Mit einem Anhang: zur älteren Geschichte der Metalle. 2 vols. Berlin 1919-31. pp. xvi + 742, viii + 258. *M.* 25, *M.* 26.60. (*Recd.* 12/6/31.)

MUNCH, JAMES, C. Bioassays: a handbook of quantitative pharmacology. London 1931. pp. x + 958. ill. 45s. net. (*Recd.* 21/5/31.)

PRESCOTT, SAMUEL CATE, and WINSLOW, CHARLES-EDWARD A. Elements of water bacteriology with special reference to sanitary water analysis. 5th edition. New York 1931. pp. x + 219.

RIJN, JACOBUS JOSEPH LOUIS VAN. Die Glykoside. Chemische Monographie der Pflanzenglykoside. 2nd edition. By HUGO DIETERLE. Berlin 1931. pp. viii + 620. *M.* 48. (*Recd.* 21/5/31.)

SCHÖNFELD, H. Neuere Verfahren zur Raffination von Oelen und Fetten. Berlin 1931. pp. 110. ill. *M.* 12. (*Recd.* 4/6/31.)

STARK, JOHANNES. Fortschritte und Probleme der Atomforschung. Leipzig 1931. pp. viii + 112. ill. *M.* 4.80. (*Recd.* 4/6/31.)

TROTMAN, SAMUEL RUSSELL, and TROTMAN, EDWARD RUSSELL. Artificial silks. London 1931. pp. x + 274. ill. 18s. net. (*Recd.* 21/5/31.)

UNITED STATES. *Department of Commerce*. Bureau of Mines. Bulletin 327. Potash bibliography to 1928 (annotated). By J. F. T. BERLINER. Washington 1930. pp. ii + 578. (*Reference.*) 5s. net.

— — — National Bureau of Standards. Miscellaneous Publication No. 110. Standards and specifications for non-metallic minerals and their products. Prepared by JOHN Q. CANNON, Jr. Washington 1930. pp. x + 680. ill. (*Reference.*) 15s. net.

WARREN, H. Electrical insulating materials. London 1931. pp. 516. ill. 42s. net. (*Recd.* 21/5/31.)

WINKLER, LUDWIG WILHELM. Ausgewählte Untersuchungsverfahren für das chemische Laboratorium. (Die Chemische Analyse, Vol. XXIX.) Stuttgart 1931. pp. xviii + 155. ill. (*Reference.*)

### III. Pamphlets.

AIYAR, G. K. [and others]. Notes on the Burmese species of plants yielding chaulmugra oil. (*Burma Forest Bulletin*, No. 21.) Rangoon 1930. pp. iv + 22. ill.

ASSOCIATION OF BRITISH CHEMICAL MANUFACTURERS. An index to Acts of Parliament and Statutory Rules and Orders affecting the chemical industry. London 1931. pp. 24.

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research*. Pamphlet No. 18. The influence of frequency of cutting on the productivity, botanical and chemical composition, and the nutritive value of "natural" pastures in Southern Australia. By J. GRIFFITHS DAVIS and ARTHUR HENRI SIM. Melbourne 1931. pp. 28. ill.

GENERAL MEDICAL COUNCIL. *Pharmacopœia Commission*. Reports of sub-committees. 1. Pharmacy. 2. Pharmaceutical chemistry. 3. Cod-liver oil colour test. London 1930-31. pp. 35, 90, 5.

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— — — — Bulletin 302. Fuel-efficiency tests on batch oil stills. By HENRY KREISINGER, W. R. ARGYLE, and W. E. RICE. Washington 1929. pp. vi + 94. ill.

— — — — Bulletin 308. Oxides in pig iron : their origin and action in the steel-making process. By C. H. HERTY, Jr., and J. M. GAINES, Jr. Washington 1929. pp. iv + 56. ill.

— — — — Bulletin 312. Bauxite : float-and-sink fractionations and flotation experiments. By B. W. GANDRUD and FRED D. DE VANEY. Washington 1929. pp. iv + 101. ill.

— — — — Bulletin 317. Rock-strata gases of the Cripple Creek district, Colo. and their effect on mining. By E. H. DENNY [and others]. Washington 1930. pp. iv + 66. ill.

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— — — — Technical Paper 464. Coal-dust explosibility factors indicated by experimental mine investigations 1911 to 1929. By GEORGE S. RICE and H. P. GREENWALD. Washington 1929. pp. 45. ill.

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— — — Technical Paper 473. Chemistry of leaching chalcocite. By JOHN D. SULLIVAN. Washington 1930. pp. 24. ill.

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— — — Technical Paper 477. A study of the lubrication fractions of Cabin Creek (W. Va.) petroleum. With chapters on the action of solvents on the heavy constituents of petroleum. By F. W. LANE [and others]. Washington 1930. pp. iv + 48. ill.

— — — Technical Paper 479. A study of the production of activated carbon from various coals and other raw materials. By A. C. FIELDNER, R. E. HALL, and A. E. GALLOWAY. Washington 1930. pp. 30. ill.

— — — Technical Paper 480. Intensities of odors and irritating effects of warning agents for inflammable and poisonous gases. By S. H. KATZ and E. J. TALBERT. Washington 1930. pp. 37. ill.

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— — — Miscellaneous Publication No. 114. Filters for the reproduction of sunlight and daylight and the determination of color temperature. By RAYMOND DAVIS and K. S. GIBSON. Washington 1931. pp. 165. ill.

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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 .

Extraordinary General Meeting, Thursday, October 15th, 1931, at 8 p.m., Professor G. G. HENDERSON, M.A., D.Sc., F.R.S., President, in the Chair.

The notice convening the meeting was read, announcing that the following alterations in the Bye-Laws had been proposed by the Council :

*Bye-Law I.*

- (a) Page 4, line 22, insert after the words "to do so" the following words : "And provided further that the Council shall have power, without such confirmation, in the case of any person who has been a Fellow for not less than 40 years, wholly to remit or to reduce the annual subscriptions thereafter payable by him whenever it may consider it desirable to do so."
- (d) Page 5, line 21, insert after the words "in arrear" the following words : "or shall not have been remitted or reduced under the provision hereinbefore contained."

*Bye-Law IV.*

- (c) Page 7, line 12, insert after the words "his subscriptions" the following words : "or such portion thereof as the Council may determine."

*Bye-Law VIII.*

- (d) Page 10, line 20, insert after the words "one year," the following words : "save and except that if there shall not be eligible for election six Vice-Presidents who have filled the office of President the Council shall have the power to nominate for re-election for the coming year one or more of the retiring Vice-Presidents who have filled such office."

The President stated that under Bye-Laws I and IV the Council sought discretionary power

- (a) To remit the payment of the annual subscription in the case of a Fellow of not less than 40 years' standing, who is unable to continue to pay the annual subscription.

In such case the Fellow will not receive the publications of the Society.

- (b) To reinstate a former Fellow without requiring payment of the arrears of annual subscriptions that were due at the time he or she ceased to be a Fellow of the Society.

and that the proposed alteration in Bye-Law VIII would enable the retiring Vice-Presidents (who have filled the office of President) to be immediately eligible for re-election, if, otherwise, the number of such Vice-Presidents would be less than six. Such re-election will be by ballot. Under the Bye-Law as at present constituted, it was not possible to elect more than five Vice-Presidents in this category at the Annual General Meeting in March 1931.

The motion that these alterations to the Bye-Laws be adopted was then proposed from the Chair and carried unanimously.

At the Ordinary Scientific Meeting which followed, the PRESIDENT referred to the loss sustained by the Society, through death, on May 23rd, 1931, of Professor Frank Wigglesworth Clarke, who was elected an Honorary Fellow on May 18th, 1904, and of the following Fellows :

	<i>Elected.</i>	<i>Died.</i>
Thomas H. Bailey .....	Feb. 8th, 1926.	April 13th, 1931.
Sir Hugh Bell, Bart. ....	Feb. 15th, 1917.	June 29th, 1931.
Ethelbert W. Blair .....	Feb. 19th, 1914.	April 23rd, 1931.
Edwin C. Conrad .....	April 4th, 1883.	May 8th, 1931.
William E. Downey .....	Feb. 18th, 1926.	Aug. 19th, 1931.
John W. Hinchley .....	Dec. 3rd, 1896.	Aug. 13th, 1931.
Harold Holcroft .....	June 1st, 1876.	July 13th, 1931.
Reginald Hopkinson .....	May 6th, 1909.	Dec. 8th, 1930.
Charles A. Keane .....	June 17th, 1886.	Sept. 18th, 1931.
Frederic N. Kerr .....	Dec. 2nd, 1926.	June 2nd, 1930.
Channell Law .....	Nov. 16th, 1876.	May 4th, 1931.
Thomas Mercer .....	Dec. 5th, 1889.	July 5th, 1931.
Matthew M. Pattison Muir .....	Feb. 16th, 1871.	Sept. 2nd, 1931.
Samuel Parrish .....	May 4th, 1893.	July 29th, 1931.
Madho Prasad .....	June 19th, 1924.	Feb. 3rd, 1931.
Edward E. Price .....	Feb. 15th, 1923.	July 21st, 1931.
Akella S. Rao .....	May 4th, 1922.	Aug. 21st, 1931.
Robert Redwood .....	June 20th, 1889.	Sept. 24th, 1931.
Henry Droop Richmond .....	March 3rd, 1887.	Aug. 27th, 1931.
Paul G. W. Typke .....	Feb. 17th, 1876.	July 17th, 1931.

It was announced that :

1. On June 18th the Council had accepted with great regret the resignation of Professor T. Slater Price from the office of Treasurer

owing to his appointment to the Chair of Chemistry at the Heriot-Watt College, Edinburgh. The Council had expressed its high appreciation of the valuable services rendered to the Society by Professor T. Slater Price as Honorary Secretary from 1924 to 1928, and as Treasurer from 1928 to June 1931.

2. Mr. Emile S. Mond had accepted the appointment to the office of Treasurer, and that Professor T. Slater Price had been appointed to fill the office of Vice-President, rendered vacant by Mr. Mond's acceptance of the Treasurership, until the next Annual General Meeting.

3. Professor J. Kendall had been appointed to serve on the Research Fund Committee in place of the President, and Sir Robert Robertson, K.B.E., on the Finance Committee in place of Mr. E. S. Mond.

4. The Society's Collection of Medals had been increased by the gift of two replicas of the Chevreul Commemoration Medallion from Professor Walter T. Taggart, of Philadelphia, and of the Jubilee Medal of the Society of Chemical Industry from Mr. G. S. W. Marlow. The thanks of the Council have been conveyed to the donors.

5. In connection with the Ordinary Scientific Meetings of the Society which are to be devoted to Discussions, the Council has decided that these Discussions shall be published separately and sent free to Fellows.

It has also been decided that advance proofs of contributions to the Discussions shall be available beforehand. Fellows desiring to receive such advance proofs for the meeting to be held on December 17th are requested to notify the Assistant Secretary before December 3rd in order that the necessary number may be ordered.

6. Applications for the Annual Reports for 1931 should reach the Assistant Secretary by the 31st December, 1931.

7. The Annual Chemical Dinner would be held in the Connaught Rooms, Great Queen Street, W.C. 2, on Thursday, December 10th, 1931, at 7 for 7.30 p.m., and that the price of the tickets is 15s. each.

8. The Ninth International Congress of Pure and Applied Chemistry under the Patronage of the Government of the Spanish Republic would be held in Madrid from April 3rd to 10th, 1932.

Mr. J. Glassman was formally admitted a Fellow of the Society.

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

Chhotalal Badrilal Almaula, B.A., B.Sc., Public Health Laboratory, Karachi, India.

- John Wilkinson Bee, M.A., 180, Shinfield Road, Reading.  
 John Godolphin Bennett, 1, Bryanston Mansions, York Street, W. 1.  
 Blanche Rosemary Carpenter, B.Sc., 96, Wyatt Park Road, Streatham Hill, S.W. 2.  
 Wesley Crocker, M.Sc., 59, Lord Street, Oswaldtwistle, Accrington.  
 James Allan Cunningham, 8, Lister Crescent, Fairfield, Liverpool.  
 George Albert Elliott, M.Sc., Ph.D., 58, Mount Street, Perth, West Australia.  
 George Denholm Gillies, B.Sc., 12, Bernard Avenue, West Ealing, W. 13.  
 Eric Gray Hancock, B.A., B.Sc., 46, Beclands Road, S.W. 17.  
 Herbert Holmes, 2, Wexford Road, Wandsworth Common, S.W. 12.  
 Sidney Holt, M.Sc.Tech., 44, Pendle Road, Streatham Park, S.W. 16.  
 Alfred Herbert James, B.Sc., Fonthill, Weald View Road, Tonbridge.  
 Digby Thomas Leyshon, 20, Grand Avenue, Ely, Cardiff.  
 John Lewis Moilliet, B.A., University College Hall, Queen's Walk, Ealing, W. 5.  
 Ruth Mona Murray, B.Sc., Lansdowne House Club, 13, Lyndhurst Gardens, N.W. 3.  
 David Malcolm Murray-Rust, M.A., B.Sc., Charterhouse, Godalming.  
 Krishna Shrinivas Nargund, B.A., M.Sc., Gujarat College, Ahmedabad, India.  
 Michael O'Donnell, 37, Castle Street, Dublin.  
 John Owen, B.Sc., Trosmarian, Llangoed, Anglesey.  
 Samuel Richard Pethrick, B.Sc., Kimberley House, Hatherleigh, Devon.  
 Abdul-Aziz Ahmad Salama, 5, Tanfield Place, Virginia Road, Leeds.  
 Donald Byard Stanley, B.Sc., 377, Romford Road, Forest Gate, E. 7.  
 Henry Israel Stonehill, 39, Stepney Green Dwellings, Mile End, E. 1.  
 Alexander Robertus Todd, B.Sc., 2, Douglas Gardens, Clarkston, Glasgow.  
 John Todd, B.Sc., Ph.D., 44, Shottskirk Road, Dykehead, Shotts, Lanarkshire.  
 Henry John Tress, B.Sc., 11, Linden Avenue, Wembley.  
 Harry Warner, 15, Belmore Road, Hurstville, N.S.W., Australia.  
 Patrick Francis Whelan, M.Sc., Marin 5, Rio Tinto, Andalucia, Spain.  
 Alfred Edward Williamson, Ivanhoe, Bilston Road, Aigburth, Liverpool.  
 Norman Albert Wood, 69, Cambridge Road, Great Crosby, Liverpool.  
 Gordon Hilliar Wyatt, Perivale, Linden Avenue, Maidenhead.

