

# PROCEEDINGS

OF THE

## CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, March 7th, 1929, 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.
Herbert Eccles .....	Dec. 5th, 1878.	Aug. 18th, 1928.
James West Knights .....	May 16th, 1878.	Feb. 6th, 1929.
Francis E. Matthews .....	June 17th, 1880.	Feb. 24th, 1929.
Charles E. Sutcliffe .....	Dec. 4th, 1924.	Dec. 28th, 1928.

It was announced that a Fellowship entitled "The Weston Fellowship in Electrochemistry" had been established by the Electrochemical Society in honour of Dr. Edward Weston, inventor of the Weston Cadmium Cell.

The candidate will be selected by the Society, and selection will be based on marked capacity in carrying out research in the science of Electrochemistry or its applications. The award will be made without distinction on account of sex, citizenship, race, or residence. The successful candidate may carry out his research at any university or institute approved by the Society. The date of the first award (approximately \$1,000) is not definitely fixed, but will probably be in the autumn of this year. Those interested should apply to the office of the American Electrochemical Society, Columbia University, New York City.

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

Vice-Presidents who have filled the office of President (one vacancy) : \*W. P. WYNNE.

Vice-Presidents who have not filled the office of President (two vacancies) : \*T. A. HENRY, \*EMILE S. MOND.

\* Nominated by the Council.

Country Members, *i.e.* those resident beyond fifty miles from Charing Cross (four vacancies): \*G. M. BENNETT (Sheffield); D. R. BOYD (Southampton); C. R. BURY (Aberystwyth); J. A. CRANSTON (Glasgow); \*W. E. GARNER (Bristol); H. H. HODGSON (Bradford); \*J. I. O. MASSON (Durham); J. REILLY (Cork).

Mr. W. M. Colles and Mr. D. C. Jones were appointed Scrutators to assist in the counting of votes recorded in the election of the Country Members of Council.

The following were formally admitted Fellows of the Chemical Society: B. J. F. Dorrington, E. L. Gates-Warren, L. P. Walls, C. M. Cawley, R. S. W. Thorne, R. D. Desai.

Certificates were read for the first time in favour of:

David Andrew Crighton, B.Sc., 51, Dalmeny Road, Tufnell Park, N. 7.

George Monty Hamilton, M.Sc., 9, The Green, Twickenham.

John Stephen Henthwaite, Canadian Celanese, Ltd., Drummondville, Quebec.

Henry Rowland Hill, B.A., 2, Beeches Walk, Carshalton, Surrey.

William Thornton, M.Sc., 11, John Street, Maidstone.

Herbert Lawton Wright, 117, Queen's Road, Bury St. Edmunds.

The following papers were read:

“The stability of complex metallic salts.” By F. G. MANN.

“The determination of unsaturated and aromatic hydrocarbons in light oils and motor spirits.” By A. B. MANNING.

“Studies of electrolytic polarisation. Part VII. Complex cyanides. (a) Silver.” By S. GLASSTONE.

“Studies of electrolytic polarisation. Part VIII. Complex cyanides. (b) Copper.” By S. GLASSTONE.

“Properties of conjugated compounds. Part VII. The additive formation of *cyclohexenes*.” By E. H. FARMER and F. L. WARREN.

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### THE THEODORE RICHARDS MEMORIAL LECTURE.

The Theodore W. Richards Memorial Lecture will be delivered by Sir Harold Hartley, M.C., C.B.E., F.R.S., on Thursday, April 25th, 1929, at 5.30 p.m., in the Meeting Hall of the Institution of Mechanical Engineers, Storey's Gate, Westminster, S.W. 1.

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List of Papers, or Abstracts thereof, received between February 21st and March 7th, 1929. (This List does not include the titles

\* Nominated by the Council.

of papers, or abstracts thereof, which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

- “Note on the determination of available oxygen by the Bunsen method.” By T. W. PARKER and P. L. ROBINSON.
- “An apparatus for the accurate control, by an air leak, of the pressure in a closed system which is being continuously evacuated.” By J. M. PETERSON and J. H. SHAXBY.
- “The introduction of the triphenylmethyl group into phenols. Part II.” By D. V. N. HARDY.
- “An improved calcium chloride tube.” By D. V. N. HARDY.
- “Methoxy-derivatives of thioxanthone.” By K. C. ROBERTS and S. SMILES.
- “The determination of the parachors of substances in solution.” By D. L. HAMMICK and L. W. ANDREW.
- “The binary system urea and ammonium nitrate. Molecular association in urea, and in ammonium nitrate.” By W. J. HOWELLS.
- “The influence of mercuric chloride on iodide reactions.” By W. B. POLLARD.
- “Aminobenzthiazoles. Part XII. The mobility of 1-amino-3:5-dimethylbenzthiazole. A case of complete reactivity in the aminothiazole form.” By R. F. HUNTER and W. E. PRIDE.
- “9-Benzhydrylanthrone and isodianthranyl.” By E. DE B. BARNETT and N. F. GOODWAY.
- “Note on high-temperature products of iron with hydrogen sulphide, carbon disulphide, and hydrogen selenide.” By J. B. PEEL, P. L. ROBINSON, and (in part) C. L. MAVIN.
- “Preparation of *o*-nitroacetophenone.” By W. O. KERMACK and J. F. SMITH.
- “Sur la viscosité de l'éther aux basses températures.” By E. VAN AUBEL.
- “The apparent influence of an electric field on the boiling point of benzene.” By J. W. SMITH.
- “The chemotherapy of some bromine derivatives of phenylarsinic acids and arsenobenzenes.” By A. HAYTHORNTHWAITTE.
- “Thioglycollamide as a reagent for identifying arsenic acids.” By H. J. BARBER.
- “Some derivatives of aryl thiol arsenious acids.” By H. J. BARBER.
- “A source of error in determining the constitution of di- and polysaccharides.” By J. C. IRVINE and R. P. MCGLYNN.
- “The constitution of Guareschi's cyano-butadiene acids. An attempt to synthesise  $\beta$ -isopropylglutaconic acid.” By C. S. GIBSON and J. L. SIMONSEN.
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**CERTIFICATES OF CANDIDATES FOR ELECTION AT THE  
BALLOT TO BE HELD AT THE ORDINARY SCIENTIFIC  
MEETING ON THURSDAY, MAY 2nd, 1929.**

**ALDINGTON, JOHN NORMAN**, 46, Long Lane, Ashton-on-Ribble, Preston. British. Assistant Works Chemist. B.Sc. (special) 2nd Class Honours in Chemistry (London). Registered student of the Institute of Chemistry. Assistant works Chemist, Siemens Electric Lamps & Supplies, Ltd., 1920-1928. (*Signed by*) G. W. F. Holroyd, C. W. Rogers, C. P. Hines.

**BAW, HLA**, 3, Tylney Road, Sheffield. Burmese. Student. B.Sc. (Calcutta). *Journ. Ind. Chem. Soc.*, Vol. III, No. 2. "The Use of Leucotrope as a Benzylating Agent." Demonstrator in Chemistry, University of Rangoon, Burma. *J.C.S.*, 1927, "o-Nitrobenzylphenyldimethyl ammonium chloride." (*Signed by*) W. P. Wynne, G. M. Bennett, S. Glasstone.

**BLOOM, JACK**, 38, Albert Grove, Leeds. British. Research Student. B.Sc. (Hons. I) Chemistry, Leeds, 1928. (*Signed by*) C. K. Ingold, C. W. Shoppee, J. W. Baker.

**BROOKE, RUPERT WOOLBY**, 19, Gloucester Road, S. Kensington, S.W. 7. British. Pharmacist. Member of the Pharmaceutical Society. Associate of the Apothecaries Society. First prizeman in Botany, *Materia Medica*, Dispensing. Thirty-one years in Pharmacy. Twenty years as Principal. Specialising in manufacturing, analytical, dispensing, and the professional side of Pharmaceutical Chemistry. Desirous of keeping in touch with the developments of Biological Chemistry, and to receive current literature and publications of the Society. (*Signed by*) Reginald Bowsher, Arthur C. V. Weston, George W. Ferguson.

**BUTT, FRANCIS ALAN**, Pentire, St. Mary's Hill, Paignton. British. Chief Chemist, Torquay & Paignton Gas Co. (*Signed by*) George William Slatter, H. Higham, Ernest Quant.

**CUNNINGHAM, ROBERT NEIL**, 62, Blenheim Gardens, N.W. 2. British. B.Sc. (Special in Chemistry) University of London. Research Student in Organic Chemistry at University College, London, since July, 1927. (*Signed by*) Henry Terrey, F. G. Donnan, R. Robinson.

**FUKUDA, MASAO**, Chemical Institute, Faculty of Science, Tohoku Imperial University, Sendai, Japan. Japanese. Research Student. Graduate of the Tohoku Imperial University in 1927 with dissertation on "The Constituents of *Typha angustata*, Bory. et Chaub" (*Bull. Chem. Soc. Japan*, 3, 1928, 53; C. 1928, Bd. 1, 2100). Engaged at present in research work in Organic Chemistry under Prof. H. Nomura at the Tohoku Imperial University. (*Signed by*) Riko Majima, Hiroshi Nomura, Sin-iti Kawai.

**GALLOWAY, JAMES**, 30, Buccleuch Street, Garnethill, Glasgow. British. Work's Chemist. Glasgow University. 4 years study in Faculty of Science. Manufacturing Chemistry: Coal Tar Products and Ammonia Products, Glasgow Corpn. Chem. Dept. (*Signed by*) T. S. Patterson, G. G. Henderson, S. Horwood Tucker, T. S. Stevens, F. R. Storrle.

**HIGGINBOTTOM, CONSTANCE**, Quarry Bank, New Mills, Nr. Stockport. British. Technical Assistant in Clinical Laboratory. M.Sc. (Victoria University of Manchester). Student at Manchester University—three years in the Honours School of Chemistry and one year as Research Student. (*Signed by*) Arthur Lapworth, Frederick Challenger, Arnold T. Peters.

**HOME-MORTON, ANDREW**, 27, Lancaster Gate, W. 2. British-born. General

Manager, The Hoffmann-La Roche Chemical Works, Limited, 51, Bowes Road, N. 13. M.Inst.C.E., M.I.Mech.E., M.I.E.E. (all of London). 1900—23, Consulting Engineer, responsible for, *inter alia*, the design, layout and installation of Buildings, Plant and Equipment for (i) Glasgow Main Drainage, Treatment by Chemical Precipitation of over 100,000,000 gallons of sewage per day, and (ii) many private concerns, engaged in Paper-making, Dyeing and Bleaching, Zinc-recovery, Brass extrusion, drawing and rolling, Whitelead-making, Sugar-refining, Extraction of Tar by-products, Fertilisers, etc. involving Chemical Processes. 1923—Date, General Manager of The Hoffmann-La Roche Chemical Works, Ltd., 51, Bowes Road, N. 13, Manufacturers and Distributors of Alkaloids, Fine Chemicals and Pharmaceutical Products. (*Signed by*) Herbert A. Berens, Ernest T. Neathercoat, Leonard Bayley.

JONES, JOHN LLOYD, 37A, Hartham Road, N. 7. British. Temporary Assistant Government Chemist. B.Sc. Wales [Aberystwyth College]. B.A. Oxon [Jesus College]. Hons. Chemistry, Wales, and Physics, Oxford. At present assistant to Sir Robert Robertson in his researches on infra-red radiations. (*Signed by*) Robert Robertson, J. J. Fox, Geo. Stubbs.

KARKHANAVALA, DADABHOY MANECKSHAW, "Tardeo Terraces," Tardeo Road, Bombay (India). Parsi Zoroastrian. Ag. Assistant Chemical Analyser to Govt. Bombay. Licentiate of Technical Chemistry (Victoria Jubilee Technical Institute), Bombay. Extensive experience in analyses of food, drugs, chemicals and other technical products in addition to toxicological analysis for the last six years in the office of the Chemical Analyser to Govt. Bombay. (*Signed by*) S. J. Shah, N. J. Vazifdar, C. H. Nanavati.

KENT, ANDREW, 207, Kenmure Street, Glasgow, S. 1. Scots. Assistant to Professor of Organic Chemistry. M.A., B.Sc. (Glasgow University). Five years on Chemistry Staff of Glasgow University. (*Signed by*) G. G. Henderson, T. S. Patterson, T. S. Stevens, F. R. Storrle.

LAYCOCK, JOHN CRAVEN, The Spinney, Market Lavington, Wiltshire. English. Student. Chemistry (Honours) Student, Cambridge University. (*Signed by*) A. J. Berry, F. G. Mann, R. G. W. Norrish.

LEISHMAN, MARGARET AUGUSTA, Wyberton, Park Hill Road, Croydon, Surrey. British. Demonstration in Chemistry, Bedford College, University of London. B.A. and B.Sc. (Oxon.). (*Signed by*) Ernest S. Hedges, James F. Spencer, M. P. Applebey.

LITTLEJOHN, WILLIAM ROWE, "Ronda," Evesham Road North, Reigate, Surrey. English. Analytical Chemist at White, Tomkins & Courage, Ltd., Reigate. B.Sc. (London), 1st Class Honours in Chemistry, 1928. Student at University College, Exeter, 1924—1928. (*Signed by*) W. H. Lewis, Ruth King, Ernest J. Parry, Milton Dewhurst.

MOFFITT, WILLIAM GEORGE, Bridge House, Carleton Road, Pontefract. British. Research Student. B.Sc. (Hons. I) Chemistry, Leeds, 1928. (*Signed by*) C. K. Ingold, C. W. Shoppee, J. W. Baker.

NAKANISHI, SOKICHI, Pharmaceutical Institute, Tokyo Imperial University. Japanese. Assistant of the Pharmaceutical Institute, Tokyo University. Graduated 1925 (T.I.U.). Assistant 1925. "Chemical Study of Seeds of *Pharbitis Nil*, Chois," *Journ. Pharm. Soc. Japan*, No. 520. "On Kessylalkohol," *ibid.*, No. 536, 544, 551. (*Signed by*) Y. Asahina, Junzo Shinoda, Shoichi Terada.

NANDI, BIRENDRA LAL, Prome Hall, University Estate, Rangoon, Burma. Hindu. Demonstrator in Chemistry, University College, Rangoon. M.Sc., Calcutta University. A paper on "Reduction of Nitrites, Nitrates, and Nitric Acid with Magnesium Amalgam; a New Method of Preparing Hyponitrites"

(*J.C.S.*, 1928, 1449). Demonstrator in Chemistry for 1 year in University College, Rangoon. (*Signed by*) D. H. Peacock, Maung Ba San, G. C. Moitra.

OCHIAI, EIJI, Pharmaceutical Institute, Tokyo Imp. University. Japanese. Assistant of the Pharmaceutical Institute, Tokyo Imperial University. Graduated 1922 (T.I.U.). Assistant 1925. "On Sinomenin," *Journ. Pharm. Soc. Japan*, No. 497, 503, 538, 539, 549. "On Matrin," *ibid.*, 522, 532, 537, 557, 560, 561. (*Signed by*) Y. Asahina, Junzo Shinoda, Shoichi Terada.

PENNYCUICK, Stuart Wortley, University of Adelaide, South Australia. British. Lecturer in Physical Chemistry. M.Sc. (Univ. of Queensland); D.Sc. (Univ. of Adelaide). Publications other than *J.C.S.*: *J. Amer. Chem. Soc.*, 1923, **45**, 1355; 1926, **48**, 6; 1922, **44**, 1133. *J. Phys. Chem.*, November 1928. *Aus. J. Exp. Biology*, 1926, **3**, 173; 1927, **4**, 99; 1928, **5**, 95; also various papers in the *Aus. Assoc. Adv. Science Reports*. *J.C.S.*, 1924, **125**, 2049; 1927, 2600; 1928, 551, 2018. (*Signed by*) Henry E. Armstrong, R. Robinson, H. Terrey.

RIDLEY, THOMAS MOORE, 18, Scotland Road, Carlisle. British. Pharmaceutical Chemist. Major Examination Pharmaceutical Society of Great Britain. Student of the late Professor A. W. Crossley, F.R.S., 1906—7. Member of the Board of Examiners, Pharmaceutical Society of Great Britain, since January 1927. I am desirous of receiving the Society's Publications. (*Signed by*) Wm. Forster, H. Humphreys Jones, Henry B. Mackie.

ROYLE, FRANK ALBERT, Research Dept., The Graesser Monsanto Chemical Works, Ltd., Ruabon, N. Wales. British. Research Chemist. M.Sc., Ph.D., Manchester. 1913 B.Sc. Chem. Honours (Manc.). 1914 M.Sc. 1916—1919, 1851 Exhibition War Scholarship. 1920—24 Assistant Lecturer, Chem. Dept., University, Manchester. 1924 Sir Clement Royds Scholarship (Manchester), resigned. 1924—1929 Chief Chemist, Graesser Monsanto Chem. Works, Ltd., Ruabon. Joint Author of: "Pungent Principle of Gingerol," Part I, *J.C.S.*, 1917, **111**, 777. "Capsaicin," Part I, *J.C.S.*, 1919, **115**, 1109. "Homocamphor," *J.C.S.*, 1920, **117**, 743. "Hydroxynaphthoic Acids," Parts I and II, *J.C.S.*, 1923, **123**, 1641, 1649. "The Nitration of  $\beta$ -Naphthoic Acid and some New Amino- and Nitro-naphthoic Acids," *J.C.S.*, 1926, 84. (*Signed by*) J. E. Myers, Fred Fairbrother, Colin Campbell.

RUZICKA, LEOPOLD, Utrecht. Organic Chemical Lab. Catharijuesingel 59. Swiss. Professor. "Dr. Ing." (*Signed by*) Jocelyn Thorpe, C. S. Gibson, N. V. Sidgwick.

SMITH, CHARLES GORDON, "Craigsidde," Higher Bebington, Cheshire. British. Chief Chemist to the Salt Union, Ltd. M.Sc., Birmingham. (*Signed by*) W. E. Gibbs, D. V. Plumbridge, T. P. Hilditch.

SULLY, BERNARD THOMAS DUDLEY, 10, Old Town, Clapham Common, S.W. 4. British. Analytical Chemist. B.Sc. (2nd Class Hons.), London. A.R.C.S. (2nd Class Hons.). A.I.C. Royal College of Science (1924—1927). Assistant Science Master (Chem.) Battersea Grammar School (1927—1928). Diploma in Education, University of London (1928). Present position, analytical chemist, Thos. Parsons & Sons. (*Signed by*) Jocelyn Thorpe, G. A. R. Kon, F. P. Walton.

SUMNER, ANDREW THEODORE, "Melatti," Hurst Road, East Molesey, Surrey. British. Civil Servant. B.Sc., London University. Assistant Lecturer, Chemical Dept., Middlesex Hospital, Medical School, 1911—14. Process Chemist with Messrs. Burroughs, Wellcome & Co., 1919—21. On the staff of Chemical Warfare Research Dept. from 1921 to date. (*Signed by*) J. Davidson Pratt, Jocelyn Thorpe, A. J. Allmand.

TERASAKA, MASANOBU, Tokushima Technical College, Japan. Japanese.

Lecturer. "Action of Organomagnesium Compounds upon Oxynitrils. I." (A New Method for the Preparation of Substituted Benzoin.) Y. Asahina and M. Terasaka, *Journ. Pharm. Soc. Japan*, 1923, 19, C. 1923, III, 434. (Signed by) Yasuhiko Asahina, Tatsuo Nakasato, Junzo Shinoda.

TYRRELL, LEONARD NOEL, 6, Providence Rd., Yiewsley, Middlesex. British Work's Analytical and Research Chemist. Three years chemist in the Analytical Laboratory of the Gramophone Co., engaged in miscellaneous works analyses, and the analysis of record materials in particular. Four years Chief Assistant Chemist, Chemical Research Laboratories, of Gramophone Co., Hayes. At present Chief Chemist to the Electramonic Co., in charge of all analytical and chemical research work, and (shortly) to take technical responsibility for the manufacture of records, matrices, recording waxes, etc. Also three years with the Techno-Chemical Laboratories of Clapham. (Signed by) P. C. L. Thorne, H. A. Williams, J. R. Boorer.

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

COOK, LAWRENCE HARVEY, Box 607, Menlo Park, Calif., U.S.A. American. Professor of Organic Chemistry at Santa Clara Univ. A.B., Stanford; A.M. Stanford. Teacher of chemistry, and research worker. (Signed by) James W. McBain.

## ADDITIONS TO THE LIBRARY.

### I. Donations.

ACADEMIE POLONAISE DES SCIENCES ET DES LETTRES. *Classe des Sciences Mathématiques et Naturelles*. Mémoires. Series A and B. No. 1, etc. Cracovie 1928 +. (Reference.)

— — Comptes Rendus Mensuels des Seances. No. 1, etc., Cracovie 1929 +. (Reference.) From the Academy.

AMERICAN CHEMICAL SOCIETY. Industrial and Engineering Chemistry. Analytical edition. Vol. I, etc. New York 1929 +. (Two copies.) From the Society.

CHEMICAL ENGINEERING AND CHEMICAL CATALOGUE. 5th edition. Edited by DUDLEY MAURICE NEWITT. London 1929. pp. 401. ill. (Reference.) 15s. net.

From the Publishers : Messrs. Leonard Hill.

COLLECTION OF CZECHOSLOVAK CHEMICAL COMMUNICATIONS. Year I, etc. Prague 1929 +. (Reference.) From the Editors.

ELEKTROTECHNISCHE ZEITSCHRIFT. (Zentralblatt für Elektrotechnik.) Year XLIX, etc. Berlin 1928 +. (Reference.)

From Dr. R. E. W. Maddison.

GLASSTONE, SAMUEL. Chemistry in daily life. London 1929. pp. vi + 250. ill. 6s. net. (Recd. 7/3/29.) From the Author.

HATFIELD, WILLIAM HERBERT. The application of science to the

steel industry. Edward de Mille Campbell Memorial Lecture. Cleveland 1928. pp. x + 154. ill. (*Recd.* 7/3/29.)

From the Author.

HAUSBRAND, EUGEN. Evaporating, condensing, and cooling apparatus. Explanations, formulæ and tables for use in practice. Translated from the 2nd German edition by ARTHUR C. WRIGHT. 4th English edition. Revised and enlarged by BASIL HEASTIE. London 1929. pp. 468. ill. 25s. net. (*Recd.* 6/3/29.)

From the Publishers : Messrs. Ernest Benn.

KONINKLIJKE AKADEMIE VAN WETENSCHAPPEN TE AMSTERDAM. Verslag van de gewone vergadering der Afdeeling Natuurkunde. Vol. XXXVIII, etc. Amsterdam 1929 +. (*Reference.*)

From the Academy.

KONOVALOV, DMITRI PETROVIC. Vapour pressure of solutions. Leningrad 1928. pp. viii + 67. ill. [In Russian.] (*Recd.* 18/2/29.)

From the Author.

LOWRY, THOMAS MARTIN, and SUGDEN, SAMUEL. A class book of physical chemistry. London 1929. pp. viii + 436. ill. 6s. 6d. net. (*Recd.* 18/2/29.)

From the Authors.

MARSH, JAMES ERNEST. The origins and growth of chemical science. London 1929. pp. x + 161. ill. 5s. net. (*Recd.* 19/2/29.)

From the Author.

RUSSIAN PHYSICAL AND CHEMICAL SOCIETY. Journal of Applied Chemistry. Vol. I, etc. Leningrad 1928 +. (*Reference.*) [In Russian.]

From the Society.

UNION OF SOCIALIST SOVIET REPUBLICS. *Thermotechnical Institute*. Annales. No. 1 (34), etc. Moscow 1928 +. (*Reference.*) [In Russian.]

From the Institute.

## II. *By Purchase.*

BADGER, WALTER LUCIUS, and BAKER, E. M. Inorganic chemical technology. New York 1928. pp. viii + 228. ill. 12s. 6d. net. (*Recd.* 22/2/29.)

HOUBEN, JOSEF, and FISCHER, WALTER. Das Anthracen und die Anthrachinone mit den zugehörigen vielkernigen Systemen. Leipzig 1929. pp. xxiii + 890. *M.* 90. (*Recd.* 10/1/29.)

KEFFER, ROBERT, in collaboration with CHARLES L. McNEIL. Methods in non-ferrous metallurgical analysis. Prepared for publication by ALLISON BUTTS. New York 1928. pp. xviii + 335. ill. 20s. net. (*Recd.* 22/2/29.)

LASSAR-COHN. Organic laboratory methods. Authorized translation from the general part of the 5th revised edition. By RALPH E. OESPER. Edited by ROGER ADAMS and HANS THACHER CLARKE. [Baltimore] 1928. pp. xii + 469. ill. 30s. net. (*Recd.* 22/2/29.)



LEWIN, LOUIS. Gifte und Vergiftungen. Vierte Ausgabe des Lehrbuchs der Toxikologie. Berlin 1929. pp. viii + 1087. ill. *M.* 55. (*Recd.* 22/2/29.)

[MANVILLE, OCTAVE, HADAMARD, JACQUES, and DARBON, A.] L'œuvrte scientifique de PIERRE DUHEM. Paris 1928. pp. 554. ill. 120 *fr.* (*Recd.* 15/2/29.)

MARTIN, HUBERT. The scientific principles of plant protection. London 1928. pp. xii + 316. 21s. net. (*Recd.* 17/1/29.)

MAYRHOFER, ADOLF. Mikrochemie der Arzneimittel und Gifte. Teil II. Die Arzneimittel organischer Natur. Berlin 1928. pp. x + 270 + 15 plates. ill. *M.* 18.50. (*Recd.* 15/1/29.)

MERNAGH, LAURENCE REGINALD. Enamels: their manufacture and application to iron and steel ware. London 1928. pp. xvi + 234. ill. 18s. net. (*Recd.* 20/12/28.)

