

# PROCEEDINGS

## OF THE

# CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, January 21st, 1932, at 8 p.m., Professor G. G. HENDERSON, M.A., D.Sc., F.R.S., President, in the Chair.

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

	Elected.	Died.
Thomas C. Allchin .....	Dec. 7th, 1922.	Sept. 19th, 1931.
Thomas W. Coslett .....	Dec. 1st, 1910.	Dec. 12th, 1931.
Holland Crompton .....	May 20th, 1886.	Dec. 22nd, 1931.
James C. Fraser .....	May 5th, 1892.	Feb. 26th, 1931.
Frederick L. Grutzmacher .....	Dec. 5th, 1912.	June 29th, 1930.
George Lunan .....	Feb. 21st, 1907.	Nov. 20th, 1931.
Alfred H. M. Purse .....	May 7th, 1931.	Nov. 21st, 1931.
Reginald E. S. Richardson .....	May 5th, 1892.	April 8th, 1931.

The PRESIDENT announced that :

1. Under the Will of the late Professor R. Meldola a legacy of £500 was bequeathed to the Chemical Society payable on the death of Mrs. Meldola and that Mrs. Meldola died on January 2nd, 1932.

2. The names of the members of Council who retire at the next Annual General Meeting, in accordance with Bye-Law VI, and who are ineligible for the same office until after the lapse of one year, are as follows :

Vice-President who has filled the office of President : Prof. W. P. Wynne.

Vice-President who has not filled the office of President : Dr. T. A. Henry.

Ordinary Members of Council :

(a) Town Members : None.

(b) Country Members : Prof. G. M. Bennett, Dr. J. A. Cranston, Prof. W. E. Garner, Prof. I. Masson.

In June 1931 the Council appointed Mr. Emile Mond as Treasurer until the next Annual General Meeting to fill the vacancy caused by

the retirement of Prof. T. Slater Price from this office. It also appointed, for the same period, Prof. T. Slater Price to fill the vacancy amongst the Vice-Presidents caused by Mr. Emile Mond's acceptance of the office of Treasurer. These two vacancies, therefore, also fall due to be filled.

Further, the Council has accepted the resignations as Ordinary Members of Council (Town Members) of Dr. J. Kenyon, Dr. G. A. R. Kon, and Mr. J. Davidson Pratt (elected at the Annual General Meeting in March, 1931), who generously placed their resignations at the disposal of the Council in order that the rotation of Ordinary Members of Council contemplated under Bye-Law XI may be carried out. Last year, there were six vacancies in this category; in the ordinary course of events, this year there would have been no vacancies.

The following vacant places in the Council, therefore, fall due to be filled at the Annual General Meeting of the Society, which is to be held at the University, Glasgow, on Friday, March 18th, 1932 :

Vice-Presidents who have filled the office of President :  
Two vacancies.

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

Treasurer : One vacancy.

Ordinary Members of Council :

(a) Town Members (*i.e.* those living within a radius of 50 miles from London), three vacancies.

(b) Country Members (*i.e.* those living beyond a radius of 50 miles from London), four vacancies.

The Council has nominated Mr. Emile Mond to the office of Treasurer.

The following were formally admitted Fellows of the Chemical Society : Miss Ruth M. Murray, Miss B. R. Carpenter, Miss W. R. A. Hollens, Messrs. N. J. H. Wallis, E. J. Boorman, R. L. Jones, E. H. Coulson, E. M. Watson, H. N. Rydon, J. B. Whitworth, G. M. Richardson, T. H. Quibell, E. M. Meade, D. B. Stanley, H. Jermain M. Creighton, D. H. Peacock.

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

Choji Araki, Prof., Shimogamo, Izumikawacho I, Kyoto, Japan.

Cecil Edwin Henry Bawn, B.Sc., Hulme Hall, Victoria Park, Manchester.

George Allan Beattie, 23, Newbolt Avenue, Cheam, Surrey.

Bernard William Bradford, Ph.D., A.R.C.S., 72, West Side, Clapham Common, S.W. 4.

- Donald Chisholm, Ph.D., 209, Auldhouse Road, Newlands, Glasgow.  
 Louis Nathan Cohen, B.A., B.Sc., 15, Breda Street Gardens, Cape Town.  
 Albert Stanley Gomm, Ph.D., The Biochemical Laboratory, University, Bristol.  
 Francis William Gray, M.A., D.Sc., 31, Hamilton Place, Aberdeen.  
 Christina Cruickshank Miller, Ph.D., D.Sc., c/o Mrs. Dickson, 245, Dalkeith Road, Edinburgh.  
 William Lockerbie Thomson, B.Sc., A.I.C., Garden Croft, Crediton, Devon.  
 Thorbergur Thorvaldson, Prof., A.M., Ph.D., University of Saskatchewan, Saskatoon, Saskatchewan, Canada.  
 Alfred René John Paul Ubbelohde, B.A., B.Sc., Christ Church, Oxford.  
 Adolf Windaus, Prof., Ph.D., Hospitalstrasse 8/9, Göttingen, Germany.

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

- Ernst Bryk, D.Phil., Hochmu'hl 4, Frankfurt-a-Main.  
 Georg Kraenzlein, D.Phil., Ludwigshafenerstrasse 14, Frankfurt-a-Main.  
 Marie Marguerite Messonnier, L'Université de Lyon, 18, Quai Claude Bernard, Lyon.  
 Julius Meyer, Prof., D.Phil., Chemisches Institut der Universitat, Burgstrasse 8, Breslau 1.  
 K. Vishvanathan, B.Sc., 315, Rastas Peth, Poona 2, India.  
 Karl Zahn, D.Phil., Liederbacherstrasse 5, Frankfurt-a-Main.

The following papers were read :

- “ The planar configuration of dimagnetic nickel complexes. Part I. Isomeric nickel derivatives of methylbenzylglyoxime.” By S. SUGDEN.  
 “ The analogy between the benzidine change and dissociation of oxides of nitrogen. A new reagent for the recovery of secondary bases from nitrosoamines and for purifying amines.” By E. C. S. JONES and J. KENNER.  
 “ Chemical evidence of chelation in the sodium salts of *o*-hydroxybenzaldehydes.” By O. L. BRADY and W. H. BODGER.  
 “ Experiments on the synthesis of polyhydroxylic compounds.” By W. CHARLTON and J. KENNER.

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#### DISCUSSION.

The Ordinary Scientific Meeting on Thursday, February 18th, 1932, will be devoted to a Discussion on “ The Significance of Velocity Measurements in Relation to the Benzene Substitution Problem.”

The Discussion will be opened by Dr. A. E. Bradfield, whose contribution will be based upon the work described in the following papers :

- “ The Chlorination of Anilides. The Directing Influence of the Acylamido-group ” (J., 1927, 986).  
 “ The Chlorination of Anilides. Part IV. The Significance of Velocity Measurements in Relation to the Problem of Benzene Substitution ” (J., 1928, 1106).

- “ The Chlorination of Anilides. Part V. The Significance of Velocity Measurements in Relation to the Problem of Benzene Substitution ” (J., 1928, 3073).
- “ The Halogenation of Phenolic Ethers and Anilides. Part I. The Bromination of Ethers in 50% Acetic Acid ” (J., 1929, 2810).
- “ The Halogenation of Phenolic Ethers and Anilides. Part II. Additional Velocity Measurements in 99% Acetic Acid ” (J., 1931, 2903).
- “ The Halogenation of Phenolic Ethers and Anilides. Part III. The ‘ Phase and Steric ’ Factor ” (J., 1931, 2907).

### THIRD PEDLER LECTURE.

The third Pedler Lecture, entitled, “ The Life and Work of Otto Wallach,” will be delivered by Professor L. Ruzicka, of Zürich, on Thursday, March 10th, 1932, at 5.30 p.m. The lecture will be held in the Meeting Hall of the Institution of Mechanical Engineers (Storey’s Gate, Westminster, S.W.1), by courtesy of the Council of that Institution. Tickets of admission will not be required.

### THE 91ST ANNUAL GENERAL MEETING, AND THE ANNIVERSARY DINNER, GLASGOW, MARCH 18TH, 1932.

The next Annual General Meeting and Anniversary Dinner of the Society will be held in Glasgow on Friday, March 18th, 1932.

This is the first official visit of the Society to Scotland. The Council hopes that the occasion will be marked by a large attendance and that, in particular, Chemists and those associated with Chemistry residing in Scotland and the North of England will make a special effort to be present. To ensure that all branches of Chemistry and of Chemical Industry shall be represented at the meetings, the Local Sections of kindred Societies and Institutions and a number of Industrial Organisations have been invited and have agreed to co-operate. The arrangements are being undertaken by a General Committee, of which Dr. W. M. Cumming, Royal Technical College, 204, George Street, Glasgow, is the Honorary Secretary.

### ANNUAL GENERAL MEETING.

The Annual General Meeting will be held in the Fore Hall of the University of Glasgow, on Friday, March 18th. The business portion of the meeting (open to Fellows only) will commence at 4 p.m., and will be followed at 4.30 p.m. by the Presidential Address,

entitled "The Publication of Chemical Literature," to be delivered by Professor G. G. Henderson, M.A., D.Sc., F.R.S.

Tea will be served at the Glasgow University Union (University Avenue) at 3.30 p.m.

#### ANNIVERSARY DINNER.

The Anniversary Dinner will take place the same evening at the Grosvenor Restaurant, Gordon Street (close to the Central Station), at 7 for 7.15 p.m.

The price of the tickets (for lady or gentleman) is 12s. 6d. each, including gratuities.

It will facilitate arrangements if application for tickets be made at an early date; in any event before *Friday, March 11th*. Application should be made direct to Mr. S. E. Carr, The Chemical Society, Burlington House, Piccadilly, London, W. 1.

Separate tables will be provided as far as possible for members and their friends who desire to sit together.

#### CIVIC RECEPTION BY THE LORD PROVOST AND THE CORPORATION OF THE CITY OF GLASGOW, THURSDAY, MARCH 17TH, 1932.

The Lord Provost and the Corporation of the City of Glasgow will honour the Society by holding a Civic Reception in the City Chambers, Glasgow, on Thursday, March 17th, at 8.15 p.m. Admission will be by invitation only, and those desiring to attend the Reception should apply to Dr. W. M. Cumming not later than *Friday, March 11th*.

#### VISITS TO NOBEL'S EXPLOSIVES WORKS, ARDEER, AND TO PROVAN CHEMICAL WORKS, PROVANMILL, GLASGOW, ON SATURDAY, MARCH 19TH, 1932.

Through the kindness of Sir Harry McGowan, K.B.E. (President and Chairman of Imperial Chemical Industries, Limited), an invitation has been received for Fellows to visit Nobel's Explosives Factory at Ardeer on Saturday, March 19th. The journey to Ardeer will be by motor-coach, which will leave Glasgow at 9.15 a.m. and arrive back at 5.45 p.m. This invitation is not extended to ladies.

For those who wish to return home earlier in the afternoon of Saturday, a forenoon visit to the Provan Chemical Works, Provanmill, Glasgow, has been arranged by kind invitation of the By-Products Committee, through Mr. James MacLeod, F.I.C., Manager of Glasgow Corporation Chemical Works. The party will travel by motor bus, leaving George Square at 9.45 a.m. and returning at 12.30 p.m. An alternative programme will be arranged for ladies

who may not desire to make this visit and further particulars of this will be announced to those attending the meetings.

The number to whom these invitations are extended is limited, and prior consideration will be given to applications received from Fellows of the Society, and in particular, from Fellows not residing in, or near, Glasgow. Fellows desiring to take part in either of these excursions should apply to Dr. W. M. Cumming *before Friday, March 11th*.

#### RAILWAY FACILITIES.

The Railway Companies have granted facilities by which those attending the meetings in Glasgow will be able to travel from all parts of the country to Glasgow at the reduced rate of an ordinary single fare and one-third for the double journey. No minimum distance is fixed, and the facilities apply to all the Railway Companies in Great Britain except the Metropolitan, Metropolitan District and London Electric Railways. Tickets will be available from March 17th to 21st (inclusive). Those desiring to take advantage of this privilege should apply before March 11th to *Mr. S. E. Carr, Chemical Society, Burlington House, Piccadilly, London, W. 1*, for a signed voucher, which must be surrendered at the Booking Office when the ticket is purchased.

Special attention is drawn to the fact that these facilities are granted on the understanding *that not less than 100 persons* avail themselves thereof. Unless at least this number of vouchers are issued, the privilege will be withdrawn.

#### HOTELS.

Accommodation can be secured at the following hotels in Glasgow, all of which are within five minutes' walk of the Grosvenor Restaurant :

Central Hotel, Gordon Street (adjoining L.M.S. Station),  
 Cranston's Waverley Hotel, 172, Sauchiehall Street,  
 George Hotel, 235, Buchanan Street,  
 Grand Hotel, Charing Cross,  
 Kenilworth Hotel, 5, Queen Street,  
 North British Station Hotel, George Square (adjoining L.N.E.R. Station),  
 St. Enoch Hotel, St. Enoch Square (adjoining L.M.S. Station).

Early application is advisable, and particulars regarding the tariff of charges can be obtained from the Assistant Secretary.

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List of papers, or abstracts thereof, received between December 17th, 1931, and January 21st, 1932. (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 reduction of nitro-compounds by aldehydes in ethyl alcoholic potassium hydroxide solution.” By E. S. BACON and D. H. RICHARDSON.
- “The oxidation of pentane and other hydrocarbons. Part I.” By L. M. PIDGEON and A. C. G. EGERTON.
- “The oxidation of pentane and other hydrocarbons. Part II.” By L. M. PIDGEON and A. C. G. EGERTON.
- “The reduction of *l*-*n*-butylvinylcarbinol to *n*-butylethylcarbinol. A correction.” By R. I. JOHNSON and J. KENYON.
- “Some physical properties of carbonyl sulphide.” By T. G. PEARSON, P. L. ROBINSON, and J. TROTTER.
- “Polycyclic aromatic hydrocarbons. Part X. The synthesis of methyl and *isopropyl* homologues of 1:2-benzanthracene.” By J. W. COOK.
- “Bromine hydrate.” By I. W. H. HARRIS.
- “The vapour pressure of water over aqueous solutions of the chlorides of the alkaline-earth metals. Part III. Correlation with other physical properties of the solutions.” By J. R. I. HEPBURN.
- “A new reaction of certain diazosulphonates derived from  $\beta$ -naphthol-1-sulphonic acid. Part IX. Preparation of phthalazine, phthalazone, and phthalimidine derivatives from 5-nitro-2-aminotoluene.” By F. M. ROWE and F. J. SIDDLE.
- “The oxidation of methane and the function of surfaces in gaseous reactions.” H. W. THOMPSON and C. F. KEARTON.
- “Some reactions of tungsten hexachloride.” By A. J. COOPER and W. WARDLAW.
- “Aliphatic sulphonyl fluorides.” By W. DAVIES and J. H. DICK.
- “Strychnine and brucine. Part XV. *neo*Strychnidine and its derivatives.” By O. ACHMATOWICZ, (the late) W. H. PERKIN, jun., and R. ROBINSON.
- “The velocity and mechanism of racemisation. Part I. Rochelle salt.” By A. N. CAMPBELL and A. J. R. CAMPBELL.
- “*p*-Xylylarsonic acid.” By A. COHEN and H. KING.
- “Studies on hydrogen cyanide. Part IV. Gattermann’s hydrogen cyanide aldehyde synthesis.” By L. E. HINKEL, E. E. AYLING, and W. H. MORGAN.
- “Derivatives of diketopyrazoline.” By F. D. CHATTAWAY and A. ADAIR.