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

- Jack Rowland Atcherley, 21, Turner Avenue, Glenhuntley, Victoria, Australia.  
 Henri Busch, Ph.D., Weissfrauenstrasse 7-9, Frankfurt, Germany.  
 Léon Antonin Jaloustre, 117, Rue St. Lazare, Paris,  
 Morris Goodwin Shepard, 153, Hillside Avenue, Waterbury, Conn., U.S.A.  
 Walter Thomas Taggart, Prof., B.S., Ph.D., John Harrison Laboratory of Chemistry, The University, Pennsylvania, U.S.A.

The following papers were read :

- “The interaction of 2 : 6-dichloro-4-methylquinol with methyl and ethyl alcohols.” By E. C. S. JONES and J. KENNER.  
 “The structure of the isomeric platinum diammino-chlorides. Discovery of a third isomeride.” By H. D. K. DREW, F. W. PINKARD, W. WARDLAW, and (in part) E. G. COX.

“The structure of the simple and mixed plato-tetrammine dihalides.”

By H. D. K. DREW, F. W. PINKARD, and W. WARDLAW.

“Amidines of pharmacological interest.” By A. P. T. EASSON and F. L. PYMAN.

The following papers were taken as read :

“Experiments on the synthesis of phenolic aporphines. Part I.”  
By J. M. GULLAND.

“Experiments on the synthesis of phenolic aporphines. Part II.  
Nitro-derivatives of 3 : 4-dihydroxyphenylacetic acid and of  
its methyl ethers.” By J. M. GULLAND.

“Experiments on the synthesis of phenolic aporphines. Part III.  
The action of benzyl chloride on nitrophenylacetic acids.”  
By J. M. GULLAND and (MISS) K. I. ROSS.

“Experiments on the synthesis of phenolic aporphines. Part IV.  
The protection of hydroxyls. by the carbethoxyl group.” By  
J. M. GULLAND and C. J. VIRDEN.

“Experiments on the synthesis of phenolic aporphines. Part V.  
*iso*Corydine.” By J. M. GULLAND, (MISS) K. I. ROSS, and  
N. B. SMELLIE.

“Experiments on the synthesis of phenolic aporphines. Part VI.  
Laurotetanine.” By R. L. DOUGLAS and J. M. GULLAND.

#### DISCUSSION, THURSDAY, DECEMBER 17TH, 1931, AT 8 P.M.

At the Ordinary Scientific Meeting on Thursday, December 17th, 1931, a Discussion on “The Critical Increment of Homogenous Reactions,” will be opened by Mr. C. N. Hinshelwood, F.R.S., and continued by Professor A. J. Allmand, F.R.S., Mr. E. J. Bowen, and Professor E. K. Rideal, F.R.S.

Fellows desiring to receive advance proofs of contributions to the Discussion should apply to the Assistant Secretary before Thursday, December 3rd.

#### 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 Tuesday, December 1st, 1931. Applications from Fellows will receive prior consideration.

All persons who received grants in December 1930, or in December of any previous year, 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 to be more or less especially 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.

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**BRITISH CHEMICAL ABSTRACTS "A" FOR 1932.**

(Printed on one side of the page only.)

The Abstracts "A" (Pure Chemistry) for 1932, printed on one side of the page only, will be issued to Fellows who make application by December 31st, 1931. 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.

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**TABLE OF ATOMIC WEIGHTS, 1931.**

The Table of Atomic Weights prepared by the International Committee can be obtained by Fellows on application to the Assistant Secretary. Price: on cards 1s. 6d. per dozen, 5s. 6d. for 50, 10s. 6d. for 100; on paper 8d. per dozen, 2s. 3d. for 50, 4s. for 100.

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**REPORT OF THE INTERNATIONAL COMMITTEE FOR THE REFORM OF NOMENCLATURE IN ORGANIC CHEMISTRY.**

Copies of this report, which appeared in the Journal for June 1931, are available free of charge on application to the Assistant Secretary.

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**THE NINTH INTERNATIONAL CONGRESS OF PURE AND APPLIED CHEMISTRY TO BE HELD IN MADRID, APRIL 3RD TO 10TH, 1931.**

The following provisional programme has been arranged:

*Dimanche 3 Avril.*

Après-midi, 18½ h. Réception des Congressistes et de leurs familles par le Comité d'Organisation.

*Lundi 4 Avril.*

Matin, 10 h. Séance solennelle d'ouverture du Congrès.

11-13 h. Conférence générale sur: "L'Effet Raman en rapport avec la constitution chimique" suivi de discussion.

Après-midi 16-18 h. Réunion des groupes et sections. Présentation et discussion de mémoires.

<i>Mardi 5 Avril.</i>	
Matin	Réservé libre aux Congressistes.
Après-midi, 18½ h.	Réception.
<i>Mercredi 6 Avril.</i>	
Matin, 9½-13 h.	Conférence générale sur : " Les hauts polimères en Chimie," suivi de discussion.
Après-midi 15½-18 h.	Réunion des groupes et sections.
18½ h.	Réception.
<i>Jeudi 7 Avril.</i>	
Réservé aux excursions.	
<i>Vendredi 8 Avril.</i>	
9½-13 h.	Conférence générale sur : " La Chimie des hautes températures," suivie de discussion.
Après-midi 16 h.	Première réunion du Conseil de l'Union Internationale de Chimie.
16-18 h.	Réunion des groupes et sections.
21 h.	Banquet officiel du Congrès.
<i>Samedi 9 Avril.</i>	
10 h.	Deuxième réunion du Conseil de l'Union Internationale de Chimie.
10-12 h.	Réunion des Commissions, rédaction des conclusions.
Après-midi 16 h.	Séance de Clôture.
17 h.	Assemblée Générale de l'Union Internationale de Chimie.
<i>Dimanche 10 Avril</i>	
Réservé aux excursions.	

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#### THEODORE WILLIAM RICHARDS MEDAL FUND.

It has been decided by the North-eastern Section of the American Chemical Society to establish a Gold Medal to commemorate the many fundamental contributions made to chemistry by Professor T. W. Richards. The medal has been designed by the distinguished sculptor, Cyrus E. Dallin, and will be awarded at intervals of two or three years for conspicuous achievement in chemistry.

A fund of ten thousand dollars will be required to cover the initial expenses and provide a trust fund yielding sufficient income for successive medals and incidental expenses.

Those desiring to be associated with this recurring tribute to the personality and memory of Professor T. W. Richards should send their contributions to Professor Lyman C. Newell, Boston University, 688, Boylston Street, Boston, Mass., U.S.A.

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List of papers, or Abstracts thereof, received between June 4th, 1931, and October 15th, 1931. (This List does not include the titles of papers which have appeared in the Journal, or which have been read at an Ordinary Scientific Meeting) :

- “Dicarboxylic acids. Part III. A comparative study of the thermal stabilities of some alkylated malonic acids.” By F. C. B. MARSHALL.
- “Methylene ethers of carbohydrates. Part I. Cellulose methylene ether.” By F. C. WOOD.
- “Tertiary methylarsines.” By W. J. C. DYKE and W. J. JONES.
- “Substitution in resorcinol derivatives. Part III. Molecular rearrangement during bromination.” By C. SRIKANTIA, M. S. IYENGAR, and K. SANTANAM.
- “Aldehydes of 2- and 3-phenanthrol.” By A. S. M. NAYAR.
- “Colour in relation to chemical constitution of dyes derived from hetero-cyclic dibasic acids.” By J. D. TEWARI.
- “*m*-Anisil and *m*-anisilic acid.” By H. H. HODGSON and W. ROSENBERG.
- “Salts and their dehydration.” By M. COPISAROW.
- “The reduction of copper oxide by hydrogen.” By J. S. LEWIS.
- “Trypanocidal activity and chemical constitution. Part III. New sulphur derivatives of aromatic organic arsenicals (continued). Gold derivatives of 2-thiolbenzimidazole-5-arsonic acid.” By J. G. EVERETT.
- “The identification of alcohols in very dilute aqueous solution.” By H. HENSTOCK.
- “Colloidal sulphur.” By H. BASSETT and R. G. DURRANT.
- “Electrolysis of dilute and neutral copper sulphate solutions. Cathode deposit.” By P. K. BANERJEE and L. GUPTA.
- “Degradation of quaternary ammonium salts. Part IV. Preliminary kinetic study of molecular rearrangement.” By T. THOMSON and T. S. STEVENS.
- “Degradation of quaternary ammonium salts. Part V. Relative migratory velocities of substituted benzyl radicles.” By T. THOMSON and T. S. STEVENS.
- “The attempted isolation of copper benzaldehyde.” By D. B. BRIGGS, H. SAENGER, and W. WARDLAW.
- “The decomposition of nitrous oxide by cathode rays.” By G. R. GEDYE.
- “Condensation of benzanilides with *p*-dialkylanilines with the aid of phosphorus oxychloride. A synthesis of *p*-dialkylaminobenzophenones, and the mechanism of the reaction.” By R. K. DESHAPANDE and R. C. SHAH.
- “A new and direct synthesis of *p*-dialkylaminobenzophenones.” By J. S. CHAUBAL and R. C. SHAH.
- “Reaction of benzanilide-imidochloride with aromatic tertiary amines.” By J. S. CHAUBAL and R. C. SHAH.



- "N-Alkyldiarylbenzenylamidines." By J. S. CHAUBAL and R. C. SHAH.
- "Quinazolonylquinolines." By P. K. BOSE and D. C. SEN.
- "The relation of limonene to carvone." By T. S. WHEELER.
- "The application of benzidine to the quantitative determination of small amounts of manganese." By R. G. HARRY.
- "Perhalide equilibrium in non-aqueous solutions." By E. A. DANCASTER.
- "The electrodeposition of chromium from tervalent chromium salt solutions. Part I. Chromium chloride and chromium sulphate baths." By H. T. S. BRITTON and O. B. WESTCOTT.
- "Hydrolysis of acetone in ultra-violet light." By E. QURESHI and N. A. TAHER.
- "The purification and some physical constants of formamide." By G. F. SMITH.
- "On the structure of the naphthalene nucleus." By N. NAKATA.
- "Complex catalytic compounds." By H. HENSTOCK.
- "The solubility of lithium chloride in water." By J. A. N. FRIEND and A. T. W. COLLEY.
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- "Physical properties and chemical constitution. Part I. Atomic refractivities and some observations on the parachor." By J. D. A. JOHNSON.
- "The determination of glass-electrode potentials by means of valve potentiometers." By C. MORTON.
- "The determination of glass-electrode potentials by means of a null ballistic valve electrometer." By C. MORTON.
- "Some dinaphthyl bases. Part I. Reduction of azoxy- and azo-naphthalenes. Isolation of an unsymmetrical hydrazo-compound." By W. M. CUMMING and G. HOWIE.
- "Some dinaphthyl bases. Part II. Syntheses and properties." By W. M. CUMMING and G. HOWIE.
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- “Waldén inversion in the  $\alpha$ -glucoheptose series. The preparation of new derivatives and the determination of the structure of methyl- $\alpha$ -glucoheptoside.” By W. N. HAWORTH, E. L. HIRST, and M. STACEY.
- “The halogenation of phenolic ethers and anilides. Part II. Additional velocity measurements in 99% acetic acid.” By A. E. BRADFIELD and B. JONES.
- “The halogenation of phenolic ethers and anilides. Part III. The “phase and steric” factor.” By A. E. BRADFIELD, W. O. JONES, and F. SPENCER.
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- “The constituents of Indian turpentine from *Pinus longifolia*, Roxb. Part VI. The autoxidation of *d*- $\Delta^3$ -carene.” By J. OWEN and J. L. SIMONSEN.