NORTON, THOMAS. The ordinall of alchimy: being a facsimile reproduction from *Theatrum Chemicum Britannicum* with annotations by ELIAS ASHMOLE. With introduction by ERIC JOHN HOLMYARD. London 1928. pp. viii + 125. 10s. 6d. net. (*Recd.* 22/12/28.)

OSEEN, CARL WILHELM. Die anisotropen Flüssigkeiten, Tatsachen und Theorien. (Fortschritte der Chemie, Physik und physikalischen Chemie, Vol. XX.) Berlin 1929.

PAULING, HARRY. Elektrische Luftverbrennung. Halle (Saale) 1929. pp. viii + 188. ill. *M.* 17.50. (*Recd.* 15/2/29.)

PORTER, CHARLES WALTER. Molecular rearrangements. New York 1928. pp. 167. 17s. net. (*Recd.* 23/2/29.)

RICHTER, VICTOR VON, and ANSCHÜTZ, RICHARD. Chemie der Kohlenstoffverbindungen oder Organische Chemie. 12th edition. Edited by RICHARD ANSCHÜTZ. Vol. I. Aliphatischen Verbindungen. By FRITZ REINDEL. Leipzig 1928. pp. xvi + 882. (*Reference.*) *M.* 59.

RIEGEL, EMIL RAYMOND. Industrial chemistry: an introduction. New York 1928. pp. 649. ill. 37s. 6d. net. (*Recd.* 22/1/29.)

ROBERTS, J. KEITH. Heat and thermodynamics. London 1928. pp. xvi + 454. ill. 30s. net. (*Recd.* 20/12/28.)

ROSENTHALER, LEOPOLD. Grundzüge der chemischen Pflanzenuntersuchung. 3rd edition. Berlin 1928. pp. iv + 160. *M.* 9. (*Recd.* 16/1/29.)

SCHMIEDER, KARL CHRISTOPH. Geschichte der Alchemie. Halle 1832. Edited by FRANZ STRUNZ. München-Planegg 1927. pp. 28 + x + 613. *M.* 10. (*Recd.* 30/1/29.)

SCHULTZ, GUSTAV. Farbstofftabellen. 7th edition. By LUDWIG LEHMANN. Vol. I, etc. Berlin 1928 +. (*Reference.*)

SCIENTIFIC AMERICAN CYCLOPEDIA OF FORMULAS. Partly based upon the 28th edition of Scientific American cyclopedia of receipts, notes and queries. Edited by ALBERT A. HOPKINS. New York 1928. pp. viii + 1077. ill. (*Reference.*). 27s. 6d. net.

SNODGRASS, KATHERINE. Copra and coconut oil. California 1928. pp. xiv + 135. ill. 8s. net. (*Recd.* 22/1/29.)

THOMSON, SIR JOSEPH JOHN, and THOMSON, GEORGE PAGET. Conduction of electricity through gases. 3rd edition. Vol. I. Cambridge 1928. pp. viii + 491. ill. 25s. net. (*Recd.* 17/1/29.)

TRAVERS, MORRIS WILLIAM. The discovery of the rare gases. London 1928. pp. viii + 128. ill. 15s. net. (*Recd.* 20/12/28.)

TREADWELL, FREDERICK PEARSON. Analytical chemistry. 7th edition. Vol. II. Quantitative analysis. Translated, enlarged and revised by WILLIAM THOMAS HALL. New York 1928. pp. xiv + 848. ill. 30s. net. (*Recd.* 22/1/29.)

VAIL, JAMES G. Soluble silicates in industry. New York 1928. pp. 443. ill. 40s. net. (*Recd.* 17/1/29.)

VERNON, WILLIAM HAROLD JUGGINS. A bibliography of metallic corrosion, comprising references to papers on ferrous and non-ferrous corrosion (including methods of protection) published up to the end of 1927. London 1928. pp. xii + 341. (*Reference.*) 21s. net.

WAGNER, HANS. Die Körperfarben. (Chemie in Einzeldarstellungen, Vol. XIII.) Stuttgart 1928. pp. xx + 506. ill. M. 36. (*Recd.* 5/2/29.)

WHITEHEAD, S. Dielectric phenomena. II. Electrical discharges in liquids. Edited by E. B. WEDMORE. London 1928. pp. 137. ill. 12s. 6d. net. (*Recd.* 20/12/28.)

WOHRYZEK, OSKAR. Chemie der Zuckerindustrie. Ein Handbuch für Wissenschaft und Praxis. 2nd edition. Berlin 1928. pp. xvi + 680. ill. M. 38. (*Recd.* 22/2/29.)

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PROCEEDINGS  
OF THE  
CHEMICAL SOCIETY.

ANNIVERSARY DINNER.

THE Anniversary Dinner of the Chemical Society was held in the Town Hall, Leeds, on Thursday, 21st March, 1929, at 7 for 7.30 p.m. The President, Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., was in the Chair, and the following were present (282):

- |   |  |
|---|--|
| Achmatowicz, O.                                 | Bousfield, H. D., C.M.G., D.S.O.,        |
| Adam, N. K.                                     | T.D., J.P.                               |
| Allan, J.                                       | Bovill, P. J.                            |
| Anderson, J.                                    | Boyce, F.                                |
| Applebey, M. P.                                 | Boyle, C. H.                             |
| Applebey, Mrs. M. P.                            | Boyle, Mrs. C. H.                        |
| Appleyard, G. H.                                | Branson, F. W.                           |
| Asquith, B.                                     | Briggs, S. H. C.                         |
| Asquith, Miss K. R.                             | Briscoe, H. V. A.                        |
| Baillie, J. B., O.B.E., <i>Vice-Chancellor,</i> | Briscoe, Mrs. H. V. A.                   |
| <i>Leeds University.</i>                        | Bruce, J.                                |
| Bain, W.  | Burgess, W. A. A.                        |
| Baker, J. W.                                    | Burrell, Miss A. M.                      |
| Baker, Mrs. J. W.                               | Burton, H.                               |
| Baly, E. C. C., C.B.E., F.R.S.                  | Burton, Mrs. H.                          |
| Baly, Mrs. E. C. C.                             | Bywaters, H. W.                          |
| Barker, S. G.                                   | Bywaters, Mrs. H. W.                     |
| Barker, Mrs. S. G.                              | Calam, P.                                |
| Barritt, J.                                     | Calam, Mrs. P.                           |
| Bearder, E. A.                                  | Carr, S. E., <i>Assistant Secretary.</i> |
| Bedford, C. S.                                  | Cawood, W.                               |
| Bedson, P. P.                                   | Channon, H. J.                           |
| Belton, J. W.                                   | Channon, Mrs. H. J.                      |
| Bennett, Miss D. M.                             | Chapman, A. W.                           |
| Bennett, G. M.                                  | Charlton, W.                             |
| Bentley, A.                                     | Child, G.                                |
| Billmann, Einaar, <i>President, Union</i>       | Clarke, C. H.                            |
| <i>Internationale de la Chimie Pure et</i>      | Clarkson, G. D.                          |
| <i>Appliquée.</i>                               | Clayton, W. F.                           |
| Billbrough, S.                                  | Clemo, G. R.                             |
| Bodenstein, Max, <i>representing the</i>        | Clibbens, D. A.                          |
| <i>Deutsche Chemische Gesellschaft.</i>         | Coates, J. E., O.B.E.                    |

- Cobb, J. W., C.B.E.  
 Cobb, Mrs. J. W.  
 Cohen, J. B., F.R.S.  
 Colbeck-Welch, G. M.  
 Comber, N. M.  
 Comber, Mrs. N. M.  
 Connell, Mr.  
 Cooper, K. E.  
 Copley, James F.  
 Coppock, J. B.  
 Coppock, Mrs. J. B.  
 Craven, J. A.  
 Cronshaw, C. J. T.  
 Cronshaw, Mrs. C. J. T.  
 Cumming, W. M.  
*Daily Mail.*  
 Dawson, H. M.  
 Dawson, Mrs. H. M.  
 Denham, W. S.  
 Denham, Mrs. W. S.  
 Dixon, G.  
 Dixon, H. B., C.B.E., F.R.S., *Past President.*  
 Dixon, H. W.  
 Dodd, A. H.  
 Donald, M. B.  
 Donald, M. H.  
 Donnan, F. G., C.B.E., F.R.S., *Foreign Secretary.*  
 Draper, W. G.  
 Dunn, F. P.  
 Dunn, J. T.  
 Eagles, B. A.  
 Eastman, Cyril, *President, Society of Dyers and Colourists.*  
 Eastwood, D. B.  
 Eldridge, A. A.  
 Evans, T.  
 Everest, A. E.  
 Everest, Mrs. A. E.  
 Fargher, R. G.  
 Findlay, A.  
 Finn, C. P.  
 Fleck, A.  
 Forster, R. B.  
 Forster, Mrs. R. B.  
 Fowweather, F. S.  
 Frank, G. H.  
 Frobisher, Arnold.  
 Gawler, R.  
 Gawler, Mrs. R.  
 Gibson, C. S., O.B.E., *Secretary.*  
 Glasstone, S.  
 Gomersall, Miss.  
 Goss, F. R.  
 Gray, R. Whytlaw, O.B.E., F.R.S.  
 Gray, Mrs. R. Whytlaw.  
 Greenaway, A. J.  
 Gregory, J. C.  
 Hagues, G.  
 Hagues, Mrs. G.  
 Hanley, J.  
 Hardwick, W. R.  
 Hardwick, Mrs. W. R.  
 Harley, R. B.  
 Harral, J. C.  
 Haskew, R. S.  
 Hatswell, F. T.  
 Hatswell, Mrs. F. T.  
 Haworth, W. N., F.R.S.  
 Hay, F. W.  
 Hebden, G. A.  
 Henry, T. A., *Vice-President.*  
 Hickson, B.  
 Hill, W. B.  
 Hindle, G. W.  
 Hinks, E., M.B.E., *President, Society of Public Analysts.*  
 Hirst, H. R.  
 Hodsman, H. J., M.B.E.  
 Holborn, M. W.  
 Holborn, Mrs. M. W.  
 Houston, C.  
 Hughes, J. D. I.  
 Hunter, H.  
 Ingle, W. L.  
 Ingold, C. K., F.R.S.  
 Jaffé, Adoff.  
 James, E. C.  
 James, T. C.  
 Jamieson, J. Kay, *Dean of the Faculty of Medicine, Leeds University.*  
 Johnson, G. Y.  
 Jones, B. Mouat, D.S.O.  
 Kenner, J., F.R.S.  
 King, A. T.  
 Kitson-Clark, E. D.  
 Lady Mayoress of Leeds.  
 Lampitt, L. H.  
 Lascelles, Rt. Hon. the Viscount, K.G., D.S.O.  
 Legg, V. H.  
 Legg, Mrs. V. H.  
 Levinstein, H., *Chairman of Council, Society of Chemical Industry.*  
 Liley, T. A.

- Livesey, C. E. L.  
 Lord Mayor of Leeds.  
 Lawson, W.  
 Luff, B. D. W.  
 Lunn, J. W.  
 Macaulay, Mr.  
 McCandlish, David.  
 McCandlish, Mrs. David.  
 McCandlish, Mrs. Douglas.  
 McCandlish, Mrs. Douglas.  
 McCombie, H., D.S.O., M.C.  
 McLennan, B. G.  
 McSwiney, B. A.  
 McSwiney, Mrs. B. A.  
 Manley, C. H.  
 Manley, Mrs. C. H.  
 Marston, H. B.  
 Mason, Miss E.  
 Mason, H. M.  
 Mason, Mrs. H. M.  
 Masson, Irvine, M.B.E.  
 Mellor, L.  
 Milne, W. P.  
 Milne, Mrs. W. P.  
 Mitchell, A. D., *Assistant Editor*.  
 Moffitt, W. G.  
 Mond, Emile S., *Vice-President*.  
 Moore, T. S., *Secretary*.  
 Morris, H. J.  
 Narayanan, B. T.  
 Nicholson, A.  
 Nickols, N. F.  
 Orton, K. J. P., F.R.S.  
 Parkin, John.  
 Parkin, Mrs. J.  
 Patterson, H. S.  
 Patterson, J. W.  
 Pease, C.  
 Pentecost, L. S., M.C.  
 Pentecost, S. J.  
 Perkin, A. G., F.R.S.  
 Perkin, Mrs. A. G.  
 Perkin, W. H., F.R.S., *Past-President*.  
 Philip, J. C., O.B.E., F.R.S., *Vice-President*.  
 Philip, Miss J. L.  
 Pickard, R. H., F.R.S.  
 Pickering, G. F.  
 Pickering, Mrs. G. F.  
 Pitt, H. Russell.  
 Rao, K. A. N.  
 Richardson, F. W.  
 Rimmington, C.  
 Roberts, J. A. F.  
 Robertson, Sir Robert, K.B.E.,  
 F.R.S.  
 Robinson, R., F.R.S.  
 Rowe, F. M.  
 Rowe, Mrs. F. M.  
 Rule, A.  
 Russell, Mrs. F. C.  
 Russell, J.  
 Russell, W. R., *Sectional Chairman,*  
*Coke Oven Managers' Association.*  
 Savage, F. C.  
 Shaw, Miss F. R.  
*Sheffield Telegraph.*  
 Shoppee, C. W.  
 Sidgwick, N. V., F.R.S.  
 Simonsen, J. L.  
 Simonsen, Mrs. J. L.  
 Slade, R. E.  
 Slade, Mrs. R. E.  
 Smallwood, A.  
 Smith, C., *Editor*.  
 Smith, F. E.  
 Smith, G. F.  
 Smith, H. Greville.  
 Smith, Henry G.  
 Smith, J. Cruickshank.  
 Smith, T. B.  
 Stembridge, G.  
 Stevenson, W. W.  
 Stock, C. J. H.  
 Tainsh, P., O.B.E.  
 Tankard, A. R.  
 Tansley, L. B., M.C.  
 Taylor, F.  
 Tetley, C. F., J.P.  
 Tetley, Col. C. H., D.S.O., *Pro-Chancellor,*  
*Leeds University.*  
 Tetley, Mrs. C. H.  
 Tetley, E. H.  
 Thomas, R.  
 Thompson, F. C.  
 Thompson, Mrs. F. C.  
 Thompson, J. T.  
 Thorpe, J. F., C.B.E., F.R.S., *President*.  
 Thorpe, Mrs. J. F.  
*The Times.*  
 Towers, J. C.  
 Turner, Miss E. G.  
 Usher, F. L.  
 Vardy, W. A. S.

Vardy, Mrs. W. A. S.	Wilson, F. J.
Vass, C. C. N.	Wilson, Capt.
Waghray, P. N.	Witham, E.
Walker, F. H.	Woolcock, J. W.
Watson, H. W.	Wuorinen, O. A.
Watson, Mrs. H. W.	Wynne, W. P., F.R.S., <i>Past-President.</i>
West, Miss E.	<i>Yorkshire Observer.</i>
Wightman, W. A.	<i>Yorkshire Post.</i>
Wightman, Mrs. W. A.	Young, A. F.
Williams, R. H.	

The following is a list of the Toasts proposed :—

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

By The Right Honourable THE VISCOUNT LASCELLES, K.G., D.S.O. :—

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

By Sir ROBERT ROBERTSON, K.B.E., D.Sc., F.R.S., Vice-President :—

4. “The City of Leeds,” coupled with the name of the Lord Mayor of the City of Leeds.

By Professor HAROLD B. DIXON, C.B.E., D.Sc., F.R.S., Past President :—

5. “The University of Leeds,” coupled with the name of Dr. J. B. BAILLIE, O.B.E., M.A., Vice-Chancellor of the University of Leeds.

By Professor R. WHYTLAW GRAY, O.B.E., Ph.D., F.R.S. :—

6. “The Guests,” coupled with the name of Professor EINAAR BILLMANN, President, Union Internationale de la Chimie Pure et Appliquée.

After the Loyal Toasts had been honoured, VISCOUNT LASCELLES, proposing the Toast of “The Chemical Society,” said :—

“Upon my shoulders has been put the duty of proposing the most important toast of the evening, and I rise with great trepidation to do so, partly because I have never felt very much at home in the presence of great scientists, and I have always been very frightened of the chemists.

“Now the present company has started the evening by instilling a mortal fear in me—one of you gentlemen in front of me introduced to our company a black cat, and a black cat always gives me a furry feeling of the tongue. I therefore must beg you to excuse me if



my tongue plays me false and I say anything I should not. But, ladies and gentlemen, on behalf of the West Riding of Yorkshire I do want to express our great pleasure in having this great and important Society in our midst. I say so especially because there is, I am confident, no portion of this country which owes more to the activities of the science of chemistry.

“ In the Charter of this Society it is stated that it was formed for the advancement of chemical science as connected with the prosperity of manufactures in the United Kingdom. Now, we in the West Riding of Yorkshire are more dependent upon the discoveries connected with the art of dyeing than almost any other county in the country, and the great achievement which was started by two Fellows of this Society—Frankland and Crum Brown—and further developed by Sir William Perkin, has been instrumental, if not in creating the prosperity of a large portion of this county, at any rate in saving it from the worst periods of distress which have fallen upon other portions of the country. The art of dyeing has so strong an influence upon the prosperity of our textile industry that I need not labour the point any more with a West Riding audience. The textile industry is widespread. Weaving, spinning, and the making of the machinery which is used in those industries, which again reflects upon the iron and steel industry in the southern portion of the county—all of them have to some extent benefited by these great discoveries. The intimate connection which exists between this Society and the University of Leeds has been greatly fostered by the son of one of those distinguished gentlemen whom I have named, namely, Professor A. G. Perkin.

“ It is not my intention to trespass upon the toast which will be proposed to your notice later in the evening, but, as I understand the activities of the Chemical Society, they are very largely connected with the dissemination of knowledge and applying the discoveries which take place in the sphere of chemistry for use in the practical life of this country. We have noted the happy connection between this Society and the University of Leeds—a combination which I hope will in time achieve even greater things than it has already done for the benefit of the West Riding of Yorkshire.

“ Mr. President, your Chemical Society has an income which I am sure you find inadequate for the uses to which you would like to put it, but I have not yet met a Society or a man that had an income adequate to the uses to which it or he would like to put it, and, if I may say so, the Society or the man whose income is adequate to the uses to which he would like to put it is one whose energy is dwindling. The man whose energy is on the increase will always require more income and more scope for that energy. Let me hope that this

Society, in common with all others, continues to find its income inadequate on the ground that I have already mentioned. Nevertheless, I ask you, ladies and gentlemen, to join me in wishing for an increased income and prosperity for the Chemical Society, and I ask you to rise and empty your glasses in order to prove the sincerity of your wishes."

The PRESIDENT, who responded, said: "In the first place I should like to thank Lord Lascelles for the kindness he has shown us in coming here to-night and also for the very happy words in which he has proposed the toast of 'The Chemical Society.' I think you will agree that not for many years has this toast been proposed in such admirable terms as those which Lord Lascelles has used to-night.

"It is not my duty to propose the toast of 'The Guests,' but I should like to mention that besides Lord Lascelles, we have present with us the Lord Mayor and Lady Mayoress of Leeds and the Vice-Chancellor of the University of Leeds, and we wish to offer them a very hearty welcome. There are certain telegrams I have to read. One is from Dr. Whiteley, wishing success to the meeting, another from Dr. Slater Price, our Treasurer, expressing regret for his inability to be present, and the third from the French Society of Chemical Industry. My next duty is to thank the General Committee and the Executive Committee, of whom Professor Whytlaw Gray is the Chairman, and particularly Mr. H. S. Patterson, who has undertaken the very arduous secretarial work attaching to a meeting of this kind. I would like to express, on my own behalf and on that of the Council and the Fellows, my sincere thanks to these gentlemen. Also we have a number of co-operating Societies who have helped to bring about what I feel, and you will all agree, is a successful meeting—the local sections of the Institute of Chemistry, the Society of Chemical Industry, the Society of Public Analysts, the Coke Oven Managers' Association, and the Society of Dyers and Colourists. We are profoundly grateful to them for what they have done.

"Another pleasant duty I have to perform is to offer the congratulations of the Society to those Fellows who have completed fifty years in Fellowship. Mr. William Jago, I understand, is unable to be present at the Dinner, though he attended the Annual General Meeting, but we have present Professor P. Phillips Bedson, and we all wish to express to him our heartiest congratulations, coupled with the hope that he may not only be here ten years hence, but twenty years hence.

"Well, Lord Lascelles, I feel that you have never met so many chemists before. They are not really a bad lot. As was remarked

by our Foreign Secretary, speaking to the President of the Royal Academy at our last Anniversary Dinner, 'They are not so bad as they are painted.' But they suffer under one very great disadvantage—they are saddled with a name which is given by Act of Parliament to some totally different body of people who in other countries are called apothecaries and druggists. In almost every other country in the world the people who dispense drugs are called druggists. I doubt whether the Fellows of this Society are really competent to fulfil the functions of a druggist. It is possible that quite a number of people in this room would be able, after mature consideration, to tell the difference between Epsom salts and oxalic acid, but I doubt if any who attempted to prescribe a dose of either could avoid being prosecuted for manslaughter. Why people who deal with minerals should be called mineralogists, and people who deal with chemicals should not be called chemicalogists, no one knows.

"This, ladies and gentlemen, is my last appearance as President at a public dinner. I go on functioning till next March, but my spring will be run down just before the anniversary meeting next year, and therefore I should like to point out to you the progress the Society has made during the year I have held the Presidency.

"I think the most important item in that connection is the fact that we have been definitely recognised by the Inland Revenue as a Society constituted in the public interest. That is a real step forward. It shows that the Society has undertaken and carried through the work which was assigned to it in its Charter so many years ago. It has published freely and placed everything at the disposal of those who wish to utilise it. I don't know whether I can say anything—I should like to—about the very large number of chemical societies existing in this country. I touched upon that point in my address this afternoon. I don't know why English people are so intensely individual, but it is a characteristic of British people and has to be dealt with. It makes us a nation, in a sense, in many respects, greater or better than others, but it has its handicaps. It seems to me that the Anglo-Saxon race is apt to have too many queen bees—people who want to hive off and form societies of their own. Well, ladies and gentlemen, that may be an excellent thing from an apiarian point of view—I am sure it is a very bad thing from a chemical point of view. If we really take matters into consideration, we may find, as we have found in the last few years, that we have many points in common, and we can save duplication and so forth by co-operation."

Sir ROBERT ROBERTSON proposed "The City of Leeds," and in

doing so said : “ The toast which I have to lay before you is that of ‘ The City of Leeds,’ coupled with the name of the Lord Mayor. In proposing such a toast, the first thought that naturally comes to one’s mind is that of hospitality. I speak with the recollection of two years ago, when the British Association met in Leeds, and all of us who were here on that occasion will recollect the wonderful hospitality we received at the hands of this city. We recollect the civic hospitality, and we have the pleasantest of memories of the private hospitality of its citizens and of the beauty of the surroundings of the city. To refresh my memory I had recourse to that blue book issued by the British Association, and in that book you will find possibly some of the reasons why Leeds is the great city it is. You will find references to the geological formation, strata and line, the geographical contours of the land, its position with regard to rivers, and all that sort of thing, with the implication that these have been the features which have made it great, but I prefer to think there is another reason—the essential qualities of the Yorkshireman. The chief guest of this evening has told us of the great diversity of industries which are the salvation of this city. Its fame and its prosperity rest not upon one foundation, but upon many, and our President this afternoon in his review laid stress upon the close collaboration and the necessity for it in the future.

“ The present Lord Mayor of the city is characterised by his devotion to civic duty. For a long time his idealism in civic matters has been carried to a point which places him on a pinnacle in regard to these matters. He said to-day in his civic welcome that he felt somewhat awkward in the presence of scientific men. I should like to assure him we are very human people.”

The LORD MAYOR of LEEDS, in responding, said : “ I am grateful for the very gracious words used in relation to the city. I appreciate very highly Sir Robert Robertson’s reference to the wonderful hospitality of Leeds, which I think is magnificent, but what I couldn’t quite understand was something he said about rivers. We have a river in Leeds—perhaps some of you have seen it. If not, I think you ought to inspect it, with a view to have it treated. I have had the advantage of tracing it to its source. If ever you have the chance of going to Malham, and seeing the beginnings of it, you will hardly believe it is the same river which passes through Leeds. It seems to have gathered a good many things in its progress. If you suffered from blindness, you would not be able to see it, but so long as your nasal organ is in good trim, you will discover it all right by walking near it. I don’t consider it one of the beauties of Leeds, and I am sure you will forgive me if I just exempt the river

from the list of the beauties of the city of which we who live here are so proud. Who pollutes the river? Well, there may be somebody here from Bradford, and I have heard it said that although Bradford is not exactly on the river side, there is a possibility of matter from Bradford getting into the river. I don't think it all gets into the river as it passes Bradford—some gets in a little higher up nearer Skipton.

“I have often heard Leeds compared with Manchester, and I know quite a number of interesting instances in which Manchester and Leeds have competed. We do think sometimes that we will really have a ship canal to Leeds, so that we can compete with Manchester on a more equal footing.

“The President has said that Britishers are apt to produce too many queen bees. Personally I am very grateful that women are now asked to share the responsibility in the government of the city and the country. What are we going to do to mark the incoming of that tremendous change? I think that the fact that this city and all our towns are going to be governed by the women as well as the men is a remarkable development in the history of the country, and I am proud to be a Britisher in this particular, whether we have too many queen bees or not. In some parts of the world they are heading for far worse forms of government, whereas we in this country are marching steadily forward to the ideal government for the human race, and I am proud that I happen to be the Lord Mayor of this great city at a time when women and men are to share equally in its government.

“The development of cities brings with it a great need for collective life, and demands, in my judgment, an intensified collective consciousness. It needs a bigger man to say ‘we’ than it does to say ‘I,’ and it takes a very much bigger man to act ‘we’ than it does to act ‘I.’ If by any means we can help to develop the collective sense and collective enterprise, we ought to be proud. We want more private enterprise, so that we may have more collective enterprise. Our cities must not be asleep as corporate bodies while the citizens are struggling to develop the common life. Collectively we must be alive to provide the conditions which will make possible the developments that private enterprise is so anxious to bring about.”