- “A contribution to Laplace’s theory of capillarity. Influence of phase extent. Measurements of interfacial tension for aqueous potassium chloride against benzene, aniline, and octane.” By W. HUGHES.
- “The two-component salt mixtures of lead nitrate with sodium and potassium nitrates.” By H. M. GLASS, K. LAYBOURN, and W. M. MADGIN.
- “The structure of the glutaconic acids and esters. Part III.  $\alpha$ -Carbethoxyglutaconic esters.” By B. S. GIDVANI, G. A. R. KON, and C. R. WRIGHT.
- “Intermetallic compounds formed in mercury. Part III. The Zn-Fe system and part of the Sn-Fe system.” By A. S. RUSSELL.
- “The replacement of bromine in bromophenols by the nitro-group. Part III. 2:3:4:6-Tetrabromophenol and 3-iodo-2:4:6-tribromophenol. A review of the halogen effect in 3-position.” By H. H. HODGSON and E. W. SMITH.
- “The orientation of the  $\alpha$ -chloroanthrones.” By E. DE B. BARNETT and C. L. HEWETT.
- “Orientation effects in the diphenyl series. Part XI. A study of the quantitative mono- and di-nitration of 4:4'-difluoro-diphenyl.” By (MISS) F. R. SHAW and E. E. TURNER.
- “The re-arrangement of hydroxysulphones. Part II.” By L. A. WARREN and S. SMILES.
- “Hemlock tannin. The water-soluble tannin from the bark of the Canadian eastern hemlock.” By A. RUSSELL.
- “Note on the preparation of 2-quinolinealdehyde and some of its derivatives.” By K. E. COOPER and J. B. COHEN.
- “The system nitric oxide-nitrogen dioxide. Part I.” By R. H. PURCELL and G. H. CHEESMAN.
- “The orienting power of the nitroso-group.” By D. LL. HAMMICK, R. G. A. NEW, and L. E. SUTTON.
- “The surface tension and density of nitric oxide.” By G. H. CHEESMAN.
- “The solubility of butyrates and isobutyrate and the density and surface tension of their aqueous solutions.” By (MISS) K. M. COLLIS and W. H. PATTERSON.
- “The interaction of ammonium and alkylammonium sulphides with aqueous formaldehyde.” By C. G. LE FÈVRE and R. J. W. LE FÈVRE.
- “The addition of bromine to  $\alpha\beta$ -diphenyl- $\delta$ -methyl- $\Delta^{\alpha\beta}$ -butadiene.” By H. BURTON.
- “The oxidation of  $\beta$ -3:4-dihydroxyphenylethylmethylamine with silver oxide. The isolation of 5:6-dihydroxy-1-methylindole



- and a synthesis of 5:6-dimethoxy-1-methylindole." By H. BURTON.
- "The solubilities of copper, manganese, and some sparingly soluble metals in mercury." By N. M. IRVIN and A. S. RUSSELL.
- "The Baeyer-Drewson reaction." By L. E. HINKEL, E. E. AYLING, and W. H. MORGAN.
- "Molecular association of aromatic hydrocarbons with thionyl chloride, sulphuryl chloride, and sulphur dioxide." By G. H. LOCKET.
- "Strychnine and brucine. Part XVI. *neo*Strychnine." By O. ACHMATOWICZ, G. R. CLEMO, (the late) W. H. PERKIN, jun., and R. ROBINSON.
- "The thermal decomposition of anhydrous oxalic acid." By M. S. SHAH and T. M. OZA.
- "The solubility of silver thiocyanate in aqueous ammonia." By F. J. GARRICK and C. L. WILSON.
- "Oxidation of hemlock tannin and its hydrolytic products with hydrogen peroxide." By A. RUSSELL.
- "Hydrazine formation in the synthesis and decomposition of ammonia. Part I. Synthesis of hydrazine and ammonia by cathode rays." By G. R. GEDYE and T. E. ALLIBONE.
- "Hydrazine formation in the synthesis and decomposition of ammonia. Part II. The photochemical decomposition of ammonia." By G. R. GEDYE and E. K. RIDEAL.
- "Hydrazine formation in the synthesis and decomposition of ammonia. Part III. A note on the synthesis of hydrazine at catalytic surfaces." By G. R. GEDYE and E. K. RIDEAL.
- "The composition of salinigrin—a correction." By H. A. D. JOWETT.
- "Mechanism of the hydrolysis of carboxylic esters with special reference to acid hydrolysis." By E. H. INGOLD and C. K. INGOLD.
- "Strychnine and brucine. Part XVII. *neo*Brucine and *neo*brucidine." By O. ACHMATOWICZ, (the late) W. H. PERKIN, jun., and R. ROBINSON.
- "Strychnine and brucine. Part XVIII. Final stages of the degradation of dinitrostrychol and an account of some nitrohydroxyquinoline derivatives." By K. N. MENON and R. ROBINSON.
- "A new alkaloid from *Holarrhena antidysenterica* seeds." By R. D. HAWORTH.

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 ERRATUM.

Proceedings, 1931.

 Page 106, line 16 from top, *for* W. E. Smith *read* W. E. Scott.

FORMS OF RECOMMENDATION FOR FELLOWSHIP. THE  
BALLOT WILL BE HELD AT THE ORDINARY  
SCIENTIFIC MEETING ON THURSDAY, FEBRUARY  
18th, 1932.

ARAKI, CHOJI, Shimogamo, Izumikawacho I, Kyoto, Japan. Japanese. Professor of Kyoto Koto-Kogeigakko; Director of Chemistry, Rigakushi, Rigakuhakushi. Graduated from College of Science, Kyoto Imperial University, in 1925. Pre-Assistant Professor of Chemistry, College of Science, Kyoto Imperial University. (*Signed by*) R. Nodzu, S. Koizumi, S. Araki.

BAWN, CECIL EDWIN HENRY, Hulme Hall, Victoria Park, Manchester. British. Assistant Lecturer. B.Sc., Bristol. Student, University of Bristol. 1926-1931. B.Sc., 1st Class Hons. Chemistry, 1929. Research, 1929-1931. Publications: "Adsorption of Gases and Vapours on Plane Surfaces," *J. Amer. Chem. Soc.*, 1932, **53** (in press and appearing Jan.). *J.C.S.*, "The Catalytic Action of Hydrogen on Carbon Monoxide Flame" (Bawn and Garner, in press). (*Signed by*) Arthur Lapworth, Fred Fairbrother, Colin Campbell.

BEATTIE, GEORGE ALLAN, "Brae Moray," 23, Newbolt Avenue, Cheam, Surrey. British. Pharmacist (Manager, Schering, Ltd., London). Chemist and Druggist (Pharmaceutical Society of Great Britain). Member of Pharmaceutical Society. Studied chemistry under Dr. Wm. Maitland at Robert Gordon's Colleges, Aberdeen (previously at Rutherford College, Newcastle-on-Tyne, and S.W. Polytechnic, London). War service with Chemical Warfare Section of Royal Engineers, including experimental work on poison gas and "liquid fire." (*Signed by*) J. J. Blackie, W. A. Beattie, A. W. Edwards.

BRADFORD, BERNARD WILLIAM, 72, West Side, Clapham Common, S.W. 4. British. Research Chemist. A.R.C.S.; B.Sc. (London); D.I.C.; Ph.D. (London). Investigation (latterly as Beit Research Fellow, Imperial College) of surface properties of metals and cognate subjects (Ref. Ph.D. Thesis, University of London, 1931). "On the Dielectric Strengths of Some Explosive Mixtures containing Carbonic Oxide," *J.C.S.*, 1930, 1540 (with G. I. Finch). (*Signed by*) H. J. Emeléus, G. H. Cheesman, L. G. Parsons.

CHISHOLM, DONALD, 209, Auldhouse Road, Newlands, Glasgow, S. 3. British. University Lecturer. B.Sc. (Glas.); Ph.D. (Glas.). Lecturer in Chemistry, Glasgow University. Associate of the Institute of Chemistry. "Oxidation Products of  $\beta$ -Pinene," *J.C.S.*, 1924, **125**, 107-113. (*Signed by*) G. G. Henderson, R. Wright, J. Roberts.

COHEN, LOUIS NATHAN, 15, Breda Street, Cape Town, South Africa. British South African. Junior Lecturer at University of Cape Town. B.A. (Cape Town); B.Sc. in Applied and Industrial Chemistry (Cape Town). Being a lecturer, I am interested in chemistry. Associate of Institute of Chemistry of Great Britain and Ireland. (*Signed by*) E. Newbery, J. Smeath Thomas, T. M. Simpson.

CROWFOOT, DOROTHY MARY, The Old House, Geldeston, Beccles, Suffolk. British. Research Student. B.A. (Oxon.). Desiring to receive current literature and to use the Library. (*Signed by*) S. G. P. Plant, J. C. Smith, E. Hope.

GOMM, ALBERT STANLEY, The Biochemical Laboratory, Department of Chemistry, The University, Bristol. British. Research Assistant, University of Bristol, B.Sc., Ph.D. (Bristol). "The Initiation of Flame in Mix-

tures of Carbon Monoxide and Oxygen," *Trans. Faraday Soc.*, 1928, **88**, 470 (with W. E. Garner). "The Exhaustive *o*-Methylation of Quercetin," *J. Amer. Chem. Soc.*, 1931, Dec. issue (with M. Nierenstein). Carried out research under Prof. W. E. Garner from 1927 to 1930. Assistant to Dr. M. Nierenstein from 1930 to present time. "The Thermal Decomposition and Detonation of Lead Azide Crystals," W. E. Garner and A. S. Gomm, *J.C.S.*, 1931, 1213. (*Signed by*) M. Nierenstein, W. E. Garner, F. Francis, M. Taylor.

GRAY, FRANCIS WILLIAM, 31, Hamilton Place, Aberdeen. British. University Lecturer in Chemistry. M.A. (Aberdeen); D.Sc. (Aberdeen). On the teaching staff of Aberdeen University Chemistry Department since 1901, and at present Senior Lecturer. Author of the books: *A Manual of Practical Physical Chemistry* (Macmillan & Co., 1914), and *The Chemistry Tangle Unravell'd* (Longmans, 1923). Author or joint author of the researches: "Diamagnetism and Sub-Molecular Structure," *Phil. Mag.*, 1930, X, 191-216. "The Diamagnetism of Polyhalides," *ibid.*, 1931, XI, 81-95. "The Paramagnetism of Polychromates," *ibid.*, 1931, XI, 297-314. Organic researches: *J.C.S.*, 1909, **95**, 2131-2137, 2138-2151. "An Adiabatic Calorimeter," *J.C.S.*, 1914, **105**, 1010-1014. "A Magnetic Study of the Constitution of Compounds of Water and of Aqueous Solutions," *J.C.S.*, 1914, **105**, 2707-2716. (*Signed by*) Alex. Findlay, James Hendrick, J. F. Tocher, Arthur K. Mills, T. Harold Reade.

HAYWARD, AILEEN MARY, Brantwood, Lake Road West, Cardiff (London address in term-time, Bedford College for Women, Regent's Park, N.W. 1). British. Demonstrator in Inorganic and Physical Chemistry. B.Sc. with 1st Class Hons. in Chemistry, and Ph.D. (University College, Cardiff). B.Sc. Special (External) with 2nd Class Hons. in Chem., University of London. Part author of "Vapour Pressures of Aqueous Solutions of Sodium Hydroxide and of Alcoholic Solutions of Calcium Chloride," *Trans. Faraday Soc.*, 1931, **27**, 117. Demonstrator in Inorganic and Physical Chemistry at Bedford College for Women, London, since Sept. 1930. (*Signed by*) James F. Spencer, Florence R. Shaw, Elizabeth E. E. Marler, Corona G. Trew.

JONES, WILLIAM OWEN, 16, Water Street, Penmaenmawr, North Wales. British. B.Sc. (Wales) with 1st Class Hons. in Chemistry (1929); Ph.D. (Wales) (1931); A.I.C. (1931). Research Student at University College of North Wales, Bangor. *J.C.S.*, 1931 (jointly with A. E. Bradfield and F. Spencer. In the press). (*Signed by*) J. L. Simonsen, A. E. Bradfield, F. G. Soper, R. S. Cahn.

MACRAE, THOMAS FOTHERINGHAM, 140, Ebury Street, S.W. 1. British. Research Scholar, Lister Institute. B.Sc. (Glasgow); Ph.D. (Glasgow). "Über die Autoxydation von Leukomethylenblau," *Ber.*, 1931, **64**, 133. "Über den Mechanismus der Oxydationsvorgänge. XXVI. Weitere Studien über die dehydrierende Enzyme der Milch," *Liebigs Ann.*, 1930, **483**, 217 (with H. Wieland). (*Signed by*) Robert Robison, J. Masson Gulland, S. S. Zilva.

MCNAREY, JOHN BUCHANAN, Oakley House, Bath Road, Slough, Bucks. British. Student of chemistry. To receive the publications, attend the meetings, and use the library of the Society. (*Signed by*) F. J. Wilson, W. M. Cumming, R. M. Caven, M. M. J. Sutherland.

MAIR, JOHN ALEXANDER, 53, Cunningham Street, Glasgow, C. 1. British. Lecturer in Chemistry. B.Sc., Ph.D. (Glasgow). Lecturer in Analytical Chemistry, The University, Glasgow (since January 1929); formerly Assistant in Physical Chemistry, Glasgow University and Glasgow Ramsay Memorial Fellow (1922-24); Research in Organic Chemistry. "The Oxidation of

Caoutchouc" (with the late J. McGregor Robertson), *J.S.C.I.*, 1927, XLVI, 41-49r. "The Action of Hypochlorous Acid on Bornylene" (with Prof. G. G. Henderson), *J.C.S.*, 1923, **123**, 1155-1161. (*Signed by*) G. G. Henderson, R. Wright, S. Horwood Tucker.

MEAD, THOMAS HOBSON, 64, Oakley Street, Chelsea, S.W. 3. British. Research Student. B.A., B.Sc. (Oxon.). Part I and Part II in the Honour School of Chemistry, Oxford. *J.C.S.*, 1929, II, 2282. (*Signed by*) Robert Robinson, J. Masson Gulland, S. S. Zilva.

MILLER, CHRISTINA CRUICKSHANK, c/o Mrs. Dickson, 245, Dalkeith Road, Edinburgh. British. University Lecturer in Chemistry. B.Sc., Ph.D., D.Sc., Edinburgh. Research Scholar and Fellow (1920-26). Publications in *Proc. Roy. Soc. Edin.*, 1924 and 1926. University Assistant, 1926-29, and subsequently Lecturer. Keith Medallist of the Roy. Soc. Edin., 1930. *J.C.S.*, 1928, 1847; 1929, 1823, 1829. (*Signed by*) James Kendall, James Walker, Sydney A. Kay.

MOONEY, RONALD BARRON, 14, Argyle Place, Edinburgh. British. Carnegie Research Fellow. M.A., B.Sc., Ph.D. (Edinburgh). Publications in collaboration with Dr. E. B. Ludlam: "Thermal Equilibrium between  $C_2H_4$ ,  $I_2$ , and  $C_2H_4I_2$ " (*Proc. Roy. Soc. Edin.*, **49**, 160); "Influence of Air and Moisture on the Budde Effect in  $Br_2$ " (*ibid.*, **49**, 256); "Decomposition of  $C_2H_4$  by Ultra-violet Light" (*Trans. Faraday Soc.*, **25**, 442). In collaboration with H. G. Reid, B.Sc.: "The Surface Reactions between Ethylene and the Halogens" (*J.C.S.*, 1931, 2597). (*Signed by*) James Kendall, Ernest Bowman Ludlam, H. Gordon Rule.

NEAL, ARTHUR FRANCIS BOUGHTON, Fermor House, Crowborough, Sussex. English. Engaged in Chemical Research. Honours B.A. (Science), Cambridge. Natural Sciences Tripos, Parts I and II, 1927-1930; research, Oct. 1930 to present time. Wishes to keep in touch with modern developments in Chemistry. (*Signed by*) W. J. Pope, F. G. Mann, W. P. Wynne, J. B. Whitworth, F. B. Kipping.

PAREKH, MUKUNDRAI MANEKLAL, Organic Laboratory, University College, Gower Street, W.C. 1. Indian. Research Worker. B.Sc. (Hon.) (Bombay); M.Sc. (1st Class Dist.) Bombay. Demonstrator in Chemistry, Baroda College (Bombay Pres.), India. (1) *J. Ind. Chem. Soc.*, VII, 137-144; (2) *ibid.*, VII, 145-150. (*Signed by*) C. K. Ingold, O. L. Brady, R. J. W. Le Fèvre.

PATTERSON, GEORGE SCOTT, "Weensland," Mornington Rise, Matlock, Derbyshire. British. Chief Works Chemist. Associate of the Textile Institute (A.T.I.); Assistant Works Chemist to the Hawick Hosiery Manufacturers' Association and the Scottish Woollen Trades Employers' Association (Hawick Branch) for  $7\frac{1}{2}$  years; Chief Chemist to Messrs. John Smedley, Ltd., Matlock, for  $2\frac{1}{2}$  years. At present Chief Chemist to Messrs. Geo. Brettle & Co., Ltd., Hosiery Manufacturers, Belper, Derbyshire. (*Signed by*) Stanley L. Burrows, J. L. Michie, J. A. McKerrow.