- “The ternary system potassium permanganate–potassium fluoride–water.” By R. C. RAY and K. K. CHATTERJI.
- “The classification of coals by means of their reactivity towards alkaline permanganate.” By W. FRANCIS.
- “Molecular complexity of supercooled acetic acid and of benzene by surface tension measurements.” By H. FRY.
- “4-Nitro-5-(3-pyridyl)pyrazole, a new oxidation product of nicotine. Part I.” By G. A. C. GOUGH and H. KING.
- “Trypanocidal action and chemical constitution. Part X. Aromatic arsonic acids containing amide groups.” By A. COHEN, H. KING, and (MISS) W. I. STRANGWAYS.
- “Attempts to find new antimalarials. Part VII. Quinoline compounds having a side-chain in the 4-position containing two or more nitrogen atoms.” By W. O. KERMAK and J. F. SMITH.
- “Synthetical experiments in the chromone group. Part V. Chromones derived from 2-phenylacetyl-1-naphthol and 2-benzylacetyl-1-naphthol.” By U. S. CHEEMA and K. VENKATARAMAN.
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- “The alleged thallos thio per-rhenate.” By H. V. A. BRISCOE, P. L. ROBINSON, and E. M. STODDART.
- “Properties of conjugated compounds. Part XIV. An examination of the homogeneity of seven monomethyl- and dimethyl-butadienes.” By E. H. FARMER and F. L. WARREN.
- “Properties of conjugated compounds. Part XV. Influence of the position of alkyl substitution on the refractivity of the monomethyl- and dimethyl-butadienes.” By E. H. FARMER and F. L. WARREN.
- “Properties of conjugated compounds. Part XVI. The dipole moments and atomic polarisation of the monomethyl- and dimethyl-butadienes.” By E. H. FARMER and F. L. WARREN.
- “Properties of conjugated compounds. Part XVII. The determination of the dipole moments of the monomethyl- and dimethyl-butadienes (continued).” By E. H. FARMER and F. L. WARREN.
- “Phase-rule studies on metallic thiocyanates Part II. The systems  $\text{AgCNS-NaCNS-H}_2\text{O}$ ,  $\text{AgCNS-KCNS-H}_2\text{O}$  and  $\text{AgCNS-NH}_4\text{CNS-H}_2\text{O}$  at  $25^\circ$ .” By V. J. OCCLESHAW.

- “Investigation on the formation and stability of  $\beta$ -lactones.” By A. KANDIAH.
- “Dehydrogeranic acid.” By R. S. CAHN, A. R. PENFOLD, and J. L. SIMONSEN.
- “A potentiometric investigation of electrolytic dissociation. Part I. Cadmium halides.” By H. L. RILEY and V. GALLAFENT.
- “The constitution of benzofurazan and benzurazan oxide.” By D. L. HAMMICK, W. A. M. EDWARDES, and E. R. STEINER.
- “The reducing action of bornyl magnesium chloride.” By I. R. SHERWOOD and W. F. SHORT.
- “A compound of nitrobenzene and sulphuric acid.” By I. MASSON.
- “The dielectric polarisation of hydrogen chloride in solution. Part I. Benzene, cyclohexane, and carbon tetrachloride.” By F. FAIRBROTHER.
- “The action of halogens on polycyclic indole derivatives. Part I. The reaction between bromine and the acyl derivatives of tetrahydrocarbazole.” By S. G. P. PLANT and (MISS) M. L. TOMLINSON.
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- “The photolysis of potassium ferrioxalate solutions. Part III.” By A. J. ALLMAND and K. W. YOUNG.
- “The calculation of degrees of dissociation of weak electrolytes.” By W. H. BANKS.
- “The inhibitory effect of substituents in chemical reactions. Part II. The reactivity of the -NCS group in substituted aryl thiocarbimides.” By D. W. BROWNE and G. M. DYSON.

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— *Fuel Research*. Physical and chemical survey of the national coal resources No. 18. The Yorkshire, Nottinghamshire and Derbyshire coalfield. South Yorkshire area. The Barnsley seam. London 1931. pp. iv + 67. ill.

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# PROCEEDINGS

OF THE

## CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, November 5th, 1931, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., Past-President, in the Chair.

The CHAIRMAN referred to the loss sustained by the Society, through death on August 30th, of Robert Grant, who was elected a Fellow of the Society on December 4th, 1919.

It was announced that delegates would represent the Society for the year 1932 as follows :

Professor C. S. Gibson, Mr. A. J. Greenaway, Dr. J. T. Hewitt, and Professor G. T. Morgan, together with the Treasurer (*ex officio*), on the Bureau of Chemical Abstracts.

Professor C. S. Gibson, Sir William J. Pope, and Professor J. F. Thorpe on the Federal Council for Chemistry.

Dr. F. B. Kipping was formally admitted a Fellow of the Society.

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

Sekharipuram Venkateswarier Anantakrishnan, B.A., 13, Temple Fortune Hill, Golder's Green, N.W. 11.

Edward James Boorman, A.R.C.S., 6, Purbeck Road, Chatham, Kent.

Arthur Cecil Bottomley, M.Sc., Ph.D., Hulme Hall, Victoria Park, Manchester.

Eric George Hemphill Carter, B.Sc., 183, Twickenham Road, Leytonstone, E. 11.

Ernest Harrison Coulson, B.Sc., A.R.C.S., 50, Greenvale Road, Eltham, S.E. 9.

Malcolm Crawford, B.Sc., c/o Monro, 296, Bath Street, Glasgow.

Dora Anne Duff, B.Sc., 29, Cheyne Walk, Hendon, N.W. 4.

Robert Albert Ernest Galley, B.Sc., A.R.C.S., 42, Ravensbourne Park, Catford, S.E. 6.

Henry Isaac Hall, B.A., St. John's College, Oxford.

Edward Francis Hartree, A.R.C.S., 23, Coleridge Walk, Golder's Green, N.W. 11.

Winifred Rosa Ashby Hollens, B.Sc., 89, Colliers Water Lane, Thornton Heath, Surrey.

Edward David Hughes, B.Sc., Ph.D., Gwalia House, 97, Gower Street, W.C. 1.

Richard Lewis Jones, B.Sc., c/o Miss A. A. Heddercott, 29, Girdler's Road, West Kensington, W. 14.

- Edwin Marshall Meade, A.R.C.S., Royal College of Science, S. Kensington, S.W. 7.
- Hermann Günther Gottschaldt Mohrhenn, B.Sc., 4, Clifton Road, Crouch End, N. 8.
- George Maxwell Richardson, M.Sc., Ph.D., Central Y.M.C.A., Tottenham Court Road, W.C. 1.
- Eliot Harry Roberts, Galestone College, Upper Norwood, S.E. 19.
- John Robertson, B.Sc, 21, Borden Road, Glasgow, W. 3.
- James Hilton Rogers, 83, Plymouth Road, Penarth, Glam.
- Henry Norman Rydon, A.R.C.S., 3, Mentmore Close, Northwick Park, Harrow.
- Abdul Baki Mohammed Solieman Sheikh, M.Sc., 9, Fairfax Road, Bedford Park, W. 4.
- Margaret Sarah Smith, B.Sc., 7, Albert Road, Brighton.
- Bernard Joseph Styles, 86, St. Peter Street, Hackney Road, E. 2.
- Norton James Hugh Wallis, B.Sc., A.R.C.S., 36, Sydenham Road, Cotham, Bristol.
- John Stephen Watt, M.Sc., University College, Oxford.
- Christopher Lumley Wilson, B.Sc., 90, Highgate Road, N.W. 5.
- Henry George Wright, 14, Lesbia Road, Lower Clapton, E. 5.

The following papers were read :

- “ A potentiometric investigation of electrolytic dissociation. Part I. Cadmium halides.” By H. L. RILEY and V. GALLAFENT.
- “ Dehydrogenation of pyridine by anhydrous ferric chloride.” By G. T. MORGAN and F. H. BURSTALL.
- “ The structure of glutaconic acids and esters. Part II.  $\alpha$ -Substituted derivatives of  $\beta$ -methylglutaconic acid.” By G. A. R. KON and E. M. WATSON.
- “ Studies in gaseous adsorption. Part II. The form of the heat of adsorption curve for hydrogen on platinum.” By E. B. MAXTED and N. HASSID.
- “ Studies in gaseous adsorption. Part III. The heterogeneity of catalytic surfaces.” By E. B. MAXTED.

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Ordinary Scientific Meeting, Thursday, November 19th, 1931, at 8 p.m., Professor G. G. HENDERSON, M.A., D.Sc., F.R.S., President, in the Chair.

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

	<i>Elected.</i>	<i>Died.</i>
Walter Francis Reid .....	Dec. 15th, 1881.	Nov. 18th, 1931.
John Baldwin Shoesmith .....	Feb. 15th, 1923.	Nov. 18th, 1931.

The PRESIDENT announced that in addition to the two Discussions already announced for December 17th, 1931, and May 19th, 1932, the Ordinary Scientific Meeting on Thursday, February 18th, 1932, will be devoted to a discussion on “ The Significance of Velocity

Measurements in Relation to the Benzene Substitution Problem ” which is to be opened by Mr. A. E. Bradfield.

The following were formally admitted Fellows of the Chemical Society : Messrs. E. A. R. Bousfield, F. G. Angell, and F. C. Clapham.

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

William Owen Jones, Ph.D., A.I.C., 16, Water Street, Penmaenmawr, North Wales.

Thomas Fotheringham Macrae, Ph.D., 140, Ebury Street, S.W. 1.

John Alexander Mair, Ph.D., 53, Cunningham Street, Glasgow.

Arthur Francis Boughton Neal, B.A., Fermor House, Crowborough, Sussex.

James Eric Wynfield Rhodes, B.Sc., A.I.C., 35, Fielding Crescent, Green Lane, Blackburn.

Gertrude Maud Robinson, M.Sc., 13, Norham Road, Oxford.

Margot Elaine Thompson, B.Sc., 174, Cromwell Road, Earl's Court, S.W. 5.

Muriel Louise Tomlinson, B.A., Kingswood, Lapworth, Warwickshire.

The following papers were read :

“ Dehydrogeranic acid.” By R. S. CAHN, A. R. PENFOLD, and J. L. SIMONSEN.

“ The nitration of oximes.” By W. CHARLTON, J. C. EARL, J. KENNER, and A. A. LUCIANO.

“ 10-Chloro-5 : 10-dihydrophenarsazine and its derivatives. Part XVII. Constitution of the nitro-derivatives produced from 3-nitrodiphenylamine-6'-arsonic acid and its homologues.” By C. S. GIBSON and J. D. A. JOHNSON.

“ Investigations of the olefinic acids. Part VI. Lactonisation and allied additive reactions. Part I. The system,  $\alpha\beta$ -acid- $\beta\gamma$ -acid- $\gamma$ -lactone.” By R. P. LINSTED.

#### DISCUSSION, THURSDAY, DECEMBER 17TH, 1931, AT 8 P.M.

At the Ordinary Scientific Meeting on Thursday, December 17th, 1931, a Discussion on “ The Critical Increment of Homogeneous Reactions,” will be opened by Mr. C. N. Hinshelwood, F.R.S., and continued by Professor A. J. Allmand, F.R.S., Mr. E. J. Bowen, and Professor E. K. Rideal, F.R.S.

Fellows desiring to receive advance proofs of contributions to the discussion should apply to the Assistant Secretary before Thursday, December 3rd.

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List of papers, or abstracts thereof, received between October 15th and November 19th, 1931. (This list does not include the titles of papers which have appeared in the Journal, or which have been read at an Ordinary Scientific Meeting.)

- “Neutral salt addition compounds of  $\beta$ -alanine.” By H. KING and G. V. RUTTERFORD.
- “Hydroxyanthraquinones. Part I. A synthesis of purpurin.” By P. G. MARSHALL.
- “The saponification of diesters.” By M. RITCHIE.
- “The oxidation of caoutchouc, gutta-percha, and balata with hydrogen peroxide.” By J. A. MAIR and J. TODD.
- “The chlorination of anilides. Part VII. The constitutional influence of the acyl group upon side-chain reactivity.” By G. WILLIAMS and S. P. HUGHES.
- “The rearrangement of hydroxy-sulphones. Part I.” By A. A. LEVI, H. C. RAINS, and S. SMILES.
- “A new reaction of certain diazosulphonates derived from  $\beta$ -naphthol-1-sulphonic acid. Part VIII. Preparation of phthalazine, phthalazone, and phthalimidine derivatives from 2-chloro-4-nitroaniline.” By F. M. ROWE and C. DUNBAR.
- “Intermetallic compounds formed in mercury. Part I. The tin-copper system.” By P. V. F. CAZALET, A. S. RUSSELL, and N. M. IRVIN.