Professor HAROLD B. DIXON proposed “The University of Leeds.” He said, “Mr. President, I have known the Leeds University in its various forms for more than fifty years. I knew it originally as the Yorkshire College of Science, which became famous not only throughout Yorkshire, but throughout the whole country, by the brilliant work of its staff. Just to mention only one instance—that wonderful symposium on coal written by five professors of the

Yorkshire College of Science. It was a scientific treatise with learning put readably that would be hard to equal. For those professors—and I had the privilege of knowing them all—were masters of their several Sciences, and they not only achieved a great fame in the country, but they persuaded practical Yorkshire to believe that just as Science had improved her industries, so it might be that her thought and feeling would be raised by the cultivation of the Arts in her midst. Hence Science joined hands with the Arts and the Yorkshire College began a career which has continued ever since, until it has culminated in the great and growing University of Leeds.

“ But there were those of that generation who didn't altogether appreciate this equal union of the Arts and Sciences. I remember very well Huxley dealing with those pessimists. There are people, he said, who look on this scientific birth of our times as a sort of monster rising out of the sea with the purpose of devouring the Andromeda of the Arts. And now and then a would-be Perseus, equipped with the cap of invisibility, tries conclusions with the dragon of Science. I rather think Huxley thought that the real end of the story would be—in fact was, as Yorkshire now knows—the marriage of the dragon of Science and the Andromeda of Art, and perhaps we should look upon Perseus as a kind of liberator who cut off the shackles that bound Andromeda to the rock.

“ It has been said that there is some kind of rivalry between Manchester and Leeds; I rather think there has been an *entente cordiale*. If we in the past gave to Leeds three distinguished chemists, Leeds has now repaid us with a brilliant physiologist. Everyone who knew the first Principal and Vice-Chancellor of Leeds, Professor Bodington, recognised that he bore great learning and urbanity like a garment. Many will remember Michael Sadler, whose spell seemed to have the power of reducing eloquence almost to the level of an exact science. I have not the privilege of knowing your present Vice-Chancellor. Of his academic Odysseys I can only beg the Muse to record ‘ how many are the men whose cities he has seen, and whose mind he has learnt.’ But if we had to look for one who could hold the scales evenly between Science and the Arts, we might well find him in a philosopher who holds, with Hegel, that ‘ Reason is the essential nature of Reality,’ or, if you prefer it, that ‘ Reality is the essential nature of Reason ’—for philosophers applied the principle of the reversible equation long before chemists rediscovered it. I think I can quote one other Hegelian phrase that may appeal to him—that there is a logic inherent in the development of all human-institutions: I presume also then in the development of the University of Leeds.

“ I give you the toast of ‘ The University of Leeds ’ coupled with the name of the Vice-Chancellor.”

Dr. J. B. BAILLIE, Vice-Chancellor of the University of Leeds, in responding, said : “ First of all, may I express, on behalf of my colleagues here and of the University as a whole, our grateful appreciation of the very gracious terms in which Professor Dixon has proposed this toast, and to you all for the way you have received it ?

“ We are happy indeed to welcome the Chemical Society on its eighty-eighth birthday in this city. In Yorkshire at that age people just begin to be young, and we trust this is the beginning for you of a future of increased prosperity—financially and otherwise. For another reason, too, it is appropriate you should have come here, because this city is celebrated, amongst many other things, for having produced one of the founders of modern chemistry—Priestley. In Leeds you have an illustration of that close association between science and industry which I trust is to be in the future a characteristic of all the great industrial cities of the world. It may be said that the University represents the intellectual side of industry. I understand, Mr. President, that you, this afternoon, dealt with that fruitful and important subject, the alliance between science and industry. That is a topic which is constantly discussed in this area, and, indeed, it was largely the association of science and industry that started the University. I trust you laid stress upon the fact that the practical application of science is by no means easy. I have come to the conclusion that the practical application is in certain respects far more difficult than purely theoretical activity.

“ We in the University are doing our best to advance the boundaries of chemical science. We have in our departments seven distinct sections of chemistry represented. We trust we are able to assist you as a Society as well as industry, which depends upon chemical science.

“ After all, this science of chemistry is one of the oldest forms of curiosity in human history. It goes back certainly to the time of the Egyptians. It has stimulated not merely the intellectual curiosity, but the cupidity of mankind. Reputations have been won and lost, fortunes have been lost and found. This science has developed the resources of mankind in managing the forces of nature as few other sciences can be said to have done. The ingenuity displayed by you and conceived by you in trying to get to the heart of the material world awakens our admiration and wonder. Your success seems to depend on a peculiar combination of poetry, patience and penetration. How far you will go in the future no man can say. You have already done a very great deal for this country,

and I am satisfied that in the future you are destined to do much more."

Professor R. WHYTLAW GRAY gave the toast of "The Guests." He said: "It is a delightful duty to propose such an important toast. Other speakers, I think, have alluded to the fact that this is the first time the Chemical Society has taken its guests to Yorkshire. As I look round the tables, I must say I feel very proud and perhaps a little abashed at having to propose the health of so many bright stars. In such a constellation I derive comfort from the reflection that they are nearly all of the 'first magnitude.'

"First of all, I would offer a very cordial welcome to our two distinguished foreign representatives, Professor Einaar Biilmann and Professor Max Bodenstein. Professor Biilmann's activities range over wide fields of chemistry, and among his later investigations I may mention his important work on hydro-electrodes, which has had far-reaching consequences and added to his great reputation as a physical chemist. He has also been an active worker in international chemistry. Professor Bodenstein is one of the great outstanding figures of the world in physical chemistry, and our Society is to be congratulated on having at this dinner so distinguished a representative from the German Chemical Society.

"We have here to-night nearly every shade of chemical activity represented—pure and applied. We have Dr. Herbert Levinstein—and all chemists will recall the great part played by his father—and also Mr. Cyril Eastman and Mr. E. Hinks. We are also delighted to have with us the Lord Mayor of Leeds, and everyone will extend a hearty welcome to Col. Bousfield, Col. Tetley, and others whom it is our privilege to entertain."

Professor BIILMANN, in responding, said: "Mr. President, My Lord, ladies and gentlemen, I shall have the very great honour to reply to the toast of the guests. In the first place, I must thank the Chemical Society and our British colleagues for the very kind invitation to come to Leeds and attend this annual meeting and this Dinner here to-night. In the second place, I wish to thank Professor Whytlaw Gray for the very charming way in which he has proposed the toast of the health of all the guests, including myself.

"The Chemical Society, if I am allowed to say so, is a little like the moon. Every month a new moon shines on the earth, and every month a new number of your Journal shines in our laboratories all round the world and tells us what you are doing in chemistry here in old England. And even a chemist who has never had the luck to visit England knows a great deal not only about chemistry but also about English chemists, if he reads that Journal of yours. But just



as we only know one side of the moon, and have never seen the other, so in your Journal only one side of our English colleagues presents itself to us, and of course we are very eager to see the other side of you as well, and to do so you have given us the most excellent opportunity here in Leeds.

“ I think some people might ask, What is the use of such an annual dinner? But they only ask because they have not read the old philosophers as they should have done. But we remember that Democritus, the old philosopher, one of the parents of the atomic theory—yes, Democritus himself said that life without feasts is like a highway without inns. And so we, the chemists, the true pupils of the old man Democritus, we know the use of personal meeting as here between colleagues, personal exchange of views, personal friendship between men of science, and of personal mutual confidence and intimacy, which is so natural to men of science, regardless of nationality, because science itself is international—the most international thing of all, the quintessence of internationality. There is certainly positive affinity for international co-operation between all chemists, and I hope that the International Union may be a good catalyst for this reaction, so that the natural state of equilibrium may be established. But although science itself is international, all of us belong to a nation and bear the impress of our nationality, and we wish to do so, I do so, and you do so, and we wish to honour our country through the work we do. Not only that, but all of us wish to decide what we shall do, which problem we shall treat, and we will never allow anybody to tell us that we ought to do other things than those we care to do. Only so can we make good science. If anyone comes and wants to organise our personal scientific work, we may reply to him in the words of my famous countryman, Hamlet, Prince of Denmark: ‘ You would play upon me . . . as on a pipe; . . . you would seem to know my stops. . . . Call me what instrument you will, though you can fret me, you cannot play upon me.’

“ Yet our science is international, and we all pursue the same end. We are like those men who, having to make a tunnel through a mountain, start from opposite sides: from north and south they break their way through the darkness of the mountain, quite certain to meet each other in the depths of the rocky mass. Why so certain? Because they took bearing of the stars far, far away. And the same we do, taking bearing by the stars of natural science, the truth far away from opinions which change every day.

“ Surely life in the chemical laboratory makes a man modest regarding the importance of his personal opinions. Every day’s experimental work tells him that ‘ there are more things in heaven and earth than are dreamt of in our philosophy ’—if I may quote again Prince Hamlet.

“ But I have to come back to our hosts. I said just now that all of us wish to honour our own country by our work. In London, in the Tate Gallery, I saw a picture by Millais, showing an old sailor sitting with maps of the polar region and studying how to pass them. On the frame are carved these words: ‘ It might be done, and England should do it.’ I think the same words are carved in your minds when you treat problems of our science, and I wish luck to the English chemists in their work for the progress of chemistry and for the honour of their country.

“ I beg my fellow guests to drink together with me to the honour of the English chemists and the Chemical Society.”

Professor MAX BODENSTEIN also briefly responded to the toast, and expressed his pleasure at being present in the industrial and musical city of Leeds. He emphasised the common interest between scientific people the world over, and the friendship that existed between them. He trusted that these good relationships would be fostered and encouraged in the future.

The dinner concluded with the singing of the National Anthem.

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### **PEDLER LECTURE.**

The first Pedler Lecture will be delivered by Professor W. H. Perkin, Sc.D., LL.D., F.R.S., on Thursday, May 30th, 1929, at 5.30 p.m., the title of his lecture being “ The Early History of the Synthesis of Closed Carbon Chains.” The lecture will be given in the Meeting Hall of the Institution of Mechanical Engineers, Storey’s Gate, St. James’s Park, S.W. 1. Tickets of admission will not be required.

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### **LIST OF FELLOWS FOR 1929.**

It has been decided to publish the List of Fellows for 1929, and to supply it to those Fellows who make application before August 31st, 1929. In order that the new List may be as complete as possible, Fellows are asked to notify the Assistant Secretary of any change of address or other alteration before the end of July.

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### **RESEARCH FUND COMMITTEE MEETING.**

A meeting of the Research Fund Committee will be held next June. Applications for grants, to be made on forms obtainable from the Assistant Secretary, Chemical Society, Burlington House, Piccadilly, London, W. 1, must be received on or before Saturday, June 1st.

All those who received grants in June 1928, or in June of any previous year, whose research grant accounts have not been closed by the Council, are reminded that their reports must be returned to the Assistant Secretary by June 1st.

## ADDITIONS TO THE LIBRARY.

### I. *Donations.*

ABDERHALDEN, EMIL. [Editor.] Handbuch der biologischen Arbeitsmethoden. Abt. I. Chemische Methoden. Teil 2, 2 Hälfte. Heft iii. Berlin 1929. pp. 1969 to 2148.

From the Publishers : Herren Urban & Schwarzenberg.

BAYLEY, THOMAS. A pocket book for chemists, chemical manufacturers, metallurgists, dyers, distillers, brewers, sugar refiners, photographers, students, etc. 9th edition. Edited by ROBERT ENSOLL. London 1929. pp. xvi + 460. (*Reference.*) 8s. 6d. net.

From the Publishers : Messrs. E. & F. N. Spon.

BRIGGS, DENNIS BROOK. Chemical analysis, qualitative and quantitative. London 1928. pp. viii + 144 + 135. ill. 6s. net. (*Recd.* 27/3/29.)

— Qualitative analysis. London 1928. pp. viii + 144. 3s. 6d. net. (*Recd.* 27/3/29.)

From the Author.

CONSTABLE, FREDERICK HURN. A concise summary of elementary organic chemistry. London 1929. pp. xiv + 149. 4s. 6d. net. (*Recd.* 22/3/29.)

From the Publishers : Messrs Methuen & Co.

FALCIOLA, PIETRO. Trattato di chimica analitica qualitativa. Vol. I. Milano 1929. pp. xx + 512. L. 75. (*Recd.* 16/4/19.)

From the Publishers : Soc. An. Istituto Editoriale Scientifico.

MENSCHUTKIN, NIKOLAI ALEXANDROVICH. Analytical chemistry. 15th edition. Moscow 1929. pp. 528. ill. [In Russian.] (*Recd.* 9/4/29.)

From Professor B. N. Menschutkin.

### II. *By Purchase.*

CURTIS, C. A. Künstliche organische Pigmentfarben und ihre Anwendungsgebiete. Berlin 1929. pp. vii + 230. M. 24. (*Recd.* 21/3/29.)

JANDER, G. and PFUNDT, O. Die visuelle Leitfähigkeitstitation und ihre praktischen Anwendungen. (Die chemische Analyse. Vol. XXVI.) Stuttgart 1929. pp. viii + 64. ill. (*Reference.*) M. 8.80.

MANTELL, CHARLES LETNAM. Industrial carbon. New York 1928. pp. x + 410. ill. 21s. net. (*Recd.* 5/4/29.)

MECKE, REINHARD. Bandenspektren und ihre Bedeutung für die Chemie. (Fortschritte der Chemie, Physik und physikalischen Chemie, Vol. XX.) Berlin 1929.

SOMMERFELD, ARNOLD. *Atombau und Spektrallinien. Wellenmechanischer Ergänzungsband.* Braunschweig 1929. pp. x + 352. ill. *M.* 14.50. (*Recd.* 21/3/29.)

UNITED STATES. *Institute for Government Research.* The Bureau of Chemistry and Soils, its history, activities and organization. By GUSTAVUS A. WEBER. Baltimore 1928. pp. xii + 218. 7s. net. (*Recd.* 20/3/29.)

### III. Pamphlets.

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research.* Pamphlet No. 10. The health and nutrition of animals. Reports by SIR ARNOLD THEILER and JOHN BOYD ORR. Melbourne 1929. pp. 76.

HENDRICK, JAMES. Some notes on the conditions of nitrification. (From the *Proc. Papers 1st Int. Cong. Soil Sci.*, 1927, 3.)

HENDRICK, JAMES, and NEWLANDS, GEORGE. The mineral composition of the soil as a factor in soil classification. (From the *Proc. Papers 1st Int. Cong. Soil Sci.*, 1927, 4.)

HENDRICK, JAMES, and WELSH, H. D. The substances removed by the drainage from a Scottish soil. (From the *Proc. Papers 1st Int. Cong. Soil Sci.*, 1927, 2.)

LOZANIĆ, S. M. Numerical regularities in the atomic weights of elements. (From the *Bull. Int. Acad. Sci. Bohême*, 1928.)

MINES DEPARTMENT. *Safety in Mines Research Board.* Paper No. 51. The testing of explosives for use in fiery coal mines. London 1929. pp. 50 + 5 plates.

NEWLANDS, GEORGE. Scottish soil types with special reference to Northeast Scotland. (From the *Proc. Papers 1st Int. Cong. Soil Sci.*, 1927, 4.)

PEREIRA, ARTUR CARDOSO. A vida e a obra de M. Berthelot. (From the *Rev. Quím. Pura e Applicada*, 1928.) ill.

— A obra e a vida de James Marsh. (From the *Arch. Inst. Med. Legal, Lisboa*, 1929, Series B, 3.) ill.

SCIENTIFIC AND INDUSTRIAL RESEARCH. Department of *Engineering Research.* Special Report No. 12. Lanoline rust preventers. By C. JAKEMAN. London 1929. pp. iv + 22. ill.

— — Special Report No. 15. Properties of materials at high temperatures. V. The "creep" strength of a "high nickel-high chromium steel," between 600° C. and 800° C. By HERBERT JAMES TAPSELL and J. REMFRY. London 1929. pp. iv + 7. ill.

— *Fuel Research.* Physical and chemical survey of the national coal resources, No. 14. Description of the coalfields of North Staffordshire. London 1929. pp. vi + 16.

— *Gas Cylinders Research Committee.* Ordinary commercial cylinders for the "permanent" gases: summary of recommendations (revised). London 1929. pp. iv + 7. ill.

# PROCEEDINGS

OF THE

## CHEMICAL SOCIETY.

Extra Meeting held at the Institution of Mechanical Engineers, Storey's Gate, Westminster, S.W. 1., on Thursday, April 25th, 1929, at 5.30 p.m., the President, Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., in the Chair.

After a brief introduction dealing with the life and work of Professor Theodore W. Richards, the PRESIDENT called upon Sir Harold Hartley to deliver the Theodore W. Richards Memorial Lecture.

At the conclusion of the lecture, a vote of thanks to the Lecturer was proposed by Professor Arthur Smithells, seconded by Professor T. M. Lowry, and carried with acclamation, Sir Harold Hartley making acknowledgment.

Ordinary Scientific Meeting, Thursday, May 2nd, 1929, 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.
Thomas B. Osborne (Honorary Fellow) .....	March 7th, 1912.	Jan. 20th, 1929.
John Doull .....	Dec. 7th, 1905.	Jan. 22nd, 1929.
Ernest Francis Ehrhardt .....	June 6th, 1887.	April 20th, 1929.
Harold J. Hailstone .....	Dec. 15th, 1921.	April 4th, 1929.
Charles James .....	Feb. 15th, 1912.	Dec. 10th, 1928.
Herbert B. Stocks .....	Nov. 17th, 1887.	Feb. 7th, 1929.
John Tomlinson .....	May 5th, 1927.	March 3rd, 1929.

Certificates were read for the first time in favour of :

Charles Alfred Allgood, St. George's Hospital, Hyde Park Corner, S.W. 1.  
 Leslie Herbert Angus, M.Sc., The Cottage, Market Bosworth, Nuneaton.  
 Knowles Edge, B.A., Ribble Lodge, Lytham, Lancs.  
 Howard Ernest Goodson, A.R.C.S., A.I.C., 7, Brentwood Grove, Armley,  
 Leeds.

- Gwilyn Owen Griffiths, B.Sc., 40, Rating Row, Beaumaris, Anglesey.  
 Walter Reginald Hunt, 21, Sandy Lane South, Wallington.  
 Alexander Leicester McAulay, Prof., M.A., Ph.D., B.Sc., University of  
 Tasmania, Hobart, Tasmania.  
 Harry Gordon Poole, M.Sc., Waite Agricultural Research Institute, Glen  
 Osmond, Adelaide, South Australia.  
 Alan Richard Powell, Red Roofs, Sycamore Road, Amersham, Bucks.  
 John Roberts, Arley House, Bracondale, Norwich.  
 Alice Mary Robinson, B.Sc., 4, Arkeigh Mansions, Hendon, N.W. 4.  
 Archibald Affleck West Russell, B.A., B.Sc., 3, Woburn Square, W.C. 1.  
 William Russell-Smith, 1, Aubert Park, Highbury, N. 5.  
 Ralla Ram Seth, B.Sc., Sheo-Asharam, Delhi, India.  
 Harold Taylor, 161, St. James's Road, Blackburn.  
 Leslie Walter Tiller, B.Sc., 39, Waimea Road, Nelson, New Zealand.  
 Jugatram Shankerprasad Vaidya, Zandu Pharmaceutical Works, Ltd.,  
 Sayani Road, Dadar, Bombay, India.  
 Harold Walmsley, 11, St. Stephens Road, Lewisham, S.E. 13.

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

- Pauchapagesa Krishnamurthy, M.A., 210, Bowbazar Street, Calcutta, India.  
 André Meyer, Prof., D.-ès-Sc., 3, Rue Docteur-Maret, Dijon, France.

Dr. E. H. Farmer and Mr. S. H. Woolhouse were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared elected as Fellows :

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|---|---|
| John Norman Aldington, B.Sc.                              | Margaret Augusta Leishman, B.A.,<br>B.Sc.               |
| Hla Baw, B.Sc.  | William Rowe Littlejohn, B.Sc.                          |
| Jack Bloom, B.Sc.   | William George Moffitt, B.Sc.                           |
| Rupert Woolby Brooke.                                     | Sokichi Nakanishi.                                      |
| Francis Alan Butt.  | Birendra Lal Nandi, M.Sc.                               |
| Lawrence Harvey Cook, A.M.                                | Eiji Ochiai.  |
| Robert Neil Cunningham, B.Sc.                             | Stuart Wortley Pennycuick, D.Sc.                        |
| Masao Fukuda.   | Thomas Moore Ridley.                                    |
| James Galloway.   | Frank Albert Royle, M.Sc., Ph.D.                        |
| Constance Higginbottom, M.Sc.                             | Leopold Ruzicka, Dr. Ing.                               |
| Andrew Home-Morton, M.Inst.C.E.,<br>M.I.Mech.E., M.I.E.E. | Charles Gordon Smith, M.Sc.                             |
| John Lloyd Jones, B.A., B.Sc.                             | Bernard Thomas Dudley Sully, B.Sc.,<br>A.R.C.S., A.I.C. |
| Dadabhoy Maneckshaw Karkhana-<br>vala.                    | Andrew Theodore Sumner, B.Sc.                           |
| Andrew Kent, M.A., B.Sc.                                  | Masanobu Terasaka.                                      |
| John Craven Laycock.                                      | Leonard Noel Tyrrell.                                   |

The following papers were read :

- “The volatility and structures of the azides and aliphatic diazo-compounds.” By N. V. SIDGWICK.  
 “The unsaponifiable matter from the oils of elasmobranch fish. Part V. The constitution of squalene as deduced from its degradation products.” By I. M. HEILBRON, W. M. OWENS, and I. A. SIMPSON.

- “The unsaponifiable matter from the oils of elasmobranch fish. Part VI. The constitution of squalene as deduced from a study of the decahydrosqualenes.” By I. M. HEILBRON and A. THOMPSON.
- “Catalytic influences in three-carbon tautomerism. Part I. Sodium alkyloxides.” By G. A. R. KON and R. P. LINSTEAD.
- “Studies in the sterol group. Part III. The acetylation and catalytic hydrogenation of ergosterol.” By I. M. HEILBRON and W. A. SEXTON.
- “Studies in the sterol group. Part IV. The existence of isomeric naturally occurring ergosterols.” By I. M. HEILBRON, W. A. SEXTON, and F. S. SPRING.
- “Styrylpyrylium salts. Part XI. The determination of the reactive group in ketones of the type  $\text{CH}_3\cdot\text{CO}\cdot\text{CH}_2\text{R}$  by means of the benzo- $\beta$ -naphthaspiropyran colour change.” By I. M. HEILBRON and F. IRVING.

Ordinary Scientific Meeting, Thursday, May 16th, 1929, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

Reference was made to the loss sustained by the Society, through death on March 31st, of Henry Edward Aykroyd, who was elected a Fellow on December 3rd, 1896.

The PRESIDENT announced that, accompanied by the Senior Secretary, he had attended a “Besondere Sitzung” of the German Chemical Society held in the “Hörsaal” of Hofmann House, Sigismundstrasse 4, Berlin at 7 p.m. on the evening of May 6th, and had presented the copy of the “Muspratt” portrait of von Liebig which had been painted at the request of the Council by Mr. G. A. Pownall. In making the presentation he said:

“Herr Präsident, meine Damen und Herren. Während der Liebig-Wöhler-Feier in Darmstadt im Juli des vorigen Jahres wurde auf der Bühne des Versammlungssaales ein von Trautschold gemaltes Bildnis Justus von Liebig's ausgestellt. Dieses Bildnis, welches von der Englischen Chemischen Gesellschaft geliehen war, wurde der Gesellschaft durch Frau Alec Tweedie, einer Patin Justus von Liebig's geschenkt.

“Frau Alec Tweedie's Mutter, geborene Emma Muspratt, war nämlich mit dem berühmten Chemiker sehr befreundet—um ihr das Leben zu retten soll von Liebig zuerst seinen Hühnerfleisch Extract bereitet haben. Das Porträt wurde Fräulein Emma Muspratt gelegentlich ihrer Vermählung mit Dr. Harley in 1860 gegeben.

“ Da das andere Trautscholdsche Porträt Justus von Liebig als älteren Mann darstellt, während er im Musprattschen Bildnis in der Blüte des Mannesalters erscheint, hat die englische Chemische Gesellschaft durch einen hervorragenden Künstler eine Kopie dieses Bildes herstellen lassen.

“ Mit dem grössten Vergnügen überreiche ich nun, Herr Präsident, diese Kopie im Namen des Vorstandes und der Mitglieder der englischen Chemischen Gesellschaft der deutschen Schwester Gesellschaft, nicht nur im Andenken an einen weltberühmten Deutschen, durch dessen Lebenswerk unsere ganze Kultur bereichert wurde, sondern auch als Zeichen der Hochschätzung und der Ehre, welche sein Name in allen Zweigen des chemischen Berufs in Grossbritannien genießt.”

The President of the German Chemical Society (Geheimrat Professor Dr. H. Wieland) asked the President to convey to the Council and Fellows of the Chemical Society the sincere thanks of the German Chemical Society for their most-welcomed gift which it would treasure among its most valued possessions. He regarded it as an expression of international friendship and goodwill which they wished most heartily to reciprocate.

The following were formally admitted Fellows of the Chemical Society: A. Herbert Spong, Allan Domleo, James G. Fife, and R. Neil Cunningham.

Certificates were read for the first time in favour of:

Albert Charles Chibnall, M.A., Ph.D., Cedar House, Chiswick, W. 4.

James Gerald Crowther, Oxford University Press, Falcon Square, E.C. 1.

Herbert Tasman Davies, Arcana, High Salvington, Worthing.

Kin Kin Gyi, B.A., 4, Fairfax Mansions, Swiss Cottage, N.W. 3.

John Arthur Hetherington, B.Sc., 57, Durham Road, Blackhill, Co. Durham.

George Berthold Loeffler, Springside, Gorey, Jersey.