PHILLIPS, JOHN THOMAS, 52, Cloncurry Street, Fulham Palace Road, Fulham, S.W. 6. British. Chemist in Radium-Radon Department, St. Bartholomew's Hospital, E.C. 1. 1895-1904, Assistant to Prof. H. E. Armstrong, Central Technical College, S.W. 1904-1918, 1921-1929, at Sir John Cass Technical Institute, Aldgate, E.C. 1918-1921, Chemist to Pierson Morrell, Manufacturing Chemist, Vauxhall, S.E. Have now a desire to keep abreast with recent Chemical work, especially connected with the products from Radium. (*Signed by*) Henry J. S. Sand, A. M. Ward, E. de Barry Barnett.

PRICE, NORMAN JEREDICK, c/o Chance & Hunt, Ltd., Oldbury, Worcs. British. Works Manager. B.A. (Cantab.). A.I.C. Senior Science Master,

Grammar School, Bridlington, Jan.–Dec. 1912. Chief Analytical Chemist, H.M. Factory, Site "B," Oldbury, 1915–1919. Chief Analytical Chemist, Chance & Hunt, Ltd., Oldbury, 1920–1923. Assistant to General Works Manager, Chance & Hunt, Ltd., 1923 to present. With C. S. L. Hawkins, "A New Determination of the Specific Gravities of Solutions of Ammonia," *J.S.C.I.*, **43**, 1924, 113–1 17t. (*Signed by*) Wm. Wardlaw, F. P. Dunn, W. A. S. Calder.

RHODES, JAMES ERIC WYNFIELD, 35, Fielding Crescent, Green Lane, Blackburn, Lancs. British. Lecturer in Chemistry, Municipal Technical College, Blackburn. B.Sc. (Hons.), London. A.I.C. Lecture in Physical and Inorganic Chemistry, Mun. Tech. Coll., Blackburn, 1920 to present date; Works Chemist, British Cellose Co. (now Celanese), 1917; Barton Chemical Works of Aniline Dye Co., 1918–1920. Author of "The Volumetric Determination of Magnesium in Magnesium Chloride Solutions," *J.S.C.I.*, 1927, XLVI, No. 16, pp. 159–160t. "Electrolysis of Potassium Oleate," G. W. F. Holroyd and J. E. W. Rhodes, *J.C.S.*, 1924, **125**, 438. (*Signed by*) G. W. F. Holroyd, B. Prentice, E. Clark, J. W. McMyn, V. Edge.

ROBINSON, GERTRUDE MAUD, 13, Norham Road, Oxford. British. Partly occupied in Chemical Research. M.Sc. (Manchester). Engaged in investigations in Organic Chemistry since 1908. *J.C.S.*, 1914, 252; 1915, 267; 1916, 1078; 1917, 109; 1924, 226; 1929, 2947; 1930, 748. P., 1913, 266. *J.C.S.*, 1914, 1456; 1915, 1753; 1917, 929; 1917, 958; 1918, 639; 1924, 827; 1921, 1470; 1925, 175; 1926, 2204. (*Signed by*) E. Hope, J. C. Smith, A. F. Walden, B. Lambert.

SPRING, FRANK STUART, Hulme Hall, Victoria Park, Manchester. British. University Lecturer. B.Sc., Ph.D. (Liverpool). Research Student, University of Liverpool, 1928–1930. Assistant Lecturer, University of Manchester, 1930 to present date. Publications, *Biochem. J.*, 1930, **24**, 133; *ibid.*, **24**, 136; *J.C.S.*, 1929, 926, 2248, 2807; 1930, 2664. (*Signed by*) Arthur Lapworth, F. P. Burt, D. H. Hey, G. N. Burkhardt.

STEVENSON, ARTHUR JOHN, Eaglehurst, Ditton Hill, Surbiton, Surrey. English. Research Chemist to Manufacturing Chemists. B.A. (Cantab.). Read Natural Science Tripos with Part II, Chemistry. (*Signed by*) W. H. Mills, William Stevenson, Eric K. Rideal.

THOMPSON, MARGOT ELAINE, 174, Cromwell Road, Earl's Court, S.W. 5. British. Research. B.Sc., General (Chemistry, Pure and App. Maths.), June 1930, 2nd class. B.Sc. Special in Chemistry. June 1931, 1st class. Obtained at Bedford College, London. (*Signed by*) James F. Spencer, E. E. Turner, Mary S. Lesslie.

THOMSON, WILLIAM LOCKERBIE, Garden Croft, Crediton, Devon. British. Chemist. B.Sc. (Edin.), A.I.C. Director and Manufacturing Chemist. (*Signed by*) Henry E. Watt, Alexander J. Dey, William Francis Martin.

THORVALDSON, THORBERGUR, University of Saskatchewan, Saskatoon, Saskatchewan, Canada. Canadian. Professor of Chemistry, University of Saskatchewan. B.A. (Manitoba), A.M. (Harvard), Ph.D. (Harvard), F.R.S.C., F.C.I.C. Papers published in *J. Amer. Chem. Soc.*, 1911, 1915, 1922, 1929, 1930; *Ind. and Eng. Chem.*, 1925; *J. Eng. Inst. Canada*, 1922, 1926, 1927, 1928; *Proc. Roy. Soc. Canada*, 1927, 1928; *Canada J. Res.*, 1929. (*Signed by*) F. G. Donnan, C. F. Goodeve, B. Topley.

TOMLINSON, MURIEL LOUISE, Kingswood, Lapworth, Warwickshire. British. Research Student. B.A., Oxford. Desirous of attending meetings and obtaining the literature of the Society. (*Signed by*) S. G. P. Plant, E. Hope, D. Ll. Hammick, Frederick M. Brewer.

UBBELOHDE, ALFRED RENÉ JOHN PAUL, Christ Church, Oxford. Belgian.

Senior Scholar of Christ Church. B.A., 1st Class Hons.: B.Sc., Oxon; B.Sc., 1st Class Hons., London. With A. C. Egerton, F.R.S.: *Trans. Faraday Soc.*, March 1930; *Proc. Roy. Soc.*, Dec. 1931. (*Signed by*) A. S. Russell, C. H. Collie, S. G. P. Plant, C. N. Hinshelwood, E. J. Bowen.

WILLIAMS, ANEURIN, Mayfield, Fairfield Road, Widnes, Lancs. British. Chemist. M.Sc. (Liverpool). 16 years' experience in industrial research work. I desire to receive the *Journals* and keep in touch with modern research developments. (*Signed by*) William Doran, T. P. Hilditch, W. C. M. Lewis, E. C. C. Baly.

WINDAUS, ADOLF, Hospitalstrasse 8/9, Göttingen, Germany. German. Professor of Chemistry. Ph.D. Nobel Laureate. (*Signed by*) George Barger, H. W. Dudley, O. Rosenheim.

WORMS, CHARLES GEORGE MAURICE DE, Milton Park, Egham, Surrey. British. Research Chemist, King's College, London. M.A. (Cantab.), B.A. (Cambridge) in Agricultural Chemistry (1st Class), 1925. Assistant Advisory Chemist, Agricultural Dept., Cambridge, 1925-27. A.I.C. (by examination), 1931. (*Signed by*) Samuel Smiles, K. C. Roberts, L. A. Warren.

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

BRYK, ERNST, Frankfurt/Main Höchst, Hochmu'hl 4. Prussian. Chemist and director of the department for literature of the I. G. Farbenindustrie Akt.-Ges., Höchst/Main. Dr. phil. of the University of Vienna. Dissertation: "Über die Einwirkung von Jod und Kalilauge auf Harnsäure." (Interaction of Iodine, Potassium Hydrate, and Uric Acid), Wien, 1894. (*Signed by*) Henri Busch.

KRAENZLEIN, GEORG, Ludwigshafenerstrasse 14, Frankfurt-a-Main/Höchst (Germany). Bavarian. Chemist. Director of I. G. Farbenindustrie Aktiengesellschaft, Frankfurt-a-Main/Höchst. Director of scientific laboratories. Dr. phil. (Würzburg). (*Signed by*) Henri Busch.

MESSONNIER, MARIE MARGUERITE, Bibliothécaire en Chef, Bibliothèque Universitaire de Lyon, 18 Quai Claude Bernard, Lyon (France). French. Librarian, University of Lyons. Licence, University of Lyons. (*Signed by*) V. Grignard.

MEYER, JULIUS, Chem. Institut der Universität, Burgstrasse 8, Breslau 1. Deutsch. Universitäts Professor, Dr. phil. (*Signed by*) C. S. Gibson.

MEYER, ROBERT, Soc. des Usines Chimiques Rhône-Poulenc, St. Fons (Rhône), France. Suisse. Directeur des Recherches Chimiques. "Pour recevoir les publications de la Société." (*Signed by*) H. Gault.

VISHVANATHAN, K., 315, Rastas Peth, Poona 2, India. Hindu. Senior Science Teacher, Shri Pratap High School, Bansa. B.Sc. (Chemistry) of the Bombay University. Desire to get up-to-date information about the advances made in pure and applied chemistry. (*Signed by*) G. B. Kolhatkar.

ZAHN, Karl, Liederbacherstrasse 5, Frankfurt-a-Main/Höchst (Germany). Prussian. Chemist in I. G. Farbenindustrie Aktiengesellschaft, Frankfurt-a-Main/Höchst. Dr. phil. (Marburg). (*Signed by*) Henri Busch.

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## ADDITIONS TO THE LIBRARY.

I. *Donations.*

BERTHOUD, ALFRED. *Matière et atomes*. 2nd edition. Paris 1932. pp. 324. ill. 26 fr. (*Recd.* 15/1/32.)

From the Publishers : M. Gaston Doin & Cie.

BRITTON, HUBERT THOMAS STANLEY. *Hydrogen ions : their determination and importance in pure and industrial chemistry*. 2nd edition. London 1932. pp. xvi + 590. ill. 25s. net. (*Recd.* 13/1/32.)

From the Publishers : Messrs. Chapman & Hall.

FARADAY CENTENARY EXHIBITION, 23rd September to 3rd October 1931. *Souvenir catalogue and guide*. London 1931. pp. 248. ill. (*Reference.*)

From the Institution of Electrical Engineers.

FOURCROY, ANTOINE FRANCOIS DE. *Elements of chemistry and natural history*. Translated from the 4th and last edition of the original French work, by R. HERON. 4 vols. Edinburgh 1796. (*Reference.*)

From Mr. J. A. Audley.

HEDGES, ERNEST SYDNEY. *Colloids*. London 1931. pp. viii + 272. ill. 12s. 6d. net. (*Recd.* 2/1/32.)

From Mr. Emil Hatschek.

INDIAN LAC ASSOCIATION FOR RESEARCH. *A practical manual of lac cultivation*. By P. M. GLOVER. Calcutta 1931. pp. viii + 81 + 16 plates. (*Recd.* 30/12/31.)

From the Director.

MENSCHUTKIN, BORIS NIKOLAEVITSCH. *Chemistry*. Parts I and II. Moscow 1931—32. pp. 136, 304. ill. [In Russian.] (*Recd.* 4/1/32.)

From the Author.

ODDO, GIUSEPPE. *Trattato di chimica generale e inorganica*. 2nd edition. Palermo 1931. pp. xxiv + 886. ill. L. 90. (*Recd.* 19/12/31.)

From the Publisher : Casa Editrice Remo Sandron.

II. *By Purchase.*

BROWNING, ETHEL. *The vitamins*. London 1931. pp. xxxvii + 575. 42s. net. (*Recd.* 17/12/31.)

CLAYTON, WILLIAM. *Colloid aspects of food chemistry and technology*. London 1932. pp. viii + 571. ill. 36s. net. (*Recd.* 17/12/31.)

GAMOW, G. *Constitution of atomic nuclei and radioactivity*. Oxford 1931. pp. viii + 114. ill. 10s. 6d. net. (*Recd.* 17/12/31.)

GERLACH, WALTHER, and SCHWEITZER, EUGEN. *Foundations and methods of chemical analysis by the emission spectrum*. Authorised translation. London [1931]. pp. 123. ill. 12s. 6d. net. (*Recd.* 17/12/31.)

GLASS RESEARCH ASSOCIATION. *Bulletin*. Nos. 4—9 and 13. London 1922—25. (*Reference.*)

KORTÜM, G. Neuere Forschungen über die optische Aktivität chemischer Moleküle. (Sammlung, N.F. Heft 10.) Stuttgart 1932. pp. 118. ill. (*Reference.*)

MANTELL, CHARLES LETNAM. Industrial electrochemistry. New York 1931. pp. viii + 528. ill. 30s. net. (*Recd.* 17/12/31.)

RUARK, ARTHUR EDWARD, and UREY, HAROLD CLAYTON. Atoms, molecules and quanta. New York 1930. pp. xviii + 790. ill. 42s. net. (*Recd.* 19/12/31.)

SCHEIBER, JOHANNES, and SÄNDIG, KURT. Artificial resins. Translated by ERNEST FYLEMAN. London 1931. pp. viii + 448. ill. 30s. net. (*Recd.* 19/12/31.)

SCHRÖTER, W. Das Rhenium. (Sammlung, N.F. Heft 11.) Stuttgart 1932. pp. 60. (*Reference.*)

STEWART, ALFRED WALTER. Recent advances in organic chemistry. 6th edition. 2 vols. London 1931. pp. xii + 430, xii + 432. ill. 42s. net. (*Recd.* 19/12/31.)

WEYGAND, CONRAD. Quantitative analytische Mikromethoden der organischen Chemie in vergleichender Darstellung. Leipzig 1931. pp. xii + 279. ill. M. 18. (*Recd.* 11/1/32.)

WYCKOFF, RALPH W. G. The structure of crystals. 2nd edition. (American Chemical Society Monograph Series.) New York 1931. pp. 498. ill. 7.50. (*Recd.* 22/12/31.)

### III. Pamphlets.

FREJKA, J., ZIKA, J., and HAMERSKY, H. Sur la tétranitroso-pyrocatechine et quelques ses dérivés. (*Publ. Fac. Sci. Univ. Masaryk*, 1931, No. 137.) [In Czecho-Slovakian. French summary.]

INDIAN INSTITUTE OF SCIENCE. Investigations on the spike-disease of sandal. I and II. Bangalore 1931. pp. 16.

KOSAKA, HIROSI. Die Beziehungen zwischen den verschiedenen physiologischen Erscheinungen der Pflanzen und den an Vegetationsorganen in Erscheinung tretenden Farbstoffen. III. Ueber die Beziehungen zwischen der Wachstumstätigkeit und der Anthocyaninbildung bei *Abutilon avicennae*. (From the *J. Dep. Agric. Kyushu Imp. Univ.*, 1931, 3.)

MIHOLIC, STANKO STANKOV. Kemijska analiza subtermalnog vrela Sutinsko kod Potsuseda. (From the *Bull. Soc. Chim. Yougoslav.*, 1931, 3.)

NATIONAL SMOKE ABATEMENT SOCIETY. The smoke abatement handbook. Manchester 1931. pp. 47.



# PROCEEDINGS

OF THE

## CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, February 4th, 1932, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., Past-President, in the Chair.

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

	Elected.	Died.
George Henry Barbrook .....	Dec. 7th, 1905.	Nov. 10th, 1931.
James Furnival Eardley .....	Feb. 16th, 1911.	Aug. 20th, 1931.

Mr. G. R. Gedye was formally admitted a Fellow of the Chemical Society.

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

Clarence Halse Cliff, Culwulla Chambers, Castlereagh Street, Sydney, N.S.W.  
 Eluned Leyshon, B.Sc., 28, Windmill Terrace, St. Thomas, Swansea.

Stotherd Mitchell, Ph.D., D.Sc., Rosebank, Bishopbriggs, Glasgow.

Gouri Kanta Mukherjee, M.Sc., Gourepore Paint Works, P.O. Garifa, Dist. 24 Pergannas, Bengal.

Thomas Cross Robinson, 85, Hillview Gardens, Hendon, N.W. 4.

George Thomson, Ph.D., 114, Forrest Street, Airdrie.

Herbert Cubitt Gostling Vincent, M.A., 54, Owlstone Road, Cambridge.