- “Intermetallic compounds formed in mercury. Part II. The zinc-copper system.” By A. S. RUSSELL, N. M. IRVIN, and P. V. F. CAZALET.
- “Degradation of quaternary ammonium salts. Part IV. Molecular rearrangements in related sulphur compounds.” By T. THOMSON and T. S. STEVENS.
- “Derivatives of phenylaminocamphor.” By F. L. ROSE.
- “Determination of the rate of rise of pressure in the combustion of some gas-oxygen mixtures.” By C. CAMPBELL, W. B. LITTLER, and C. WHITWORTH.
- “The conversion of *d*- $\beta$ -octyl chloroformate into dextrorotatory  $\beta$ -chloro-octane and the action of the chlorides and oxychloride of phosphorus on *d*- $\beta$ -octanol.” By A. H. J. HOUSSA and H. PHILLIPS.
- “Constitutional factors controlling prototropic changes in carbonyl compounds. Part I. The relative speeds of enolisation of acetone and bromoacetone and the effect of the acid catalyst.” By E. D. HUGHES, H. B. WATSON, and E. D. YATES.
- “Binary systems comprising urea with certain metallic nitrates.” By W. J. HOWELLS.
- “Metallic hydroxy-acid complexes. Part VI. Complexes of lead and zinc.” By (MISS) E. E. WARK.
- “The synthesis and orientation of trichloroanthraquinones and amino-disulphonates of anthraquinone. Part II.” By A. A. GOLDBERG.
- “The double compound of aluminium chloride with hydrogen cyanide.” By L. E. HINKEL and R. T. DUNN.
- “On active nitrogen. Part IX. The electrical conductivity of active nitrogen.” By E. J. B. WILLEY and W. A. STRINGFELLOW.
- “On active nitrogen. Part X. A supposedly oxidisable variety of nitrogen.” By E. J. B. WILLEY and S. G. FOORD.
- “The reduction of heteronuclear nitroanthraquinonesulphonates.” By A. A. GOLDBERG.
- “Strychnine and brucine. Part XIII. Note on dihydroindolylpropionic and dihydroindolylbutyric acids.” By B. K. BLOUNT and R. ROBINSON.
- “Studies in chemotherapy (antimalarials). Part II. Pyrrol methyl ketones and their transformation to indoles.” By A. U. QURESHI, J. S. AGGARWAL, and J. N. RÂY.
- “The action of Grignard solutions on the 10-methoxyanthrones.” By E. DE B. BARNETT.
- “The reaction at the quinhydrone electrode in methyl alcohol.” By A. MACFARLANE.

- “Cyclic esters of sulphuric acid. Part II. The constitution of methylene and glyoxal sulphates, and the reaction of methylene sulphate with tertiary bases.” By W. BAKER and (in part) F. B. FIELD.
- “The formation and stability of *spiro*-compounds. Part XIV. The effect of the methylcyclohexane ring on the carbon tetrahedral angle.” By R. D. DESAI.
- “The chemistry of alkylcyclopentanones. Part II. The effect of the methylcyclopentane ring on the carbon tetrahedral angle.” By R. D. DESAI.
- “Dihydroresorcinols. Part I. The alkylation of substituted dihydroresorcinols.” By R. D. DESAI.
- “Investigations on alkyloaconitic acids.” By R. D. DESAI.
- “A convenient method of preparing anhydrous aluminium bromide.” By R. P. BELL.
- “Effect of replacement of methyl by alkyl and aryl on the stability of the xanthate molecule.” By (MISS) I. M. McALPINE.
- “Hydrolysis and decomposition of menthyl dixanthide and of bornyl dixanthide.” By (MISS) I. M. McALPINE.
- “Effect of solvents on the optical rotation of menthene, bornylene, and borneol.” By (MISS) I. M. McALPINE.
- “Effect of solvents on the optical rotation of esters of menthyl and bornyl xanthic acid, and on menthyl and bornyl dixanthide.” By (MISS) I. M. McALPINE.
- “The physical properties of nitrobenzene in the neighbourhood of the melting point.” By N. B. MASSEY, F. L. WARREN, and J. H. WOLFENDEN.
- “Potassium rheni-iodide.” By H. V. A. BRISCOE, P. L. ROBINSON, and A. J. RUDGE.
- “Reactivity of *peri*-substituted naphthalenes. Part I. Displacement of the nitro-group in 8-nitro-1-naphthoic acid by thionyl halides to form 8-chloro- and 8-bromo-naphthoic acids.” By H. G. RULE and A. J. G. BARNETT.
- “Ring-closure studies in the piperidine series.” By G. R. CLEMO, J. ORMSTON, and G. R. RAMAGE.
- “The lupin alkaloids. Part V.” By G. R. CLEMO, G. R. RAMAGE, and R. RAPER.
- “The formation of thionaphthindoles. Part III. The synthesis of thionaphthindoles from 3-oxy-1-thionaphthens.” By E. W. McCLELLAND and J. L. D’SILVA.
- “Preliminary synthetical experiments in the morphine group. Part I.” By R. ROBINSON and S. SUGASAWA.
- “Preliminary synthetical experiments in the morphine group. Part II.” By R. ROBINSON and S. SUGASAWA.

- “Strychnine and brucine. Part XIV. Oxidation of hexahydrostrychnine.” By L. H. BRIGGS and R. ROBINSON.
- “Cyanine dyes and related compounds.” By (MISS) F. M. HAMER, I. M. HEILBRON, J. H. READE, and H. N. WALLS.
- “Dicarbocyanines. A new series of cyanine dyes.” By S. BEATTIE, I. M. HEILBRON, and F. IRVING.
- “Studies in the sterol group. Part XI. The formation of ethers of ergosterol and its derivatives.” By I. M. HEILBRON and J. C. E. SIMPSON.
- “Polycyclic aromatic hydrocarbons. Part VIII. The chemistry of 1 : 2 : 5 : 6-dibenzanthracene.” By J. W. COOK.
- “Polycyclic aromatic hydrocarbons. Part IX. The chemical nature of chrysogene, the colouring matter of the higher coal-tar hydrocarbons.” By J. W. COOK.
- “The kinetics of reactions involving collisions between solute and solvent molecules.” By E. A. MOELWYN-HUGHES.
- “Search for trypanocidal activity. Derivatives of dehydrothio-*p*-toluidinesulphonic acid and of 3-aminocarbazoledisulphonic acid.” By G. T. MORGAN and J. G. MITCHELL.
- “Nitration of carbazole.” By G. T. MORGAN and J. G. MITCHELL.
- “Physico-chemical studies of complex formation involving weak acids. Part IV. Alkali solutions of lanthanum tartrate.” By H. T. S. BRITTON and W. E. BATTRICK.
- “Capillary activity in aqueous solution.” By H. MILLS.
- “Estimation of acetic acid in presence of stannic chloride.” By C. S. MURTY and S. HUSAIN.
- “The vapour pressure of  $\beta\beta'$ -dichlorodiethyl sulphide.” By S. A. MUMFORD, J. W. C. PHILLIPS, and W. C. BALL.
- “Higher aliphatic compounds. Part II. The system cetyl iodide-octadecyl iodide.” By J. C. SMITH.
- “Trypanocidal action and chemical constitution. Part XII. Arylthioarsinites derived from  $\kappa$ -thiolundecic acid.” By A. COHEN.
- “The dissociation constants of organic acids. Part V. The mobility of the hydrogen ion at 18° and at 25°.” By G. H. JEFFERY and A. I. VOGEL.

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FORMS OF RECOMMENDATION FOR FELLOWSHIP. THE  
BALLOT WILL BE HELD AT THE ORDINARY  
SCIENTIFIC MEETING ON THURSDAY, DECEMBER  
3rd, 1931.

ALMAULA, CHHOTALAL BADRILAL, Public Health Laboratory, Karachi (Sind). Indian. Chemical Assistant, Public Health Laboratory, Karachi. B.A. in 1919 with Chemistry and Physics, and B.Sc. in 1920 with Chemistry

as principal subject at the University of Bombay. Superintendent, Govt. Casein Demonstration Factory, Anand, Nov. 1920 to Aug. 1921. Asst. Chemist, Depart. of Industries, Bombay, Aug. 1921 to April 1924. Asst. Chemist in the Laboratory of Messrs. J. Hughes & Davies, Bombay, April 1924 to Feb. 1925. Chemical Asst., Public Health Laboratories, Feb. 1925 to date, and as such Public Analyst for the city of Karachi. (*Signed by*) S. J. Shah, A. H. Nanavati, M. S. Shah.

ANANTAKRISHNAN, SEKHARIPURAM VENKATESWARIER, 13, Temple Fortune Hill, Golder's Green, N.W. 11. Indian. Student. B.A. (Hons.) of the Madras University. Desire to receive the publications of the Society, attend the meetings, and use the Library. (*Signed by*) C. K. Ingold, J. N. E. Day, M. S. Kazi.

BEE, JOHN WILKINSON, 180, Shinfield Road, Reading, Berks. British. University Lecturer in Agricultural Chemistry. M.A. Cambridge; Diploma in Agriculture, Cambridge. Research in Agricultural Chemistry, Cambridge, 1926-28. Lecturer in Agricultural Chemistry, Reading University, 1928-31. (*Signed by*) H. A. D. Neville, D. Roy Maxted, W. F. K. Wynne-Jones.

BENNETT, JOHN GODOLPHIN, 1, Bryanston Mansions, York Street, W. 1. British. Chemical Engineering Student. Student. Captain Royal Engineers (ret.). (*Signed by*) T. J. Drakeley, J. R. I. Hepburn, H. J. S. King, D. H. Richardson.

BOORMAN, EDWARD JAMES, 6, Purbeck Road, Chatham, Kent. British. Student. A.R.C.S. (at Royal College of Science), 1st Class. Student, Royal College of Science, Oct. 1929 to Oct. 1931. (*Signed by*) Jocelyn Thorpe, G. A. R. Kon, R. P. Linstead.

BOTTOMLEY, ARTHUR CECIL, Hulme Hall, Victoria Park, Manchester. British. Research Chemist in Cancer Research Dept., Manchester University. M.Sc., Ph.D. (Manchester). Bottomley and Robinson, *J.C.S.*, 1927, 2785; Bottomley, Lapworth, and Walton, *ibid.*, 1930, 2215. (*Signed by*) Arthur Lapworth, D. H. Hey, G. N. Burkhardt.

CARPENTER, BLANCHE ROSEMARY, 96, Wyatt Park Road, Streatham Hill, S.W. 2. British. Research Student. B.Sc. Pass, Special, London. (*Signed by*) E. E. Turner, Mary S. Lesslie, Elizabeth E. J. Marler.

CARTER, ERIC GEORGE HEMPHILL, 183, Twickenham Road, Leytonstone, E. 11. British. Chemistry Research Student. B.Sc. (2nd Class Hons., London). For three years a Chemistry Student at East London College. (*Signed by*) J. R. Partington, D. C. Jones, W. H. Patterson, H. D. K. Drew.

COCKER, WESLEY, 59, Lord Street, Oswaldtwistle, Accrington, Lancs. British. Assistant to Professor of Organic Chemistry. B.Sc. (1928) (1st Class Hons.); M.Sc. (1929), Manchester. Research Student. Work on (1) Reaction mechanisms, and (2) Amino-acids. Dalton Scholar, 1930; Beves Fellow, 1931. Various papers to *J.C.S.* and also *Recueil de Pays Bas* (Burkhardt and Cocker, July 1931). Cocker, Lapworth, and Walton, *J.C.S.*, 1930, 440; Cocker and Lapworth, *ibid.*, 1931, 1391; Cocker, Lapworth, and Peters, *ibid.*, 1931, 1382. (*Signed by*) Arthur Lapworth, G. N. Burkhardt, D. H. Hey.

COULSON, ERNEST HARRISON, 50, Greenvale Road, Eltham, S.E. 9. British. Research Student. Bachelor of Science (London, 1st Class); Associate of Royal College of Science (1st Class). Laboratory Assistant, Research Department, Royal Arsenal, Woolwich, June 1926 to Oct. 1929. Student, Royal College of Science, Oct. 1929 to Oct. 1931. (*Signed by*) Jocelyn Thorpe, G. A. R. Kon, R. P. Linstead.



CRAWFORD, MALCOLM, c/o Monro, 296, Bath Street, Glasgow, C. 2. Scottish. Research Student, Glasgow University. B.Sc. (1st Class Hons.) in Applied Chemistry, Glasgow University. At present carrying out research work in Organic Chemistry at Glasgow University. (*Signed by*) T. S. Patterson, S. Horwood Tucker, T. S. Stevens.

CUNNINGHAM, JAMES ALLAN, 8, Lister Crescent, Fairfield, Liverpool. British. Managing Director. Wholesale Manufacturing Chemist. (*Signed by*) James Williamson, H. Humphreys Jones, J. E. Whipp.

DUFF, DORA ANNE, 29, Cheyne Walk, Hendon, N.W. 4. British. Research Student. B.Sc. (London University). Student of chemistry for three years at University College, London, being research student the third year. (*Signed by*) C. K. Ingold, O. L. Brady, R. J. W. Le Fèvre.

GALLEY, ROBERT ALBERT ERNEST, 42, Ravensbourne Park, Catford, S.E. 6. British. Research Student. B.Sc. (London); A.R.C.S. Junior Technical Assistant at the Fuel Research Station (D.S.I.R.), 1926-29. "Polycyclic Aromatic Hydrocarbons," Part V (with J. W. Cook), *J.C.S.*, 1931, 2012. (*Signed by*) E. H. Farmer, R. P. Linstead, J. W. Cook.

GILLIES, GEORGE DENHOLM, 12, Bernard Avenue, West Ealing, W. 13. British. Assistant Examiner, H.M. Patent Office. B.Sc. (Special Chemistry, 1st Class Hons.), London University. Obtained at Battersea Polytechnic. Two years' experience as Laboratory Assistant at Gas Light & Coke Co., Nine Elms, and two years' experience in works laboratory of Kodak, Ltd., at Wealdstone, Middlesex. (*Signed by*) J. Kenyon, F. Bell, C. W. Davies.