Shigehiko Sugasawa, Chemical Department, University College, Gower Street, W.C. 1.

Hubert Bradford Vickery, B.A., M.Sc., Ph.D., Connecticut Agricultural Experiment Station, New Haven, Connecticut, U.S.A.

The following papers were read:

“ The dissociation constants of organic acids. Part I. The primary dissociation constants of some alkyl malonic acids.”

By A. I. VOGEL.

“ The dissociation constants of organic acids. Part II. The primary dissociation constants of some cyclic 1 : 1-dicarboxylic acids.” By A. I. VOGEL.

“ The properties of nicotine and its derivatives. Part I. Molecular extinction-coefficients.” By T. M. LOWRY and W. V. LLOYD.



- “The properties of nicotine and its derivatives. Part II. Optical rotatory power and rotatory dispersion.” By T. M. LOWRY and W. V. LLOYD.
- “Investigations on the dependence of rotatory power on chemical constitution. Part XXXIV. Borotartaric acid.” By S. G. BURGESS and H. HUNTER.

### LIST OF FELLOWS FOR 1929.

It has been decided to publish the List of Fellows for 1929, and to supply it to those Fellows who make application before August 31st, 1929. In order that the new List may be as complete as possible, Fellows are asked to notify the Assistant Secretary of any change of address or other alteration before the end of July.

### HARRISON MEMORIAL PRIZE

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

Provided that, in the opinion of the Selection Committee, there is a candidate of sufficient distinction to warrant an award of the Prize, the next award is to be made in December, 1929.

Applications, five copies of which must be submitted, should contain the following information :

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

The Selection Committee is prepared to receive applications, nominations, or information as to candidates eligible for the Prize.

Any such communication must be received by the President, The Chemical Society, Burlington House, Piccadilly, London, W. 1, not later than Monday, December 2nd, 1929.

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List of Papers, or Abstracts thereof, received between March 7th and May 16th, 1929. (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 viscosity of iodine-potassium iodide solutions.” By F. V. DAVIS.
- “The action of thionyl chloride on alcohols in the presence of pyridine.” By D. E. LADHAMS.
- “The effect of gases on the electric charges developed by heated metals.” By D. H. BANGHAM and D. R. LEWIS.
- “Organic derivatives of silicon. Part XXXIX. The action of sodium on phenoxychlorosilanes.” By R. A. THOMPSON and F. S. KIPPING.
- “Organic derivatives of silicon. Part XL. Attempts to prepare unsaturated compounds from phenyl silicon trichloride.” By F. S. KIPPING, A. G. MURRAY, and (in part) J. G. MALTBY.
- “The effect of a gas upon the pressure of a vapour.” By L. A. SAYCE and H. V. A. BRISCOE.
- “The dissociation constants of organic acids. Part I. The primary dissociation constants of some alkyl malonic acids.” By A. I. VOGEL.
- “Studies in complex salts. Part II. The preparation, properties, and stability of some bisdicarboxylate copper salts.” By H. L. RILEY.
- “The effect of gases on the colour of iodine vapour, and the solvent action of various vapours on solid iodine.” By R. WRIGHT and T. MCGREGOR.
- “On the modifications of galactose.” By C. N. REIBER, J. MINSAAAS, and R. T. LYCHE.
- “The Walden inversion. Part II.” By H. N. K. RÖRDAM.
- “The decomposition of carbon monoxide in the silent electric discharge. Part III.” By R. W. LUNT and L. S. MUMFORD.
- “Cobalt with a co-valency of four. A new series of complex compounds.” By E. G. V. PERCIVAL and W. WARDLAW.
- “Nicotine tetrachloriodide.” By F. D. CHATTAWAY and G. D. PARKES.
- “*N*-Methyl derivatives of 2-phenylnaphthylene-1 : 3-diamine.” By W. S. KENTISH.

- “The production of pinacols in the reaction between a carboxylic ester and a Grignard reagent.” By H. H. HATT.
- “Isatin anil. Part I. The isomerism of isatin-2-anil.” By R. K. CALLOW and E. HOPE.
- “A wandering of the acyl group in partially acylated phenolic compounds. Part II. Synthesis of anthragallol 1 : 2- and 1 : 3-dimethyl ethers.” By A. G. PERKIN and C. W. H. STORY.
- “The mechanism of tautomeric interchange and the effect of structure on mobility and equilibrium. Part IV. Further evidence relating to the mechanism of acid catalysis in the mutarotation of nitrogen derivatives of tetra-acetylglucose.” By J. W. BAKER.
- “The product of the reaction between ammonium thiocyanate and nitric acid.” By P. L. ROBINSON and W. E. SCOTT.
- “The production of kojic acid from pentoses by *Aspergillus Oryzae*.” By F. CHALLENGER, L. KLEIN, and T. K. WALKER.
- “The properties of the chlorides of sulphur. Part II. Molecular extinction coefficients.” By T. M. LOWRY and G. JESSOP.
- “10-Chloro-5 : 10-dihydrophenarsazine and its derivatives. Part IX. The synthesis of nitromethyldiphenylamine-6'-arsinic acids and their conversion into nitromethyl derivatives of 10-chloro-5 : 10-dihydrophenarsazine. Constitution of 10-chloro-5 : 10-dihydrophenarsazine.” By C. S. GIBSON and J. D. A. JOHNSON.
- “The constitution of the red isomeride of creatinine picrate responsible for Jaffé's colour reaction.” By W. K. ANSLOW and H. KING.
- “New polynuclear co-ordination compounds of cobalt.” By E. G. V. PERCIVAL and W. WARDLAW.
- “The isomerism of derivatives of 2-phenylnaphthylene-1 : 3-diamine.” By M. S. LESSLIE and E. E. TURNER.
- “The mobility of symmetrical triad prototropic systems. Part V. A new triad system (methyleneazomethine).” By C. K. INGOLD and C. W. SHOPPEE.
- “Influence of poles and polar linkings on tautomerism in the simple three-carbon system. Part II. Some bis-quaternary  $\alpha\gamma$ -propenylenediammonium salts.” By C. K. INGOLD and E. ROTHSTEIN.
- “The parachor and chemical constitution. Part XII. Fused metals and salts.” By S. SUGDEN and H. WILKINS.
- “Tertiary phosphines containing the higher alkyl radicals.” By W. C. DAVIES, P. L. PEARSE, and W. J. JONES.
- “The photolysis of potassium ferrioxalate solutions. Part I. Experimental.” By A. J. ALLMAND and W. W. WEBB.

- “The photolysis of potassium ferrioxalate solutions. Part II. Discussion.” By A. J. ALLMAND and W. W. WEBB.
- “Potassium hexathionate.” By J. R. PARTINGTON and A. F. TIPLER.
- “Ethylene dimercaptan and 1 : 3-dithian.” By D. T. GIBSON.
- “The isomeric monohydroxyphenylalanines. Part I. A new synthesis of the ortho- and meta-isomerides and a comparison of their properties with those of tyrosine.” By W. P. DICKINSON and P. G. MARSHALL.
- “Nitrofurfuraldehyde.” By H. J. STERN.
- “The application of the Guareschi reaction to quinones. Part I. Benzoquinone.” By R. CRAVEN.
- “The parachor and chemical constitution. Part XIII. Some compounds of titanium and tin.” By F. B. GARNER and S. SUGDEN.
- “The nitrosation of phenols. Part VI. Further study of the nitrosation of *m*-chlorophenol.” By H. H. HODGSON and A. KERSHAW.
- “A micro-method for determining semicarbazones and its application to the analysis of ketones.” By R. P. HOBSON.
- “Note on the bromination of coumarin.” By D. M. WILLIAMS.
- “The adsorption of fumaric and maleic acids by pure charcoals.” By H. J. PHELPS.
- “The formation and stability of the 2-thio-1 : 2-dihydrobenziso-thiazoles.” By E. W. McCLELLAND, L. A. WARREN, and J. H. JACKSON.
- “Acid and salt effects in catalysed reactions. Part XX. The ionisation of acids in salt solutions.” By H. M. DAWSON and W. LOWSON.
- “The chemistry of the caryophyllene series. Part II. Clovene and isoclovene.” By G. G. HENDERSON, R. O. O. McCRONE, and J. M. ROBERTSON.
- “Investigations on the bivalency of carbon. Part II. The displacement of chlorine from desyl chloride. Benzoin diethyl-acetal.” By A. M. WARD.
- “Studies of valency. Part XIII. Further experiments on the molecular structure of the quadrivalent derivatives of tellurium.” By T. M. LOWRY and F. L. GILBERT.
- “The chemistry of the three-carbon system. Part XXI. Some *cycloheptane* compounds.” By W. E. HUGH, G. A. R. KON, and T. MITCHELL.
- “The influence of ethyl ether and of dimethylpyrone on the availability of hydrogen chloride in alcoholic solution.” By V. E. S. MITCHELL and J. R. PARTINGTON.

- “1-Methoxy-derivatives of thioxanthone.” By K. O. ROBERTS and S. SMILES.
- “The relationships between hydrogen chloride and the chlorides of sulphur. Part I. Freezing points of the system hydrogen chloride-sulphur monochloride.” By H. TERREY and H. SPONG.
- “Note on a possible source of error in the capillary tube method of measuring surface tension.” By S. TOLANSKY.

CERTIFICATES OF CANDIDATES FOR ELECTION AT  
THE BALLOT TO BE HELD AT THE ORDINARY  
SCIENTIFIC MEETING ON THURSDAY, JUNE 20th,  
1929.

ALLGOOD, CHARLES ALFRED, St. George's Hospital, Hyde Park Corner, S.W. 1. Chief Pharmacist to St. George's Hospital. Member of the Pharmaceutical Society of Great Britain. Teacher of Practical Pharmacy to St. George's Hospital Medical School. (*Signed by*) Charles Alex. Hill, John W. Heath, Edward A. Andrews.

ANGUS, LESLIE HERBERT, The Cottage, Market Bosworth, Nuneaton. British. Science Master. M.Sc., Leeds, 1925. I wish to keep in touch with the developments of chemistry through the Society's publications. Research experience in the Department of Physical Chemistry, University of Leeds. (*Signed by*) H. M. Dawson, W. Lowson, C. W. Shoppee, H. Burton.

CHIBNALL, ALBERT CHARLES, Cedar House, Chiswick Mall, W. 4. British. Hon. Assistant, Biochemical Dept., University College, London. M.A. (Cantab.); Ph.D. (London). Papers dealing with the protein and fat metabolism of green leaves published in the *Biochemical Journal* and *Journal of Biological Chemistry*. (*Signed by*) C. S. Gibson, J. C. Drummond, Paul Haas.

CRIGHTON, DAVID ANDREW, 51, Dalmeny Road, Tufnell Park, N. 7. British. Temporary Assist. Chemist, Govt. Chem. Lab., London. B.Sc. (2nd Class Honours Chemistry), Edinburgh University. Student at Edinburgh University for four years (October 1924 to June 1928). Graduated June, 1928. Became Temporary Assistant Chemist, Govt. Chem. Lab., London, on 1st November, 1928. (*Signed by*) Robert Robertson, Geo. Stubbs, J. J. Fox.

CROWTHER, JAMES GERALD, c/o Oxford University Press, Falcon Square, E.C. 1. British. Publisher's Assistant. Author of "Science for You" (Routledge). Scientific Correspondent to the *Manchester Guardian*. (*Signed by*) N. V. Sidgwick, A. Robertson, N. K. Adam.

DAVIES, HERBERT TASMAN, "Arcana," High Salvington, Worthing, Sussex. British. Metallurgical Chemist. Certificate Metallurgy, Melbourne University. Student, Berkeley University, California. Manager, Gindalbie Gold Mines, W. Australia. Exploring Party South Sea Islands, also in Rocky Mountains, Canada. Reporting and Erection of Metallurgical Plant, New Zealand. At present running Analytical and Research Laboratory, 34, Queen Street, Hammersmith, W. 6. (*Signed by*) A. M. Low, S. H. Jones, A. H. Stevens.

EDGE, KNOWLES, Ribble Lodge, Lytham, Lancs. British. Manufactur-

ing Chemist (Director of Company). B.A. (Cantab.), 1st Class Applied Chemistry, June, 1925. Technical Director and Head of Research Dept. of Wm. Edge & Sons, Ltd., Manufacturing Chemists, Bolton. (*Signed by*) J. Harold Edge, G. T. Morgan, D. D. Pratt.

EVANS, DAVID LLOYD EMRYS, 10, Victoria Square, Aberdare. British. Pharmist. M.P.S. Desirous of availing himself of the use of the library. (*Signed by*) D. Hughes, J. Macvie Hill, Geo. A. Turner.

GOODSON, HOWARD ERNEST, 7, Brentwood Grove, Armley, Leeds. English. Lecturer in Chemistry. Diplomas: Associate, Royal College of Science, London (A.R.C.S.). Associate, Institute of Chemistry (A.I.C.). Chief Lecturer since 1920 at the Technical College, Leeds, in the Department of Chemistry. From 1916 to 1919 engaged in analytical work in the high-explosives section of the Department of Chemical Inspection at Woolwich Arsenal. (*Signed by*) S. Parrish, W. P. Wynne, James C. Philip, M. A. Whiteley, R. Gawler.

GRIFFITHS, GWILYM OWEN, 40, Rating Row, Beaumaris, Anglesey. British. Teacher of Chemistry. B.Sc. (Wales), 1st Class Honours, 1922. Science Master at the Grammar School, Beaumaris, from 1924 to date. (*Signed by*) Kennedy Orton, A. E. Bradfield, H. B. Watson, Brynmor Jones.

GYI, (Miss) KIN KIN, 4, Fairfax Mansions, Finchley Road, Swiss Cottage, N.W. 3. Burmese. Student Teacher. B.A. Chemistry, Burma University. (*Signed by*) L. W. Townsend, J. W. Cook, F. H. Burstall.

HAMILTON, GEORGE MONTY, 9, The Green, Twickenham, Middlesex. British. Research Chemist. B.Sc. (London); M.Sc. (London). Research for M.Sc. (two years), Birkbeck College, London. Research (fourteen months) with Research Association of British Paint, Colour, and Varnish Manufacturers (Teddington). (*Signed by*) J. Outram Cutter, Samuel Sugden, Louis Arnold Jordan.

HENTHWAITE, JOHN STEPHEN, Canadian Celanese, Ltd., Drummondville, Quebec, Canada. English. Works Chemist at present in the employment of British Celanese, Ltd. Ex-service student at the University of Leeds. (*Signed by*) Arthur Smithells, W. Lowson, H. M. Dawson, R. B. Forster, A. G. Perkin.

HETHERINGTON, JOHN ARTHUR, 57, Durham Road, Blackhill, Co. Durham. British. Research Scholar, Durham University (Durham Division). B.Sc., Durham (1st Class Hons.). Am carrying out research at Durham, and wish to devote myself to investigation. (*Signed by*) Irvine Masson, H. V. A. Briscoe, G. H. Christie.

HILL, HENRY ROWLAND, 2, Beeches Walk, Carshalton, Surrey. British. Chemist and London Manager to The British Gas Purifying Materials Co., Ltd. B.A., chemistry, Oxford. For some time Assistant Works Chemist to Messrs. H. J. Enthoven & Co. (lead refiners). Analytical and research work in connection with coal-gas purification and particularly the treatment of English iron ore for this purpose. "The Interaction of Diazonium Salts and Phenols," by F. D. Chattaway and H. R. Hill, *J.C.S.*, 1922, **121**, 2756. (*Signed by*) F. L. Garton, Harold Heron, F. D. Chattaway.

HUNT, WALTER REGINALD, "Kenilworth," 21, Sandy Lane, South Walington, Surrey. British. Student of Chemistry and Chemical Dealer. Student of chemistry as applied to laundry materials. Dyeing. (*Signed by*) S. P. Schotz, Eric C. Pickering, Charles Dorée.

LOEFFLER, GEORGE BERTHOLD, "Springside," Gorey, Jersey, C.I. Canadian citizen, Manufacturing Chemist. M.P.S. (Gt. Britain). Object in desiring admission to the Chemical Society is to attend the meetings and

follow up the publications of the Society, and to have the use of the Library. (Signed by) F. W. Toms, E. J. Woodcock, G. Cofman-Nicoressti.

MCAULAY, ALEXANDER LEICESTER, University of Tasmania, Hobart, Tasmania, Australia. British. Professor of Physics. M.A. (Cantab.); Ph.D. (Manchester); B.Sc. (Tas.); F.Inst.P. Papers on Physical Chemical subjects (overpotential and corrosion) (*J.C.S.*, 1925; *Proc. Roy. Soc.*, Feb. 1926; *Phil. Mag.*, June 1926; *Nature*, Aug. 4, 1928; *J.C.S.*, 1929). "An Investigation of the Effect of Differential Aeration on Corrosion by means of Electrode Potential Measurements" (*J.C.S.*, 127, 1925), McAulay and Bowden. (Signed by) Ulick R. Evans, R. G. W. Norrish, Guy D. Bengough.

POOLE, HARRY GORDON, Waite Agricultural Research Institute, Glen Osmond, Adelaide, South Australia. British. Assistant Chemist under Prof. J. A. Prescott. M.Sc. (Melbourne); A.A.C.I. Two years' research in organic chemistry at Melbourne University. Joint or independent author of papers below. At present soil research under Commonwealth Council for Scientific and Industrial Research. *J.C.S.*, 1927, 1122, 2661; 1928, 1378, 1616. (Signed by) J. A. Prescott, E. J. Hartung, A. C. D. Rivett.

POWELL, ALAN RICHARD, "Red Roofs," Sycamore Road, Amersham, Bucks. British. Research Chemist. Analytical Chemist with Messrs. G. T. Holloway & Co., Ltd., 1913-1918; Chief Research Chemist to Messrs. Johnson, Matthey & Co., Ltd., 1918 to date. Publications: "Determination of Tin in Wolfram Ores," *J.S.C.I.*, 1918, 37, 285. Papers on the Determination of Nickel and Cobalt [with Dr. W. R. Schoeller], *Analyst*, May 1916, June 1917, August 1919. Papers on the Analytical Chemistry of Tantalum, Niobium, and their Mineral Associates, *J.C.S.*, 1921, 119, 1927; *Analyst*, 1925, 50, 485; 1928, 53, 258; *Z. anorg. Chem.*, 1926, 151, 223. (Signed by) Henry J. S. Sand, E. de Barry Barnett, A. M. Ward.

ROBERTS, JOHN, Arley House, Bracondale, Norwich. British. "Almata" (Infant Food) Factory Manager, J. & J. Colman, Ltd., Norwich. Formerly Research Chemist. Received training in chemistry, etc., at Bradford Grammar School and Bradford Technical College. Six years' Chemist at Bradford Dyers Association. Studied colour chemistry at Leopold Cassella Co., Frankfurt-on-Main. Assistant Director (Technical) to Minister of Food. Ten years in the service of J. & J. Colman. (Signed by) L. J. Harris, R. A. Morton, F. C. Guthrie, T. P. Hilditch, V. J. Occleshaw, J. W. Corran.

ROBINSON, (Mrs.) ALICE MARY, 4, Arkleigh Mansions, Brent Street, Hendon, N.W. 4. British. Research Student. B.Sc., London. (Signed by) E. E. Turner, Florence R. Shaw, James F. Spencer, Mollie Barr.

RUSSELL, ARCHIBALD AFFLECK WEST, 3, Woburn Square, W.C. 1. British. Student (Research). B.A., B.Sc., Oxford. I am at present researching under Dr. Sugden at Birkbeck College and should like to keep myself abreast with current happenings in chemistry. (Signed by) Samuel Sugden, F. E. King, F. J. Thorneycroft.

RUSSELL-SMITH, WILLIAM (Heathfield, Little Heath, Potters Bar, Middlesex) (Private), 1, Aubert Park, Highbury, London, N. 5. British. Analytical Chemist. Engaged since 1907 as Analytical Chemist in Laboratory of Teschemacher & Smith, 1, Aubert Park, Highbury, N. 5. Partner since 1912. (Signed by) John Millar Thomson, Patrick H. Kirkaldy, H. Russell-Smith.

SETH, RALLA RAM, Sheo-Asharam, Delhi, India. Indian (British subject). Research Student for Ph.D. degree of Leeds University, Leeds. B.Sc. (Punjab, India). Studied up to M.Sc. (Chemistry) (Punjab). Demonstrated for five years in Hindu College, Delhi. Lecturer for a short period in the same College. Chemical Adviser and Director to Rallay Colour Works, Delhi.

Still on staff. Formerly Manufacturing Chemist to Imperial Disinfectant and Chem. Works, Delhi, and The Capital Oil and Soap Works, Delhi. (*Signed by*) F. M. Rowe, R. B. Forster, R. Whytlaw Gray.

SUGASAWA, SHIGEHICO, Chemical Department, University College, Gower Street, W.C. 1. Japanese. Assistant of The Tokyo Imperial University. Doctor of Pharmacy (Tokyo Imperial University, Japan). Studies on the synthesis of some amino-acids. Studies on the synthesis of some indol derivatives, etc. Abstract of Chemical Papers, A., 1928, 874; 1929, 195-196; and others in *Journ. Pharm. Soc. Japan*, 1926-1928. (*Signed by*) Robert Robinson, William Bradley, Shinzo Murakami.

TAYLOR, HAROLD, 161, St. James's Road, Blackburn, Lancs. British. Chief Chemist, County Borough of Blackburn Gas Dept. Educated: Blackburn High School; Holborn Hall College; Leeds University. Experience: Messrs. Brotherton & Co., Ltd., Messrs Chance & Hunt, Ltd., Messrs. British Dyestuffs Corporation, Ltd., Messrs. City of Birmingham Gas Dept., and County Borough of Blackburn Gas Dept. (*Signed by*) J. B. Cohen, W. Lawson, Edward Halliwell.

THORNTON, WILLIAM, 11, John Street, Maidstone, Kent. British. School Teacher. M.Sc., 1927; B.Sc. (1st Class Honours in Chemistry), 1926 (Sheffield University). Chemistry Master at Asheton Schools, Tenterden, Kent. Anxious to keep in touch with modern developments in chemistry. (*Signed by*) W. P. Wynne, F. G. Tryhorn, G. M. Bennett, Thos. B. Smith, E. G. Turner, W. F. Wyatt.

TILLER, LESLIE WALTER, 39, Waimea Road, Nelson, New Zealand. British. Orchard Chemist to The Cawthron Institute, Nelson, N.Z. B.Sc., N.Z. (Victoria University College). Author of "Cold Storage Investigations, Season 1926" (Cawthron Institute Bull. No. 6, New Series). Co-author of following Cawthron Institute Bulletins: "Flesh Collapse in Apples, Season 1923," "Flesh Collapse in Apples, Season 1924," "Cold Storage Investigations, Season 1925" (Bull. No. 1, New Series), "A Report on Certain Diseases of the Apple in the Nelson District, Season 1925-26" (Bull. No. 4, New Series); also of "Soil Problems of the Montere Hills" (*Rep. Australas. Assoc. Advan. Sci.*, Vol. 16, 1923, p. 809). (*Signed by*) Thomas H. Easterfield, P. W. Robertson, H. O. Askew.

VAIDYA, JUGATRAM SHANKERPRASAD, Zandu Pharmaceutical Works, Ltd., Sayani Road, Dadar, Bombay, 14. Hindu (British subject). Manufacturing Chemist; Director, Zandu Pharmaceutical Works, Ltd., Bombay, 14. Diploma as Pharmaceutical Chemist from The Laxman Meram Chemical Laboratory, Rajkot (this institution is now abolished by the Government, but I possess the Diploma). I started the Zandu Pharmaceutical Works in 1910 and have worked as a manufacturing chemist ever since. I am conducting a Technical Research Laboratory connected with my works and have had practical experience in manufacturing chemistry for the last eighteen years. (*Signed by*) V. K. Bhagwat, K. M. Sheth, Kapilram H. Vakil.

WALMSLEY, HAROLD, 11, St. Stephen's Road, Lewisham, S.E. 13. English. Chemist-Optician. M.P.S. (Lond.); M.I.C.O. (Lond.). (*Signed by*) W. Chas. Sayers, John J. Laws, Percy Barrs.

WRIGHT, HERBERT LAWTON, 117, Queen's Road, Bury St. Edmund's, Suffolk. British. Works Chemist (Beet Sugar Factory). Diploma in Chemistry (Woolwich Polytechnic). Present position as above stated. Previous experience (chiefly analytical) in the following industries: (1) Oils and Lubricants, (2) Coal Tar distillation, (3) Dyestuffs, (4) Sugar refining. (*Signed by*) P. M. Mooney, H. E. C. Powers, L. J. de Whalley.



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

KRISHNAMURTHY, PANCHAPAGESA, 210, Bowbazar Street, Calcutta, India. Hindu. Research Associate, Indian Association for the Cultivation of Science, Calcutta. M.A. (Madras). Previously worked as a Research Scholar of the University of Madras, and also as a Chemical Assistant in the Governmental Test House, Alipore. "The Union of Benzoylacetonitrile with Organic Bases in the Presence of Salicylaldehyde," Parts I and II. *J.C.S.*, 1927, 1349; 1928, 415. (*Signed by*) B. Sanjiva Rao, P. C. Guha.

MEYER, ANDRÉ, 3, Rue Docteur-Maret, Dijon (Côte d'Or), France. Française. Directeur, Laboratoire de Chimie Appliquée de la Faculté des Sciences, Université de Dijon. Docteur es Sciences; Professeur à la faculté des Sciences, Dijon. Ancien Chef de Laboratoire aux Établissements Kuhlmann. (*Signed by*) Jocelyn Thorpe.

O'CALLAGHAN, MICHAEL ANGELO, Florida 734, Buenos Aires, Argentine Republic. Irish born. Resident in Sydney from 1897-1925 as Dairy Commissioner for the Government of New South Wales, and afterwards as Chief Dairy Commissioner for the Australian Commonwealth Government. (*Signed by*) Walter Thorp, Daniel J. O'Mahony.