The following papers were read :

- “Hydrazine formation in the synthesis and decomposition of ammonia. Part I. Synthesis of hydrazine and ammonia by cathode rays.” By G. R. GEDYE and T. E. ALLIBONE.
- “Hydrazine formation in the synthesis and decomposition of ammonia. Part II. The photochemical decomposition of ammonia.” By G. R. GEDYE and E. K. RIDEAL.
- “Hydrazine formation in the synthesis and decomposition of ammonia. Part III. A note on the synthesis of hydrazine at catalytic surfaces.” By G. R. GEDYE and E. K. RIDEAL.
- “The stereoisomeric 2 : 3 : 5 : 6-tetramethylpiperazines. Part III. The reduction products of 2 : 3 : 5 : 6-tetramethylpyrazone methiodide.” By F. B. KIPPING.
- “Formaldehyde condensations with aliphatic ketones. Part I.” By G. T. MORGAN and E. L. HOLMES.

Ordinary Scientific Meeting, Thursday, February 18th, 1932, at 8 p.m., Professor G. G. HENDERSON, M.A., D.Sc., F.R.S., President, in the Chair.

Messrs. E. A. Wagstaff, R. A. E. Galley, G. F. Bloomfield, and S. Anwar Ullah were formally admitted Fellows of the Chemical Society.

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

Donald Russell Duncan, B.Sc., 84, Haydon Park Road, Wimbledon, S.W. 19.  
 Eric Higgins, Ph.D., Punchetts, Tewin Wood, Hertfordshire.  
 Sanuro Ishiwata, Tokyo Imperial University, Tokyo, Japan.  
 Velur Venkiteshadyer Sivarama Iyer, M.A., Dyson Perrins Laboratory, South Parks Road, Oxford.  
 John Butler Day-Lewis, The Square, Riverhead, Kent.  
 Alan Richardson Raper, M.A., Messrs. The Mond Nickel Co., Ltd., Bashley Road, N.W. 10.  
 Arnold Shepherdson, B.Sc., 19, Dawlish Road, Chorlton-cum-Hardy, Manchester.  
 Kyosuke Tsuda, Tokyo Imperial University, Tokyo, Japan.

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

Augustine F. S. Musante, A.B., M.A., Sun Oil Company Research Laboratory, Norwood, Penn., U.S.A.  
 Norman Arthur Shepard, Ph.D., 154, Casterton Avenue, Akron, Ohio, U.S.A.  
 Lothar Wöhler, Prof., Dr.phil., Technische Hochschule, Darmstadt, Germany.

Mr. N. L. Anflogoff and Dr. A. I. Vogel were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared elected as Fellows :

Choji Araki.	John Buchanan McNarey.
Cecil Edwin Henry Bawn, B.Sc.	John Alexander Mair, B.Sc., Ph.D.
George Allan Beattie.	Thomas Hobson Mead, B.A., B.Sc.
Bernard William Bradford, B.Sc., Ph.D., A.R.C.S.	Marie Marguerite Messonnier.
Ernst Bryk, Dr.phil.	Julius Meyer, Dr.-phil.
Donald Chisholm, B.Sc., Ph.D.	Robert Meyer.
Louis Nathan Cohen, B.A., B.Sc.	Christina Cruickshank Miller, Ph.D., D.Sc..
Dorothy Mary Crowfoot, B.A.	Ronald Barron Mooney, M.A., B.Sc., Ph.D.
Albert Stanley Gomm, B.Sc., Ph.D.	Arthur Francis Boughton Neal, B.A.
Francis William Gray, M.A., D.Sc.	Mukundrai Maneklal Parekh, M.Sc.
Aileen Mary Hayward, B.Sc., Ph.D.	George Scott Patterson.
William Owen Jones, B.Sc., Ph.D., A.I.C.	John Thomas Phillips.
Georg Kraenzlein, Dr.phil.	Norman Jeredick Price, B.A., A.I.C.
Thomas Fotheringham Macrae, B.Sc., Ph.D.	James Eric Wynfield Rhodes, B.Sc., A.I.C.

Gertrude Maud Robinson, M.Sc.	Alfred René John Paul Ubbelohde, B.A., B.Sc.
Frank Stuart Spring, B.Sc., Ph.D.	K. Vishvanathan, B.Sc.
Arthur John Stevenson, B.A.	Aneurin Williams, M.Sc.
Margot Elaine Thompson, B.Sc.	Adolf Windaus, Ph.D.
William Lockerbie Thomson, B.Sc., A.I.C.	Charles George Maurice de Worms, M.A.
Thorbergur Thorvaldson, B.A., A.M., Ph.D.	Karl Zahn, Dr.-phil.
Muriel Louise Tomlinson, B.A.	

An informal discussion on "The significance of velocity measurements in relation to the benzene substitution problem" was opened by Dr. A. E. Bradfield, and continued by Prof. A. Lapworth, Prof. R. Robinson, Prof. G. M. Bennett, Dr. R. G. W. Norrish, and Prof. D. H. Peacock.

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### THIRD PEDLER LECTURE.

The third Pedler Lecture, entitled, "The Life and Work of Otto Wallach," will be delivered by Professor L. Ruzicka, of Zürich, on Thursday, March 10th, 1932, at 5.30 p.m. The lecture will be given in the Meeting Hall of the Institution of Mechanical Engineers (Storey's Gate, Westminster, S.W. 1), by courtesy of the Council of that Institution. Tickets of admission will not be required.

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### THE 91ST ANNUAL GENERAL MEETING AND THE ANNIVERSARY DINNER, GLASGOW, MARCH 18TH, 1932.

#### Annual General Meeting.

The Annual General Meeting will be held in the Fore Hall of the University of Glasgow, on Friday, March 18th. The business portion of the meeting (open to Fellows only) will commence at 4 p.m., and will be followed at 4.30 p.m. by the Presidential Address entitled "The Publication of Chemical Literature," to be delivered by Professor G. G. Henderson, M.A., D.Sc., F.R.S.

Tea will be served at the Glasgow University Union (University Avenue) at 3.30 p.m.

#### Anniversary Dinner.

The Anniversary Dinner will be held the same evening at the Grosvenor Restaurant, Gordon Street (opposite the Central Station) at 7 for 7.15 p.m. Application for tickets (price 12s. 6d. each for lady or gentleman) should be made as soon as possible to Mr. S. E. Carr, The Chemical Society, Burlington House, London, W. 1, accompanied by a remittance for the number of tickets required.

Civic Reception, Thursday, March 17th.

A Civic Reception will be held by the Lord Provost and the Corporation of the City of Glasgow in the City Chambers, Glasgow, on Thursday, March 17th, at 8.15 p.m. Admission will be by invitation only.

Visits, Saturday, March 19th.

Invitations have been received to visit Nobel's Explosives Factory at Ardeer, and the Provan Chemical Works, Provanmill, Glasgow. For those not desiring to make these visits, a tour by motor coach to Loch Lomond will be arranged; if, however, the weather is unfavourable, places of interest in the city will be visited.

Motor conveyance will leave City Chambers, George Square, for  
Ardeer, at 9.15 a.m. (arriving back at 5.45 p.m.). Fare 3s. 6d.  
Provanmill, at 9.45 a.m. (arriving back at 12.30 p.m.).  
Loch Lomond (or places of interest), at 10.0 a.m. (arriving back at 1 o'clock p.m.).

The number of invitations is limited, prior consideration being given to Fellows of the Society not residing in, or near, Glasgow, and the invitation to Ardeer is not extended to ladies.

Fellows desiring to attend the Civic Reception or to take part in the visits should apply before March 11th to Dr. W. M. Cumming (Royal Technical College, 204, George Street, Glasgow), who will supply full particulars.

Railway Facilities.

Fellows attending the meetings will be able to travel by rail from all parts of the country to Glasgow at the reduced rate of an ordinary single fare and one-third for the double journey. No minimum distance is fixed. Tickets will be available from March 17th to 21st (inclusive). Those desiring to take advantage of this privilege should apply *before March 11th* to the Assistant Secretary for a signed voucher. These facilities, however, will be withdrawn unless at least 100 persons avail themselves thereof.

Hotels.

Full particulars of the hotels (with charges) in Glasgow can be obtained from Dr. W. M. Cumming, or the Assistant Secretary.

The Council hopes that Fellows resident in Scotland will attend the meetings, and that many Fellows living south of the Tweed will make a special effort to be present.

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List of papers, or Abstracts thereof, received between January 21st and February 18th, 1932. (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.)

- “Potassium dibromiodide hydrate,” by G. H. CHEESMAN and J. H. MARTIN.
- “Substituted aromatic aldehydes in Hantzsch’s pyridine condensation. Part III. Nitromethoxy- and nitrohydroxy-benzaldehydes.” By L. E. HINKEL, E. E. AYLING, and W. H. MORGAN.
- “The vapour pressure of water over aqueous solutions of the chlorides of the alkaline-earth metals. Part IV. Evaluation of activity coefficients.” By J. R. I. HEPBURN.
- “A new reaction of certain diazosulphonates derived from  $\beta$ -naphthol-1-sulphonic acid. Part X. Preparation of phthalazine derivatives from 4-aminoazobenzene and 4'-nitro-4-aminoazobenzene.” By F. M. ROWE and F. S. TOMLINSON.
- “The parachor and chemical constitution. Part XVII. Fluorine compounds.” By E. C. ALLEN and S. SUGDEN.
- “The solubility of picric acid in mixed solvents. Part II. Benzene-alcohol mixtures.” By J. C. DUFF and E. J. BILLS.
- “Preliminary synthetic experiments in the morphine group. Part III. Some derivatives of papaveroline and laudanoline.” By Z. KITASATO and R. ROBINSON.
- “Preliminary synthetic experiments in the morphine group. Part IV. A dehydro-derivative of laudanoline hydrochloride and its constitution.” By R. ROBINSON and S. SUGASAWA.
- “Synthesis of 1-, 2-, 3-, and 4-methylphenanthrenes.” By R. D. HAWORTH.
- “Hydroxy-carbonyl compounds. Part VI. The application of the Simonis reaction to *p*-cresol.” By A. ROBERTSON and W. F. SANDROCK.
- “The viscosities of phosphoric esters.” By D. P. EVANS and W. J. JONES.
- “A thermal analysis of the system lithium nitrate-thallos nitrate.” By H. V. A. BRISCOE, C. EVANS, and P. L. ROBINSON.
- “The dimorphism of certain aliphatic compounds. Part II.” By J. W. C. PHILLIPS and S. A. MUMFORD.
- “The configuration of phthalylbenzidine.” By E. E. TURNER.
- “The polarity of the co-ordinate link. Part I. The constitution of the arsinimines.” By F. G. MANN.
- “A note on the preparation and dinitration of *N*-phenylpiperidine.” By R. J. W. LE FEVRE.

- “Some physical properties of the hydrides of selenium and tellurium.” By P. L. ROBINSON and W. F. SCOTT.
- “The properties of nicotine and its derivatives. Part IV. Refractive dispersion. Part V. Magnetic rotatory dispersion.” By T. M. LOWRY and C. B. ALLSOPP.
- “The properties of nicotine and its derivatives. Part VI. Electrical conductivities. Part VII. Electrometric titrations.” By T. M. LOWRY and W. V. LLOYD.
- “The reactions of  $\omega$ -substituted acetophenone derivatives. Part II. The mechanism of the interaction of  $\omega$ -halogenoacetophenones with primary and tertiary bases.” By J. W. BAKER.
- “The salt-forming characteristics of doubly and singly linked elements of the oxygen group. Part III. The carbonyl group in ethyl benzoate.” By J. W. BAKER and L. HEY.
- “The addition of halogens to unsaturated acids and esters. Part IV. The rate of addition of bromine to cinnamic acid in acetic acid.” By D. M. WILLIAMS.
- “The reactions of phenol with hydrogen at high pressures.” By C. M. CAWLEY.
- “The infra-red spectra and structure of tautomeric compounds.” By C. E. H. BAWN.
- “Bromine-chloride hydrate.” By S. A. ULLAH.
- “Chlorine hydrate.” By S. A. ULLAH.
- “The alkaloids of ergot. Part III. Ergine, a new base obtained by the degradation of ergotoxine and ergotinine.” By S. SMITH and G. M. TIMMIS.
- “The equilibria between mixtures of carbon monoxide and carbon dioxide at various pressures in contact with steels of different carbon concentrations at temperatures ranging from 750° to 1150°.” By A. BRAMLEY and H. D. LORD.
- “Some notes on the iron-carbon equilibrium diagram.” By A. BRAMLEY.
- “Azo-sulphites of dis-azonaphthols and their fission into the corresponding amino-azonaphthols.” By A. T. KING.
- “Sulphites of azo-compounds containing two hydroxy-groups.” By A. T. KING.
- “The constitution of cryptopine hydrochloride.” By R. D. HAWORTH and T. W. SIMPSON.
- “Some derivatives of *d*-nor- $\psi$ -ephedrine.” By (Miss) J. M. STRATTON and F. J. WILSON.
- “The primary dissociation constants of the methylcyclohexane-1:1-diacetic acids. An anomaly between the physical and chemical tests of the valency deflexion hypothesis.” By D. J. G. IVES, R. P. LINSTAD, and H. L. RILEY.

- “Surface tension determinations of malonic esters, and the constitutive nature of the parachor.” By A. B. BECK, A. K. MACBETH, and S. W. PENNYCUICK.
- “The action of phosphorus pentachloride on acetanilide.” By O. G. BACKEBERG.
- “The conversion of *l*-phenylmethylcarbinol into dextrorotatory and levorotatory  $\alpha$ -chloroethylbenzene.” By A. H. J. HOUSSA and H. PHILLIPS.
- “Apparatus for quantitative catalytic reduction.” By H. PAGET and W. SOLOMON.
- “Separation of normal long-chain hydrocarbons by fractional distillation in high vacuum.” By (MISS) H. S. GILCHRIST and (MISS) B. KARLIK.
- “Note on a reaction of fluorene.” By A. J. HALLWOOD and R. ROBINSON.
- “The nitration of *o*-benzylvanillin.” By P. V. NAIR and R. ROBINSON.
- “Some further examples of kationoid reactivity of aromatic compounds. Part I.” By W. BRADLEY and R. ROBINSON.
- “Synthesis of derivatives of myristicin.” By W. BAKER, (MISS) L. V. MONTGOMERY, and (MISS) H. A. SMITH.
- “*Cannabis indica* resin. Part III. The constitution of cannabinol.” By R. S. CAHN.
- “Strychnine and brucine. Part XIX. Reduction of strychnine methosulphate by means of sodium amalgam in the presence of carbon dioxide.” By (the late) W. H. PERKIN, jun., R. ROBINSON, and J. C. SMITH.
- “Rhenium oxychloride.” By H. V. A. BRISCOE, P. L. ROBINSON, and A. J. RUDGE.

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## ADDITIONS TO THE LIBRARY.

### 1. *Donations.*

BOLAM, THOMAS ROBERT. The Donnan equilibria and their application to chemical, physiological and technical processes. London 1932. pp. viii + 154. ill. 9s. net. (*Recd.* 15/2/32.)

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

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE. Chemistry at the centenary (1931) meeting. Cambridge 1932. pp. xii + 272. ill. *Reference.* 7s. 6d. net.

From the Organising Committee of the Chemistry Section.

HARDEN, ARTHUR. Alcoholic fermentation. 4th edition. (Monographs on Biochemistry.) London 1932. pp. viii + 244. 15s. net. (*Recd.* 3/2/32.)

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

KAST, HERMANN, and METZ, LUDWIG. *Chemische Untersuchung der Spreng- und Zündstoffe*. Braunschweig 1931. pp. x + 583. ill. *M.* 40. (*Recd.* 5/2/32.) From Mr. A. Marshall.

PAINT, VARNISH, LACQUER, ENAMEL and COLOUR MANUFACTURE. Vol. I, etc. London 1931 +. (*Reference.*) 10s. per annum.

From the Publishers : Messrs. Leonard Hill.

SOUTHCOMBE, J. E. *Lubricating oil tests and their significance*. London 1932. pp. 69. ill. 2s. 6d. net. (*Recd.* 8/2/32.)

From the Publishers : Messrs. H. Wells Oil Co.

## II. *By Purchase.*

KAUSCH, OSKAR. *Die aktive Kohle, ihre Herstellung und Verwendung*. *Ergänzungsband*. Halle (Saale) 1932. pp. viii + 200. ill. *M.* 17. (*Recd.* 21/1/32.)

## III. *Pamphlets.*

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research*. Bulletin No. 51. *A soil survey of the swamps of the Lower Murray River*. By J. K. TAYLOR and HARRY GORDON POOLE. Melbourne 1931. pp. 43. ill.