GRIFFITH, BRINLEY, "Gwynfa," Edward Close, Brentwood Road, Romford. British. B.Sc., Bristol. Science Master, Ilford Modern School. Student, University of Bristol. Am desirous of keeping in touch with the developments of modern chemistry. (*Signed by*) F. W. Rixon, M. Taylor, R. C. Menzies.

HALL, HENRY ISAAC, St. John's College, Oxford. British. Research Student in Chemistry. B.A., Oxford. Now engaged in research at Oxford. (*Signed by*) S. G. P. Plant, E. Hope, J. C. Smith.

HANCOCK, ERIC GRAY, 46, Beclands Road, S.W. 17. British. Research Student at King's College, London, under Prof. A. J. Allmand. B.A., B.Sc. (Oxon). Scholar of St. John's College, Oxford, Oct. 1927 to July 1931. B.A., 1930; B.Sc., 1931; 1st Class in Final Honours School of Natural Science, July 1931. Worked one year on the "Hydrolysis of Sulphur Monochloride" (unpublished) under D. Ll. Hammick. (*Signed by*) D. Ll. Hammick, Frederick M. Brewer, A. J. Allmand.

HARTREE, EDWARD FRANCIS, 23, Coleridge Walk, Golder's Green, N.W. 11. British. Research Student. A.R.C.S. Student at the Royal College of Science since Oct. 1929. Vacational employment at Baird and Tatlock's research laboratory. (*Signed by*) Jocelyn Thorpe, G. A. R. Kon, R. P. Linstead.

HOLLENS, WINIFRED ROSA ASHBY, 89, Colliers Water Lane, Thornton Heath, Surrey. English. Student. B.Sc. General, B.Sc. Special Chemistry, 1st Class, London. Desire to attend meetings and receive the Journals. (*Signed by*) James F. Spencer, E. E. Turner, Mary S. Lesslie.

HOLMES, HERBERT, "Maroyris," 2, Wexford Road, Wandsworth Common, S.W. 12. English. Assistant Analytical Chemist. Desire to receive the Society's *Journal*, and to be able to attend the meetings of the Society, as well as to be able to use the Library. (*Signed by*) Henry J. S. Sand, A. M. Ward, F. G. Kny Jones.

HOLT, SIDNEY, 44, Pendle Road, Streatham Park, S.W. 16. British,

English. Chemist. M.Sc. (Tech.), Manchester. Department of Scientific and Industrial Research. "Studies in Naphthalene Series, Part III," G. B. Jambuserwala, S. Holt, and F. A. Mason, *J.C.S.*, 1931, 373, and F. A. Mason and S. Holt, *ibid.*, 1931, 377. (*Signed by*) C. S. Gibson, John D. Johnson, L. A. Elson, B. Levin.

HUGHES, EDWARD DAVID, Gwalia House, 97, Gower Street, W.C. 1. British. Research Student. B.Sc., Ph.D. (Wales). Two years' research at Bangor University. One year at University College, London. *J.C.S.*, 1929, 1945-54; *ibid.*, 1930, 1733-40 (both with Dr. H. B. Watson). (*Signed by*) C. K. Ingold, R. J. W. Le Fèvre, O. L. Brady.

JANES, ALFRED HERBERT, Fonthill, Weald View Road, Tonbridge, Kent. British, by birth. Student. B.Sc. Hons. (London). Engaged in Research, in London University (East London College). (*Signed by*) J. R. Partington, H. D. K. Drew, D. C. Jones.

JONES, RICHARD LEWIS, c/o Miss A. A. Heddercott, 29, Girdler's Road, W. Kensington, W. 14. British. B.Sc. (2nd Class Hons.), Glasgow. Student. (*Signed by*) Jocelyn Thorpe, G. A. R. Kon, R. P. Linstead.

LA VALETTE, FRANK ERIC, c/o St. James College, 165, Lower Circular Road, Calcutta, India. Domiciled European. Headmaster, St. James College. M.Sc. (Calcutta). Teacher of Physics and Chemistry in the Cambridge Classes of the School. (*Signed by*) J. N. Mukherjee, J. C. Bardhan, P. C. Rây.

LEYSHON, DIGBY THOMAS, 20, Grand Avenue, Ely, Cardiff. British. Head Brewer and Chemist (Ely Brewery Co., Ltd., Ely, Cardiff). Associate of the Institute of Brewing (by examination), 1925. Honoursman and Silver Medallist with full Technological Certificate in Brewing of City and Guilds of London Institute, 1925. Studied Chemistry under Professor W. J. Jones at the University College, Cardiff, 1921-23, passing the Final B.Sc. examination of the University in Organic, Inorganic, and Physical Chemistry, but did not complete B.Sc. Degree. Formerly Technical Assistant to the late Dr. R. V. Stanford for period 1919-21 at the Laboratories of the Cardiff City Mental Hospital. Served with the Public Schools Brigade and Royal Flying Corps, 1915-18. I desire to obtain the Journals of the Chemical Society. (*Signed by*) H. Ll. Bassett, W. C. Davies, W. J. Jones.

MEADE, EDWIN MARSHALL, Royal College of Science, S. Kensington, S.W. 7. British. Research Student. A.R.C.S. (2nd Class). Student, Royal College of Science, 1929-31. (*Signed by*) G. A. R. Kon, E. H. Farmer, R. P. Linstead.

MOHRHENN, HERMANN GÜNTHER GOTTSCHALDT, 4, Clifton Road, Crouch End, N. 8. British. Research Student. B.Sc. (2nd Class Hons. Chem.), University College, London. Research Student, one year under Prof. C. K. Ingold, D.Sc. (*Signed by*) C. K. Ingold, Henry Terrey, O. L. Brady.

MOILLIET, JOHN LEWIS, Univ. College Hall, Queen's Walk, Ealing, W. 5. Research Student at Univ. College, London. B.A. with Hons. in Chemistry and Phi Beta Kappa, Rice Institute, Houston, Texas, U.S.A. (*Signed by*) Conmar Robinson, Henry Terrey, F. G. Donnan.

MURRAY, RUTH MONA, Lansdowne House Club, 13, Lyndhurst Gardens, N.W. 3. British. Research Student. B.Sc. Pass, Special, London. (*Signed by*) E. E. Turner, Mary S. Leslie, Elizabeth E. J. Marler.

MURRAY-RUST, DAVID MALCOLM, Charterhouse, Godalming, Surrey. British. Schoolmaster. M.A., B.Sc. (Oxford). Lecturer in Chemistry at Balliol College, Oxford, 1927-31. Papers on Electrical Conductivity of Solutions, published in *Proc. Roy. Soc.* and *J.C.S.* Part author of following: *J.C.S.*, 1930, 2492; 1931, 199, 215. *Ann. Rep.*, 1930, 326. (*Signed by*) C. N. Hinshelwood, E. J. Bowen, H. Hartley.

NAIR, PARAMESWAR VELAYUDHAN, Dyson Perrins Laboratory, Oxford. Hindu (Indian). Research Student (Candidate for the degree of D.Phil. (Oxon.)). B.A., University of Madras; M.Sc. (1st Class), University of Lucknow. (*Signed by*) R. Robinson, K. N. Menon, S. Sugasawa.

NARGUND, KRISHNA SHRINIVAS, Gujarat College, Ahmedabad, India (London address: 9, Fairfax Road, Bedford Park, W. 4.) Indian. Assistant Lecturer in Chemistry, Gujarat College for the last five years. B.A. (Hons.), Bombay; B.Sc. (1st class), Bombay; M.Sc. (distinction), Bombay; A.I.I.Sc. (a research diploma of the Indian Institute of Science, Bangalore). No papers in *J.C.S.*, but I have published one paper in *Journ. Ind. Inst. Science*, Vol. 9, Part VII, and another in *J. Ind. Chem. Soc.*, April 1931. (*Signed by*) G. A.R. Kon, R. D. Desai, R. S. Thakur.

O'DONNELL, MICHAEL, Dispensary, 37, Castle Street, Dublin. Irish. Resident Medical Officer. L.A.H.D., L.P.S.I., Dublin. Ex. Examiner, Apothecaries Hall, Dublin. (*Signed by*) Sydney Young, Emil A. Werner, Thos. Nolan.

OWEN, JOHN, "Trosmarian," Llangoed, Anglesey, N.W. British. B.Sc. (Wales), 1st Class Hons. in Chemistry with Agricultural Chemistry (1930). Research Student (Organic Chemistry). (*Signed by*) J. L. Simonsen, A. E. Bradfield, F. G. Soper, R. S. Cahn.

PETHERICK, SAMUEL RICHARD, Kimberley House, Hatherleigh, Devon. British. Demonstrator. B.Sc. (London), while at University College, London. At present a Demonstrator in Chemistry at University College, Southampton, and doing research at same institution. (*Signed by*) D. R. Boyd, A. E. Clarence Smith, A. I. Vogel.

POLLARD, JACK, 1, Brunel Street, Burnley, Lancs. British. Assistant Works Manager, Oswald Street Gas Works, Burnley. I have passed examinations in Organic, Inorganic, and Physical Chemistry to standard required by Institution of Gas Engineers for Diploma. I served Jan. to July 1928 under Major Ross, F.I.C., F.C.S., Borough Analyst. Assistance in design and control of chemical works plant and gas-making plants. I wish to continue my chemical studies and to take advantage of your technical publications. (*Signed by*) J. Herbert Clegg, D. V. Hollingworth, J. W. Bell.

RICHARDSON, GEORGE MAXWELL, Central Y.M.C.A., Tottenham Court Road, W.C. 1. British. Research Student. M.Sc. (N.Z.); Ph.D. (London). Joint publications: *J.C.S.*, 1928, 1775; *Biochem. J.*, 1929, 23, 68, 624, 1242. (*Signed by*) C. R. Harington, A. C. Chibnall, E. H. Farmer.

ROBERTS, ELIOT HARRY, Galestone College, Upper Norwood, S.E. 19. British. Schoolmaster. H.L.C. (Oxon), Chemistry, Theoretical and Practical (Inter-Science standard), Dyson Perrins Laboratory, South Parks Road, Oxford. Registered Student, Institute of Chemistry, Inter. A.I.C. course (equivalent to Inter-Hons. B.Sc.). Faculty of Technology, University of Manchester, six years' experience. Senior Science Master, Heaton Moor College (recognised by the B. of E.), Heaton Moor, Stockport. Many successes at the Oxford Locals and Conjoint Board Exams. (*Signed by*) W. G. Aston, Wm. Barbour, Margaret S. Dixon.

ROBERTSON, JOHN, 21, Borden Road, Glasgow, W. 3. Scots. B.Sc. (Glasgow University). University Assistant in Organic Chemistry since 1927. *J.C.S.*, 1924, 125, 1526; 1929, 300. (*Signed by*) Charles Buchanan, T. S. Stevens, Andrew Kent.

ROGERS, JAMES HILTON, 83, Plymouth Road, Penarth, Glamorgan. British. Chemist and Druggist. Member of the Pharmaceutical Society. I would like to have access to the books in the Society's Library. (*Signed by*) G. W. H. Stokes, J. H. Smith, A. G. Foster.

RYDON, HENRY NORMAN, 3, Mentmore Close, Northwick Park, Harrow, Middlesex. British. A.R.C.S. (1st Class Hons.), at Royal College of Science, London, also qualified for B.Sc. (Special), London University. Research Student in Organic Chemistry at Royal College of Science. Previously two years student of chemistry at Royal College of Science. (*Signed by*) Jocelyn Thorpe, G. A. R. Kon, R. P. Linstead.

SALAMA, ABDUL-AZIZ AHMAD, 5, Tanfield Place, Virginia Road, Leeds. Egyptian. Diploma in Science and Education (H.T.C., Cairo). Student of Chemistry, Leeds University. (*Signed by*) Frederick Challenger, W. A. Wightman, H. M. Dawson.

SHEIKH, ABDUL BAKI MOHAMMED SOLIEMAN, 9, Fairfax Road, Bedford Park, W. 4. Sunni Musalman (British). Research Student. B.Sc., M.Sc. (Bombay). I want to receive the Journals of Chemical Society to be in touch with the developments of modern research chemistry. (*Signed by*) G. A. R. Kon, R. D. Desai, E. H. Farmer.

SMITH, MARGARET SARAH, 7, Albert Road, Brighton, Sussex. English. Research Student. B.Sc. (General), B.Sc. (Special Chemistry), London. Student at Brighton Technical College, 1926-30. Research student in organic chemistry at University College, London, 1930 to date. (*Signed by*) C. K. Ingold, O. L. Brady, J. N. E. Day.

STANLEY, DONALD BYARD, 377, Romford Road, Forest Gate, E. 7. British. Research Student, East London College. B.Sc. (Special), Chemistry, 1st Class Hons., at East London College. (*Signed by*) J. R. Partington, H. D. K. Drew, W. H. Patterson, D. C. Jones.