PASCHALL, BENJAMIN STUART. Business address: 1015, American Bank Building, Seattle, Washington, U.S.A.; Residence: 1222, Summit Avenue, American, born Doylestown, Penna., U.S.A., 1879. Physician and Chemist. M.D., University of Pennsylvania, Philadelphia, Penna, 1903. Have done biochemical research since 1905 and run a commercial laboratory. Member of American Chemical Society, Society of Chemical Industry, Fellow of American Medical Association, etc. (*Signed by*) J. P. Longstaff.

## ADDITIONS TO THE LIBRARY.

### I. Donations.

HOFMANN, KARL. Die radioaktiven Stoffe nach dem neuesten Stande der wissenschaftlichen Erkenntnis. Leipzig 1904. pp. 76. (*Recd.* 7/5/29.) From Mr. W. W. Starling.

INTERNATIONAL CONGRESS OF PHOTOGRAPHY, VII, London, July 9-14, 1928. Proceedings. London 1929. pp. xiv + 571. ill. (*Reference.*) 25s. net. From the Editors.

MITCHELL, H. H., and HAMILTON, T. S. The biochemistry of the amino acids. (American Chemical Society Monograph Series.) New York 1929. pp. 619. ill. \$9.50 net. (*Recd.* 3/5/29.)

From the Publishers: The Chemical Catalog Company, Inc.

SCHUBERT, MAX. Die Cellulosefabrikation (Zellstofffabrikation). 4th edition. By ERNST ALTMANN. Berlin 1924. pp. xii + 279. ill. (*Recd.* 11/5/29.) From Dr. R. E. W. Maddison.

TEEPLE, JOHN E., and associates of the AMERICAN POTASH AND CHEMICAL CORPORATION. The industrial development of Searles Lake brines, with equilibrium data. (American Chemical Society

Monograph Series.) New York 1929. pp. 182. ill. \$3 net. (Recd. 3/5/29.)

From the Publishers: The Chemical Catalog Company, Inc.

## II. *By Purchase.*

DEUTSCHE CHEMISCHE GESELLSCHAFT. System der organischen Verbindungen. Ein Leitfaden für die Benutzung von Beilsteins Handbuch der organischen Chemie. By BERNHARD PRAGER, DORA STERN, and KONRAD ILBERG. Berlin 1929. pp. 246. (Two copies.) *M.* 24. (Recd. 19/4/29.)

FOWLER, R. H. Statistical mechanics: the theory of the properties of matter in equilibrium. Cambridge 1929. pp. viii + 570. ill. 35s. net. (Recd. 16/5/29.)

KENDALL, EDWARD C. Thyroxine. (American Chemical Society Monograph Series.) New York 1929. pp. 265. ill. 23s. net. (Recd. 16/5/29.)

RAWLINS, F. I. G., and TAYLOR, A. M. Infra-red analysis of molecular structure. Cambridge 1929. pp. xvi + 176. ill. 10s. 6d. net. (Recd. 16/5/29.)

SCHEIBER, JOHANNES, and SANDIG, KÜRT. Die künstlichen Harze. (Chemie in Einzeldarstellungen, Vol. XIV.) Stuttgart 1929. pp. xv + 376. ill. *M.* 28. (Recd. 7/5/29.)

SUTERMEISTER, EDWIN. Chemistry of pulp and paper-making. 2nd edition. New York 1929. pp. x + 565. ill. 32s. 6d. net. (Recd. 16/5/29.)

WALDSCHMIDT-LEITZ, ERNST. Enzyme actions and properties. Translated and extended by ROBERT P. WALTON. New York 1929. pp. xviii + 255. 20s. net. (Recd. 16/5/29.)

## III. *Pamphlets.*

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research.* Bulletin No. 41. Studies concerning the so-called bitter pit of apples in Australia, with special reference to the variety "Cleopatra." By W. M. CARNE, H. A. PITTMAN, and H. G. ELLIOT. Melbourne 1929. pp. 101. ill.

BLOOMFIELD, J. J., and ISBELL, H. S. The problem of automobile exhaust gas in streets and repair shops of large cities. (From the *U.S. Public Health Reports*, 1928, 43.)

GOLDBERGER, JOSEPH [and others]. A further study of experimental blacktongue with special reference to the blacktongue preventive in yeast. (From the *U.S. Public Health Reports*, 1928, 43.)

KARAVAEV, N. L., and PALKIN, A. P. Das Trocknen der Zuckerrübe und Estrahieren des Zuckers aus derselben mittelst Diffusion. (From *Acta Univ. Asiæ Med.*, Ser. vi, No. 3.) [In Russian. German summary.]

# PROCEEDINGS

OF THE

## CHEMICAL SOCIETY.

Extra Meeting at the Institution of Mechanical Engineers, on Thursday, May 30th, 1929, at 5.30 p.m., the President, Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., in the Chair.

The PRESIDENT stated that the Council had been fortunate in securing Professor W. H. Perkin to deliver the first of the lectures founded in honour of the late Sir Alexander Pedler, C.I.E., F.R.S., a generous benefactor to the Society. He then called upon Professor Perkin to deliver his lecture entitled : " The Early History of the Synthesis of Closed Carbon Chains."

At the conclusion of the lecture a vote of thanks to Professor Perkin was moved from the Chair, seconded by Professor R. Robinson, and carried unanimously, Professor Perkin making acknowledgment.

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Ordinary Scientific Meeting, Thursday, June 6th, 1929, 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.
H. H. Maharaj Rana Sir Bhawani Singh Bahadur of Jhalawar .....	Feb. 15th, 1917.	April 13th.
Walter Leach .....	Dec. 16th, 1886.	April 12th.
Henry Harcourt Phillips .....	Feb. 16th, 1882.	May 19th.

It was announced that the following Committees for 1929—1930 had been appointed by the Council :—

*Finance Committee* : J. L. Baker, F. P. Dunn, C. A. Hill, E. S. Mond, J. C. Philip, R. H. Pickard, W. P. Wynne, and the Officers (Treasurer as Chairman), with the Assistant Secretary as Secretary.

*House Committee* : J. L. Baker, Sir Herbert Jackson, Sir William J. Pope, Sir Robert Robertson, Alexander Scott, J. M. Thomson, and the Officers, with the Assistant Secretary as Secretary.

*Library Committee* : J. J. Fox, T. A. Henry, J. R. Partington (Chairman), S. W. Smith, J. F. Spencer, S. Sugden, and the Officers, together with representatives of contributing Societies, with the Librarian as Secretary.

*Publication Committee* : M. P. Applebey, H. Bassett, G. M. Bennett, H. V. A. Briscoe, J. J. Fox, R. Whytlaw Gray, A. J. Greenaway, T. A. Henry, C. N. Hinshelwood, J. T. Hewitt, C. K. Ingold, J. Kenyon, H. King, K. J. P. Orton, J. C. Philip, F. L. Pyman, E. K. Rideal, R. Robinson, N. V. Sidgwick (Chairman), J. L. Simonsen, S. Smiles, S. Sugden, and the Officers, with the Editor as Secretary.

*Research Fund Committee* : A. J. Allmand, F. E. Francis, W. N. Haworth, G. G. Henderson, C. K. Ingold, A. Lapworth, W. H. Mills, K. J. P. Orton, Sir Robert Robertson, N. V. Sidgwick, and the Officers, with the Assistant Secretary as Secretary.

The following were formally admitted Fellows of the Chemical Society : Rupert Woolby Brooke, Tom Heap, and William Bradley. Certificates were read for the first time in favour of :

Wilfrid Herbert Cliffe, 1, Main Avenue, Levenshulme, Manchester.

Oscar Vincent Hellestrand, 133, St. George's Road, Bexley, New South Wales.

Eric Frank Hersant, 1, Prince of Wales Crescent, Chalk Farm, N.W. 1.

Robert Ewen Jeffery, 9, Greycliffe Avenue, Vaucluse, New South Wales.

Ramanlal Chhaganlal Shah, B.A., M.Sc., 21, Cromwell Road, South Kensington, S.W. 7.

Alfred Pattinson Telford, 140, Harrowby Street, Liverpool.

Albert Reuben Tremain, B.Sc., c/o Australian Institute of Tropical Medicine, Townsville, North Queensland.

Frederick Thomas Trustrum, 36, Fordwych Road, N.W. 2.

The following papers were read :—

“The production of kojic acid from pentoses by *Aspergillus Oryzæ*.”

By F. CHALLENGER, L. KLEIN, and T. K. WALKER.

“The properties of the chlorides of sulphur. Part II. Molecular extinction-coefficients.” By T. M. LOWRY and G. JESSOP.

“The isomerism of derivatives of 2-phenylnaphthylene-1 : 3-diamine.” By M. S. LESSLIE and E. E. TURNER.

“Studies of valency. Part XIII. Further experiments on the molecular structure of the quadrivalent derivatives of tellurium.” By T. M. LOWRY and F. L. GILBERT.

“Synthetical experiments in the *iso*-flavone group. Part V. A new general method applicable to the synthesis of derivatives of 7-hydroxy*iso*flavone.” By W. BAKER, A. POLLARD, and R. ROBINSON.

Ordinary Scientific Meeting, Thursday, June 20th, 1929, 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 Professor Charles Moureu, who was elected an Honorary Fellow on March 1st, 1923, and stated that the following resolution had been passed by the Council at its meeting held that afternoon :—

The President, Officers, and Council of the Chemical Society learned with profound regret at their meeting on June 20th, 1929, of the death of their distinguished Honorary Fellow, Professor Charles Moureu, and desire to record their high appreciation of the eminent services rendered by Professor Moureu to the Science of Chemistry. They offer to Madame Moureu and to the Société Chimique de France their sincere sympathy in the irreparable loss they have sustained.

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 first Ordinary Scientific Meeting next Session, October 17th :

Professor M. Bodenstein, Professor N. Bohr, Sir William H. Bragg, Professor P. Debye, Professor A. Hantzsch, Doctor I. Langmuir, Professor W. Nernst, Professor W. Ostwald, Sir Ernest Rutherford, Professor O. Wallach, and Professor H. Wieland.

2. The following letter had been received from Professor Joji Sakurai, to whom the Council had conveyed its congratulations and its appreciative thanks.

3 Akebono-cho, Hongo, Tokyo.  
May 1st, 1929.

THE SECRETARY,  
THE CHEMICAL SOCIETY,  
LONDON.

DEAR SIR,

In the course of the present year I shall complete my fifty years of Fellowship of the Chemical Society, and I desire to mark the occasion by contributing a small sum of ten guineas to the fund of the Society. The sum is shamefully small compared with the great benefit I have derived from being a Life Member for half a century, but it is what my means allow and not what my heart desires. If the Society will accept the enclosed cheque and use the money for any purpose it may consider appropriate I shall be happy.

Yours faithfully,  
(Signed) JOJI SAKURAI.

3. The following Address of Congratulation had been sealed in Council that afternoon and would be presented on behalf of the Society by Principal H. R. Raikes to the University of Cape Town on the occasion of the centenary celebrations of the South African College to be held at Cape Town from October 1st to 5th, 1929.

*The Chemical Society*

to

*The Chancellor, Vice-Chancellor, Council, and Senate of the University of Cape Town.*

The President, Council, and Fellows of the Chemical Society send hearty greetings to the Chancellor, Vice-Chancellor, Council and Senate of the University of Cape Town on the occasion of its Celebration of the Centenary of the South African College.

Founded in 1829 as a private institution by a Committee which "was formed to frame a plan for providing better means of education than the Government Schools at that time afforded," the South African College was the first institution of its kind to be established in South Africa, and the pioneer work of the College during the first century of its existence will ever be regarded as having laid the sure foundation on which Higher Education in South Africa has been built. The task accomplished by the South African College was fittingly recognised by its incorporation in 1918 as the University of Cape Town.

The Chemical Society welcomes this opportunity of recording its appreciation of the great services rendered by the College to South Africa, and in conveying its congratulations expresses the hope that the University of Cape Town may contribute in ever-increasing measure to the progress of education.

Signed on behalf of the Chemical Society.

JOCELYN THORPE, *President.*

T. SLATER PRICE, *Treasurer.*

C. S. GIBSON, }  
T. S. MOORE, } *Secretaries.*

F. G. DONNAN, *Foreign Secretary.*



Sealed this Twentieth Day of June, One Thousand Nine Hundred and Twenty-Nine.

4. 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 1930 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, 1929, by registered post to: "Het Bestuur der Koninklyke Akademie van Wetenschappen, bestemd voor de Commissie van het 'van 't Hoff-funds," Trippenhuys, 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.

5. The attention of the Council had been directed by the Federal Council to the appointment of a Committee by the Board of Trade to consider

"whether any, and if so what, amendments in the Patents and Designs Acts, or changes in the practice of the Patent Office are desirable,"

with the view to the preparation of a joint memorandum representing the considered views of chemists.

A Committee appointed by the Association of British Chemical Manufacturers some six months ago to consider this question would act on behalf of the Federal Council, and the Council of the Chemical Society had appointed Professor W. A. Bone as its representative on this Committee. On the completion of its work, this Committee would submit a memorandum to the Federal Council for its consideration and this memorandum, if approved, would then be forwarded as the considered opinion of chemists to the Board of Trade.

Fellows are invited to send to the Assistant Secretary of the Chemical Society expressions of opinion and suggestions which will be communicated by Professor Bone to this Committee.

The Association of British Chemical Manufacturers desires to be in a position to submit its memorandum to the Board of Trade before the holidays, and expressions of opinions and suggestions from Fellows should be submitted as soon as possible.

6. The Council had received from the Comite International de la Croix Rouge (1, Promenade du Pin, Geneva, Switzerland) the following particulars of an international competition for the discovery of a detective reagent of yperite (mustard gas):

### 1. TECHNICAL CONDITIONS.

*Detection of the yperite.* The reagent must permit the detection of yperite in the air without the least ambiguity. The proposed reaction for the detection of the presence of yperite must be characteristic for that gas, and the author must specify whether the said reaction is influenced by another chemical substance mixed with yperite in war materials.

*Characteristics of the reagent.* The reagent and the proposed apparatus must be easy to construct and capable of being produced at a reasonable cost and in large quantities. Accurate indications should be given as to how and also as to how long they can be preserved.

*Sensibility of the reagent.* The sensibility of the reagent will be one of the essential points of the competition. The reagent must reveal a concentration-limit of 0.07 mgr. a litre of yperite in the air.

### 3. REGULATIONS OF THE COMPETITION.

A sum of 10,000 Swiss francs, granted by the International Committee of the Red Cross, shall be attributed by a jury to one or several of the competitors, according to the value of the works submitted.

The competition opens on July 1st, 1929, and closes on December 31st, 1930.

Chemists desirous of competing should, before December 31st, 1930, send their proposals to the Secretary of the International Committee of the Red Cross, in Geneva, in the following manner. The despatch should contain :

(a) Their names and addresses in a sealed envelope. On this envelope must be written a motto and a declaration, on their word of honour, that the reagent is the result of the author's own researches.

(b) A second envelope sealed, bearing the same motto and containing the detailed proposals. The official languages are French, English, German and Italian. On January 31st, 1931, the International Committee of the Red Cross will open the envelopes containing the proposals and have these proposals translated into French. The proposals will be known only by the motto, and not by the authors' names. When the jury meets, both the original texts and the translations are to be submitted to it for examination without its knowing the authors' names. At the end of the competition, after the proposals have been classed, the envelopes containing the authors' names will be opened and the result of the competition



proclaimed. The reagent or the dispositive adopted shall be called by its authors' name and become the property of the International Red Cross.

Certificates were read for the first time in favour of :—

Duncan Hunter, 110, Harlaxton Drive, Nottingham.

Frederick Charles Thompson, M.Sc., 16, Springfield Mount, Leeds.

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

Thomas Alexander Grant, 63, East Street, Kingston, Jamaica.

Messrs. H. Paget and R. H. Purcell were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared elected as Fellows :

Charles Alfred Allgood.	André Meyer, D.-ès.-Sc.
Leslie Herbert Angus, M.Sc.	Michael Angelo O'Callaghan.
Albert Charles Chibnall, M.A., Ph.D.	Benjamin Stuart Paschall, M.D.
David Andrew Crighton, B.Sc.	Harry Gordon Poole, M.Sc.
James Gerald Crowther.	Alan Richard Powell.
Herbert Tasman Davies.	John Roberts.
Knowles Edge, B.A.	Alice Mary Robinson, B.Sc.
David Lloyd Emrys Evans.	Archibald Affleck West Russell, B.A.,
Howard Ernest Goodson, A.R.C.S.,	B.Sc.
A.I.C.	William Russell-Smith.
Gwilym Owen Griffiths, B.Sc.	Ralla Ram Seth, B.Sc.
Kin Kin Gyi, B.A.	Shigehiko Sugasawa.
George Monty Hamilton, M.Sc.	Harold Taylor.
John Stephen Henthwaite.	William Thornton, M.Sc.
John Arthur Hetherington, B.Sc.	Leslie Walter Tiller, B.Sc.
Henry Rowland Hill, B.A.	Jugatram Shankerprasad Vaidya.
Walter Reginald Hunt.	Harold Walmsley.
Panchapagesa Krishnamurthy, M.A.	Herbert Lawton Wright.
George Berthold Loeffler.	
Alexander Leicester McAulay, M.A.,	
B.Sc., Ph.D.	

The following papers were read :

- “Manipulation in intensive drying.” By H. B. BAKER.
- “Notes on intensive drying of gaseous media.” By W. A. BONE.
- “The light emission from the phosphorescent flames of ether, acetaldehyde, propaldehyde, and *n*-hexane.” By H. J. EMELÉUS.
- “The relative configurations of *d*- $\beta$ -octanol and its dextrorotatory halides. The interconversion of the optically active  $\beta$ -octanols by a new method.” By A. J. H. HOUSSA, J. KENYON, and H. PHILLIPS.
- “Amylases of the cereal grains. Oats.” By J. L. BAKER and H. F. E. HULTON.

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

	£	s.	d.
Optically active hydrocarbons. C. Buchanan. (Glasgow Univ.)	10	0	0
The reduction of nitric oxide gas. A. J. Butterworth. (E. Lond. Coll.) ... ..	10	0	0
The constitution of the molybdic acids and their molybdates. D. A. Campbell. (Nottingham Univ. Coll.) ... ..	10	0	0
The behaviour of boron in union with organic radicals. F. Challenger. (Manchester Univ.) ... ..	6	0	0
Organic acids by fermentation processes. F. Challenger. (Manchester Univ.) ... ..	10	0	0
Isomeric change of aromatic compounds ( <i>contd.</i> ). A. W. Chapman. (Sheffield Univ.) ... ..	10	0	0
Determination of the structure of certain sesquiterpene derivatives by synthesis. G. R. Clemo. (Armstrong Coll.) ...	10	0	0
The chemistry of aconitic acid. R. D. Desai. (Imperial Coll.)	12	0	0
The studies on colour and fluorescence of the pyronine dyestuffs. A. N. Dey. (Imperial Coll.) ... ..	12	0	0
The formation and stability of $\beta$ -lactones. A. Kandiah. (Imperial Coll.) ... ..	12	0	0
The constitution of the glucoside hesperidin. F. E. King. (E. Lond. Coll.) ... ..	12	0	0
Tautomerism of diamines. M. S. Lesslie (Miss). (Bedford Coll.)	10	0	0
Three-carbon tautomerism. E. Leton. (Imperial Coll.) ...	10	0	0
The investigation of centro-asymmetric systems. P. Maitland. (Cambridge Univ.) ... ..	12	0	0
The constitution of sparteine. R. Raper. (Armstrong Coll.) ...	10	0	0
The electrical conductivities of the copper salts of a series of substituted malonic acids. H. L. Riley. (Imperial Coll.)	10	0	0
Additive properties of certain conjugated hydrocarbons. W. D. Scott. (Imperial Coll.) ... ..	10	0	0
Isomerism of diphenyl compounds. F. R. Shaw (Miss). Bedford Coll.) ... ..	6	0	0
Configuration of the hexahydroterephthalic acids. R. V. Thomas (Cambridge Univ.) ... ..	10	0	0
Syntheses of cyclic compounds ( <i>contd.</i> ). A. I. Vogel. (Imperial Coll.) ... ..	12	0	0
The relation between chemical constitution and antiseptic action in derivatives of 1:3-diketohydrindene. T. K. Walker. (Manchester Tech. Coll.) ... ..	10	0	0
Studies of acids and bases in non-aqueous solvents. W. F. K. Wynne-Jones. (Reading Univ.) ... ..	10	0	0
	£224	0	0

### THE LIBRARY.

The Library will be closed for Stocktaking from Monday, August 5th, until Saturday, August 17th (inclusive). During the following four weeks (August 19th to September 14th), the Library will close daily at 5 p.m.

## LIST OF FELLOWS FOR 1929.

It has been decided to publish the List of Fellows for 1929, and to supply it to those Fellows who make application before August 31st, 1929. In order that the new List may be as complete as possible, Fellows are asked to notify the Assistant Secretary of any change of address or other alteration before the end of July.

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## HARRISON MEMORIAL PRIZE.

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

Provided that, in the opinion of the Selection Committee, there is a candidate of sufficient distinction to warrant an award of the Prize, the next award is to be made in December, 1929.

Applications, five copies of which must be submitted, should contain the following information :

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

The Selection Committee is prepared to receive applications, nominations, or information as to candidates eligible for the Prize. Any such communication must be received by the President, The Chemical Society, Burlington House, Piccadilly, London, W. 1, not later than Monday, December 2nd, 1929.

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List of Papers, or Abstracts thereof, received between May 16th and June 20th, 1929. (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 Reimer-Tiemann reaction with *m*-fluorophenol and the nitration of 4-fluoro-2-hydroxy- and 2-fluoro-4-hydroxy-benzaldehydes.” By H. H. HODGSON and J. NIXON.
- “On the connexion between absorbed energy and velocity in photochemical reactions of the I<sup>05</sup> type.” By A. J. ALLMAND.
- “The interaction of sodamide and alkyl iodides with acetophenone and its homologues.” By A. RUSSELL.
- “The effect of the cohesion of the medium on reaction velocity. The velocity of interaction of *N*-chloroacetanilide and hydrobromic acid in aqueous media.” By M. RICHARDSON and F. G. SOPER.
- “The reactions taking place in a mixture of ether, acetyl bromide, and naphthol.” By H. L. BASSETT and K. F. TAYLOR.
- “The interaction of carbon tetrabromide with sulphur and selenium.” By H. V. A. BRISCOE, J. B. PEEL, and J. R. ROWLANDS.
- “The heat of formation of sodium sesquicarbonate in solution at 30° C.” By J. C. SWALLOW.
- “Equilibrium between alcohols and salts. Part III.” By G. C. GIBSON, J. O. DRISCOLL, and W. J. JONES.
- “Substitution in resorcinol derivatives. Part II. Bromo-derivatives of  $\beta$ -resorcylaldehyde and their orientation.” By (the late) M. G. S. RAO, C. SRIKANTIA, and M. S. IYENGAR.
- “Synthetical experiments on the aporphine alkaloids. Part VI. *iso*Thebaine. Attempted syntheses of 3:4:5-trimethoxy-aporphine.” By R. K. CALLOW, J. M. GULLAND, and R. D. HAWORTH.
- “Germanium. Part IV. The solubility of germanium dioxide in acids and alkalis.” By W. PUGH.
- “Germanium. Part V. The hydrolysis of sodium germanate and the dissociation constants of germanic acid.” By W. PUGH.
- “The isomeric trithioacetaldehydes.” By E. V. BELL, G. M. BENNETT, and F. G. MANN.
- “Studies in keto-lactol tautomerism. Part III. Influence of bulky substituents on the tautomerism of  $\alpha$ -carboxy- $\gamma$ -acetyl- $\beta\beta$ -methylethylbutyric acid and  $\alpha$ -carboxy- $\gamma$ -acetyl- $\beta\beta$ -diethylbutyric acid.” By M. QUDRAT-I-KHUDA.
- “Studies in keto-lactol tautomerism. Part IV. Chemistry of 1:1:2-trimethyl-5-acetylcyclopentane-2-carboxylic acid.

- Some observations on the constitution of the acid esters of camphoric acid and a synthesis of homoepicamphor." By M. QUDRAT-I-KHUDA.
- "The rotatory dispersion of organic compounds. Part XVIII. Potassium borotartrate." By T. M. LOWRY.
- "The formation of thionaphthindole." By E. W. McCLELLAND.
- "The reaction between magnesium phenyl bromide and phenyl glycide ether." By D. R. BOYD and G. J. C. VINEALL.
- "Dyes derived from cinchomeric acid." By J. D. TEWARI.
- "Viscosity and constitution." By J. D. A. JOHNSON.
- "The electrokinetic potential and its relation to the rate of coagulation of colloids. Part I." By B. N. GHOSH.
- "Action of alkali on stannic oxide sol. Part I." By B. N. GHOSH.
- "Action of alkali on stannic oxide sol. Part II." By B. N. GHOSH.
- "The constitution of linolic acid." By R. D. HAWORTH.
- "Electrometric titration curves of dibasic acids. Part III. Substituted malonic acids." By R. GANE and C. K. INGOLD.
- "2 : 4-Dinitrobenzaldehyde as a reagent." By G. M. BENNETT and W. L. C. PRATT.
- "10-Chloro-5 : 10-dihydrophenarsazine and its derivatives. Part X. The 1- and/or 3-methyl derivatives. The condensation of arsenious chloride and phenyl-*m*-tolylamine." By C. S. GIBSON and J. D. A. JOHNSON.
- "The slow oxidation of phosphorus. Part I. The inhibition of the glow of phosphorus by phosphorus trioxide." By C. C. MILLER.
- "The slow oxidation of phosphorus. Part II. The oxidation products of phosphorus and phosphorus trioxide." By C. C. MILLER.
- "The rates of saponification of various commercial oils, fats and waxes and pure triglycerides by aqueous alkali." By J. W. MCBAIN, C. W. HUMPHREYS, and Y. KAWAKAMI.
- "The equilibrium  $\text{CO}_2 + \text{C} \rightleftharpoons 2\text{CO}$ , and the structure of carbon." By F. J. DENT and J. W. COBB.
- "Substances of the phenarsazine type containing the acenaphthene nucleus." By C. S. GIBSON and J. D. A. JOHNSON.
- "Hydrolysis and decomposition of menthyl methyl xanthogenate and of boronyl methyl xanthogenate." By I. M. McALPINE.
- "The action of phosphoric oxide on  $\beta$ -anilidobutyral." By F. A. MASON.
- "The action of phosphorus pentachloride on ethyl tartrate." By T. S. PATTERSON and A. R. TODD.
- "Some substances derived from the anhydrocatechin tetramethyl ethers." By W. BAKER.