—— ——— Bulletin No. 52. *The soils of Australia in relation to vegetation and climate*. By JAMES ARTHUR PRESCOTT. Melbourne 1931. pp. 82. ill.

IMPERIAL INSTITUTE. *The mineral industry of the British Empire and foreign countries*. China-clay (kaolin). London 1931. pp. 100.

INSTITUTE OF CHEMISTRY OF GREAT BRITAIN AND IRELAND. *Recent advances in the fermentation industries*. By JOHN VARGAS EYRE. Streatfeild Memorial Lecture, 1931. London 1932. pp. 20.

MINES DEPARTMENT. *Safety in Mines Research Board*. Paper No. 73. *The combustion of coal dust*. By A. L. GODBERT and RICHARD VERNON WHEELER. London 1932. pp. 21. ill.

NAG, NAGENDRA CHANDRA, and BANERJEE, H. N. *The proteolytic enzymes of Carica Papaya*. I and II. (From the *Trans. Bose Research Inst., Calcutta*, 1930-31.)

—— ——— *The proteolytic enzyme in the seeds of Phaseolus Mungo, L.* (From the *Trans. Bose Research Inst., Calcutta*, 1930-31.)

SCHLAPFER, P., and BRUNNER, M. *Polymerisation und thermischer Zerfall des Acetylens*. (From the *Ber. 10 Int. Kong. Acetylen*, 1930.) pp. 25.

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. *Building Research*. Special Report No. 17. *The estimation of free calcium oxide and hydroxide*. By B. BAKEWELL and GEORGE EDWARD BESSEY. London 1931. pp. iv + 21.



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

Ordinary Scientific Meeting, Thursday, March 3rd, 1932, at 8 p.m.,  
Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., Past-President, in  
the Chair.

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

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

\*H. B. BAKER, \*Sir WILLIAM J. POPE.

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

\*G. T. MORGAN, \*T. SLATER PRICE.

*Treasurer* : EMILE MOND.

*Ordinary Members of Council* :

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

\*A. J. ALLMAND, \*F. P. DUNN, †E. H. FARMER, †G. I.  
FINCH, †L. F. GILBERT, †E. E. TURNER.

*Country Members* (*i.e.* those resident beyond a radius of fifty  
miles from Charing Cross) (4 vacancies) :

†J. B. FIRTH (Nottingham), \*†F. E. FRANCIS (Bristol),  
\*I. M. HEILBRON (Liverpool), †H. H. HODGSON (Brad-  
ford), †H. S. PATTERSON (Leeds), †J. REILLY (Cork),  
†E. H. RODD (Timperley).

Dr. Harold King and Mr. W. M. Colles were appointed Scrutators  
to assist in the counting of votes recorded in the election of the  
Ordinary Members of Council (Town and Country).

\* Nominated by Council under Bye-Law VI.

† Nominated by Fellows under Bye-Law VI.

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

- Ivan Walter Henry Harris, B.Sc., A.R.C.S., 68, Finborough Road, S.W. 10.  
 Harold Clifford Higinbotham, 73, Redcliff Gardens, S.W. 10.  
 Walter Horridge, M.C., Heather Lea, Bury.  
 Alexander Lang Morrison, B.Sc., D.Phil., 27, Seabank Road, Wallasey, Cheshire.  
 Sydney Diggary Nicholas, B.A., The Chemistry Department, The University, Edgbaston, Birmingham.

The following papers were read :

- “The properties of nicotine and its derivatives. Part IV. Refractive dispersion. Part V. Magnetic rotatory dispersion.”  
 By T. M. LOWRY and C. B. ALLSOPP.  
 “The properties of nicotine and its derivatives. Part VI. Electrical conductivities. Part VII. Electrometric titrations.”  
 By T. M. LOWRY and W. V. LLOYD.  
 “The reactions of  $\omega$ -substituted acetophenone derivatives. Part II. The mechanism of the interaction of  $\omega$ -halogeno-acetophenones with primary and tertiary bases.” By J. W. BAKER.  
 “The salt-forming characteristics of doubly and singly linked elements of the oxygen group. Part III. The carbonyl group in ethyl benzoate.” By J. W. BAKER and L. HEY.  
 “Contributions to the chemistry of selenium. Part I. The reaction of selenium dioxide with ketones.” By H. L. RILEY and J. F. MORLEY.  
 “Contributions to the chemistry of selenium. Part II. The reaction of selenium dioxide with aldehydes.” By H. L. RILEY and N. A. C. FRIEND.

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### THIRD PEDLER LECTURE.

Extra Meeting held at the Institution of Mechanical Engineers on Thursday, March 10th, 1932, at 5.30 p.m. In the absence of the President, through illness, the Chair was occupied by Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., Past-President.

Professor Dr. L. Ruzicka, of Zürich, delivered the Third Pedler Lecture, entitled “The Life and Work of Otto Wallach.” At the conclusion of the Lecture, a vote of thanks to Professor Ruzicka was proposed by Professor H. E. Armstrong. This was seconded by Professor R. Robinson, and carried with acclamation, Professor Ruzicka making brief acknowledgment.

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### **ORDINARY SCIENTIFIC MEETING, THURSDAY, MAY 19TH, 1932, AT 8 P.M.**

It has been found necessary to postpone the Discussion on “Orientation in Addition Reactions” announced for this meeting,

but its place will be taken by an informal Discussion on "Some Aspects of Asymmetric Synthesis," which will be opened by Professor A. McKenzie, M.A., D.Sc., F.R.S.

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#### INSTITUTE OF FUEL.

A meeting of the Institute of Fuel will be held in the Chemical Society's Rooms on Wednesday, May 11th, at 6 p.m., when Professor Ernst Berl, of Darmstadt, will present a paper entitled "The Artificial Formation of Bituminous Coal and Mineral Oil Hydrocarbons."

The paper is an extension of the one written by Professor Berl for the Third International Coal Conference at Pittsburgh in November last, and brings the subject of his research work more up to date. It is claimed that the experiments at Darmstadt indicate that cellulose can be the parent substance not only of bituminous coal, but also of mineral oil hydrocarbons. Professor Berl will show samples of the coal substances he has actually produced from cellulose.

Fellows of the Chemical Society are invited to attend the meeting, and to take part in the discussion. Advance copies of the paper will be available about a fortnight before the meeting, and will be obtainable from Mr. P. C. Pope, Secretary, The Institute of Fuel, 53, Victoria Street, S.W. 1.

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#### RESEARCH FUND COMMITTEE.

A meeting of the Research Fund Committee will be held in June next. Applications for grants, to be made on forms obtainable from the Assistant Secretary, must be received on or before Wednesday, June 1st, 1932. Applications from Fellows will receive prior consideration.

All persons who received grants in June 1931, or in June of any previous year, whose accounts have not been declared closed by the Council are reminded that reports must be returned by June 1st.

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

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List of Papers, or Abstracts thereof, received between February 18th and March 10th, 1932. (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 mercuriation of pyridine.” By N. P. McCLELAND and R. H. WILSON.
- “Reduction products of certain cyclic methyl imines. Part II.” By J. GRAYMORE.
- “The mechanism of some addition reactions of nitroethylenes.” By B. FLÜRSCHHEIM and E. L. HOLMES.
- “The effect of a basic magnesium carbonate on a copper surface.” By T. HAGYARD.
- “The nitration of the halogenoethylenes.” By R. B. BURROWS and L. HUNTER.
- “The photodecomposition of chlorine dioxide solutions.” By E. J. BOWEN and W. M. CHEUNG.
- “ $\beta$ -Pseudognoscopine.” By M. GREENWOOD and R. ROBINSON.
- “Compound formation between nitrobenzenes.” By J. P. WIBAUT.
- “Constitutional factors controlling prototropic changes in carbonyl compounds. Part II. Acid and base catalysis in the bromination of halogenated acetones.” By H. B. WATSON and E. D. YATES.
- “The influence of solvents and of other factors on the rotation of optically active compounds. Part XXIX. The rotation dispersion of camphor, camphoroxime, *is*nitrosocamphor, and oxymethylenecamphor.” By T. S. PATTERSON, E. F. M. DUNN (Mrs. R. C. HAMILTON), C. BUCHANAN, and J. D. LOUDON.
- “The influence of solvents and of other factors on the rotation of optically active compounds. Part XXX. The rotation dispersion of various derivatives of camphor.” By T. S. PATTERSON and J. D. LOUDON.
- “Experiments on the synthesis of rotenone and its derivatives. Part II. The synthesis of rissic acid and of derric acid, and the constitution of rotenone, deguelin, and tephrosin.” By A. ROBERTSON.
- “Lichen acids. Part II. The constitution of evernic acid and the synthesis of methyl evernate.” By A. ROBERTSON and R. J. STEPHENSON.
- “Reactions of nitrosophenols. Part I. Diazomethane. A new criterion for nitrosophenols.” By H. H. HODGSON.
- “The decomposition of lead nitrate in molten potassium nitrate.” By K. LAYBOURN and W. M. MADGIN.

- “A ring homologue of tropacocaine.” By B. K. BLOUNT and R. ROBINSON.
- “Experiments on the synthesis of physostigmine (eserine). Part VI. A synthesis of *dl*-esermethole methopicate.” By F. E. KING and R. ROBINSON.
- “Synthetical experiments bearing on the problem of the nature of betanin and related nitrogenous anthocyanins. Part I.” By (Mrs.) A. M. ROBINSON and R. ROBINSON.
- “The refractivities of ovalbumin and serum albumin in aqueous solutions of variable concentration and  $p_H$ .” By D. E. WOODS and E. B. R. PRIDEAUX.
- “The composition of the compounds of picryl chloride and of *s*-trinitrobenzene with benzene.” By D. L. HAMMICK, G. M. HILLS, and J. HOWARD.
- “Note on bromopiperitone.” By G. I. DAVIES and J. L. SIMONSEN.
- “A synthesis of *cis*- and *trans-dl*-1:1-dimethyl-2- $\gamma$ -ketobutylcyclopropane-3-carboxylic acids.” By J. OWEN and J. L. SIMONSEN.
- “Salt catalysis in the Schotten-Baumann reaction.” By H. HENSTOCK.
- “Research on amines. Part V.” By H. J. S. KING.
- “The influence of *Bz*-substituents upon some reactions of the anthrones. Part I.” By E. DE B. BARNETT and C. L. HEWETT.

FORMS OF RECOMMENDATION FOR FELLOWSHIP. THE  
BALLOT WILL BE HELD AT THE ORDINARY  
SCIENTIFIC MEETING ON THURSDAY, MAY 5th, 1932.

CLIFF, CLARENCE HALSE, “Culwulla Chambers,” Castlereagh Street, Sydney. British Subject. Dentist. Specially interested in chemistry connected with dental practice. Intend specialising in dental *Materia Medica*. The literature and *Journals* of the Chemical Society would be a great assistance in carrying out my work. (*Signed by*) G. Spurge, Edmond Samuels, Richard W. Challinor.

DUNCAN, DONALD RUSSELL, 84, Haydon Park Road, Wimbledon, S.W. 19. British. Chemical Research Worker. Abstractor for B.C.A. B.Sc. (London). Research work published in *J.C.S.* (in collaboration with Mr. H. W. Cremer). (Read paper on “Nitrogen Tri-iodide” before the Society, Dec. 4, 1930.) “Nitrogen Tri-iodide” (1930, 2750). “A Study of the Polyhalides. Part I. Methods of Preparation” (1931, 1857); “Part II. Physical Properties” (1931, 2243). (*Signed by*) Samuel Smiles, L. A. Warren, L. J. Burrage.

HARRIS, IVAN WALTER HENRY, 68, Finborough Road, S.W. 10. British. Research Student. B.Sc. (Lond.); A.R.C.S. (Royal College of Science) (2nd Class Hons.). “Bromine Hydrate” recently accepted for publication. (*Signed by*) H. B. Baker, H. L. Riley, G. H. Cheesman.

HIGGINS, ERIC, Punchetts, Tervin Wood, Hertfordshire. British. Technical Director, United Water Softeners, Ltd. Ph.D., Columbia University, New York City. Worked out the Wimmer-Higgins Fathardening process and established manufacture at Brake Oldenbury (still operating). Discovered processes for manufacture of 2:3-hydroxynaphthoic acid and its arylides (Brenthol AS), and established manufacture in England (British Synthetics, Ltd.). Worked out commercial manufacture of "natural" zeolites and established manufacture in England (United Water Softeners, Ltd.). Commercial agreements have prohibited publications for the most part. This is now not the case. (*Signed by*) W. R. Ormandy, J. W. Blagden, J. P. O'Callaghan, Arthur E. Everest, Francis V. Darbishire, E. V. Evans.

HIGINBOTHAM, HAROLD CLIFFORD, 73, Redcliffe Gardens, S.W. 10. British. Chemist and Druggist. Member of the Pharmaceutical Society (London). I desire to receive the publications of the Society and to attend the meetings and use the Library. (*Signed by*) J. C. Crocker, F. H. Lowe, C. Dorée, D. W. E. Barker.

HORRIDGE, Capt. WALTER, M.C., Heather Lea, Bury, Lancashire. British. Director, Horridge & Cornall, Ltd. (Calico Printers). Student, Chemistry and Chemical Technology, College of Technology, Manchester, Oct. 1905-July 1908. (*Signed by*) Jocelyn Thorpe, Cecil J. T. Cronshaw, John Thomas, E. H. Rodd, R. Brightman, W. A. Silvester, P. Chorley.

ISHIWATA, SABURO, Pharmaceutical Institute, Tokyo Imperial University, Tokyo, Japan. Japanese. Assistant of Pharmaceutical Institute, T.I.U. Dr. of Pharmacy (Tokio Imperial University). (*Signed by*) Yasuhiko Asahina, Heisaburo Kondo, Shigehiko Sugawara.

IYER, VELUR VENKITASESHARIYER SIVARAMA, Dyson Perrins Laboratory, South Parks Road, Oxford. Indian. Research Student. M.A. (Calcutta). Three years' research with Dr. J. J. Sudborough in the Indian Institute of Science, Bangalore (1922-1925). Six years' teaching experience as Asst. Prof. of Chemistry, Maharaja's College, Emakulam, S. India. (*Signed by*) Robert Robinson, D. Ll. Hammick, P. V. Nair.

LEWIS, JOHN BUTLER DAY, The Square, Riverhead, Kent. British. Pharmacist and Technical Chemist. M.P.S., and Assistant to Francis E. Corringham. (*Signed by*) Francis E. Corringham, Frederick Hayter, William H. Ballantyne.

LEYSHON, ELUNED, 28, Windmill Terrace, St. Thomas, Swansea, Glam. British. Science Mistress. General Hons. B.Sc. (Physics, Physiology, Chemistry), 2nd Class 1930, Hons. Chem., 1st Class, 1931 (University of London). Student at University College, London, 1927-1931. Chemistry and General Science Mistress at Glanmôr Secondary Girls' School, Swansea, 1931-to date. (*Signed by*) L. F. Gilbert, O. L. Brady, Henry Terrey.

MITCHELL, STOTHERD, Rosebank, Bishopbriggs, Glasgow. British. Carnegie Teaching Fellow, University of Glasgow. B.Sc., Ph.D., D.Sc. (Glasgow). University Assistant, 1923-1927, and subsequently a Carnegie Teaching Fellow. *J. Biol. Chem.*, 1929, **82**, 727; *J.C.S.*, 1925, 208; 1926, 1333; 1928, 3258; 1930, 1829. (*Signed by*) G. G. Henderson, R. Wright, David T. Gibson.

MORRISON, ALEXANDER LANG, 27, Seabank Road, Wallasey, Cheshire. British. Research Student. B.Sc. with Hons. in Chemistry (Glasgow); D.Phil. (Frankfurt a. Main). Two years at Glasgow University as Demonstrator and Research Student. One and a half years at Frankfurt a. Main University as Research Student. Published work in *Zeit. für physiol. Chemie*, **198**, 165. At present at Liverpool University working on Ergosterol. (*Signed by*) William Doran, R. A. Morton, I. M. Heilbron.

MUKHERJEE, GOURIE KANTA, Gourepore Paint Works, Jenson & Nicholson (India), Ltd., P.O. Garifa, Dist. 24, Pergannas (Bengal), India. Bengali, Brahmin; Indian, Hindu. Chief Chemist. M.Sc. (Calcutta University). Research Scholar (Calcutta University). Temporary Lecturer in Chemistry, Govt. College, Hoogly (Bengal). Chief Chemist and Paint Foreman, Napier Paint Works, Calcutta. Asst. Chemist, J. & R. Hutchison, Calcutta. (*Signed by*) J. N. Mukherjee, P. C. Rây, J. C. Bardhan.