STONEHILL, HENRY ISRAEL, 39, Stepney Green Dwellings, Mile End, E. 1. British. Chemical Research Student. B.Sc. (Chem., 1st Class Hons.), London (examination passed but actual award of degree to be made next year). Studied chemistry for past two years at East London College, University of London. Passed B.Sc. (Chem.) examination, June 1931, with 1st Class Hons. (*Signed by*) J. R. Partington, H. D. K. Drew, H. H. Hatt.

STYLES, BERNARD JOSEPH, 86, St. Peter Street, Hackney Road, E. 2. English. Analyst. Member British Association Chemists. Papers, with F. J. Todd, Ph.C., "The Official Preparations of Cinchona Bark," B.P. Conf. 1927, and "Liquid Extract Belladonna," P.J. 9/7/27. I am anxious to receive the *Journal* and other publications and so keep in touch with the advance of chemistry. (*Signed by*) H. V. A. Briscoe, Leonard E. Hulls, Wm. H. Woodcock.

TODD, ALEXANDER ROBERTUS, 2, Douglas Gardens, Clarkston, Glasgow. British. Research Student. B.Sc. (Hons.), Glasgow. Three years' research experience in the Universities of Glasgow and Frankfurt a.M. *J.C.S.*, 1929, 1768, 2876. (*Signed by*) Charles Buchanan, T. S. Stevens, F. R. Storrie.

TODD, JOHN, 44, Shottskirk Road, Dykehead, Shotts, Lanarkshire. British. Carnegie Research Fellow. B.Sc., Ph.D. (Glasgow). Robert Donaldson Scholar, Carnegie Scholar, Carnegie Fellow, Associate of the Institute of Chemistry. Researches on Caoutchouc, Gutta-percha, and Balata. (*Signed by*) G. G. Henderson, Alfred Russell, T. S. Stevens.

TRESS, HENRY JOHN, 11, Linden Avenue, Wembley, Middlesex. English. Student. B.Sc. (1st Class Hons.), Internal, London (East London College). Research Student in Organic Chemistry at East London College under Dr. H. D. K. Drew. (*Signed by*) J. R. Partington, H. D. K. Drew, D. C. Jones.

WALLIS, NORTON JAMES HUGH, "Guys Cliffe," 36, Sydenham Road, Cotham, Bristol. British. Research Student. A.R.C.Sc., B.Sc. (Lond.), at Royal College of Science. To be kept informed of the most recent work

by means of the Society's publications, lectures, etc. (*Signed by*) G. A. R. Kon, E. H. Farmer, R. P. Linstead.

WARNER, HARRY, 15, Belmore Road, Hurstville, N.S.W. Australian. Food, Drug and Meat Inspector of the City of Sydney. Diploma in Biology, Sydney Technical College (the course included qualitative, quantitative, food analysis, and theoretical and practical inorganic, organic and industrial chemistry). Certificates from Sydney Technical College as Food and Drug Inspector, Factory Inspector, Health Inspector, Stock and Meat Inspector. Certificate from the London Royal Sanitary Institute as Food and Meat Inspector. Interested in Chemistry of Food and Drug Technology. (*Signed by*) Richard W. Challinor, A. D. Ollé, R. B. Scammell, R. E. Jeffery.

WATKINS, GERTRUDE MARGARET CLARE, 39, Upland Road, Sutton, Surrey. British. Research Student. B.Sc., London (Student of Bedford College for Women). Teacher of Chemistry. (*Signed by*) James F. Spencer, Corona G. Trew, E. E. Turner.

WATT, JOHN STEPHEN, University College, Oxford. British. Research Student. M.Sc., New Zealand. Have published the following papers in conjunction with Professor R. Robinson and Dr. W. F. Short, *J.C.S.*, 1930, 2293; 1931, 980. (*Signed by*) Robert Robinson, J. C. Smith, L. H. Briggs.

WHEELER, HAROLD, 41, Burghley Road, Hornsey, N. 8. British. London Representative of Manufacturing Chemists. Chemist and Druggist. Member of the Pharmaceutical Society, London. Have attended Science Lectures at the following: University College of Leic. and Rutlandshire (Tutor, Dr. Thomas); Leic. College of Technology (Tutors, Dr. Wood and Mr. Jones, M.Sc.); London School of Pharmacy (Tutor, Mr. Rankin, B.Sc., Ph.C.); Chelsea Polytechnic (Tutor, Mr. C. Morton, B.Sc., F.C.S.), etc. I wish (i) to receive the Society's publications, (ii) to attend the Society's lectures, and (iii) to have the use of the Society's Library. (*Signed by*) H. N. B. Richardson, F. H. Lowe, C. Morton.

WHELAN, PATRICK FRANCIS, Marin 5, Rio Tinto, Andalucia, Spain. British. Chemist and Hydro-metallurgist with The Rio Tinto Co., Ltd., 3, Lombard Street, London. B.Sc., 1927, and M.Sc., 1928, from National University of Ireland. Published work: Leonard and Whelan in *Science Proc. Roy. Dublin Soc.*, Vol. 19 (N.S.), No. 7. (*Signed by*) A. G. G. Leonard, Thomas J. Nolan, A. O'Farrelly, A. D. Mitchell.

WILLIAMSON, ALFRED EDWARD, Ivanhoe, Bilston Road, Aigburth, Liverpool. British. Managing Director. Wholesale Manufacturing Chemist. (*Signed by*) James Williamson, H. Humphreys Jones, J. E. Whipp.

WILSON, CHRISTOPHER LUMLEY, 90, Highgate Road, N.W. 5. British. Research Student. B.Sc. (Leeds). One year's research at Leeds University with F. J. Garrick, B.A., and one year's research at University College, London, with Professor C. K. Ingold, F.R.S. (*Signed by*) C. K. Ingold, R. J. W. Le Fèvre, O. L. Brady.

WOOD, NORMAN ALBERT, 69, Cambridge Road, Gt. Crosby, Liverpool. British. Chairman of Directors. Wholesale Manufacturing Chemist. (*Signed by*) James Williamson, H. Humphreys Jones, J. E. Whipp.

WRIGHT, HENRY GEORGE, 14, Lesbia Road, Lower Clapton, N.E. British. Laboratory Manager. Many years of experience in analytical work, including alkaloidal assays, water, milk, urine, and chemicals, and work on manufacturing formulas for oxycyanide of mercury, terebene, etc. Keen on receiving Society's publications. (*Signed by*) H. V. A. Briscoe, Leonard G. Hulls, Henry J. S. Sand.

WYATT, GORDON HILLIAR, "Perivale," Linden Avenue, Maidenhead. English. Student (at East London College). Passed B.Sc. Special (Lond.) examination in Chemistry (2nd Class). (*Signed by*) J. R. Partington, D. C. Jones, H. D. K. Drew, W. H. Patterson.

Forms of Recommendation for Fellowship recommended by the Council for presentation to ballot under Bye-Law I (2).

ATCHERLEY, JACK ROWLAND, 21, Turner Avenue, Glenhuntly, S.E. 9. Victoria, Australia. British. Manufacturing and Research Chemist, Chemical Laboratories, The Myer Emporium, Ltd., Victoria. Diploma I.C.S., London. Chemical methods immunising dried fruits against attack by insects. Commonwealth Patent 1928, and Council of Scientific and Industrial Research Reports. "Chemical Process for controlling Blow-Fly Pest in Sheep," *Pastoralists Review*. "Practical Methods of Sterilisation of Soil," *J. Agric. Vict.* "Non-Poisonous Sheep Dips and Agricultural Sprays." (*Signed by*) Alfred H. Jackson, Frederic Dunn.

BUSCH, HENRI, Frankfurt a.M., Weissfrauenstrasse 7-9. Deutscher. Chemiker. Dr.phil. Leiter des Literarischen Büros der Deutschen Goldund Silber-Scheideanstalt vormals Roessler, Frankfurt a.M. (*Signed by*) Karl Merck.

CALVET, FERNANDO, The University, Santiago de Compostela, Spain. Spanish. Professor. Ph.D. (Oxford); Dr. en Ciencias (Madrid). Formerly Ramsay Fellow and Rockefeller Fellow. Formerly Assistant at the University of Barcelona. *J.C.S.*, 1927, 685; 1928, 1088, 2913. (*Signed by*) F. D. Chattaway.

DENINA, Prof. Dr. ERNESTO, Laboratorio di Elettrochimica e di Chimica Fisica della R. Scuola di Ingegneria, Via Ospedale 32, Torino. Italiano. Professore di Elettrochimica e di Chimica Fisica al R. Politecnico e alla R. Università; direttore del Laboratorio di Elettrochimica del R. Politecnico di Torino. Dr. ingegnere chimico (Torino); diplomato in Elettrochimica ed Elettrometallurgia (Torino); libero docente in Elettrochimica (Roma). "Studi di Termochimica, ricerche sugli accumulatori a piombo, sui potenziali elettrolitici e sulle elettrolisi, sulle applicazioni delle lampade termoioniche," ecc. pubblicati sui principali periodici italiani. (*Signed by*) G. G. Henderson.

JALOUSTRE, LÉON-ANTONIN, 117, Rue St.-Lazare, Paris. French. Consulting Engineer, Expert. Licencié ès sciences, Agrégé de Physique, Diplômé d'études supérieures de Chimie de l'Université de Paris. Ancien Elève de l'École Normale Supérieure (Sciences) et de l'Institut Pasteur de Paris. Ex-Chargé de Conférences à l'Institut de Chimie. Appliquée de l'Université de Paris. Auteur de nombreux travaux sur la chimie des éléments radio-actifs et sur la radio-biologie. Publications diverses aux Comptes-Rendus de l'Académie des Sciences, de l'Académie de Médecine, de la Société de Biologie. Autour d'une thèse sur l'arginase chez les végétaux. (*Signed by*) T. S. Moore.

SHEPARD, MORRIS GOODWIN, 153, Hillside Avenue, Waterbury, Conn., U.S.A. American. Chemical Engineer. Chem. E., Columbia University, New York City. Seventeen years as Research Chemist with U.S. Rubber Co., including six as Chief Chemist of The Naugatuck Chemical Co., Naugatuck, Conn., a subsidiary of the U.S. Rubber Co. (*Signed by*) Percy J. Leaper, W. A. Gibbons.

TAGGART, WALTER THOMAS, John Harrison Laboratory of Chemistry, University of Pennsylvania, Pa., U.S.A. (Residence: 4418, Spruce Street, Phila., Pa.). U.S.A. Blanchard Professor of Chemistry. B.S., Ph.D. (*Signed by*) Louis A. Jordan, C. S. Gibson.

## ADDITIONS TO THE LIBRARY.

I. *Donations.*

DARWIN, CHARLES GALTON. The new conceptions of matter. London 1931. pp. viii + 1921. ill. 10s. 6d. net. (*Recd.* 15/10/31.)  
From the Publishers: Messrs. G. Bell & Sons.

FRASER, RONALD G. J. Molecular rays. Cambridge 1931. pp. xiv + 204. ill. 12s. 6d. net. (*Recd.* 3/11/31.)  
From the Syndics of the Cambridge University Press.

INSTITUTION OF CHEMISTS (INDIA). Proceedings. Vol. I, etc. Calcutta 1929 +. (*Reference.*)  
From the Institution.

JACOB, A., and COYLE, V. The use of fertilisers in tropical and sub-tropical agriculture. London 1931. pp. 272. ill. 10s. 6d. net. (*Recd.* 19/10/31.)  
From the Publishers: Messrs. Ernest Benn.

LEVENE, PHOEBUS AARON, and BASS, LAWRENCE W. Nucleic acids. (American Chemical Society Monograph Series.) New York 1931. pp. 337. ill. \$4.50 net. (*Recd.* 15/10/31.)  
From the Publishers: The Chemical Catalog Co. Inc.

MIALL, STEPHEN. A history of the British chemical industry. London 1931. pp. xvi + 273. ill. 10s. 6d. net. (*Recd.* 23/10/31.)  
From the Society of Chemical Industry.

PEINTURES-PIGMENTS-VERNIS. Year VIII, etc. Paris 1931 +. (*Reference.*)  
From the Bureau of Chemical Abstracts.

SYDNEY, UNIVERSITY OF. Reprints. Series III. (Chemistry, organic and inorganic.) Vol. I, etc. Sydney 1924 +. (*Reference.*)  
From the University.

TECHNIKAI KURIR. Vol. II, etc. Budapest 1931 +. (*Reference.*)  
From the Editor.

II. *By Purchase.*

ALTPETER, JULIUS. Das Hexamethylentetramin und seine Verwendung. Halle (Saale) 1931. pp. vi + 178. ill. M. 16. (*Recd.* 14/11/31.)

ARKEL, A. E. VAN, and BOER, J. H. DE. Chemische Bindung als elektrostatische Erscheinung. Translated by LI KLEMM and WILHELM KLEMM. Leipzig 1931. pp. xx + 320. ill. M. 17. (*Recd.* 14/11/31.)

CHIH-CH'ANG, LI. The travels of an alchemist. Translated by ARTHUR WALEY. London 1931. pp. xii + 166. ill. 10s. 6d. net. (*Recd.* 20/10/31.)

DEBYE, PETER [Editor]. The dipole moment and chemical structure. Translated by WINIFRED M. DEANS. London 1931. pp. x + 134. ill. 10s. net. (*Recd.* 15/10/31.)