- “The constitution of carthamin. Part I.” By C. KURODA.
- “The lupin alkaloids. Part II.” By G. R. CLEMO and R. RAPER.
- “Glucosides. Part II. The preparation of  $\alpha$ -glucosides from  $\beta$ -glucosyl chlorides.” By W. J. HICKINBOTTOM.
- “Note on the phosphorescent flame of arsenic.” By H. J. EMELEÚS.
- “Comparison of directive powers of elements having consecutive atomic numbers in aromatic substitutions. Part I. Orienting influence of oxonium oxygen.” By R. J. W. LE FÈVRE.
- “The synthesis of *meso*-alkyl and *meso*-aryl derivatives of anthracene. Part VI.” By E. DE B. BARNETT and N. F. GOODWAY.

## ADDITIONS TO THE LIBRARY

### I. Donations.

ABDERHALDEN, EMIL. [Editor.] Handbuch der biologischen Arbeitsmethoden. Abt. I. Chemische Methoden, Teil 2, II Hälfte, Heft iv. Berlin 1929. pp. 2149 to 2307.

From the Publishers : Herren Urban & Schwarzenberg.

INSTITUT INTERNATIONAL DE CHIMIE SOLVAY. Troisième Conseil de Chimie tenu a Bruxelles du 12 au 18 Avril 1928. Rapports et discussions sur des questions d'actualité. Paris 1928. pp. xvi + 562. (*Reference.*) 70 fr.

From Sir William Pope.

INSTITUT INTERNATIONAL DE PHYSIQUE SOLVAY. Cinquième Conseil de Physique tenu a Bruxelles du 24 au 29 Octobre 1927. Electrons et photons. Paris 1928. pp. viii + 291. ill. (*Reference.*) 60 fr.

From Sir William Pope.

NATIONAL BENZOLE ASSOCIATION and UNIVERSITY OF LEEDS. *Joint Benzole Research Committee*. Sixth report. London 1929. pp. iv + 212. ill. (*Reference.*)

From the Association.

PARLIS, ALBERT HENDRIK. Verdringing van de aldehyd-groep in piperonal en derivaten. Leiden [1929]. pp. xii + 200. (*Recd.* 23/5/29.)

From the Author.

STIEGLITZ, JULIUS. [Editor.] Chemistry in medicine : a co-operative treatise intended to give examples of progress made in medicine with the aid of chemistry. New York 1928. pp. xxii + 757. ill. \$2 net. (*Recd.* 6/6/29.)

From Dr. T. A. Henry.

THOMS, HERMANN. [Editor.] Handbuch der praktischen und wissenschaftlichen Pharmazie. Vol. V. Part iv. Berlin 1929. pp. 753 to 980. ill. *M.* 10.

From the Publishers : Herren Urban & Schwarzenberg.

TINKLER, CHARLES KENNETH, and MASTERS, HELEN. Applied chemistry : a practical handbook for students of household science

and public health. 2nd edition. Vol. I. London 1929. pp. xii + 296. ill. 15s. net. (*Recd.* 11/6/29.)

From the Publishers : Messrs. Crosby Lockwood & Son.

## II. *By Purchase.*

ALEMbic CLUB REPRINTS, No. 19. The foundations of the theory of dilute solutions. Papers on Osmotic pressure by J. H. VAN 'T HOFF, and on Electrolytic dissociation by SVANTE ARRHENIUS, 1887. Edinburgh 1929. pp. 67. ill. 2s. 6d. net. (*Recd.* 10/6/29.)

BAUER, K. HUGO. Die trockenden Öle. (Monographien aus dem Gebiete der Fett-Chemie, Vol. XI.) Stuttgart 1928. pp. vii + 354. ill. M. 27. (*Recd.* 12/6/29.)

CORDIER, VICTOR. Die chemische Zeichensprache einst und jetzt. Graz 1928. pp. xii + 220. ill. M. 15. (*Recd.* 28/5/29.)

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HALL, SIR ALFRED DANIEL. Fertilisers and manures. 3rd edition. London 1929. pp. xxiv + 414. ill. 8s. net. (*Recd.* 18/5/29.)

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VOGEL, HERMANN WILHELM. Handbuch der Photographie. New edition. Edited by ERICH LEHMANN. Vol. I, part i. Photochemie und photographische Chemie. By WALTER NODDACK and ERICH LEHMANN. Berlin 1928. pp. x + 314. ill. *M.* 15. (*Recd.* 12/6/29.)

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——— Vol. II, part i. Photographische Optik. By HANS HARTING. Berlin 1925. pp. vi + 187. ill. *M.* 7. (*Recd.* 12/6/29.)

——— Vol. II, part ii. Das Negativverfahren. By OTTO MENTE, ERICH LEHMANN and WILLY NAUCK. Berlin 1926. pp. 192. ill. *M.* 9. (*Recd.* 12/6/29.)

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AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research*. Pamphlet No. 11. The Tasmanian grass grub (*Oncopera intricata* Walker). A preliminary report on its life history, and methods of control. By GERALD F. HILL. Melbourne 1929. pp. 43. ill.

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HOME OFFICE. *Factory Department*. Memorandum on the manufacture, use and storage of cellulose solutions. London 1929. pp. 12. ill.

IMPERIAL INSTITUTE. The Mineral Industry of the British Empire and Foreign Countries. Cadmium. London 1929. pp. 23.

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MINISTRY OF HEALTH. Report of an investigation regarding the emission of fumes from artificial silk works. By the Chief Inspector of Alkali, etc., Works. London 1929. pp. 7.

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PERLITZ, HARALD. On the domain of the atom of bismuth in its crystal. (From the *Sitzungsber. Naturforscher-Ges. Univ. Tartu*, 1929, 35.)

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SCIENTIFIC AND INDUSTRIAL RESEARCH. Department of *Building Research*. Special Report No. 12. Investigations into the durability of architectural terracotta and faience. By W. A. McINTYRE. London 1929. pp. viii + 73. ill.

— — Special Report No. 13. Effect of temperature on the setting times of cements, and on the strength of cements, mortars and concretes. By W. N. THOMAS and N. DAVEY. London 1929. pp. iv + 38.

— *Engineering Research*. Special Report No. 14. Properties of materials at high temperatures. 4. The strength at elevated temperatures of low carbon steels for boiler construction. By REGINALD GEORGE BATSON and H. J. TAPSELL. London 1929. pp. vi + 41. ill.

— *Food Investigation*. Special Report No. 34. The leakage of heat into ships' insulated holds. London 1929. pp. vi + 34. ill.

— *Forest Products Research*. Bulletin No. 2. *Lyctus* powder-post beetles. By RONALD C. FISHER. London 1928. pp. vi + 46. ill.

SOUTH AFRICA, UNION OF. *Department of Agriculture*. (Division of Chemistry, Series No. 90.) The determination and application of the electrical resistance and  $p_H$  value in irrigation soil surveys. By ARTHUR STEAD. (From the *S. African J. Sci.*, 1928, 25.)

— — (Division of Chemistry, Series No. 91.) The sphere of the chemist in agriculture. Solving problems for the farmer. (From *Farming in S. Africa*, 1928.)

— — (Division of Chemistry, Series No. 92.) Manuring of wattles. By C. O. WILLIAMS. Fertilizer trials with wattles. By J. B. OSBORN. (From *Farming in S. Africa*, 1928 and 1929.) ill.

STEECE, HENRY M. Recent fertilizer experiments with cotton. (From *Rep. Agric. Exper. Stations*, 1927.)

UNION OF SOCIALIST SOVIET REPUBLICS. *Scientific Technical Department of the Supreme Council of National Economy*. Central Institute for Tobacco Investigations. Bulletin No. 34. Zur Kenntnis der Tabakfermentation. By A. I. SMIRNOV. Krasnodar 1927. pp. 115. [In Russian. German summary.]

— — — Bulletin No. 36. Fertilizer experiments with tobacco in Veseloye (near Adler) in 1925. By A. V. OTRYGANIEV. Krasnodar 1927. pp. 20. [In Russian. English summary.]

— — — Bulletin No. 37. Soil investigations of the chemical section. By A. SCHMUCK, S. NEGOVELOV, and V. ZAPOLSKI. Krasnodar 1927. pp. 47. [In Russian.]

# PROCEEDINGS

## OF THE

# CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, October 17th, 1929, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., President, in the Chair.

Among the visitors welcomed by the President were Professor Dr. K. Fajans of Munich and Sir Venkata Raman of Calcutta.

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

	Elected.	Died.
John Bairstow .....	Dec. 3rd, 1891.	June 19th, 1929.
Arthur C. Cockburn .....	Dec. 2nd, 1880.	July 25th, 1929.
Ernest Hartshorne .....	June 18th, 1925.	Sept. 16th, 1929.
Ernest E. Mabbott .....	May 7th, 1925.	June 6th, 1929.
Gerald W. Martin .....	Nov. 19th, 1885.	Oct. 14th, 1929.
Thomas H. Moore .....	June 18th, 1902.	July 20th, 1928.
William W. J. Nicol .....	Feb. 1st, 1883.	March 18th, 1929.
William H. Perkin .....	April 17th, 1884.	Sept. 17th, 1929.
Percy B. Phipson .....	Dec. 7th, 1905.	March 8th, 1929.
Sudhindranarayan Ray .....	Dec. 6th, 1923.	July 6th, 1929.
William Regester .....	April 15th, 1880.	July 4th, 1929.
Samuel B. Schryver .....	May 4th, 1899.	Aug. 21st, 1929.
Rustomji N. Unwalla .....	March 4th, 1896.	May 25th, 1929.
Robert L. M. Wallis .....	Dec. 1st, 1910.	April 1st, 1929.
Paul T. White .....	May 6th, 1897.	June 29th, 1929.

In referring to the death of Professor W. H. Perkin, the PRESIDENT said :

“ Fellows will have felt the deepest regret on hearing of the death of Professor William Henry Perkin, which occurred at Oxford on September 17th last, and will wish to join with the Council in sending the following expression of sympathy to Mrs. Perkin :

The Council and Fellows of the Chemical Society desire to express to you their deepest sympathy on the death of your husband, Professor William Henry Perkin. They recall with gratitude his long and signal services to the Society as Councillor, Vice-President, and President and the influence he always

exerted among them by his inspiring personality and his desire to further the objects for which the Society was founded.

In common with the whole Scientific world they mourn the loss of one who added lustre to a name already renowned in Chemical Science, and whose contributions to our knowledge of Organic Chemistry will be remembered as long as the science endures.

“ William Henry Perkin was born at Sudbury on June 17th, 1860, and was the eldest son of the late Sir William Perkin. After studying at the Universities of Würzburg and München, at the latter of which he was Privat-docent, he became successively Professor of Chemistry in the Heriot-Watt College, Professor of Organic Chemistry in the University of Manchester and Waynflete Professor of Chemistry in the University of Oxford. His great contributions to Organic Chemistry fall into three classes :

- (1) The chemistry of carbon rings, an account of which he gave us as recently as May last when he delivered the first Pedler Lecture,
- (2) The chemistry of camphor and the terpenes,
- (3) The chemistry of the alkaloids.

In all these sections he published papers of the highest fundamental importance, and the chemistry of these groups, as it stands to-day, is mainly due to him.

“ Perkin was essentially an experimenter, probably as great an experimenter and manipulator as organic chemical science has as yet produced. To this great gift he was able to apply a mind teeming with original ideas and a brain full of detailed knowledge and experience such as is rarely possessed by any one man. An indefatigable worker, he was able to contribute, both by himself and with the aid of his many co-workers, an unusually large number of papers which were published in our Journal and elsewhere. These will always stand as a monument to his fame.”

It was also announced that :

1. Mr. Basil Holmes had presented to the Society a framed picture of a group of Fellows of the Royal Society, published July 1st, 1878, which was formerly in the possession of the late Dr. J. Hall Gladstone.

2. The following Address of Congratulation had been sealed in Council that afternoon, and would be presented by the President to the Comité d'Organisation du Centenaire Paul Schutzenberger at the Celebrations to be held in Paris on November 7th, 1929 :

The President, Council, and Fellows of the Chemical Society send greetings to the Comité d'Organisation du Centenaire Paul

Schutzenberger and welcome the opportunity of participating in the Celebrations in honour of the Centenary of the birth of this great French Chemist.

The work of Paul Schutzenberger embraced a wide section of Chemical Science and formed a basis on which much of our modern knowledge is built. His work on the derivatives of Phosphorus, Arsenic, and Silicon, as well as his notable contributions to Organic Chemistry, especially in connection with the natural colouring matters, provide examples which have served as a source of inspiration to many who have followed after him.

The Chemical Society joins with its French colleagues in offering homage to the memory of a great Frenchman and a great Chemist.

Signed on behalf of the Chemical Society,

JOCELYN THORPE, *President.*

T. SLATER PRICE, *Treasurer.*

C. S. GIBSON, } *Secretaries.*

T. S. MOORE, }

F. G. DONNAN, *Foreign Secretary.*

Sealed in Council this Seventeenth Day of October, One Thousand Nine Hundred and Twenty-Nine.

3. The second Liversidge Lecture, entitled "Surface Forces and Chemical Equilibria," would be delivered by Professor Dr. H. Freundlich on Thursday, December 12th, 1929, 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.

4. The Annual Chemical Dinner, at which Lord Dewar would preside, would be held in the Connaught Rooms, Great Queen Street, W.C. 2, on Friday, November 8th, 1929, at 7.30 p.m. Tickets, price 12s. 6d. each, for lady or gentleman, including gratuities, but not wines, can be obtained from Mr. F. A. Greene, Chemical Industry Club, 2, Whitehall Court, S.W. 1.

The following were formally admitted Fellows of the Chemical Society : B. H. Ingham, H. G. Smith, S. Sugawara, W. R. Littlejohn, J. A. B. Smith, R. K. Callow, and D. A. Crighton.

Certificates were read for the first time in favour of :

Mark Barent, B.Sc., 29, Victoria Park Square, E. 2.

Lindsay Heathcote Briggs, M.Sc., Massey Agricultural College, Palmerston North, New Zealand.

John Henry Brightman, B.Sc., 102, Hodford Road, Golders Green, N.W. 11.

William Chalmers, M.A., Department of Chemistry, McGill University, Montreal, Canada.

- Walter Cule Davies, B.Sc., Ph.D., 9, Grove Place, Penarth, Glam.  
 Charles Edward Duce, Elsonia, Eling Lane, Totton, Southampton.  
 Henry Alexander Sherwin Gothard, Verbena, Southlands Road, Bickley, Kent.  
 John Graymore, M.Sc., A.I.C., Sunrising, Lincoln Road, Newark.  
 Frank Arnold Greene, M.I.Mech.E., M.I.E.E., M.I.Chem.E., 50, Clifton Hill,  
 St. John's Wood, N.W. 8.  
 Chika Kuroda, D.Sc., 970, Minami-Somei, Sugamo, Tokyo.  
 Leopold Ferdinand Levy, M.Sc., 27, Wilmot Road, Downhills Park, N. 17.  
 Albert Reginald McLeod, M.D., C.M., T. & G. Building, Elizabeth Street,  
 Sydney, N.S.W.  
 John Gordon Malloch, M.Sc., Ph.D., University of Alberta, Edmonton,  
 Alberta, Canada.  
 Frederick Cecil Barron Marshall, B.Sc., 91, Calabria Road, N. 5.  
 Owen Mathias, M.Sc.Tech., A.I.C., 28, Stanley Road, Whalley Range,  
 Manchester.  
 Ernest John Miller, B.Sc., 128, Lozells Road, Handsworth, Birmingham.  
 Arthur Williams Morgan, 21, Conduit Road, Bedford.  
 Basanta Kumar Pal, M.Sc., Chemistry Department, Intermediate College,  
 Mandalay, Burma.  
 Basur Sanjiva Rao, Prof., M.A., Ph.D., Central College, Bangalore, India.  
 Eric Samuel Richards, 33, Price Street, Smethwick, Staffs.  
 Frank Sharples, Assoc.M.C.T., 985, Middleton Road, Chadderton, Oldham.  
 Roger Stansfield, 48, Virginia Avenue, Eden Terrace, Auckland, New Zealand.  
 Katherine Frieda Taylor, B.Sc., Ph.D., 3, Woodland Place, Penarth, Glam.  
 Sidney Charles Gunther Tweedy, 77, The Grove, Palmers Green, N. 13.  
 Bishambhar Dayal Varma, 68, Ganeshganj, Lucknow, India.

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

- Atulpati Banerji, D.Sc., Medical Officer, Reformatory & Industrial School,  
 Alipore, Calcutta.  
 Henri Gault, Prof., Société des Usines Chimiques Rhône-Poulenc, St. Fons  
 (Rhône), France.

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

- Professor Dr. Max Bodenstein (Berlin).  
 Professor Dr. Niels Bohr, For.Mem.R.S. (Copenhagen).  
 Sir William H. Bragg, K.B.E., F.R.S.  
 Professor Dr. Peter Debye (Leipzig).  
 Professor Dr. Arthur Hantzsch (Dresden).  
 Professor Irving Langmuir (Washington).  
 Geh.Reg.-Rat Professor Dr. Walther Nernst (Berlin).  
 Geheimrat Professor Dr. Wilhelm Ostwald (Grossbothen).  
 Sir Ernest Rutherford, Kt., O.M., Pres.R.S.  
 Geheimrat Professor Dr. Otto Wallach (Göttingen).  
 Geh.Reg.-Rat Professor Dr. Heinrich Wieland (Munich).

The following papers were read :

- “ The modes of addition to conjugated unsaturated systems. Part  
 II. The reduction of conjugated unsaturated acids by metals

dissolving in aqueous media." By H. BURTON and C. K. INGOLD.

"Synthesis of anthracene homologues. Part I. 2:6- and 2:7-Dimethylantracenes." By G. T. MORGAN and E. A. COULSON.

"Synthesis of anthracene homologues. Part II. 2:3:6-Trimethylantracene." By G. T. MORGAN and E. A. COULSON.

"Dynamic isomerism involving mobile hydrocarbon radicals. Part I. The triarylbenzenylamidines." By A. W. CHAPMAN.

"Studies of valency. Part XIV. An optically-active telluronium salt; *p*-tolylphenylmethyltelluronium iodide." By T. M. LOWRY and F. L. GILBERT.

"Studies of valency. Part XV. Optically-active *p*-tolylphenyl-telluroxide." By T. M. LOWRY and F. L. GILBERT.

### SECOND LIVERSIDGE LECTURE.

The second Liversidge Lecture, entitled "Surface Forces and Chemical Equilibria," will be delivered by Professor Dr. H. Freundlich on Thursday, December 12th, 1929, 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.

### 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 Monday, December 2nd, 1929. Applications from Fellows will receive prior consideration.

All persons who received grants in December, 1928, 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 2nd.

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.

### THE HARRISON MEMORIAL PRIZE.

In accordance with the Trust Deed governing the Harrison Memorial Fund, the Selection Committee consisting of the Presidents

of the Chemical Society, the Institute of Chemistry, the Society of Chemical Industry, and the Pharmaceutical Society, will proceed to make an award of the Harrison Prize in December next.

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

Provided that, in the opinion of the Selection Committee, there is a candidate of sufficient distinction to warrant an award of the Prize, the next award is to be made in December, 1929.

Applications, five copies of which must be submitted, should contain the following information :

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

The Selection Committee is prepared to receive applications, nominations, or information as to candidates eligible for the Prize. Any such communication must be received by

The President,  
The Chemical Society,  
Burlington House,  
Piccadilly, London, W. 1,

*not later than Monday, December 2nd, 1929.*

### A LIEBIG HOUSE UNION.

A Liebig House Union has been formed at Darmstadt under the presidency of Geheimrat Professor Dr. A. von Weinberg, supported by a strong Committee. The object of the Union is to maintain, as a permanent museum, the birthplace of von Liebig at "Grosse Kaplaneigasse 30," which has recently been rebuilt. It is hoped



to bring together in this museum all the mementos of the great chemist and of the industries with which he was connected. Membership subscriptions are as follows: For ordinary membership at least 20 M., for corporate membership at least 100 M. yearly. Individuals who pay not less than 500 M., or corporations who subscribe at least 2000 M. will be known as "Founders," and will become permanent members of the Union. Members who subscribe more than 20 M. yearly will be entitled to a copy of E. Berl's "Liebigbriefe," and those who subscribe more than 100 M. to a copy of August Kekulé's notebook of Liebig's lecture reproduced in facsimile, so long as it is available. Subscriptions should be made payable to the Union at the Diskonto-Gesellschaft Filiale, Darmstadt.

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### ANNUAL REPORTS.

The price of the Annual Reports for 1929, Vol. XXVI, will be 5s. 6d. to those Fellows who apply by December 31st, 1929.

Application should be made to the Assistant Secretary, and must be accompanied by a remittance.

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### SPECIAL PUBLICATIONS OF THE SOCIETY.

Fellows are reminded that the following publications can be obtained at the reduced prices mentioned:

	<i>Price.</i>
Memorial Lectures, Vol. I (1893-1900) . . .	9s. post free.
"    "    Vol. II (1901-1913) . . .	7s.     "
Faraday Lectures (1869-1928) . . .	5s. 6d.   "
Photographs of Eminent Chemists, set of 8 . . .	18s.     "
"    "    "    each. . .	2s. 6d.   "

The Council also has a few sets of the *Berichte der Deutschen Chemischen Gesellschaft* from 1915 to 1924 (inclusive) for £22, post free.

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### BRITISH CHEMICAL ABSTRACTS "A" FOR 1930.

*(Printed on one side of the page only)*

The Abstracts "A" (Pure Chemistry) for 1930, printed on one side of the page only, will be issued to Fellows who make application by December 31st, 1929. On account of the cost of producing

these Abstracts, the Council has found it necessary to increase the price to £1 10s. A remittance for this amount must accompany each application.

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## PUBLICATIONS OF OTHER SOCIETIES.

Fellows of the Chemical Society who are not members of the Society of Chemical Industry, the American Chemical Society, or the Dutch Chemical Society may procure the publications of these Societies for 1930 at the following prices :

### SOCIETY OF CHEMICAL INDUSTRY

- |   |                   |
|---|-------------------|
| (a) Abstracts in Applied Chemistry (exclusive of Index)                             | £1 10s. post free |
| (b) Annual Reports of the Progress of Applied Chemistry for 1929 . . . . .          | 10s. ,, ,,        |
| (c) Abstracts in Applied Chemistry (printed on one side of the page only) . . . . . | £2 10s. ,, ,,     |

Application should be made direct to the Secretary, Society of Chemical Industry, 46 and 47 Finsbury Square, E.C. 2, and should reach him by 31st December, 1929. Fellows resident abroad should apply by return of mail.

### AMERICAN CHEMICAL SOCIETY

- |  |         | <i>Postage.*</i> |
|--|---------|------------------|
| (a) Journal of the American Chemical Society . . . . . | \$6.25  | \$1.00           |
| (b) Chemical Abstracts . . . . .                       | \$6.25  | \$1.50           |
| (c) Industrial and Engineering Chemistry . . . . .     | \$6.25  | \$1.00           |
| Price for all three Journals : . . . . .               | \$15.00 | \$3.50           |
| Price for any two Journals : . . . . .                 | \$11.50 | \$2.00           |
| (d) Chemical Reviews . . . . .                         | \$4.00  | \$0.50           |

Application should be made direct to the Secretary, American Chemical Society, Mills Buildings, Washington, D.C., U.S.A., and should be sent by December 31st, 1929.

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

\* One-half postage rates to Canada. No postage charges to countries in the Pan American Union and Spain.

### NEDERLANDSCHE CHEMISCHE VEREENIGING

- |  |                     |
|--|---------------------|
| (a) Chemisch Weekblad . . . . .                          | Fl. 10.25 post free |
| (b) Recueil des travaux chimiques des Pays Bas . . . . . | Fl. 11.50 ,, ,,     |

Application to be made to Dr. A. D. Donk, Nederlandsche Chemische Vereeniging, Verspronckweg, 100, Haarlem, Holland.

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

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## DISCOVERY OF A DETECTIVE REAGENT OF YPERITE (MUSTARD GAS).

With reference to the notice appearing in the Proceedings for June 1929 (pp. 71 and 72) the Jury appointed to judge the competition is composed of the following :

Geh. Reg.-Rat Professor Dr. F. Haber, Kaiser Wilhelm Institut, Berlin-Dahlem.

Sir William J. Pope, K.B.E., F.R.S., The University, Cambridge.

Professor F. Swarts, The University, Ghent.

Professor G. Urbain, 1, Rue Victor Cousin, Sorbonne, Paris.

Secretary of the Jury: The Technical Adviser of the International Red Cross Committee.