NICHOLAS, SYDNEY DIGGARY, The Chemistry Dept., The University, Edgbaston, Birmingham. British. Lecturer in Chemistry, Birmingham University. B.A. (Oxon.). Various papers published in the *J.C.S.* and other journals in conjunction with C. E. Wood and E. A. Cooper, respectively. (*Signed by*) E. L. Hirst, E. A. Cooper, C. E. Wood.

RAPER, ALAN RICHARDSON, Mond Nickel Co., Ltd., Bashley Road, N.W. 10. British. Research Chemist. M.A., Cambridge University. "Investigation on Equilibrium Diagram of the Copper-Tin Alloys," published in *J. Inst. Metals*, 1927, 2, 217. "Chemical and Electrochemical Research on Platinum Metals," not published. (*Signed by*) H. McCombie, J. B. Whitworth, J. Dexter.

ROBINSON, THOMAS CROSS, 85, Hillview Gardens, Hendon, N.W. 4. British. Registered Pharmacist. Student at Accrington Grammar and Tech. Schools, fourth and fifth years' Chemical Trades Courses, Organic, Inorganic, and Physical Chemistry. Blackburn Technical College, Advanced Chemistry, Physics, and Botany. Manchester College of Pharmacy, 1921-1922. At present engaged in control of chemical and galenical manufacture. (*Signed by*) Arthur Mortimer, J. Stuart Hills, F. W. Gamble.

SHEPHERDSON, ARNOLD, 19, Dawlish Road, Chorlton-cum-Hardy, Manchester. British. Assistant Research Manager in Imperial Chemical Industries, Ltd. (Dyestuffs Group). B.Sc. (Leeds). Seventeen years' experience in industrial research work. (*Signed by*) E. H. Rodd, P. Chorley, R. Brightman.

THOMSON, GEORGE, 114, Forrest Street, Airdrie, Lanarkshire. British. Assistant in Physical Chemistry, Glasgow University. B.Sc. (Glasgow); Ph.D. (Glasgow). Temporary Assistant in Organic Chemistry, 1926-1929. Assistant in Physical Chemistry since 1929. *J.C.S.*, 1929, 1895. (*Signed by*) G. G. Henderson, R. Wright, T. S. Stevens.

TSUDA, KYOSUKE, Pharmaceutical Institute, Tokyo Imperial University, Tokyo, Japan. Japanese. Assistant of Pharmaceutical Inst., Tokyo Imperial University. Dr. of Pharmacy (Tokyo Imperial University). (*Signed by*) Yasuhiko Asahina, Heisaburo Kondo, Shigehiko Sugasawa.

VINCENT, HERBERT CUBITT GOSTLING, 54, Owlstone Road, Cambridge, England. British. Geologist, at present Research Student in Organic Chemistry, Cambridge University. B.A., Hons. (Cantab); M.A. (Cantab.); F.G.S. 1st Class Hons. Nat. Sci. Trip., Pt. 1, 1921. Wilshire University Prize. 1st Class Hons. Nat. Sci. Trip., Pt. 2, 1923. Director of Science Studies, Fitz House, 1923-1924. Research in geochemistry. Demonstrating in Dept. of Mineralogy, Cambridge, 1923-1924. (*Signed by*) W. J. Pope, W. H. Mills, A. Hutchinson.

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

MUSANTE, AUGUSTINE FRANCIS STEPHEN, Rose Tree Road, Media, Pennsylvania, U.S.A. (Business address: Sun Oil Company Research Laboratory, Norwood, Pennsylvania, U.S.A.). American. Research Chemist. A.B., M.A., Swarthmore College, Swarthmore, Pennsylvania. Research investigations in hydrocarbons. (*Signed by*) Gellert Alleman, P. T. Sharples.

SHEPARD, NORMAN ARTHUR, 154, Casterton Avenue, Akron, Ohio, U.S.A. United States citizen. Director of Chemical Research, Firestone Tire & Rubber Company, Akron, Ohio. Ph.B. (Yale); Ph.D. (Yale), 1913. Instructor in Chemistry, Yale, 1913-1917. Assistant Professor, Yale, 1917-1919. Director of Chemical Research, Firestone Tire & Rubber Company, 1919-to date. (*Signed by*) Marston T. Bogert.

VAUGHN, THOMAS HUNT, University of Notre Dame, Box 130, Notre Dame, Indiana, U.S.A. American. Graduate Student in Chemistry. B.S., University of Notre Dame. Joint author of following papers: "A Comparison of Halogeno- and Oxy-acids," *Proc. Ind. Acad. Sci.*, 1929, **39**, 153-54; "Determination of Organic Halogen by the Liquid Ammonia-Sodium Method," *Ind. and Eng. Chem., Anal. Ed.*, **3**, 274 (1931); "The Reaction of Boron Fluoride with Alcohols and Glycols," *Proc. Ind. Acad. Sci.*, 1930, **40**, 203; "A Condenser for Low-boiling Substances," *J. Chem. Educ.*, 1931, **7**, 2433. (*Signed by*) F. E. Cislak, Jocelyn Thorpe.

VENKATARAMAN, KRISHNASAMI, Forman Christian College, Lahore. Indian. Professor of Organic Chemistry. M.A. (Madras); M.Sc.Tech., Ph.D. (Manchester). Publications: "Bixin," *J. Ind. Inst. of Sci.*, 1923; "The Behaviour of Different Starches towards Dyestuffs and Iodine," *J. Soc. Dyers and Col.*, April and Nov. 1926; "Artificial Silk," *J. Ind. Text.*, Feb., March, April, June, July 1929; "Dicinnamoylmethane," *J. Ind. Chem. Soc.*, 1930; *J.C.S.*, 1926, 2344; 1929, 61, 2219; 1931, 1165, 1541, 2376, 2591. (*Signed by*) N. A. Yajnik, S. S. Bhatnagar, Jocelyn Thorpe.

WÖHLER, LOTHAR, Darmstadt, Herdwey 56. Hessen (Deutschland). ordentl. Professor der Chemie an der Technischen Hochschule Darmstadt. Dr. phil. nat. Univers. Heidelberg n.-. Vorstand d. chem. Instituts. Viele Anhandlg. über anorgan. n.-. physik. Chemie in den Ber. d. d. chem. Ges., *Ztschr. Elektroch.*, *Z. anorg. Chem.*, *Z. physik. Chem.*, *Z. f. Kolloidchemie und Beiheften*, *Z. angew. Chem.*, *Chem. Ztg.*, *Ztschr. f. Schiess. u. Sprengstoffwesen u. a. in den Jahren 1896 bis 1931*. *Lehrb. f. anorgan. Chemie*, Leipzig, 1913. (*Signed by*) F. G. Donnan.

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### I. Donations.

EGYPTIAN GOVERNMENT. *Central Narcotics Intelligence Bureau*. Annual report for the year 1930 etc. Cairo 1931+. (*Reference.*)

From the Director.

GAUDIN, A. M. *Flotation*. New York 1932. pp. xvi + 552. ill. 36s. net. (*Recd.* 20/2/32.)

From the Publishers: The McGraw-Hill Publishing Co.

ROSSMAN, JOSEPH. *The law of patents for chemists*. Washington, D.C. 1932. pp. x + 304. \$3.50. (*Recd.* 26/2/32.)

From the Publishers: The Inventors Publishing Co.

SIEMENS-KONZERN. *Wissenschaftliche Veröffentlichungen*. Vol. VI, part ii, etc. Berlin 1928+. (*Reference.*)

From the Bureau of Chemical Abstracts.

TOKYO. *Cellulose Institute*. Cellulose industry. Vol. V, etc. Tokyo 1929+. (*Reference.*) [In Japanese. English abstracts.]

From the Bureau of Chemical Abstracts.



PROCEEDINGS  
OF THE  
CHEMICAL SOCIETY.

ANNIVERSARY DINNER, MARCH 18TH, 1932.

The Anniversary Dinner was held at the Grosvenor Restaurant, Gordon Street, Glasgow, on Friday, March 18th, 1932, at 7.30 p.m. The President, Professor G. G. HENDERSON, M.A., D.Sc., F.R.S., was in the Chair, the number present being 186. Among the guests were Lord Weir of Eastwood, Sir Thomas Kelly (Lord Provost of Glasgow), Principal Sir Thomas Holland (Edinburgh University), Principal Sir James Irvine (St. Andrews University), Principal Robert S. Rait (Glasgow University), Dr. E. F. Armstrong (Chairman of Council, The Association of British Chemical Manufacturers), Sir Robert Bruce, Mr. W. A. S. Calder (Past-President, Institution of Chemical Engineers), Dr. G. C. Clayton (President, Institute of Chemistry), Mr. Hugh C. Cree (President, Glasgow Chamber of Commerce), Mrs. McCready, and Professor G. T. Morgan (President, Society of Chemical Industry).

The following Toasts were proposed :

1. The King.
  2. The Queen, the Prince of Wales, and the other Members of the Royal Family.
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By the Right Honourable LORD WEIR, D.L., LL.D. :

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

By Professor H. E. ARMSTRONG, LL.D., D.Sc., F.R.S., Past-President :

4. "The Lord Provost and the Corporation of the City of Glasgow," coupled with the name of Sir THOMAS KELLY.

By Sir WILLIAM J. POPE, K.B.E., D.Sc., F.R.S., Past-President :

5. "The University of Glasgow," coupled with the name of Principal R. S. RAIT, C.B.E., D.L., LL.D.

By Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., Past-President :

6. "The Guests," coupled with the name of Principal SIR THOMAS HOLLAND, K.C.S.I., K.C.I.E., F.R.S.
-

Ordinary Scientific Meeting, Thursday, April 21st, 1932, at 8 p.m., Professor G. G. HENDERSON, M.A., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death, on April 4th, 1932, of Professor Dr. Wilhelm Ostwald, Honorary Fellow, and of the following Fellows :

	Elected.	Died.
Thomas Aspinall .....	June 20th, 1903.	Jan. 29th, 1932.
Arthur Edward Barclay .....	Dec. 2nd, 1880.	April 7th, 1932.
Harold William Bausor .....	Dec. 4th, 1919.	Jan. 29th, 1932.
Thomas Bolas .....	Mar. 18th, 1869.	Mar. 1st, 1932.
Francis Vernon Darbishire .....	Feb. 18th, 1892.	Mar. 15th, 1932.
Henry Chapman Jones .....	May 4th, 1876.	Mar. 7th, 1932.
John Edmund Legg .....	May 16th, 1889.	Mar. 7th, 1932.
Ernest Whitworth Rowley .....	Feb. 17th, 1921.	Feb. 6th, 1932.
Charles Spackman.....	Dec. 15th, 1892.	Mar. 11th, 1932.
Alfred Collett Young .....	Feb. 5th, 1885.	April 6th, 1932.

The PRESIDENT stated that the Council had received that afternoon a presentation copy of the Perkin Memorial Volume (bound in morocco) from the Authors, to whom the Council had conveyed its thanks for the valuable gift. He further stated that the thanks of the Council had also been conveyed to Mr. André Bracher and to Mr. Conrad W. Lockyer for presenting volumes of the publications of the Society.

Messrs. Charles de Worms and Michael Waloff were formally admitted Fellows of the Chemical Society.

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

Janet Catherine Bell, B.A., Eskdale, Hillfoot Road, Woolton, Liverpool.

Thomas Robert Bolam, D.Sc., 126, Blackford Avenue, Edinburgh.

Bernard Cavenagh, M.A., D.Sc., F.I.C., 311, St. Kilda Street, Brighton, S. 5, Melbourne, Australia.

Alec Bramley Densham, B.A., 47, St. George's Square, S.W.1.

Reginald Haydn Hopkins, D.Sc., F.I.C., The University, Edgbaston, Birmingham.

Frederick Oliver Howitt, M.Sc., A.I.C., 68, Seymour Road, West Bridgford, Nottingham.

Alexander Lawson, Ph.D., Chemistry Department, University College, Southampton.

Guy Frederic Marrian, D.Sc., 65, Fitzjohn's Avenue, N.W. 3.

John Henry Martin, B.Sc., A.R.C.S., 29, Ormeley Road, Balham, S.W. 12.

Manmatha Nath Niyogi, M.Sc., 8, Duke Street, E.C. 3.

Charles Ockrent, Ph.D., 4, Buccleuch Terrace, Edinburgh.

Derek Richter, B.A., B.Sc., D.Phil, 11, Frenchay Road, Oxford.

Reginald John Rosser, B.Sc., D.Phil., Endellion, Wilkins Road, Cowley, Oxford.

James Sandilands, F.I.C., 102, Westholmes Gardens, Musselburgh.

Robert Henry Slater, Ph.D., 4, Kingsburgh Road, Murrayfield, Edinburgh.

Henry William Thompson, Ph.D., 23, Beech Croft Road, Oxford.

Alfred Thomas Ward, M.Sc., 9, Regent Place, Rugby.

Foster Neville Woodward, B.Sc., 20, Staplands Road, Broad Green, Liverpool.

A Form of Recommendation for Fellowship has been authorised by the Council for presentation to ballot under Bye-Law I (2) in favour of :

August Anton Kunzenbacher, M.A., 59, Leslie Place, Irvington, N.J., U.S.A.

The following papers were read :

"A new reaction of certain diazosulphonates derived from  $\beta$ -naphthol-1-sulphonic acid. Part X. Preparation of phthalazine derivatives from 4-aminoazobenzene and 4'-nitro-4-aminoazobenzene." By F. M. ROWE and F. S. TOMLINSON.

"The equilibria between mixtures of carbon monoxide and carbon dioxide at various pressures in contact with steels of different carbon concentrations at temperatures ranging from 750° to 1150°." By A. BRAMLEY and H. D. LORD.

"Some notes on the iron-carbon equilibrium diagram." By A. BRAMLEY.

"*Cannabis indica* resin. Part III. The constitution of cannabinol." By R. S. CAHN.

The following paper was taken as read :

"The parachor and chemical constitution. Part XVIII. Additive compounds of boron trifluoride." By S. SUGDEN and M. WALOFF.

Ordinary Scientific Meeting, Thursday, May 19th, 1932, at 8 p.m.

The Discussion on

"SOME ASPECTS OF ASYMMETRIC SYNTHESIS"

to be opened by Professor A. McKenzie, F.R.S., will be based on the following papers which have appeared in the *Biochemische Zeitschrift* :

1. "Asymmetric induction. Part I. Asymmetric synthesis and induction."

A. MCKENZIE and (Miss) A. G. MITCHELL (1929, 208, p. 456).

2. "Asymmetric synthesis. Part II. Influence of solvent on the optical activity of the menthyl and bornyl esters by  $\alpha$ -keto-acids."

A. MCKENZIE and (Miss) A. G. MITCHELL (1929, 208, p. 271).

3. "The existence of optically active cinnamic acid."

A. MCKENZIE and (Miss) A. G. MITCHELL (1930, 221, p. 1).

4. "The mutarotation of optically active esters of  $\alpha$ -keto-acids."  
A. MCKENZIE and (Miss) A. G. MITCHELL (1930, **224**, p. 242).
5. "Asymmetric syntheses. Part IX. Preparation of optically active substituted glycollic acids from *l*-menthyl and *l*-bornyl- $\alpha$ -naphthoylformates."  
A. MCKENZIE and P. D. RITCHIE (1931, **231**, p. 412).
6. "Asymmetric syntheses. Part X. Optically active substituted glycollic acids."  
A. MCKENZIE and P. D. RITCHIE (1931, **237**, p. 1).

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#### RESEARCH FUND COMMITTEE.

A meeting of the Research Fund Committee will be held in June next. Applications for grants, to be made on forms obtainable from the Assistant Secretary, must be received on or before Wednesday, June 1st, 1932. Applications from Fellows will receive prior consideration.

All persons who received grants in June 1931, or in June of any previous year, whose accounts have not been declared closed by the Council are reminded that reports must be returned by June 1st.

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

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#### GENERAL DISCUSSION ON COLLOID SCIENCE APPLIED TO BIOLOGY.

In future the General Discussion on Colloid Science Applied to Biology published by the Faraday Society will be obtainable by Fellows of the Chemical Society at the special price of 8s. 4d. (postage 5d. extra). Application should be made to Messrs. Gurney & Jackson, 33, Paternoster Row, E.C. 4.