DURRANS, THOMAS HAROLD. Solvents. (Monographs on Applied Chemistry.) 2nd edition. London 1931. pp. xvi + 180. ill. 10s. 6d. net. (*Recd.* 19/10/31.)

FAJANS, KASIMIR. Radioelements and isotopes : chemical forces and optical properties of substances. New York 1931. pp. x + 125. ill. 15s. net. (*Recd.* 15/10/31.)

HOLMYARD, ERIC JOHN. Makers of chemistry. Oxford 1931. pp. xvi + 314. ill. 7s. 6d. net. (*Recd.* 19/10/31.)

HUME-ROTHERY, W. The metallic state. Electrical properties and theories. Oxford 1931. pp. xx + 372. ill. 25s. net. (*Recd.* 15/10/31.)

JENSEN, HAROLD RUPERT. The chemistry, flavouring and manufacture of chocolate, confectionery and cocoa. London 1931. pp. xvi + 406. ill. 27s. net. (*Recd.* 15/10/31.)

KLUYVER, A. J. The chemical activities of micro-organisms. London 1931. pp. 109. ill. 4s. 6d. net. (*Recd.* 20/10/30.)

KNOOP, FRANZ. Oxydationen im Tierkörper. Ein Bild von den Hauptwegen physiologischer Verbrennung. (Sammlung, New Series, Vol. I.) Stuttgart 1931. pp. 37.

KÖRBER, FRIEDRICH, and SCHIEBOLD, ERNST. [Editors.] Fortschritte der Röntgenforschung in Methode und Anwendung. Leipzig 1931. pp. viii + 326. ill. *M.* 38. (*Recd.* 14/11/31.)

KOLTHOFF, ISAAK MAURITS. The colorimetric and potentiometric determination of  $p_H$ . Outline of electrometric titrations. New York 1931. pp. xii + 167. ill. 11s. net. (*Recd.* 15/10/31.)

LOEB, LEONARD B. The nature of a gas. New York 1931. pp. x + 153. ill. 12s. 6d. net. (*Recd.* 15/10/31.)

NOUVEL, OTTO. Die Industrie der Phenol-Aldehyd-Harze. Halle (Saale) 1931. pp. viii + 128. ill. *M.* 11. (*Recd.* 14/11/31.)

PETERS, JOHN P., and VAN SLYKE, DONALD D. Quantitative clinical chemistry. Vol. I. Interpretations. [Baltimore] 1931. pp. xvi + 1264. ill. 54s. net. (*Recd.* 15/10/31.)

RAITT, WILLIAM. The digestion of grasses and bamboo for paper-making. London 1931. pp. xii + 116. ill. 21s. net. (*Recd.* 19/10/31.)

SLOTTA, KARL HEINRICH. Grundriss der modernen Arzneistoff-Synthese. Stuttgart 1931. pp. x + 202 + 25 tables. *M.* 20. (*Recd.* 14/11/31.)

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#### ERRATUM.

Proceedings, 1931.

Page 70, line 12 from bottom, for 1931 read 1932.



# PROCEEDINGS

OF THE

## CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, December 3rd, 1931, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., Past-President, in the Chair.

Mr. M. S. Kazi was formally admitted a Fellow of the Chemical Society.

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

Dorothy Mary Crowfoot, B.A., The Old House, Geldeston, Beccles.  
John Buchanan McNarey, Oakley House, Bath Road, Slough.  
Thomas Hobson Mead, B.A., B.Sc., 64, Oakley Street, Chelsea, S.W. 3.  
Ronald Barron Mooney, M.A., Ph.D., 14, Argyle Place, Edinburgh.  
Mukundrai Maneklal Parekh, M.Sc., Organic Laboratory, University College, Gower Street, W.C. 1.  
George Scott Patterson, Weensland, Mornington Rise, Matlock.  
John Thomas Phillips, 52, Cloncurry Street, Fulham Palace Road, S.W. 6.  
Norman Jeredick Price, B.A., A.I.C., c/o Messrs. Chance & Hunt, Ltd., Oldbury, Worcs.  
Frank Stuart Spring, Ph.D., Hulme Hall, Victoria Park, Manchester.

Mr. H. H. Robins and Dr. W. H. Brindley were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared duly elected as Fellows :

Chhotalal Badrilal Almaula, B.A., B.Sc.	Malcolm Crawford, B.Sc.
Sekharipuram Anantakrishnan Ven- kateswarier, B.A.	James Allan Cunningham.
Jack Rowland Atcherley.	Prof. Dr. Ernesto Denina.
John Wilkinson Bee, M.A.	Dora Anne Duff, B.Sc.
John Godolphin Bennett.	Robert Albert Ernest Galley, B.Sc., A.R.C.S.
Edward James Boorman, A.R.C.S.	George Denholm Gillies, B.Sc.
Arthur Cecil Bottomley, M.Sc., Ph.D.	Brinley Griffith, B.Sc.
Henri Busch, Dr.-phil.	Henry Isaac Hall, B.A.
Fernando Calvet, Ph.D., Dr. en Ciencias.	Eric Gray Hancock, B.A., B.Sc.
Blanche Rosemary Carpenter, B.Sc.	Edward Francis Hartree, A.R.C.S.
Eric George Hemphill Carter, B.Sc.	Winifred Rosa Ashby Hollens, B.Sc.
Wesley Cocker, M.Sc.	Herbert Holmes.
Ernest Harrison Coulson, B.Sc., A.R.C.S.	Sidney Holt, M.Sc.Tech.
	Edward David Hughes, B.Sc., Ph.D.
	Léon Antonin Jaloustre.
	Alfred Herbert Janes, B.Sc.

- Richard Lewis Jones, B.Sc.  
 Frank Eric La Valette, M.Sc.  
 Digby Thomas Leyshon.  
 Edwin Marshall Meade, A.R.C.S.  
 Hermann Günther Gottschaldt Mohrenhenn, B.Sc.  
 John Lewis Moilliet, B.A.  
 Ruth Mona Murray, B.Sc.  
 David Malcolm Murray-Rust, M.A., B.Sc.  
 Parameswar Velayudhan Nair, B.A., M.Sc.  
 Krishna Shrinivas Nargund, B.A., M.Sc.  
 Michael O'Donnell, L.A.H.D., L.P.S.I.  
 John Owen, B.Sc.  
 Samuel Richard Pethrick, B.Sc.  
 Jack Pollard.  
 George Maxwell Richardson, M.Sc., Ph.D.  
 Eliot Harry Roberts.  
 John Robertson, B.Sc.  
 James Hilton Rogers.  
 Henry Norman Rydon, B.Sc., A.R.C.S.  
 Abdul-Aziz Ahmad Salama.  
 Abdul Baki Mohammed Solieman Sheikh, M.Sc.  
 Morris Goodwin Shepard.  
 Margaret Sarah Smith, B.Sc.  
 Donald Byard Stanley, B.Sc.  
 Henry Israel Stonehill.  
 Bernard Joseph Styles.  
 Walter Thomas Taggart, B.S., Ph.D.  
 Alexander Robertus Todd, B.Sc.  
 John Todd, B.Sc., Ph.D.  
 Henry John Tress, B.Sc.  
 Norton James Hugh Wallis, B.Sc., A.R.C.S.  
 Harry Warner.  
 Gertrude Margaret Clare Watkins, B.Sc.  
 John Stephen Watt, M.Sc.  
 Harold Wheeler.  
 Patrick Francis Whelan, M.Sc.  
 Alfred Edward Williamson.  
 Christopher Lumley Wilson, B.Sc.  
 Norman Albert Wood.  
 Henry George Wright.  
 Gordon Hilliar Wyatt.

The following papers were read :

- “The dissociation constants of organic acids. Part V. The mobility of the hydrogen ion at 18° and at 25°.” By G. H. JEFFERY and A. I. VOGEL.  
 “Catalytic dehalogenation by tetrahydronaphthalenes in presence of copper.” By (Miss) M. S. LESSLIE and E. E. TURNER.  
 “Orientation effects in the diphenyl series. Part X. The quantitative nitration of 4 : 4'-dichloro- and 4 : 4'-dibromo-diphenyl, and of 4-chloro-4'-bromodiphenyl.” By (Miss) F. R. SHAW and E. E. TURNER.  
 “Magnetism and valency. Part I. Copper and silver compounds.” By S. SUGDEN.  
 “Properties of conjugated compounds. Part XVIII. The catalytic hydrogenation of butadiene- $\alpha$ -carboxylic acids.” By E. H. FARMER and R. A. E. GALLEY.

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#### DISCUSSIONS.

In addition to the two Discussions already announced for December 17th, 1931, and May 19th, 1932, the Ordinary Scientific Meeting on Thursday, February 18th, 1932, will be devoted to a Discussion on “The Significance of Velocity Measurements in Relation to the

Benzene Substitution Problem." The Discussion will be opened by Mr. A. E. Bradfield.

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#### ANNUAL REPORTS.

Fellows who have not ordered the Annual Reports for 1931 should make application as soon as possible. Application should be accompanied by a remittance for 5s. 6d.

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Ordinary Scientific Meeting, Thursday, December 17th, 1931, at 8 p.m., Professor G. G. HENDERSON, D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death on December 12th, 1931, of Mr. Beeby Thompson, who was elected a Fellow on February 5th, 1877.

The following announcements were made :

1. Professor W. E. Garner, Professor J. Kendall, and Professor T. M. Lowry would represent the Society on the Editorial Board of the *Journal of Physical Chemistry* for 1932.

2. The Perkin Memorial Volume, dealing with the life and work of the late Professor William Henry Perkin, Past-President of the Society, will be published at the end of next month, and issued free to Fellows with the publications for January. The contributors to this volume are : Mr. A. J. Greenaway, F.I.C., Professor J. F. Thorpe, C.B.E., D.Sc., F.R.S., and Professor R. Robinson, D.Sc., F.R.S. The volume will be sold at 3s. 6d., postage extra.

3. The Discussion number of the *Journal* containing the proceedings of this evening's meeting will also be published at the end of next month, and issued free to Fellows with the publications for January. The volume will be sold at 1s. 6d., postage extra.

4. At the meeting of Council held this afternoon it was decided that as from January 1st, 1932, and until further notice, papers should not be considered for publication in the *Journal* unless the author, or one of the authors, is a Fellow of the Society.

The following were formally admitted Fellows of the Society : H. Wheeler, S. V. Anantakrishnan, Eric G. Hancock, E. G. Carter, G. H. Wyatt, K. I. Ross, H. W. Thompson, M. S. Smith, H. G. Wright, B. J. Styles, E. D. Hughes, G. D. Greville, F. W. Kirkbride, K. S. Nargund, D. M. Murray-Rust, W. F. K. Wynne-Jones, B.

Topley, H. G. G. Mohrhenn, C. L. Wilson, H. I. Stonehill, E. F. Hartrey, J. E. Mills, James Bell, J. H. Wolfenden, and E. J. Bowen.

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

Aileen Mary Hayward, B.Sc., Ph.D., Brantwood, Lake Road West, Cardiff.  
 Arthur John Stevenson, B.A., Eaglehurst, Ditton Hill, Surbiton.  
 Aneurin Williams, M.Sc., Mayfield, Fairfield Road, Widnes.  
 Charles George Maurice de Worms, M.A., A.I.C., Milton Park, Egham, Surrey.

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

Robert Meyer, La Société des Usines Chimiques, St.-Fons, Rhône, France.

A Discussion on "The Critical Increment of Homogeneous Reactions" was opened by Mr. C. N. Hinshelwood, and continued by Mr. E. J. Bowen, Professor A. J. Allmand, Professor E. K. Rideal, Dr. F. G. Soper, Dr. R. G. W. Norrish, Mr. C. R. Bailey, and Mr. H. W. Thompson. An account of the Discussion will be contained in the special Discussion number of the *Journal*.