List of Papers, or Abstracts thereof, received between June 20th, and October 17th, 1929. (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 inhibition of chemical reactions. Part III. The inhibition by sulphur of the atmospheric oxidation of benzaldehyde.” By K. C. BAILEY.
- “Nitrogen-phosphorus compounds. Some derivatives of diphenyl-phosphoric acid.” By B. BEILENSOHN and R. DICKINSON.
- “Chemical preparation of a substance probably living.” By H. C. WOODRUFF.
- “The action of visible light on the oxidation of lactic and tartaric acids.” By F. BERNHEIM.
- “The anomalous fifth carbon atom in *n*-fatty nitriles.” By R. A. FULTON and W. B. LEE.
- “The nitration of aromatic thiocyanates.” By F. CHALLENGER, C. HIGGINBOTTOM, and A. HUNTINGTON.
- “Studies of the boron-carbon linkage. Part I. The oxidation and nitration of phenylboric acid.” By F. CHALLENGER and A. D. AINLEY.
- “A modified Reimer-Tiemann reaction. The influence of ring substituents on the aldehyde yields from the action of phenols on an alkaline solution of trichloroacetic acid.” By D. E. ARMSTRONG and D. H. RICHARDSON.
- “The influence of solvents and of other factors on the rotation of optically active compounds. Part XXVIII. The rotation dispersion of mannitol and some of its derivatives. Note on rotation dispersion curves.” By T. S. PATTERSON and A. R. TODD.

- “The chemistry of the three-carbon system. Part XXIII. The influence of substituent groups on the tautomeric change.”  
By R. P. LINSTEAD.
- “The classification of the sugars. Part II.” By J. G. MALTBY.
- “The constitution of metal-ion-pyridine complexes in aqueous solution.” By F. K. V. KOCH.
- “The constitution of carthamin. Part II.  $\beta$ -Carthamidin methyl ether and its synthesis.” By C. KURODA.
- “A new isomerism of halogenohydroxybenzoyltoluic acids. Part II. 5(4 ?)-Methyl-2-(5'-chloro-2'-hydroxybenzoyl)-benzoic acid.”  
By M. HAYASHI.
- “A new isomerism of halogenohydroxybenzoyltoluic acids. Part III. 3(6 ?)-Methyl-2-(3'-chloro-4'-hydroxybenzoyl)-benzoic acid.” By M. HAYASHI.
- “A new isomerism of halogenohydroxybenzoyltoluic acids. Part IV. 3(6 ?)-Methyl-2-(4'-chloro-2'-hydroxybenzoyl)-benzoic acid and 3(6 ?)-methyl-2-(2'-chloro-4'-hydroxybenzoyl)-benzoic acid. (Appendix : 3(6 ?)-Methyl-2-(2' : 5'-dihydroxybenzoyl)-benzoic acid.)” By M. HAYASHI.
- “Researches on nitrous oxide.” By A. N. C. BENNETT.
- “The mechanism of the degradation of fatty acids by mould fungi. Part IV.” By V. SUBRAMANIAM, H. B. STENT, and T. K. WALKER.
- “A study into the nature of the development of colour by photochemical change in strong solutions of ammonium thiocyanate.”  
By B. S. SHARMA.
- “The action of hydrofluoric acid on compounds of selenium and tellurium. Part III. Solubilities of tellurium dioxide and oxyfluorides.” By E. B. R. PRIDEAUX and J. O'N. MILLOTT.
- “The conversion of acetylchloroaminobenzene into *p*-chloroacetanilide by hydrogen and chlorine ions.” By J. W. BELTON.
- “The action of sulphur monochloride on antimonypentachloride.”  
By J. R. PARTINGTON.
- “Arsenic trichloride and sulphur chloride.” By J. R. PARTINGTON.
- “Derivatives of dihydropentindole. Part II.” By S. G. P. PLANT.
- “The relation between chemical affinity and paramagnetism of the elements.” By W. E. J. TRASK.
- “Researches on amines. Part III. Derivatives of cupric nitrite.” By H. J. S. KING.
- “The condensations of benzaldehyde and ethyl acetoacetate with urea and thiourea.” By L. E. HINKEL and D. H. HEY.
- “The synthesis of glycine.” By W. K. ANSLOW and H. KING.
- “The formation of *N*-nitrosoamines from tertiary aromatic amines. Part I. The conversion of derivatives of dimethylaniline by nitrous acid into the corresponding nitrosoamines and mono-

- methylaniline derivatives." By W. G. MACMILLAN and T. H. READE.
- "Polynuclear cobalt complexes containing cobalt in the anion." By E. G. V. PERCIVAL and W. WARDLAW.
- "Complex bromides of quinquevalent molybdenum." By F. G. ANGELL, R. G. JAMES, and W. WARDLAW.
- "Acid and salt effects in catalysed reactions. Part XXII. The influence of inert salts on the secondary dissociation of dibasic acids." By H. M. DAWSON and J. E. SMITH.
- "Germanium. Part VI. An improved method of extracting germanium from germanite." By W. PUGH.
- "The 'fine-structure' of certain 'straight-chain' compounds." By W. B. LEE.
- "The unsaturation and tautomeric mobility of heterocyclic derivatives. Part I. Benzthiazole, dihydrobenzthiazole, and thiazole derivatives." By R. F. HUNTER.
- "The effect of hydrogen-ion concentration on the electrode potential of iron." By A. L. MCAULAY and G. L. WHITE.
- "Cyanine dyes from quaternary salts of methyl- $\alpha$ - and - $\beta$ -naphthathiazoles." By F. M. HAMER.
- "The influence of substituents on the benzoin reaction." By H. H. HODGSON and W. ROSENBERG.
- "Polysaccharides. Part V. Glycogen." By W. N. HAWORTH, E. L. HIRST, and J. I. WEBB.
- "The solubilities of *o*- and *p*-nitrophenols in aqueous methyl alcohol solutions at 25° and 40°. Formation of  $\beta$ -*p*-nitrophenol." By J. C. DUFF.
- "Dyes derived from triazole dicarboxylic acid. The effect of heterocyclic nitrogen on colour." By J. D. TEWARI.
- "Chemical kinetics of the system  $\text{Ag}_2\text{CO}_3 \rightleftharpoons \text{Ag}_2\text{O} + \text{CO}_2$ ." By W. D. SPENCER and B. TOPLEY.
- "The nitrosation of phenols. Part VII. Resorcinol monomethyl ether and *m*-cresol." By H. H. HODGSON and H. CLAY.
- "The nitration of 3-hydroxy-1:4-benzisooxazine and its 7- and 8-acetamido-derivatives." By I. E. BALABAN.
- "The influence of the sulphur atom on the reactivity of adjacent atoms or groups. Part III.  $\delta$ - and  $\epsilon$ -Chlorosulphides." By G. M. BENNETT, F. HEATHCOTE, and A. N. MOSSES.
- "Studies of a Bredig silver hydrosol." By R. J. BEST and A. B. COX.
- "Passivity of metals. Part III. The quantity and distribution of the superficial oxide." By U. R. EVANS and J. STOCKDALE.
- "The formation of 1-substituted benzimidazoles." By M. A. PHILLIPS.

- “The oxidation of  $\alpha$ -terpinene with benzoylhydroperoxide.” By L. A. ELSON, C. S. GIBSON, and J. L. SIMONSEN.
- “Monohalogenomononitrotoluenes. Arsenical compounds derived from 3-bromo-4-nitrotoluene.” By L. A. ELSON, C. S. GIBSON, and J. D. A. JOHNSON.
- “10-Chloro-5:10-dihydrophenarsazine and its derivatives. Part XI. Mono-, di-, and tri-methyl derivatives.” By C. S. GIBSON and J. D. A. JOHNSON.
- “*nor-d- $\psi$* -Ephedrine, a convenient base for the resolution of externally compensated acids. Resolution of *dl*-benzenesulphonylalanine and of *dl-N*-phenylalanineamide-4-arsinic acid.” By C. S. GIBSON and B. LEVIN.
- “Compounds of the tryparsamide type. Part II. Resolution of *dl-N-2*-methylphenylalanineamide-4-arsinic acid.” By C. S. GIBSON and B. LEVIN.
- “Dimorphism in the aliphatic dicarboxylic acid series (azelaic acid).” By W. A. CASPARI.

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## ADDITIONS TO THE LIBRARY.

### I. *Donations.*

ABDERHALDEN, EMIL. [Editor.] Handbuch der biologischen Arbeitsmethoden. Abt. I. Chemische Methoden. Teil 2, II Hälfte, Heft v. Berlin 1929. pp. 2309 to 2584. *M.* 14. (*Recd.* 8/8/29.)

— — — Abt. XI. Chemische, physikalische und physikalisch-chemische Methoden zur Untersuchung des Bodens und der Pflanze. Teil 4, Heft i. Berlin 1929. pp. 1 to 192. *M.* 10. (*Recd.* 10/8/29.) From the Publishers: Herren Urban & Schwarzenberg.

BRITTON, HUBERT THOMAS STANLEY. Hydrogen ions: their determination and importance in pure and industrial chemistry. London 1929. pp. xiv + 515. ill. 25s. net. (*Recd.* 11/9/29.)

From the Publishers: Messrs. Chapman & Hall.

CELLULOSECHEMIE. Year VII, etc. Berlin 1926 +. (*For circulation.*)

From the Bureau of Chemical Abstracts.

FIRTH, JAMES BRIERLEY. Physical chemistry. London 1929. pp. vi + 292. ill. 5s. 6d. net. (*Recd.* 1/8/29.)

From the Publishers: The University Tutorial Press, Ltd.

GESELLSCHAFT FÜR LINDE'S EISMASCHINEN A.-G. Geschichte. 50 Jahre Kältetechnik 1879-1929. Wiesbaden 1929. pp. 192. ill. (*Recd.* 15/7/29.)

From the Society.

HAAS, PAUL, and HILL, THOMAS GEORGE. An introduction to the chemistry of plant products. 2nd edition. Vol. II. London 1929. pp. viii + 220. ill. 10s. 6d. net. (*Recd.* 13/7/29.)

From Dr. P. Haas.

INSTITUT INTERNATIONAL DE CHIMIE SOLVAY. Troisième Conseil de Chimie. Rapports et discussions. Paris 1928. pp. xvi + 562. (*Recd.* 26/7/29.) From Dr. E. K. Rideal.

INSTITUTION OF PETROLEUM TECHNOLOGISTS. Standard methods of testing petroleum and its products. 2nd edition. London 1929. pp. xiv + 140. 7s. 6d. net. (*Recd.* 5/10/29.) From the Institution.

KENDALL, JAMES. At home among the atoms: a first book of congenial chemistry. [New York] 1929. pp. xvi + 270. ill. 7s. 6d. net. (*Recd.* 18/9/29.)

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

KOETSCHAU, RUDOLF. Einführung in die theoretische Wirtschaftskemie. Dresden 1929. pp. x + 155. ill. M. 12. (*Recd.* 24/6/29.) From the Publisher: Herr Theodor Steinkopff.

KOLTHOFF, ISAAK MAURITS, and MENZEL, HEINRICH. Volumetric analysis. An authorized translation based upon the German text by N. HOWELL FURMAN. Vol. II. New York 1929. pp. xiv + 552. ill. 25s. net. (*Recd.* 15/7/29.)

From the London Publishers: Messrs. Chapman & Hall.

MENSCHUTKIN, BORIS NIKOLAEVITSCH. Molecule and atom in chemistry. Moscow 1929. pp. 144. [In Russian.] (*Recd.* 1/7/29.)

— Studies in general (inorganic) chemistry. Moscow 1929. pp. 600. ill. [In Russian.] (*Recd.* 1/7/29.) From the Author.

NAISH, WILLIAM ARCHIBALD, and CLENNELL, JOHN EDWARD. Select methods of metallurgical analysis. London 1929. pp. xii + 495. ill. 30s. net. (*Recd.* 19/9/29.)

From the Publishers: Messrs. Chapman & Hall.

NOÛY, PIERRE LECOMTE DU. Équilibres superficiels des solutions colloïdales. Études de biophysique moléculaire. (Monographies de l'Institut Pasteur.) Paris 1929. pp. 228. ill. 32fr. (*Recd.* 29/6/29.)

From Mr. Emil Hatschek.

PAPIERFABRIKANT, DER. Wochenschrift für die Papier-, Pappen-, Holz-, Schliff-, Strohstoff- u. Zellstoff-Fabrikation. Year XXVI, etc. Berlin 1928+. (*Reference.*) From the Bureau of Chemical Abstracts.

PHARMACEUTICAL FORMULAS. P.F. Vol. I. Being "The Chemist and Druggist" book of selected formulas from the British, United States and other pharmacopœias, together with non-official formulas from various sources. 10th edition. By SAMUEL WALTER WOOLLEY and GEORGE PETERS FORRESTER. London 1929. pp. xvi + 1146. (*Reference.*) 15s. net. From Mr. G. P. Forrester.

REDGROVE, HERBERT STANLEY, and FOAN, GILBERT A. Blonde or brunette? A complete account of the theory and practice of hair-dyeing in all its branches. London 1929. pp. xii + 182. ill. 7s. 6d. net. (*Recd.* 6/9/29.)

From the Publishers: Messrs. William Heinemann, Ltd.

SOUTH KENSINGTON. *Science Museum*. Handbook of the collections illustrating industrial chemistry. Compiled by ALEXANDER BARCLAY. London 1929. pp. 83. ill. 1s. net. (*Recd.* 8/10/29.)

From the Compiler.

TEMPLE, M. S. A survey of the soils of Buckinghamshire. (University of Reading. Faculty of Agriculture. Bulletin 38.) Reading 1929. pp. 130. ill. (*Recd.* 5/7/29.)

From the Dean of the Faculty.

THOMS, HERMANN. [Editor.] *Handbuch der praktischen und wissenschaftlichen Pharmazie*. Vol. VI. Part ix. Berlin 1929. pp. 2161 to 2402.

From the Publishers : Herren Urban & Schwarzenberg.

UNITED STATES. *Department of Commerce*. Bureau of Standards Journal of Research. Vol. I, etc. Washington 1928 +. (*For circulation.*)

From the Bureau of Chemical Abstracts.

UNIVERSITATIS ASLÆ MEDIÆ. Acta. Series VI. *Chemia*. No. 1, etc. Taschkent 1928 +. (*Reference.*)

From the University.

WEST, CLARENCE JAY, and BEROLZHEIMER, D. D. Bibliography of bibliographies on chemistry and chemical technology. First supplement 1924–1928. (Bulletin of the National Research Council, No. 71.) Washington 1929. pp. 161. (*Reference.*) \$1.50.

From the National Research Council.

## II. *By Purchase.*

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS. Transactions. Index to Vols. I to XV, inclusive. New York 1929. pp. ii + 228. (*Reference.*) 25s. net.

AMERICAN PHYSICAL SOCIETY. The Physical Review Supplement. Studies in contemporary physics. Vol. I, etc. Minneapolis 1929 +. (*Reference.*)

BALLS, WILLIAM LAWRENCE. Studies of quality in cotton. London 1928. pp. xxviii + 376. ill. 20s. net. (*Recd.* 24/6/29.)

CHEMNITIUS, FRITZ. Die Chemie in Jena von Rolfinck bis Knorr (1629–1921). Jena 1929. pp. 192. ill. *M.* 8. (*Recd.* 1/8/29.)

EITEL, WILHELM. *Physikalische Chemie der Silikate*. Leipzig 1929. pp. xii + 552. ill. *M.* 63. (*Recd.* 15/7/29.)

FAJANS, KASIMIR, and WÜST, J. *Physikalisch-chemisches Praktikum*. Leipzig 1929. pp. xvi + 217. ill. *M.* 13.50. (*Recd.* 10/9/29.)

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FRIEND, JOHN NEWTON. A text-book of inorganic chemistry. Vol. VI. Part iii. Vanadium, niobium, and tantalum. By



SYDNEY MARKS. London 1929. pp. xxvi + 222. (Two copies.) 18s. net. (*Recd.* 26/9/29.)

HANDBUCH DER PHYSIK. Edited by HANS GEIGER and KARL SCHEEL. Vol. IV. Allgemeine Grundlagen der Physik. Edited by HANS THIRRING. Berlin 1929. pp. xii + 667. ill. *M.* 63. (*Recd.* 17/7/29.)

— — — Vol. XXI. Licht und Materie. Edited by HEINRICH KONEN. Berlin 1929. pp. xii + 968. ill. *M.* 96. (*Recd.* 7/10/29.)

HEERMANN, PAUL. Färberei- und textilchemische Untersuchungen. 5th edition. Berlin 1929. pp. viii + 435. ill. *M.* 25.50. (*Recd.* 1/8/29.)

JANDER, GERHARDT, and ZAKOWSKI, JOSEF. Membranfilter, Cella- und Ultrafeinfilter. (Kolloidforschung in Einzeldarstellungen.) Leipzig 1929. pp. ix + 193. ill. *M.* 13. (*Recd.* 15/7/29.)

LEE, [ARTHUR] BOLLES. Microtometist's vade-mecum: a handbook of the methods of microscopic anatomy. 9th edition. Edited by JAMES BRONTË GATENBY and E. V. COWDRY. London 1928. pp. x + 710. ill. 30s. net. (*Recd.* 24/6/29.)

LEY, HERMANN, and RAEMISCH, ERICH. Technologie und Wirtschaft der Seide. Berlin 1929. pp. viii + 551. ill. *M.* 66. (*Recd.* 17/7/29.)

SCHINDLER, WILHELM. Die Grundlagen des Fettlickerns. Leipzig 1928. pp. xii + 230. ill. *M.* 15. (*Recd.* 17/7/29.)

SCHOTTKY, W., ULICH, H., and WAGNER, C. Thermodynamik. Die Lehre von den Kreisprozessen, den physikalischen und chemischen Veränderungen und Gleichgewichten. Berlin 1929. pp. xxvi + 619. ill. *M.* 59. (*Recd.* 1/8/29.)

SINGER, LEOPOLD. Anorganische und organische Entfärbungsmittel. Dresden 1929. pp. xii + 251. *M.* 21.50. (*Recd.* 12/7/29.)

UNITED STATES. *Institute for Government Research*. The Bureau of Dairy Industry; its history, activities, and organization. By JENKS CAMERON. Baltimore 1929. pp. x + 74. 7s. net. (*Recd.* 24/6/29.)

### III. Pamphlets.

AHMAD, MAQBŪL. A Persian translation of the eleventh century Arabic alchemical treatise '*Ain as-San'ah wa 'Aun as-Sana'ah*. To which is annexed a note on the chemistry of the processes given in the treatise, by B. B. DATTA. (From the *Mem. Asiatic Soc. Bengal*, 1929, 8.)

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research*. Bulletin No. 42. A soil survey of Block E (Renmark) and Ral Ral (Chaffey) irrigation areas. By J. K. TAYLOR and H. N. ENGLAND. Melbourne 1929. pp. 51. ill.

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research*. Pamphlet No. 12. The cattle tick pest and methods for its eradication. Melbourne 1929. pp. 23.

[BATAVIA.] *Proefstation voor Rubber*. Mededeelingen. No. 32. Plasticiteitsbepalingen bij ruwe rubber. VI. Veranderingen in plasticiteit bij bewaren van de rubber. By OTTO DE VRIES. Batavia 1928. pp. 12.

— — — No. 33. Over het conserveeren van latex met borax. By N. BEUMÉE-NIEUWLAND. Batavia 1928. pp. 12.

— — — No. 34. Coagulatie-verschijnselen bij *Hevea* latex. VII. Verschijnselen in alkalische latex. By OTTO DE VRIES and N. BEUMÉE-NIEUWLAND. Batavia 1928. pp. 18.

— — — No. 35. Room uit latex. II. Rubber bereid uit uitgewasschen room. By OTTO DE VRIES, R. RIEBL, and N. BEUMÉE-NIEUWLAND. Batavia 1928. pp. 17.

— — — No. 36. Rubbergehalte-bepalingen in latex geconserveerd met trinatriumphosphaat en formaline. By W. SPOON and N. BEUMÉE-NIEUWLAND. Batavia 1928. pp. 16.

— — — No. 37. Coagulatieverschijnselen in *Hevea*-latex. VIII. Rubber verkregen door bevriezen van de latex. By OTTO DE VRIES and N. BEUMÉE-NIEUWLAND. Batavia 1928. pp. 11.

— — — No. 38. Onderzoekingen over den meeldauw bij *Hevea Brasiliensis*. By W. BOBILIOFF. Batavia 1929. pp. 43.

— — — No. 39. Onderzoekingen over de roode wortelschimmel bij *Hevea*. By W. BOBILIOFF. Batavia 1929. pp. 20.

— — — No. 40. Coagulatieverschijnselen in *Hevea*-latex. VIII. Invloed van eenige zwaarmetaalzouten op coagulatie en coalescentie. By OTTO DE VRIES and N. BEUMÉE-NIEUWLAND. Batavia 1929. pp. 94. ill.

— — — No. 41. Over het arbeidsverbruik bij crepebereiding. By R. RIEBL. Batavia 1929. pp. 20.

— — — No. 42. Slakken op *Hevea*. By R. MENZEL and T. A. TENGWALL. Batavia 1929. pp. 5.

BERRY, PHILIP A. The estimation of cineol in eucalyptus oil with special reference to the crude oil obtained from *Eucalyptus cneorifolia*. (From the *Australian J. Pharm.*, 1929.) ill.

BERKHOUT, P. J. TEDING VAN. Contribution a l'étude du métabolisme basal chez les habitants des tropiques. (From the *Med. Dienst Volksgesondheid Ned.-Indie*, 1929.)

BURTON, HAROLD, and INGOLD, CHRISTOPHER KELK. The existence and stability of free radicals. (From the *Proc. Leeds Phil. Soc. (Sci. Section)*, 1929, 1.)

COWARD, HUBERT FRANK. Explosibility of atmospheres behind stoppings. (From the *Trans. Inst. Min. Eng.*, 1929, 77.)

MISSING PAGES FROM 99 TO 118

# PROCEEDINGS

OF THE

## CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, December 5th, 1929, 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.
Nadirshaw A. Masani .....	June 20th, 1912.	1918.
Hartley Shaw .....	May 6th, 1920.	March 6th, 1929.

The following announcement was made :

The Biochemical Society will hold a Dinner in honour of the four Nobel Laureates in Medicine and Chemistry, 1929, on Monday, February 3rd, 1930, at King Edward VII Rooms, Hotel Victoria, Northumberland Avenue, London, W.C. Sir Charles J. Martin, C.M.G., F.R.S., will preside and the guests of honour will be Professor C. Eijkman, Professor Hans von Euler, Professor Arthur Harden, F.R.S., Professor Sir Frederick Gowland Hopkins, F.R.S. Tickets for the Dinner will be 12s. 6d. each inclusive of gratuities, but exclusive of wines. Fellows of the Chemical Society, who are not members of the Biochemical Society, desiring to attend the Dinner should apply to Dr. C. R. Harington, "Greenfield," Boxmoor, Herts. enclosing remittance.

The number of tickets is limited, and applications will be dealt with in the order in which they are received. In no case can applications received after Monday, January 20th, 1930, be considered.

The following were formally admitted Fellows of the Chemical Society: C. S. Hicks, John V. Loach, C. G. Anderson, F. E. King, G. Discombe.

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

- John Stuart Anderson, B.Sc., A.R.C.S., 42, Grosvenor Road, Highbury, N. 5.  
 Thomas Stewart Brechin, c/o Messrs. Miller & Co., Kandy, Ceylon.  
 Geoffrey Herbert Cheesman, B.Sc., A.R.C.S., 9, Compton Road, Wimbledon, S.W. 19.  
 Howard Augustus Costigan, Ph.D., 280, Wellington Road North, Heaton Chapel, Stockport.  
 John Malcolm Davies, 33, Boverton Street, Cardiff.  
 John Edward Mills, M.Sc., 164, Willesden Lane, N.W. 6.  
 George Christopher Hewson, Arran Street, Ballina, co. Mayo.  
 Marjorie Winifred Odell, B.Sc., A.R.C.S., 67, Marlowes, Hemel Hempstead.  
 Rosa Schalit, B.Sc., A.R.C.S., 41, Eton Avenue, N.W. 3.  
 Florence Mary Ellaline Shepherd, M.Sc., 54, Craignair Road, Tulse Hill, S.W. 2.  
 Albert Edward Williams, 38, Cavendish Road, Chorlton-cum-Hardy, Manchester.  
 Bernard Wyman, B.A., c/o Messrs. Brunner Mond & Co., Winnington Works, Northwich.