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List of Papers, or Abstracts thereof, received between March 10th and April 21st, 1932. (This List does not include the titles of papers, or abstracts thereof, which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

- "Conversion of hydroaromatic into aromatic compounds. Part V. The influence of the 2-methyl-group in 2-methyl-5-phenyldi-hydroresorcinol." By L. E. HINKEL and J. F. J. DIPPY.

- “The preparation, relationships, and structures of a number of phosphates of bivalent metals. By H. BASSETT and W. L. BEDWELL.
- “Fortuitous empirical relationships in chemical kinetics.” By D. T. LEWIS and L. J. HUDLESTON.
- “Polycyclic aromatic hydrocarbons. Part X. 1 : 2 : 7 : 8-Dibenzanthracene.” By J. W. COOK.
- “The constituents of guaiacum resin. Part I. Synthesis of pyroguaiacin methyl ether.” By R. D. HAWORTH and C. R. MAVIN.
- “Exponential analysis applied to the asymmetric hydrolysis of some  $\beta$ -glucosides with emulsin.” By S. MITCHELL and I. MACARTHUR.
- “A synthesis of diphenyl.” By I. R. SHERWOOD and W. F. SHORT.
- “The conductivity of electrolytes in ethyl cyanoacetate and *o*-toluonitrile.” By J. C. PHILIP and P. RANGARAMANUJAM.
- “Studies in solvent action. Part III. Rotatory powers of *l*-menthyl methyl naphthalate in mixtures of alcohols with benzene or hexane.” By H. G. RULE and A. McLEAN.
- “Studies in solvent action. Part IV. Optical rotation of *l*-menthyl hydrogen naphthalate in polar and non-polar solvents.” By H. G. RULE and A. McLEAN.
- “Thermionic emission during the catalytic combination of carbonic oxide-oxygen mixtures on a platinum surface.” By B. W. BRADFORD.
- “A solid polybromide of potassium.” By I. W. H. HARRIS.
- “The measurement of electron displacements. Part I. The quantitative determination of inductive and electromeric effects.” By F. R. GOSS.
- “The orienting influence of free and bound ionic charges on attached simple or conjugated unsaturated systems. Part IV. Nitration of some phenyl alkyl sulphones.” By W. A. BALDWIN and R. ROBINSON.
- “Pyridine arsenicals.” By N. P. McCLELAND and R. H. WILSON.
- “The structure of the isocyanides. Part II.” By R. G. A. NEW and L. E. SUTTON.
- “The system cupric selenate-water-selenic acid at 25°.” By G. B. MACALPINE and L. A. SAYCE.
- “Nitrous acid as a nitrating agent. Part II. The nitration of dimethyl-*p*-anisidine.” By H. H. HODGSON and J. H. CROOK.
- “An automatic apparatus for the quantitative removal of ferric chloride from aqueous solution.” By A. M. WARD.
- “Some *o*-benzenesulphonyl fluoride derivatives.” By W. DAVIES and J. H. DICK.
- “The structure of para-red and related dyes.” By F. A. MASON.

- “The thermal combination of ethylene and bromine at glass surfaces. Part I. General kinetics of the reaction at 16°.” By G. WILLIAMS.
- “The thermal combination of ethylene and bromine at glass surfaces. Part II. The influence of water.” By G. WILLIAMS.
- “Primary photochemical processes. Part I. The decomposition of formaldehyde.” By R. G. W. NORRISH and F. W. KIRKBRIDE.
- “The interaction of phenylmagnesium bromide with *N*-chloropiperidine and other *N*-chloro-compounds.” By R. J. W. LE FÈVRE.
- “Alternative electrode reactions. Part I. Reactions at a platinum cathode in nitric acid solutions.” By H. J. T. ELLINGHAM.
- “The mobility of groups containing sulphur.” By D. T. GIBSON.
- “Synthetical studies in the decalin series. Part I.” By G. R. CLEMO and J. ORMSTON.
- “Studies on 2-substituted dihydroresorcinols. Part II. The direct introduction of the 2-methyl group.” By L. E. HINKEL, E. E. AYLING, and G. HOPKINS.
- “The system potassium carbonate-ammonia-water.” By M. P. APPLEBEY and (MISS) M. A. LEISHMAN.
- “The system zinc sulphate-ammonia-water.” By M. P. APPLEBEY and M. E. D. WINDRIDGE.
- “Studies in complex salts. Part V. The effect of diisopropyl substitution on the stability of the dimalonatocuprate ion.” By D. J. G. IVES and H. L. RILEY.
- “Substitution reactions in polycyclic systems. Part I. The nitration of 4-methyldiphenyl.” By W. S. M. GRIEVE and D. H. HEY.
- “Aminobenzthiazoles. Part XIII. Corrected data for the 2-alkylamino- $\beta$ -naphthathiazole series.” By G. M. DYSON, R. F. HUNTER, and R. W. MORRIS.
- “The compounds of lithium chloride with cobalt chloride. Water as a linking agent in polynuclear kations.” By H. BASSETT and (MISS) I. SANDERSON.
- “Studies in gaseous adsorption. Part III. The thermal activation effect in the adsorption of hydrogen on platinum and nickel.” By E. B. MAXTED and N. HASSID.
- “The rearrangement of hydroxy-sulphones. Part III.” By A. A. LEVI and S. SMILES.
- “The system nitrobenzene-sulphuric acid-water.” By C. W. GIBBY.
- “Studies in the sterol group. Part XII. The oxidation of  $\alpha$ -ergosterol and its derivatives.” By I. M. HEILBRON, J. C. E. SIMPSON, and D. G. WILKINSON.

- “Studies in the sterol group. Part XIII. Hydrocarbons of the ergosterol series.” By I. M. HEILBRON, F. S. SPRING, and E. T. WEBSTER.
- “Studies in the sterol group. Part XIV.  $\beta$ -Ergosterol and its derivatives.” By I. M. HEILBRON and D. G. WILKINSON.
- “Studies in the sterol group. Part XV. The relationship between  $\alpha$ - and  $\beta$ -ergosterol and their derived hydrocarbons.” By A. L. MORRISON and J. C. E. SIMPSON.
- “Quinoline compounds containing arsenic. Part IV. Synthesis of derivatives of quinoline-5- and quinoline-8-arsonic acids.” By R. H. SLATER.
- “Lichen acids. Part III. The constitution of barbatic acid and the syntheses of *isorhizonic* acid and methyl barbatate.” By A. ROBERTSON and R. J. STEPHENSON.
- “Arsenic acids of the fluorenone series. Derivatives of amino-fluorenone-2-arsonic acid.” By G. T. MORGAN and (MISS) J. STEWART.
- “Compounds of copper with mercury.” By A. S. RUSSELL and J. HOWITT.
- “The nature of active charcoal. Part I. The adsorption isotherms of organic acids in aqueous solution with ash-free charcoals.” By C. OCKRENT.
- “Dynamic isomerism involving mobile hydrocarbon radicals. Part IV. The rearrangement of 3 : 5-dichloro-substituted triphenylbenzenylamidines.” By A. W. CHAPMAN and C. H. PERROTT.
- “A ring closure reaction in the triarylamidine series. A new source of disecundary *ortho*-diamines.” By A. W. CHAPMAN and C. H. PERROTT.
- “Co-ordination compounds of boron trifluoride and organic esters.” By G. T. MORGAN and R. TAYLOR.
- “Estimation of the sulphate ion by precipitation as barium sulphate.” By J. A. N. FRIEND and W. N. WHEAT.
- “The selenates of lanthanum and their solubilities in water.” By J. A. N. FRIEND.
- “The partial esterification of polyhydric alcohols. Part XII. The function of ethylene oxide rings.” By A. FAIRBOURNE, G. P. GIBSON, and D. W. STEPHENS.
- “The partial esterification of polyhydric alcohols. Part XIII. Glycerol  $\alpha$ -monophenyl ether.” By A. FAIRBOURNE and D. W. STEPHENS.
- “The partial esterification of polyhydric alcohols. Part XIV. The iodohydrins.” By A. FAIRBOURNE and D. W. STEPHENS.
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- “Syntheses of alkylphenanthrenes. Part III. Retene and 1 : 4-dimethyl-7-isopropylphenanthrene.” By R. D. HAWORTH, B. M. LETSKY, and C. R. MAVIN.
- “Hydroxy-carbonyl compounds. Part VII. Coumarins and 1 : 4-benzopyrones derived from *m*-cresol.” By A. ROBERTSON, R. B. WATERS, and (in part) E. T. JONES.
- “Hydroxy-carbonyl compounds. Part VIII. Some derivatives of 2 : 6-dihydroxytoluene.” By E. T. JONES and A. ROBERTSON.
- “Properties of conjugated compounds. Part XVIII. Addition of hypochlorous acid to sorbic acid.” By G. F. BLOOMFIELD and E. H. FARMER.
- “Reactions of olefinic compounds. Part I. Additivity of olefinic acids towards hypochlorous acid and ethyl hypochlorite : orientation in relation to additive mechanism.” By G. F. BLOOMFIELD and E. H. FARMER.
- “The condensation of the esters of  $\alpha\alpha'$ -dibromodicarboxylic acids with thiocarbamides and the synthesis of dithiazolymethane derivatives.” By R. G. ATKINSON and R. F. HUNTER.
- “The quantitative nitration of *p*-chloro- and *p*-bromo-toluene.” By (Miss) F. R. SHAW and E. E. TURNER.
- “The stereochemistry of 2 : 2'-disubstituted diphenyls. Part I. The optical resolution of phenyl benzidine-2 : 2'-disulphonate.” By (Miss) M. S. LESSLIE and E. E. TURNER.
- “Studies in the mechanism of flame movement. Part I. The uniform movement of flame in mixtures of methane and air, in relation to tube-diameter.” By H. F. COWARD and F. J. HARTWELL.
- “The alkaloids of ergot. Part IV. A complex group common to ergotoxine and ergotamine.” By S. SMITH and G. M. TIMMIS.
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- “Organic antimonial compounds. Part III.” By (Miss) M. E. BRINNAND, W. J. C. DYKE, W. H. JONES, and W. J. JONES.

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BILLITER, JEAN. Technische Elektrochemie. 2nd edition. Vol. III. Schmelzfluss-Elektrolyse. Halle (Saale) 1932. pp. viii + 196. ill. M. 12.50. (*Recd.* 12/4/32.)

From the Publisher : Herr Wilhelm Knapp.

FOWLES, GEORGE. Volumetric analysis. London 1932. pp. xii + 202. ill. 6s. net. (*Recd.* 8/4/32.)

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

WEST, CLARENCE JAY, and BEROLZHEIMER, D. D. Bibliography of bibliographies on chemistry and chemical technology. Second supplement 1929—31. (Bulletin of the National Research Council, No. 86.) Washington 1932. pp. 150. (*Reference.*) \$1.50.

From the National Research Council.

WHYTLAW-GRAY, ROBERT, and PATTERSON, HUBERT SUTTON. Smoke : a study of aerial disperse systems. London 1932. pp. viii + 192. ill. 14s. net. (*Recd.* 31/3/32.)

From Mr. E. Hatschek.

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ARCHIBALD, EBENEZER HENRY. The preparation of pure inorganic substances. New York 1932. pp. x + 383. ill. \$3.75 net. (*Recd.* 21/4/32.)

BURN, JOSHUA HAROLD. Recent advances in materia medica : being a description of the methods of preparing and testing sera and

vaccines, hormones and vitamins, with an account of their properties and medicinal uses. London 1932. pp. x + 224. ill. 12s. 6d. net. (*Recd.* 18/2/32.)

DUTCHER, R. ADAMS, and HALEY, DENNIS E. Introduction to agricultural biochemistry. New York 1932. pp. x + 484. ill. \$4.50 net. (*Recd.* 21/4/32.)

EWALD, PETER PAUL, and HERMANN, CARL. Strukturbericht 1913-1928. Leipzig 1931. pp. vi + 818. ill. (*Reference.*) M. 47.

HAWK, PHILIP BOUVIER, and BERGEIM, OLAF. Practical physiological chemistry. 10th edition. [Philadelphia] 1931. pp. xviii + 930. ill. \$6.50 net. (*Recd.* 21/4/32.)

HIMUS, GODFREY WILFRED. Fuel testing: laboratory methods in fuel technology. London (1932). pp. x + 257. ill. 15s. net. (*Recd.* 21/4/32.)

HOUGEN, O. A., and WATSON, K. M. Industrial chemical calculations: the application of physico-chemical principles and data to problems of industry. New York 1931. pp. viii + 502. ill. \$4.50 net. (*Recd.* 18/2/32.)

HUGHES, ARTHUR LLEWELYN, and DUBRIDGE, LEE ALVIN. Photoelectric phenomena. New York 1932. pp. xii + 532. ill. \$5 net. (*Recd.* 21/4/32.)

KOLTHOFF, ISAAC MAURITS, and FURMAN, N. HOWELL. Potentiometric titrations. 2nd edition. New York 1931. pp. xiv + 482. ill. \$6 net. (*Recd.* 18/2/32.)

MINISTRY OF AGRICULTURE AND FISHERIES. Bulletin No. 28. Artificial fertilizers in modern agriculture. By SIR EDWARD JOHN RUSSELL. London 1931. pp. viii + 202. ill. 3s. net. (*Recd.* 24/2/32.)

MONYPENNY, JOHN HENRY GILL. Stainless iron and steel. 2nd edition. London 1931. pp. x + 576. ill. 25s. net. (*Recd.* 22/2/32.)

MUNBY, ALAN E. Laboratories, their planning and fittings. 2nd edition. London 1931. pp. xx + 224. ill. 30s. net. (*Recd.* 18/2/32.)

NEWMAN, FRANK HERBERT. Recent advances in physics (non-atomic). London 1932. pp. x + 378. ill. 15s. net. (*Recd.* 21/4/32.)

OHLMÜLLER, WILHELM, and SPITTA, OSCAR. Untersuchung und Beurteilung des Wassers und des Abwassers. 5th edition. By WOLFGANG OLSZEWSKI and O. SPITTA. Berlin 1931. pp. xii + 566 + 7 plates. M. 49.60. (*Recd.* 9/3/32.)

PARLIAMENTARY REPORTS. Final report on the third census of production of the United Kingdom (1924). The chemical and allied trades [etc.]. London 1931. pp. xvi + 468. (*Reference.*) 7s. net.

RUSSELL, SIR EDWARD JOHN. Soil conditions and plant growth. 6th edition. London 1932. pp. viii + 636. ill. 21s. net. (*Recd.* 22/2/32.)

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SOMMERFELD, ARNOLD. Atombau und Spektrallinien. 5th edition. Vol. I. Braunschweig 1931. pp. viii + 736. ill. *M.* 31.60. (*Recd.* 1/4/32.)

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WEIZEL, WALTER. Bandenspektren. Leipzig 1931. pp. xiv + 461. ill. *M.* 45. (*Recd.* 9/3/32.)

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### III. Pamphlets.

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research*. Bulletin No. 55. The basal (standard) metabolism of the Australian merino sheep. By E. W. LINES and A. W. PEIRCE. Melbourne 1931. pp. 34. ill.

— — Pamphlet No. 23. Refrigeration applied to the preservation and transport of Australian foodstuffs. A survey and a scheme for research. By J. R. VICKERY. Melbourne 1931. pp. 40.

INSTITUTE OF CHEMISTRY OF GREAT BRITAIN AND IRELAND. Chemistry and the community. By SIR FRANK EDWARD SMITH. 3rd S. M. Gluckstein Memorial Lecture, 1931. London 1932. pp. 22.

JOHNSON, ROWLAND NICHOLAS. Artificial stones used for dental models. (From the *Brit. Dental J.*, 1931, 52.) ill.

KAWAMURA, JIPEI. Über einen neuen Bestandteil des Tsuga-Harzes. (From the *Bull. Imp. Forestry Exper. Stat.*, 1931.) [In Japanese. English summary.]

MCDOWALL, FREDERICK HENRY. Estimation of moisture in cheese. (From the *N.Z. J. Sci. Tech.*, 1930, 11.)

— Temperature-change in cheese and butter. (From the *N.Z. J. Sci. Tech.*, 1931, 12.)

MURPHY, D. W., and JOMINY, W. E. The influence of atmosphere and temperature on the behaviour of steel in forging furnaces. (*Univ. Michigan Engineering Research Bulletin*, 1931, No. 21.) pp. vi + 150. ill.