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

	£	s.	d.
Physico-chemical studies of basic beryllium complexes. W. R. Angus. (Univ. Coll., Lond.) ... ..	5	0	0
Hantzsch's pyridine condensation. E. E. Ayling. (Univ. Coll., Swansea) ... ..	5	0	0
Heterogeneous equilibria in ternary systems. C. R. Bailey. (Univ. Coll., Lond.) ... ..	5	0	0
The constitution of taxine. B. K. Blount. (Oxford Univ.) ...	15	0	0
Lactonisation of $\alpha\beta$ - and $\beta\gamma$ -unsaturated acids. E. J. Boorman. (Imperial Coll.) ... ..	5	0	0
Halogenation of phenolic ethers, etc. A. E. Bradfield. (Univ. Coll., Bangor) ... ..	5	0	0
Addition of mercaptans to ethylenic hydrocarbons and certain derivatives. G. N. Burkhardt. (Manchester Univ.) ...	6	0	0
<i>Cannabis Indica</i> resin (Hashish). R. S. Cahn. (Univ. Coll., Bangor) ... ..	2	0	0
Constitution of barbaloin. R. S. Cahn. (Univ. Coll., Bangor)...	4	0	0
Lichen acids. F. W. Canter. (Lond. Sch. of Hygiene)... ..	5	0	0
Substitution in <i>p</i> -diphenyl ketones. (Miss) B. R. Carpenter. (Bedford Coll.) ... ..	5	0	0
Relation between interfacial tension lowering and adsorption by porous adsorbents. E. G. Carter. (E. Lond. Coll.) ...	5	0	0
Application of the Guareschi reaction to quinones. R. Craven. (Robert Gordon's Coll., Aberdeen) ... ..	5	0	0

	£	s.	d.
Hydroxy-carbonyl compounds. F. H. S. Curd. (Lond. Sch. of Hygiene) ... ..	5	0	0
Addition reaction of cinnamylidenemalonie ester. (Miss) D. A. Duff. (Univ. Coll., Lond.) ... ..	7	0	0
Studies in the hindrance of organic reactions. G. M. Dyson. (Loughborough Coll.) ... ..	7	0	0
Physical properties of binary liquid mixtures. (Miss) I. K. Faith. (Bedford Coll.) ... ..	5	0	0
Selenates and other salts of praseodymium. J. N. Friend. (Birm. Tech. Coll.) ... ..	10	0	0
Hydrogenation of conjugated compounds. R. A. E. Galley. (Imperial Coll.) ... ..	5	0	0
Polysulphonyl methanes. D. T. Gibson. (Glasgow Univ.) ...	5	0	0
Structure of glutaconic esters and acids. B. S. Gidvani. (Imperial Coll.) ... ..	5	0	0
Chemical dynamics of the reactions between sodium <i>m</i> -xylenolate and alkyl iodides. P. J. Hardwick. (Chelsea Polytechnic)	5	0	0
Measurement of oxidation and reduction potentials. (Miss) A. M. Hayward. (Bedford Coll.) ... ..	5	0	0
Stereochemistry of some mixed $\beta$ -tetrammines. F. S. H. Head. (E. Lond. Coll.) ... ..	7	10	0
Substitution reactions in polycyclic systems. D. H. Hey. (Manchester Univ.) ... ..	5	0	0
Dielectric constants of benzene solutions of some sulphur, selenium, and tellurium compounds, and of certain heterocyclic oxygen compounds. E. C. E. Hunter. (E. Lond. Coll.) ... ..	5	0	0
Cytisine and related alkaloids. H. R. Ing. (Univ. Coll., Lond.) ... ..	7	10	0
Some aromatic hydrazides. A. H. Janes. (E. Lond. Coll.) ...	5	0	0
Dipole moments of organic substances with special reference to organic derivatives of metals and metalloids. J. D. A. Johnson. (Guy's Hospital Medical School) ... ..	22	10	0
Formation of bridged cyclic compounds. R. L. Jones. (Imperial Coll.) ... ..	5	0	0
Investigation of organo-metallic compounds ( <i>continued</i> ). W. J. Jones. (Univ. Coll., Cardiff) ... ..	4	0	0
Amino-derivatives of quasi-aromatic system. M. S. Kazi. (Univ. Coll., Lond.) ... ..	5	0	0
Synthesis of physostigmine (eserine). F. E. King. (Oxford Univ.) ... ..	10	0	0
Interaction of amine salts with aldehydes. R. J. W. Le Fèvre. (Univ. Coll., Lond.) ... ..	5	0	0
Effect of structure on the equilibrium between $\alpha\beta$ - and $\beta\gamma$ -unsaturated esters. G. W. G. MacLennan. (Imperial Coll.) ...	5	0	0
Ring closure of cyclopentane derivatives. E. M. Meade. (Imperial Coll.) ... ..	5	0	0
Studies in mutual liquid solubilities. H. J. Moss. (E. Lond. Coll.) ... ..	5	0	0
Diaryl ethers. (Miss) R. M. Murray. (Bedford Coll.) ... ..	5	0	0
Cyclic unsaturated acids and esters. B. L. Nandi. (Imperial Coll.) ... ..	4	0	0

	£	s.	d.
(a) Dehydration of $\beta$ -hydroxy esters.			
(b) Catalytic influence in the three-carbon tautomerism. K. S. Nargund. (Imperial Coll.) ... ..	5	0	0
Primary photochemical reactions. R. G. W. Norrish. (Cambridge Univ.) ... ..	16	16	0
Synthesis of cyclic acids derived from $\Delta_3$ -carene. J. Owen. (Univ. Coll., Bangor) ... ..	5	0	0
Ring chain valency tautomerism. M. M. Parekh. (Univ. Coll., Lond.) ... ..	17	7	0
$\beta\gamma$ -Substituted butane derivatives. S. R. Pethrick. (Univ. Coll., Southampton and Woolwich Polytechnic) ... ..	5	0	0
(a) Studies on glucosides.			
(b) Hydroxy-carbonyl compounds. A. Robertson. (Lond. Sch. of Hygiene) ... ..	12	10	0
Influence of poles in the simple three-carbon system. E. Rothstein. (Leeds Univ.) ... ..	8	0	0
(a) Influence of polar solvents on the rotatory power of <i>l</i> -benzoin and its methyl ether.			
(b) Benzoin condensation in the presence of optically active alkaloids. H. G. Rule. (Edinburgh Univ.) ... ..	10	0	0
Lactonisation and additive reactions of unsaturated acids with direct double bonds. H. N. Rydon. (Imperial Coll.) ... ..	4	10	0
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(a) Thermal decomposition of substituted dibasic acids.			
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### PERKIN MEMORIAL VOLUME.

The Perkin Memorial Volume dealing with the life and work of the late Professor William Henry Perkin, Sc.D., LL.D., F.R.S., Past-President of the Society, will be published at the end of January, and will be issued free to Fellows with the publications for January. The contributors to this volume are: Mr. A. J. Greenaway, F.I.C., Professor J. F. Thorpe, C.B.E., D.Sc., F.R.S., and Professor R. Robinson, D.Sc., F.R.S. The volume will be sold at 3s. 6d., postage extra.

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### DISCUSSION NUMBER.

The special number of the *Journal*, containing the report of the Discussion on "The Critical Increment of Homogeneous Reactions," held on December 17th, will be published at the end of January next and will be issued free to Fellows with the publications for that month. The contributors to the Discussion are: Mr. C. N. Hinshelwood, M.A., F.R.S., Mr. E. J. Bowen, M.A., Professor A. J. Allmand, M.C., D.Sc., F.R.S., Professor E. K. Rideal, M.A., F.R.S., Dr. F. G. Soper, Dr. R. G. W. Norrish, B.A., Mr. C. R. Bailey, B.A., M.Sc., Mr. H. W. Thompson, and Dr. T. Iredale.

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### ANNUAL REPORTS.

Fellows are reminded that applications for the Annual Reports for 1931, Volume XXVIII, at 5s. 6d. per copy should be made at once to Mr. S. E. Carr. Application must be accompanied by a remittance for 5s. 6d.

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## DISCUSSION.

The Ordinary Scientific Meeting on Thursday, February 18th, 1932, will be devoted to a Discussion on "The Significance of Velocity Measurements in Relation to the Benzene Substitution Problem." The Discussion will be opened by Mr. A. E. Bradfield.

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List of papers, or abstracts thereof, received between November 19th, 1931, and December 17th, 1931. (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 replacement of bromine in bromophenols by the nitro-group. Part II. 3-Fluoro-2:4:6-tribromophenol. Some cases of group migration." By H. H. HODGSON and J. NIXON.
- "The action of alkylmagnesium on triphenylphosphine dichloride." By B. K. BLOUNT.
- "An experiment to illustrate diffusion of gases." By J. E. MACKENZIE and H. W. MELVILLE.
- "Studies of valency. Part XV. The dielectric constants of phosphorus trichloride and pentachloride." By T. M. LOWRY and J. HOFFTON.
- "Note on the chemical behaviour of ekatantalum." By O. GRATIAS and C. H. COLLIE.
- "An *X*-ray examination of  $\beta$ -methylxyloside." By E. G. COX.
- "Symmetrical triad prototropic systems. Part VIII. The analogy between symmetrical triad systems and aromatic side-chain reactivity, and the effect of *m*-substitution on mobility and equilibrium in the  $\alpha\gamma$ -diphenylmethyleniazomethine system." By C. W. SHOPPEE.
- "The vapour pressure of water over aqueous solutions of the chlorides of the alkaline-earth metals. Part I. Experimental, with critical discussion of vapour-pressure data." By J. R. I. HEPBURN.
- "The sulphonation of *o*-anisidine and acet-*o*-anisidine." By R. CHILD.
- "Complex formation between nitrobenzenes." By D. L. HAMMICK, L. W. ANDREW, and J. HAMPSON.
- "A paramagnetic organic compound." By J. KENYON and S. SUGDEN.
- "Isomeric 3-bromo-derivatives of dehydro-2-naphthol 1-sulphide." By J. A. C. McCLELLAND and S. SMILES.
- "An *X*-ray examination of the oxides of lead." By J. A. DARBYSHIRE.



- “The action of light on mixtures of ozone and chlorine. Part II. Results with high ozone concentrations. Discussion.” By A. J. ALLMAND and J. W. T. SPINKS.
- “The vapour pressure of water over aqueous solutions of the chlorides of the alkaline-earth metals. Part II. Deviations from Raoult’s law, as indicated by the molecular lowering of vapour pressure and van ’t Hoff coefficients; with theoretical discussion.” By J. R. I. HEPBURN.
- “Benzoic esters and electronic affinities of radicals. Part III.” By A. ZAKI.
- “Carbonyl selenide. Part I. Preparation and physical properties.” By T. G. PEARSON and P. L. ROBINSON.
- “A study of liquid-liquid junctions with a view to eliminate liquid-liquid junction potential difference.” By J. V. LAKHANI.
- “Freezing points of the system hydrogen chloride-sulphur monochloride.” By H. TERREY and H. SPONG.
- “New derivatives of *p*-arsanilic acid. Part III. *p*-Arsonoglutaranilic acid and related compounds.” By G. T. MORGAN and E. WALTON.
- “Experiments on the synthesis of physostigmine (eserine). Part I. Some indolenine derivatives.” By R. ROBINSON and H. SUGINOME.
- “Experiments on the synthesis of physostigmine (eserine). Part II. Synthesis of a base which is believed to be *dl*-noreserethole.” By R. ROBINSON and H. SUGINOME.
- “Experiments on the synthesis of physostigmine (eserine). Part III. Synthesis of *des*-ethoxydehydroeseretholemethine.” By H. S. BOYD-BARRETT and R. ROBINSON.
- “Experiments on the synthesis of physostigmine (eserine). Part IV. The Plancher rearrangement of indole derivatives.” By H. S. BOYD-BARRETT.
- “Experiments on the synthesis of physostigmine (eserine). Part V. A synthesis of dehydroesermetholemethine.” By F. E. KING and R. ROBINSON.
- “Resolution of *r*-phenylmethoxyacetic acid into its optically active components.” By D. J. C. PIRIE and (MISS) I. A. SMITH.
- “A qualitative study of the action between mercury and methyl iodide.” By J. L. MAYNARD.
- “The component glycerides of partially hydrogenated fats. Part I. The alterations in glyceride structure produced during progressive hydrogenation of olive and cottonseed oils.” By T. P. HILDITCH and E. C. JONES.
- “The slow combustion of acetylene.” By R. SPENCE.

- “The kinetics of two bimolecular reactions in solution and in the vapour phase.” By E. A. MOELWYN-HUGHES and C. N. HINSHELWOOD.
- “Nitro-derivatives of dehydrodivanillin.” By J. M. GULLAND and G. U. HOPTON.
- “Selective adsorption by activated charcoal from solutions containing two organic acids.” By C. OCKRENT.
- “The nitrosation of phenols. Part XIII. *o*-Chlorophenol.” By H. H. HODGSON.
- “The nitrosation of phenols. Part XIV. Resorcinol mono*iso*-propyl ether.” By H. H. HODGSON and H. CLAY.
- “The kinetics of the esterification of acetic anhydride in ethyl alcohol solution.” By E. A. MOELWYN-HUGHES and A. C. ROLFE.
- “The picrolonates of the alkaline-earth metals.” By P. L. ROBINSON and W. E. SMITH.
- “The preparation of dibromofluorescein.” By M. A. PHILLIPS.
- “Catalysis and photo-conductors.” By A. F. H. WARD and F. H. CONSTABLE.
- “The chemistry of the three-carbon system. Part XXVII. Nitriles of butenoic and hexenoic acids. A note on the analysis of unsaturated nitriles by halogen addition.” By R. A. LETCH and R. P. LINSTED.
- “Synthetical experiments in the chromone group. Part VII. A synthesis of 7:8:4'-trihydroxyflavone, 7:8:3':4'-tetrahydroxyflavone, 7:8:3':4':5'-, 5:7:3':4':5'-, and 3:7:3':4':5'-pentahydroxyflavone.” By I. C. BADHWAR, K. S. KANG, and K. VENKATARAMAN.
- “The preparation of pure ethane, methane, and hydrogen and the analysis of their mixtures.” By W. E. MACGILLIVRAY.
- “The rotation dispersion and circular dichroism of bornylene nitrosite.” By S. MITCHELL and S. B. CORMACK.
- “The planar configuration of diamagnetic nickel complexes. Part I. Isomeric nickel derivatives of methylbenzylglyoxime.” By S. SUGDEN.
- “Note on the measurement of glass electrode potentials by valve electrometer.” By G. D. GREVILLE and N. F. MACLAGEN.
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From Dr. Robert Donald.

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