Mr. H. Paget and Dr. J. G. F. Druce were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently duly elected as Fellows :

- |   |  |
|---|--|
| Alfred Edward Aldridge.                                 | Robert Ewen Jeffery.                   |
| Herbert Charles Baker, B.Sc.                            | John Keene, D.Chem.                    |
| Atulpati Banerji, L.M.F.                                | Auguste Victor Keller.                 |
| Mark Barent, B.Sc.                                      | Chika Kuroda, D.Sc.                    |
| Harry Barron, B.Sc.                                     | Leopold Ferdinand Levy, M.Sc.          |
| Robert Bienaimé.  | Ellis Lloyd, B.Sc., Ph.D.              |
| Frank Philip Bowden, M.Sc., Ph.D.                       | Robert Winstanley Lunt, M.Sc., Ph.D.   |
| Stanley Edward Boxer, A.R.C.S.                          | Alexander Mackie, Ph.D., A.I.C.        |
| Lindsay Heathcote Briggs, M.Sc.                         | Albert Reginald McLeod, M.D., C.M.     |
| John Henry Brightman, B.Sc.                             | John Gordon Malloch, M.Sc., Ph.D.      |
| Frederick Walter Canter, B.Sc.                          | Elizabeth Esther Jessie Marler, B.Sc.  |
| William Chalmers, M.A.                                  | Frederick Cecil Barron Marshall, B.Sc. |
| Wilfrid Herbert Cliffe.                                 | Alfred Ronald Martin, B.Sc.            |
| Francis Henry Swinden Curd, B.Sc.                       | Owen Mathias, M.Sc.Tech., A.I.C.       |
| Walter Cule Davies, B.Sc., Ph.D.                        | Faqir Chand Mathur, M.Sc.              |
| Charles Edward Duce.                                    | Thakorghai Naranji Mehta, B.A., B.Sc.  |
| John Farquharson, B.Sc., A.I.C.                         | James Midgley, M.Sc., A.I.C.           |
| Ernest Fourneau.  | Ernest John Miller, B.Sc.              |
| Dorothy Lilian Fox, B.Sc.                               | Agnes Gellatly Mitchell, B.Sc.         |
| Henri Gault.  | Walter Mitchell, B.Sc.                 |
| John Horne Gillies, A.M.A.Sc.                           | Arthur Williams Morgan.                |
| Wilhelm Gluud, Dr. Phil.                                | James Robertson Myles, B.Sc.           |
| Henry Alexander Sherwin Gothard.                        | Basanta Kumar Pal, M.Sc.               |
| Thomas Alexander Grant.                                 | Donald Waring Powell, B.Sc.            |
| John Graymore, M.Sc., A.I.C.                            | Francis Thomas Garnet Prunty.          |
| Frank Arnold Greene, M.I.Mech.E., M.I.E.E., M.I.Chem.E. | Basrur Sanjiva Rao, M.A., Ph.D.        |
| Oscar Vincent Heliestrand.                              | Eric Samuel Richards.                  |
| Eric Frank Hersant, B.Pharm.                            | Patrick Dunbar Ritchie, B.Sc.          |
| Alfred Harold Holden, B.Sc.                             | Conmar Robinson, Ph.D., A.I.C.         |
| Duncan Hunter.  |  |

Jnan Ranjan Sanyal, B.Sc.	Alfred Pattinson Telford.
Ramanlal Chhaganlal Shah, B.A., M.Sc.	Frederick Charles Thompson, M.Sc.
Frank Sharples, Assoc. M.C.T.	Albert Reuben Tremain, B.Sc.
Ernest Woodhouse Smith, D.Sc., F.I.C.	Frederick Thomas Trustrum.
Wilfrid Devonshire Spencer, Ph.D.	Sidney Charles Gunther Tweedy.
Roger Stansfield.	Adipudi Vasundhara, B.A.
Richard John Stephenson, B.Sc.	Hubert Bradford Vickery, B.A., M.Sc., Ph.D.
Katherine Frieda Taylor, Ph.D.	Clifford Rex Wright, A.R.C.S.

The following papers were read :

- “ Passivity of metals. Part III. The quantity and distribution of the superficial oxide.” By U. R. EVANS and J. STOCKDALE.
- “ The argentothiosulphuric acids and their derivatives. Part I. The preparation of the sodium salts and the isolation of mono-argentomonothiosulphuric acid.” By H. BAINES.
- “ Sugar carbonates. Part IV. The dicarbonates of glucose, fructose, mannose, galactose, and arabinose.” By W. N. HAWORTH and C. R. PORTER.
- “ Isolation of crystalline  $\alpha$ - and  $\beta$ -ethylglucofuranosides ( $\gamma$ -ethylglucosides) and other crystalline derivatives of glucofuranose.” By W. N. HAWORTH and C. R. PORTER.

Ordinary Scientific Meeting, Thursday, December 19th, 1929, 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 :—

	<i>Elected.</i>	<i>Died.</i>
William Harold R. Allen .....	Dec. 1st, 1904.	Jan. 25th, 1929.
Frederick W. Dootson .....	Feb. 17th, 1897.	Dec. 12th, 1929.

It was announced that :

1. The Harrison Memorial Prize Selection Committee consisting of the President of the Chemical Society (Professor J. F. Thorpe, C.B.E., D.Sc., F.R.S.), the Institute of Chemistry of Great Britain and Ireland (Professor Arthur Smithells, C.M.G., D.Sc., F.R.S.), the Society of Chemical Industry (Dr. Herbert Levinstein), and the Pharmaceutical Society (Mr. L. Moreton Parry), had awarded the Harrison Memorial Prize for 1929 to Dr. Reginald Patrick Linstead.

The Prize is given for conspicuously meritorious work in any branch of chemistry pure or applied, and is to be regarded as an

exceptional distinction to commemorate an exceptional man and to be conferred upon the young chemist under thirty years of age who, in the opinion of those best qualified to judge, has made a notable addition to our knowledge of chemistry.

The presentation of the Prize will be made at the Annual General Meeting of the Chemical Society, on Thursday, March 27th, 1930, at 4 p.m.

2. The Hugo Müller Lecture, entitled "The Chemistry and Geochemistry of the Titanium Group," will be delivered by Professor G. von Hevesy on Wednesday, March 26th, 1930, at 5.30 p.m. at a place to be announced later. Tickets of admission will not be required.

The following were formally admitted Fellows of the Chemical Society: H. Alec S. Gothard, H. Rowland Hill, R. C. Shah, T. N. Mehta, F. C. B. Marshall, L. F. Levy, M. Barent.

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

Harold Cordingley, B.Sc., Hawksworth Avenue, Guiseley, Leeds.

Mohammad Qamrud Doja, B.A., B.Sc., Doja Buildings, P.O. Bankipore, Patna, India.

Cecil Philip Ellis, B.Sc., A.I.C., School for Sons of Chiefs, Bo, Sierra Leone.

Nellie Ivy Fisher, B.Sc., A.R.C.S., 127, Wellesley Road, Ilford.

Giichiro Fuseya, Prof., Kogakubu, Tohoku Imperial University, Sendai, Japan.

Leslie Hey, B.Sc., 11, Sholebroke Place, Chapelton, Leeds.

John Hunter, B.Sc., A.I.C., 17, Brunswick Road, Withington, Manchester.

Francis George Lamont, M.Sc., 81, St. George's Road, S.W. 1.

Sayed Mosallam, B.Sc., Sedfa, Eldwair, Egypt.

Edmund Brodie Robinson, B.Sc., A.I.C., Van Ryn, Glencroft Terrace, Darlington.

Albert Towers, M.Sc., 9, Cambridge Street, Guiseley, Leeds.

Harold Kenneth Whalley, B.A., B.Sc., Pembroke College, Cambridge.

The following papers were read:

"The influence of hydrogen and of water vapour on the ignition of carbon monoxide." By A. SMITHELLS, H. WHITAKER, and MISS T. HOLMES.

"The parachor and chemical constitution. Part XIV. Tellurium compounds." By F. H. BURSTALL and S. SUGDEN.

"Studies in 'strainless' rings. Part II. The effect of *trans*-decalin on the carbon tetrahedral angle." By K. A. N. RAO.

"Synthesis of 1:2-thiol-histidine." By J. N. ASHLEY and C. R. HARRINGTON.

"2-Thiol-4(5)- $\beta$ -aminoethyl glyoxaline (2-thiolhistamine)." By F. L. PYMAN.

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

	£	s.	d.
Separation of hydrocarbon mixtures. H. Barron. (E. Lond. Coll.) ... ..	5	0	0
Unsaturated mono- and di-basic acids. S. E. Boxer. (Imperial Coll.) ... ..	10	0	0
Halogenation of anilides and phenolic ethers. A. E. Bradfield. (Univ. Coll., Bangor.) ... ..	15	0	0
Hydroxy carbinol compounds. F. W. Canter. (E. Lond. Coll.)	10	0	0
Orienting influence of groups containing sulphur and selenium when attached to the benzene nucleus. F. Challenger. (Manchester Univ.) ... ..	5	0	0
Solubility and electric conductivity of salts in anhydrous hydrogen cyanide. J. E. Coates. (Univ. Coll., Swansea) ... ..	20	0	0
Bacterial fermentations. R. P. Cook. (Sir William Dunn Inst., Cambridge) ... ..	15	0	0
Hydroxy carbonyl compounds. F. H. Curd. (E. Lond. Coll.)	10	0	0
Alkylation of dihydroresorcinols. R. D. Desai. (Imperial Coll.)	10	0	0
Isocholesterol and other sterols—their isolation and relation to cholesterol. C. Dorée. (Chelsea Polytech.) ... ..	10	0	0
Resolution into optically active isomerides of certain compounds of quadricovalent platinum. H. D. K. Drew. (Birmingham Univ.) ... ..	20	0	0
Order of directive power of oxygen and sulphur (neutral) in aromatic substitution. G. W. Fenton. (N. Staffs. Tech. Coll.) ... ..	10	0	0
Investigation of diaryl ethers. Miss D. L. Fox. (Bedford Coll.)	6	0	0
Three carbon tautomerism. H. B. Fraser. (Imperial Coll.) ...	10	0	0
Kinetics of oxidation by alkaline permanganates. Miss C. M. Grocock. (Leeds Univ.) ... ..	10	0	0
Chemical dynamics of the reactions between sodium <i>m</i> -xylenolate and alkyl iodides. P. J. Hardwick. (Chelsea Polytech.) ...	6	0	0
Vapour pressure of water at 25° C. over aqueous solutions of metallic chlorides. J. R. I. Hepburn. (Northern Polytech.)	5	0	0
Degradation of ammonium and phosphonium compounds. L. Hey. (Leeds Univ.) ... ..	15	0	0
Substituted aromatic aldehydes in Hantzsch's pyridine condensation ( <i>contd.</i> ). L. E. Hinkel. (Univ. Coll., Swansea) ...	10	0	0
Synthetic uses of the chloro-ethylenes. L. Hunter. (Univ. Coll., Leicester) ... ..	7	0	0
(a) Chemistry of cytisine and related alkaloids. (b) Chemical, physical, and pharmacological investigations of quaternary ammonium bases. H. R. Ing. (Univ. Coll., Lond.) ...	15	0	0
Mutual solubility of the isomeric butyl alcohols. D. C. Jones. (E. Lond. Coll.) ... ..	10	0	0
Investigation of tertiary phosphines. W. J. Jones. (Univ. Coll., Cardiff) ... ..	10	0	0
Effect of <i>trans</i> -hexahydrohydrindene on the carbon tetrahedral angle. A. Kandiah. (Imperial Coll.) ... ..	10	0	0
Syntheses of derivatives of quinoline likely to possess anti-malarial action. W. O. Kermack. (R. Coll. of Phys., Edinburgh) ... ..	15	0	0



	£	s.	d.
Isomeric changes in unsaturated dibasic acids and the corresponding monobasic acids. J. T. W. Mann. (Imperial Coll.)	10	0	0
Investigation of diphenyl derivatives. Miss E. E. J. Marler. (Bedford Coll.) ... ..	6	0	0
Addition of hydrogen bromide to substituted butadienes. F. C. B. Marshall. (Imperial Coll.) ... ..	8	0	0
Exploration of methods for the synthesis of guaiacetic acid and pyroguaiacin. A. R. Martin. (E. Lond. Coll.) ... ..	12	0	0
Addition of esters to substituted sorbic esters. T. N. Mehta. (Imperial Coll.) ... ..	10	0	0
Mechanism of the formation of alcohols in the Hoffman degradation. C. S. Patel. (Leeds Univ.) ... ..	15	0	0
Co-ordination compounds of platinum and palladium. F. W. Pinkard. (Birmingham Univ.) ... ..	10	0	0
Orientation in the addition of hydrogen halides to simple and conjugated unsaturated systems. Miss E. Ramsden. (Leeds Univ.) ... ..	10	0	0
Hydroxy carbonyl compounds. A. Robertson. (E. London Coll.) ... ..	20	0	0
Attempt to synthesise diterpenes and diterpene alcohols. W. F. Short. (Univ. Coll., Auckland) ... ..	5	0	0
Effect of the solvent on reaction velocity. F. G. Soper. (Univ. Coll., Bangor) ... ..	15	0	0
Hydroxy benzene carboxylic acids. R. J. Stephenson. (E. Lond. Coll.) ... ..	10	0	0
Determination of the partial vapour-pressure curves in certain systems. M. Stern. (E. Lond. Coll.) ... ..	15	0	0
Transference of water; its dependence on the nature of the ions, and the concentration and temperature of the solutions used. Miss M. Taylor. (Bristol Univ.) ... ..	20	0	0
Influence of solvent on the reaction between Grignard reagents and activated $>CH_2$ and $\geq CH$ groups. S. H. Tucker. (Glasgow Univ.) ... ..	5	0	0
Bivalency of carbon ( <i>contd.</i> ). A. M. Ward. (Sir John Cass Tech. Inst.) ... ..	5	0	0
Estimation of nuclear reactivity in nitration of mono-substituted benzenes. D. Ward. (Leeds Univ.) ... ..	10	0	0
Stereochemistry of co-ordination compounds of platinum and palladium. W. Wardlaw. (Birmingham Univ.) ... ..	10	0	0
Additive properties of conjugated compounds. F. L. Warren. (Imperial Coll.) ... ..	10	0	0
Studies in the glucoside series. R. B. Waters. (E. Lond. Coll.)	12	0	0
Non-aqueous solutions. R. J. Winterton. (E. Lond. Coll.) ...	15	0	0
A reinvestigation of the glutaconic acid problem. C. R. Wright. (Imperial Coll.) ... ..	10	0	0
	£512	0	0

## ANNUAL REPORTS ON THE PROGRESS OF CHEMISTRY.

Fellows are reminded that applications for the Annual Reports for 1929, Volume XXVI, at 5s. 6d. per copy, should be received by Mr. S. E. Carr without delay. Application must be accompanied by a remittance for 5s. 6d.

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List of papers, or abstracts thereof, received between November 21st, 1929, and December 19th, 1929. 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 action of bromine upon the *p*-tolylhydrazones of benzaldehyde and of the nitrobenzaldehydes.” By F. D. CHATTAWAY and A. B. ADAMSON.
- “The chlorination of anilides. Part VI. The rates of *N*-chlorination of acetanilides and acetobenzylamides and the effects of substituents upon side-chain reactivity.” By G. WILLIAMS.
- “The vapour density of zirconium tetrachloride.” By J. A. N. FRIEND, A. T. W. COLLEY, and R. S. HAYES.
- “The isomerism of the oximes. Part XXXVIII. Alkyl-*p*-nitrobenzaldoximes, *O*- and *N*-alkylhydroxylamines, and sulphime-*S*-ethers.” By O. L. BRADY and F. H. PEAKIN.
- “The methylation of the oximes of benzil. Part II. The mono-methyl ethers of the benzildioximes.” By O. L. BRADY and M. M. MUERS.
- “The reaction of cupric chloride and hydrazine sulphate.” By T. IREDALE and C. E. MALLEEN.
- “Internal equilibrium in sulphur. Part II. Amorphous sulphur (S) as a gel and the Tyndall effect in liquid sulphur.” By D. L. HAMMICK and M. ZVEGINTZOV.
- “The solubility of sodium thiocyanate in alcohol.” By J. R. PARTINGTON.
- “Reduction products of the hydroxyanthraquinones. Part XI.” By E. J. CROSS and A. G. PERKIN.
- “The parachor of chlorine dioxide.” By G. H. CHEESMAN.
- “The study of nitrous acid as a nitrating agent. Part I. The nitration of dimethyl-*p*-toluidine.” By H. H. HODGSON and A. KERSHAW.
- “Hydroxyamino-acids.” By W. J. N. BURCH.
- “The interaction of ethyl 1-mandelate and thionyl chloride in the presence of pyridine. The mechanism of the replacement of

- hydroxyl by chloro-groups by means of thionyl chloride." By J. KENYON, A. G. LIPSCOMBE, and H. PHILLIPS.
- "Lichen acids. Part I. Derivatives of  $\beta$ -orcinol." By A. ROBERTSON and R. J. STEPHENSON.
- "The formation of glyoxalosazones by the interaction of dichloroacetaldehyde and aryl hydrazines." By F. D. CHATTAWAY and L. H. FARINHOLT.
- "Colour reaction for some arsenic acids." By I. E. BALABAN.
- "A new method for the preparation of 4- and 6-hydroxy-3-nitrophenylarsinic acids." By I. E. BALABAN.
- "Syntheses of cyclic compounds. Part VI. A contribution to the chemistry of the 2-, 3-, and 4-methylcyclohexanones." By A. I. VOGEL and M. P. OOMMEN.
- "An apparatus for the determination of solubility." By A. N. CAMPBELL.
- "Substituted diaryl ethers. Part III. A new synthesis of substituted xanth-hydrols." By J. REILLY and P. J. DRUMM.
- "Properties of conjugated compounds. Part IX. Addition of bromine to  $\alpha\delta$ - $\alpha\gamma$ - and  $\beta\gamma$ -dimethylbutadienes." By E. H. FARMER, C. D. LAWRENCE, and W. D. SCOTT.
- "An improved receiver for vacuum distillation." By G. A. R. KON.
- "Derivatives of lyxofuranose." By H. G. BOTT, E. L. HIRST, and J. A. B. SMITH.
- "The action of substituted aromatic amines on camphoric anhydride, hydroxy-, methoxy-, and ethoxy-camphoranilic acids, and camphoro-methoxy, and ethoxy-phenylimides." By M. SINGH and R. SINGH.
- "Anserine." By F. L. PYMAN.
- "The heats of association of acetic and heptylic acids in the vapour state." By MISS T. E. FENTON and W. E. GARNER.
- "The *p*-aminophenol arsenic acids." By M. A. PHILLIPS.

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## ADDITIONS TO THE LIBRARY.

### I. *Donations.*

ABDERHALDEN, EMIL. [Editor.] Handbuch der biologischen Arbeitsmethoden. Abt. I. Chemische Methoden. Teil II, Heft v. Berlin 1929. pp. 877 to 1068. *M.* 10.

From the Publishers: Herren Urban & Schwarzenberg.

HILLEBRAND, WILLIAM FRANCIS, and LUNDELL, GUSTAVE ERNST FRED. Applied inorganic analysis: with special reference to the

analysis of metals, minerals and rocks. New York 1929. pp. xx + 929. 42s. 6d. net. (*Recd.* 28/11/29.)

From the London Publishers : Messrs. Chapman & Hall.

HINSHELWOOD, CYRIL NORMAN. The kinetics of chemical change in gaseous systems. 2nd edition. Oxford 1929. pp. viii + 266. ill. 12s. 6d. net. (*Recd.* 21/11/29.)

From the Publisher : Mr. Humphrey Milford.

## II. *By Purchase.*

BENNION, EDMUND BARON. Breadmaking, its principles and practice. London 1929. pp. viii + 251. ill. 15s. net. (*Recd.* 21/11/29.)

CLARK, ALFRED JOSEPH. Applied pharmacology. 3rd edition. London 1929. pp. xii + 529. ill. 15s. net. (*Recd.* 21/11/29.)

GEE, GEORGE E. Gold alloys, their manufacture and application. London 1929. pp. viii + 336. ill. 16s. net. (*Recd.* 21/11/29.)

MANTELL, CHARLES LETNAM. Tin : its mining, production, technology, and applications. (American Chemical Society Monograph Series.) New York 1929. pp. 366. ill. 29s. 6d. net. (*Recd.* 22/11/29.)

MAUGÉ, LUCIEN. Les industries de l'azote. Paris 1929. pp. xlv + 684. ill. 160 fr. (*Recd.* 21/11/29.)

NORD, F. F. Mechanism of enzyme action and associated cell phenomena. [Baltimore, Md.] 1929. pp. x + 78. ill. 9s. net. (*Recd.* 21/11/29.)

SMITH, THOMAS BROOKS. Analytical processes. A physico-chemical interpretation. London 1929. pp. viii + 373. ill. 12s. 6d. net. (*Recd.* 21/11/29.)

WELLS, HARRY GIDEON. The chemical aspects of immunity. 2nd edition. (American Chemical Society Monograph Series.) New York 1929. pp. 286. 25s. net. (*Recd.* 21/11/29.)

WILSON, JOHN ARTHUR. The chemistry of leather manufacture. 2nd edition. Vol. II. New York 1929. pp. 499 to 1181. ill. 42s. net. (*Recd.* 4/12/29.)

## III. *Pamphlets.*

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research.* Pamphlet No. 13. The mechanical analysis of soils. By C. S. PIPER and H. G. POOLE. Melbourne 1929. pp. 19. ill.

KULLGREN, CARL, and TYDÉN, HILDING. Über die Bestimmung von Pentosanen. (From the *Handl. Ing. Vetensk. Akad.*, No. 94, 1929.) ill.

MEDICAL RESEARCH COUNCIL. Special Report Series No. 135. The carbohydrate content of foods. By R. A. McCANCE and R. D. LAWRENCE. London 1929. pp. 73. ill.

MINISTRY OF AGRICULTURE AND FISHERIES. Research Monograph No. 6. A survey of the soils and fruit of the Wisbech Area. By C. WRIGHT and J. F. WARD. London 1929. pp. 71. ill.

— — Miscellaneous Publications No. 65. Variations in the composition of milk. London 1929. pp. 19. ill.

ROFFO, A. H., and CORREA, L. M. Über die Zerstörung des Cholesterins durch die Röntgenstrahlen "in vitro." (From the *Fortschr. Gebiete Röntgenstrahlen*, 1929, 39.) ill.

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. *Food Investigation*. Special Report No. 36. Postmortem changes in animal tissues—the conditioning or ripening of beef. By T. MORAN and E. C. SMITH. London 1929. pp. viii + 64. ill.

— — Special Report No. 37. The handling and stowage of white fish at sea. By ADRIAN LUMLEY, J. J. PIQUÉ, and GEORGE A. REAY. London 1929. pp. viii + 74. ill.

— — Index to the literature of food investigation. No. I, etc. London 1929 +. (*Reference.*)

— *Forest Products Research*. Bulletin No. 1. Dry-rot in wood. [By PERCY GROOM and others.] London 1928. pp. vi + 24. ill.

— *Fuel Research*. Technical Paper No. 22. The reactivity of coke. 2.—The examination of a number of metallurgical cokes. By JOHN HENRY JONES, JAMES GRIEVE KING, and FRANK STURDY SINNATT. London 1929. pp. iv + 30. ill.

— — Technical Paper No. 23. The fusion point of coal ash (Part I). By JAMES GRIEVE KING, ALFRED BLACKIE, and JOHN O'NEILLE MILLOTT. London 1929. pp. 19. ill.

— *Water Pollution Research*. Technical Paper No. 1. Water softening. The base-exchange or zeolite process: summary of existing knowledge. By A. R. MARTIN. London 1929. pp. iv + 20. ill.

SEWELL, ROBERT BERESFORD SEYMOUR. Geographic and oceanographic research in Indian waters. Parts III–V. (From the *Mem. Asiatic Soc. Bengal*, 1927–29, 9.) ill.

SHINODA, J., and KAWAGOYE, M. Über die Bestandteile des *Arctium Lappa*, L. Part I. (From the *J. Pharm. Soc. Japan*, 1929, 49.) [In Japanese. German summary.]

SHINODA, J., and SATO, S. Synthese der Polyoxychalkone, Polyoxyhydrochalkone, und Polyoxyflavanone. IV and V. (From the *J. Pharm. Soc. Japan*, 1929, 49.) [In Japanese. German summaries.]

SHINODA, J., and UYEDA, S. Über einen Bestandteil der Baumrinde der Pfirsiche. (From the *J. Pharm. Soc. Japan*, 1929, 49.) [In Japanese. German summary.]

SOUTH AFRICA, UNION OF. *Department of Agriculture*. (Division of Chemistry, Series No. 102.) A portable apparatus for  $p_H$  determinations in the field. By P. KAMERMAN. (From the *J. S. African Chem. Inst.*, 1929, 12.)

SWISS BANK CORPORATION. L'industrie chimique suisse. Bâle 1929. pp. 24. ill.

UNION OF SOCIALIST SOVIET REPUBLICS. *Scientific Technical Department of the Supreme Council of National Economy*. Central Institute for Tobacco Investigations. Bulletin No. 38. The chemical composition of consecutive pickings of the leaves of tobacco types "Samsun," "Dubec," "Trebizond," and "American." By M. PIATNITZKI. Krasnodar 1927. pp. 24. [In Russian. English summary.]

— — — Bulletin No. 39. Influence of the air humidity and time factor on the fermentation of tobacco. By A. I. SMIRNOV. Krasnodar 1927. pp. 24. [In Russian. English summary.]

— — — Report of the Meteorological Station. . . . 1915-1926. Krasnodar 1929. pp. 43.

UNITED STATES. *Department of Agriculture*. Circular No. 64. Cyanamid, its uses as a fertilizer material. Washington 1929. pp. 12. ill.

— — Circular No. 76. Fires in cotton gins and how to prevent them. By HARRY E. ROETHE. Washington 1929. pp. 8. ill.

— — Food, Drug, and Insecticide Administration. Service and regulatory announcements. Food and Drug No. 1. Regulations for the enforcement of the Federal Food and Drugs Act. (Ninth revision.) Washington 1927. pp. 19.

— — — Food and Drug No. 2. (First revision.) Definitions and standards for food products. Washington 1928. pp. 20.

— *Department of Commerce*. Bureau of Standards. Circular No. 373. Recommended specifications for quicklime for use in the distillation of ammonia from ammonia liquors obtained in coke and gas manufacture. Washington 1929. pp. 4.

— — — Circular No. 374. X-ray and radium protection. Recommendations of International Congress of Radiology. Washington 1929. pp. 8.

UNIVERSITY OF OXFORD. INSTITUTE FOR RESEARCH IN AGRICULTURAL ENGINEERING. Bulletin No. 4. A Report on the development and costs of the Oxford Process for the production of sugar from sugar beet. Oxford 1929. pp. 55 + 6 plates. ill.

UVAROV, B. P. Insect nutrition and metabolism. A summary of the literature. (From the *Trans. Ent. Soc. Lond.*, 1928.)

VAIDYANATHAN, V. I. On the magnetic susceptibility of ozonides. (From the *Indian J. Physics*, 1928, 2.)

— On the relation of diamagnetic susceptibility in the liquid and vapour states. (From the *Indian J. Physics*, 1928, 2.) ill.

— On the diamagnetism and structure of ethylene. (From the *Indian J. Physics*, 1928, 3.)

— On the magnetic susceptibility of ozone. (From the *Indian J. Physics*, 1928, 3.) ill.

— Influence of temperature on the X-ray liquid haloes. (From the *Indian J. Physics*, 1929, 3.) ill.

— X-Ray diffraction in liquids of the terpene series. (From the *Indian J. Physics*, 1929, 3.) ill.