NEW ZEALAND. *Department of Scientific and Industrial Research.* Bulletin No. 21. Standardized cheese, and cheese analysis. By FREDERICK HENRY McDOWALL. Wellington 1930. pp. 19. ill.

— Treatment and disposal of dairy waste waters. By FREDERICK HENRY McDOWALL. Wellington 1931. pp. 36.

OPSTALL, HENDRIK JOHANNES VAN. Reactiesnelheden van 1-chloor-2-4-dinitrobenzol en -naphthaline met aromatische aminen. Leiden 1932. pp. xvi + 141.

PERLITZ, HARALD. Abstandsänderungen nächster Nachbaratome in einigen Elementen und Legierungen bei Umordnung aus der kubischen flächenzentrierten Anordnung in die kubische raumzentrierte oder die hexagonale dichteste Anordnung. (From the *Acta Comm. Univ. Tartu.*, 1931, A 22.) ill.

SCHLÄPFER, PAUL. Ueber die Verbrennung von Koks in Zentralheizungen. (From the *Monats.-Bull. Schweiz. Ver. Gas-Wasserfach.*, 1930.) ill.

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SCHLÄPFER, PAUL, and MÜLLER, E. Studien über den Bläh- und Backvorgang bei der thermischen Behandlung von Steinkohlen. (*Eidgen. Materialprüf. E.T.H., Zurich, Ber.*, 55, 1931.) pp. 47. ill.

SCHMITT, N. Rotenon, ein aussichtsreiches, für Warmblüter ungefährliches Insecticid. (From *Wein und Rebe*, 1931, 13.)

SCHWARTZE, E. W. [and others]. The effect of pasteurization upon the vitamin-C content of milk in the presence of certain metals. (From the *J. Nutrition*, 1931, 4.) ill.

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. *Building Research.* Special Report No. 18. The weathering of natural building stones. By ROBERT JOHN SCHAFFER. London 1932. pp. x + 149. ill.

— *Engineering Research.* Special Report No. 17. The strength at high temperatures of a cast and a forged steel as used for turbine construction. By H. J. TAPSELL and A. E. JOHNSON. London 1931. pp. iv + 33. ill.

— *Fuel Research.* Physical and chemical survey of the national coal resources. No. 21. The Northumberland and Durham coalfield. Northumberland area. The Yard seam. London 1931. pp. vi + 54. ill.

SULLIVAN, MICHAEL XAVIER, HESS, W. C., and SEBRELL, W. H. Studies on the biochemistry of sulphur. XI. (From the *U.S. Public Health Reports*, 1931, 46.)

THERIAULT, EMERY J., and MCNAMEE, PAUL D. Experimental studies of natural purification in polluted waters. VI. Rate of disappearance of oxygen in sludge. (From the *U.S. Public Health Reports*, 1931, 46.)

# PROCEEDINGS

OF THE

## CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, May 5th, 1932, at 8 p.m.,  
Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., Past-President, in  
the Chair.

The CHAIRMAN announced that the following Committees for  
1932—1933 had been appointed by the Council :

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

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

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

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

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

Mr. C. G. B. Hose was formally admitted a Fellow of the Chemical  
Society.

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

Henry William Blair, Grove Place, Juniper Green, Edinburgh.

Gihei Hamaguchi, Yamasa, Chōshi, Chiba-ken, Japan.

Arthur Jones, M.Sc., 17, Circle Gardens, Merton Park, S.W. 19.

Alexander King, M.Sc., A.R.C.S., Dumbreck, Royston Park Road, Hatch End,  
Middlesex.

James Dalrymple Loudon, B.Sc., 8, Ralston Street, Airdrie, Lanarkshire.  
 Kenneth Angus Murray, B.Sc., 63, Montagu Street, Boksburg, Transvaal.  
 Francis Leslie Rose, B.Sc., 13, Arundel Street, Nottingham.  
 William Livingston Ruigh, Ph.D., 22, Seminary Avenue, Rahway, New Jersey, U.S.A.  
 James William Starkey, B.Sc., 350, Crookesmoor Road, Sheffield.

Mrs. E. H. Farmer and Dr. R. P. Linstead were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared duly elected.

Clarence Halse Cliff.	Augustine Francis Stephen Musante, A.B., M.A.
Donald Russell Duncan, B.Sc., Ph.D.	Sydney Diggary Nicholas, B.A.
Ivan Walter Henry Harris, B.Sc., A.R.C.S.	Alan Richardson Raper, M.A.
Eric Higgins, Ph.D.	Thomas Cross Robinson.
Harold Clifford Higinbotham.	Norman Arthur Shepard, Ph.D.
Walter Horridge, M.C.	Arnold Shepherdson, B.Sc.
Saburo Ishiwata.	George Thomson, B.Sc., Ph.D.
Velur Venkitaseshariyer Sivarama Iyer, M.A.	Kyosuke Tsuda.
John Butler Day Lewis.	Thomas Hunt Vaughn, B.S.
Eluned Leyshon, B.Sc.	Krishnasami Venkataraman, M.A., M.Sc.Tech., Ph.D.
Stotherd Mitchell, D.Sc., Ph.D.	Herbert Cubitt Gostling Vincent, M.A.
Alexander Lang Morrison, B.Sc., D.Phil.	Lothar Wöhler, Dr.Phil.
Gourie Kanta Mukherjee, M.Sc.	

The following papers were read :

- “Dynamic isomerism involving mobile hydrocarbon radicals. Part IV. The rearrangement of 3 : 5-dichloro-substituted triphenylbenzenyl amidines.” By A. W. CHAPMAN and C. H. PERROTT.
- “A ring closure reaction in the triarylamidine series. A new source of disecundary-*ortho*-diamines.” By A. W. CHAPMAN and C. H. PERROTT.
- “Properties of conjugated compounds. Part XVIII. Addition of hypochlorous acid to sorbic acid.” By G. F. BLOOMFIELD and E. H. FARMER.
- “Reactions of olefinic compounds. Part I. Additivity of olefinic acids towards hypochlorous acid and ethyl hypochlorite : orientation in relation to additive mechanism.” By G. F. BLOOMFIELD and E. H. FARMER.
- “The stereochemistry of 2 : 2'-disubstituted diphenyls. Part I. The optical resolution of phenyl benzidine-2 : 2'-disulphonate.” By (MISS) M. S. LESSLIE and E. E. TURNER.
- “The quantitative nitration of *p*-chloro- and *p*-bromo-toluene.” By (MISS) F. R. SHAW and E. E. TURNER.
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Ordinary Scientific Meeting, Thursday, May 19th, 1932, at 8 p.m., Professor G. G. HENDERSON, M.A., D.Sc., F.R.S., President, in the Chair.

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

	Elected.	Died.
Richard Haliburton Adie .....	Dec. 3rd, 1885.	May 18th, 1932.
John Christmas Chorley .....	Dec. 3rd, 1891.	May 4th, 1932.

The PRESIDENT announced that the Council, at its meeting that afternoon, had awarded the Longstaff Medal for 1933 jointly to Professor W. N. Haworth, F.R.S., and to Sir James C. Irvine, C.B.E., F.R.S., in recognition of their outstanding work on the chemistry of the sugars. The presentation will be made at the next Annual General Meeting on March 30th, 1933.

Dr. A. S. Gomm was formally admitted a Fellow of the Chemical Society.

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

Clarence Jephcott, M.A., Ph.D., 37, Tavistock Square, W.C. 1.  
 Joseph Kennedy, B.Sc., 39, Polwarth Gardens, Edinburgh.  
 Austin Raymond Martin, Ph.D., 13, Braemar Place, Aberdeen.  
 Owen Morris, 72, Chapel Lane, Headingley, Leeds.  
 Sunil Coomar Mukhopadhyay, B.Sc., 112, Gower Street, W.C. 1.  
 Augustus Stephens, St. Bartholomew's Hospital, E.C. 1.  
 Mikio Tsuda, Prof., Ōhyo-kagaku, Kōtō-kōgyō gakkō, Ohka-cho, Yokohama, Japan.

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

Arrigo Mazzucchelli, Prof., The Royal University, Pisa, Italy.  
 Donald Kiteley Tressler, A.B., Ph.D., The Birdseye Laboratories, Gloucester, Mass., U.S.A.

An Informal Discussion on "Some Aspects of Asymmetric Synthesis" was opened by Professor A. McKenzie, F.R.S., and continued by Dr. R. H. Pickard, Prof. T. M. Lowry, Dr. J. Kenyon, Dr. N. V. Sidgwick, Dr. G. W. Clough, Dr. H. King, Prof. Dr. Einar Bilmann, and Dr. E. E. Turner.

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#### 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, 1932.

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 Thursday, December 1st, 1932.*

List of Papers, or Abstracts thereof, received between April 21st and May 19th, 1932. (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*.)

“ Ethyl palmitate. Its density, surface tension, parachor, and Eötvös-Ramsay-Shields constant.” By C. P. ELLIS.

“ The rate of chlorination of anilides and phenols as affected by association.” By R. E. ROBERTS and F. G. SOPER.



- “*cyclo-1 : 2-Dimercaptoethane-stibinyl derivatives.*” By R. E. D. CLARK.
- “Physico-chemical studies of complex formation involving weak acids. Part VI. Solutions of complex cyanides of silver, zinc, cadmium, mercury, and nickel.” By H. T. S. BRITTON and E. N. DODD.
- “The action of ephedrine on benzaldehyde.” By W. DAVIES.
- “The action of some metallic oxides on benzotrichloride and benzal chloride.” By W. DAVIES and J. H. DICK.
- “The action of chloramine-*T* on disulphides containing the -S-S-linkage.” By J. R. ALEXANDER and H. MCCOMBIE.
- “The equilibrium  $\text{Fe}^{+++} + \text{I}^- \rightleftharpoons \text{Fe}^{++} + \frac{1}{2}\text{I}_2$  in aqueous solution.” By H. M. DAWSON and E. SPIVEY.
- “Optical rotatory dispersion in the carbohydrate group. Part I.” By T. L. HARRIS, E. L. HIRST, and C. E. WOOD.
- “The dissociation constants of organic acids. Part VI. The limiting mobility of the hydroxyl ion at 25°.” By G. H. JEFFERY and A. I. VOGEL.
- “X-Ray evidence on the structure of the furanose and pyranose forms of  $\alpha$ -methylmannoside.” By E. G. COX and T. H. GOODWIN.
- “Reactions between hexamethylenetetramine and phenolic compounds. Part I. New method for the preparation of 3- and 5-aldehydosalicylic acids.” By J. C. DUFF and E. J. BILLS.
- “The mechanism of saponification of phenyl benzoate in ethyl alcohol-water mixtures.” By C. W. GIBBY and W. A. WATERS.
- “Quinoline compounds containing arsenic. Part V. Syntheses of 7 : 8-triazolquinoline-5-arsonic acid.” By R. H. SLATER.
- “The crystalline structure of tetrammino-platinous chloride.” By E. G. COX.
- “The interaction of acetonephenylhydrazone and phenyl isocyanate.” By W. A. CALDWELL, J. CHAPMAN, H. W. GOODWIN, and F. J. WILSON.
- “A general method for the preparation of 1-substituted glyoxalines from acetalythiocarbimide and primary amines.” By A. P. T. EASSON and F. L. PYMAN.
- “Attempts to prepare a compound containing the group  $\text{-N} \begin{matrix} \nearrow \text{S} \\ \searrow \text{O} \end{matrix}$  and a note on substitution in, and the formula of, nitrosobenzene.” By R. J. W. LE FÈVRE.
- “Three-carbon tautomerism in dicyclic systems. Part I. A comparison between the corresponding compounds of *trans*- $\beta$ -decalin and *cyclohexane*.” By R. S. THAKUR.

- “Three-carbon tautomerism in dicyclic systems. Part II. The effect of an  $\alpha$ -methyl group on tautomerism in *trans*- $\beta$ -decalin compounds.” By R. S. THAKUR.
- “Orientation in the substitution reactions of alkynaphthalenes. Part I. Side-chain nitration of 1:4-dimethylnaphthalene.” By R. ROBINSON and H. W. THOMPSON.
- “Studies in stereochemical structure. Part IV. Esters of (–) menthol and the (–), (+), and *r*-mandelic acids.” By R. ROGER.
- “2:4-Diamino-1-methylnaphthalene.” By H. W. THOMPSON.
- “The reduction of silver ions by ferrous ions.” By D. ROBERTS and F. G. SOPER.
- “The preparation of unsymmetrical diphenyl derivatives.” By I. R. SHERWOOD, W. F. SHORT, and R. STANSFIELD.
- “The constitution of cellobiose.” By G. M’OWAN and (MISS) M. A. ROSS.
- “The nature of the catalytic action of hydrochloric acid in the intramolecular change of *N*-chloroacetanilide.” By H. M. DAWSON and H. C. MILLET.
- “Syntheses of 19-ketophenanthridindocoline, 3-benzoylcarbazole, and 3:6-dibenzoylcarbazole.” By S. G. P. PLANT and (MISS) M. L. TOMLINSON.
- “The structure of glutaconic acids and esters. Part IV. Some cyclic glutaconic derivatives.” By G. A. R. KON and H. R. NANJI.
- “The structure of glutaconic acids and esters. Part V. 3-Methylcyclopropene-1:2-dicarboxylic acid and its ester.” By G. A. R. KON and H. R. NANJI.
- “Three-carbon tautomerism in dicyclic systems. Part III. A comparison between the corresponding compounds of *trans*-hexahydrohydrindene (2) and *cyclopentane*.” By R. S. THAKUR.
- “Three-carbon tautomerism in dicyclic systems. Part IV. The effect of an  $\alpha$ -methyl group on tautomerism in *trans*-hexahydrohydrindene compounds.” By R. S. THAKUR.
- “Note on  $\beta$ -phenyl ethyl malonic acid.” By J. B. COHEN.
- “Physico-chemical studies of complex acids. Part VII. Glass electrode titrations of vanadic acid.” By H. T. S. BRITTON and R. A. ROBINSON.
- “An easily adjusted electrical thermo-regulator.” By L. J. HUDLESTON.
- “The velocity of ionic reactions in different solvent media.” By D. T. LEWIS.

FORMS OF RECOMMENDATION FOR FELLOWSHIP.  
THE BALLOT WILL BE HELD AT THE ORDINARY  
SCIENTIFIC MEETING ON THURSDAY, JUNE 2nd, 1932.

BELL, JANET CATHERINE, "Eskdale," Hillfoot Road, Woolton, Liverpool. British. Research Student. B.A. (Cantab.). Research student at Oxford University with Professor R. Robinson, F.R.S.; Yarrow Research Studentship. (*Signed by*) Mary Beatrice Thomas, R. G. W. Norrish, Robert Robinson.

BLAIR, HENRY WILLIAM, Grove Place, Juniper Green, Edinburgh. British. Member of Pharmaceutical Society; Chemist. Chief Chemist, Laboratories, Messrs. Pinkerton, Gibson & Co., Ltd., Wholesale Druggists and Manufacturing Chemists, Edinburgh, for past sixteen years. Certificates (Class) in Inorganic and Organic Chem., Physics, Electricity and Magnetism, etc., Heriot-Watt College. Notes on "Opium," 1914; "Aniline Dyes," 1918; "Scotch Chamomiles," Jan. 1920; "New Curriculum," 1920 (Pres. Add. Ed. Chem. Assoc.); "Ph Values of Concentrated Sol. of Ammon. Acet.," 1931 (all in *Pharm. Journal*). (*Signed by*) Eric Knott, J. J. Blackie, W. A. Beattie.

BOLAM, THOMAS ROBERT, 126, Blackford Avenue, Edinburgh. British. University Lecturer. M.Sc. (Bristol), D.Sc. (Edinburgh). Lecturer in the Department of Chemistry of the University of Edinburgh. Publications in *J.C.S.* (1918), *J.S.C.I.* (1921), *Trans. Faraday Soc.* (1926, 1928, 1930), *J. Physical Chem.* (1931), *J.C.S.*, 1918, **113**, 825-832. (*Signed by*) James Kendall, H. Gordon Rule, Ernest B. Ludlam.

CAVANAGH, BERNARD, 311, St. Kilda Street, Brighton, S. 5, Melbourne, Australia. British. University Lecturer. M.A. (Oxford), D.Sc. (London), F.I.C. *Phil. Mag.*, 1922, **XLIII**, 606; **XLIV**, 226, 610; *Proc. Roy. Soc.*, **A**, **106**, 243; *J.C.S.*, 1927, 2207; 1928, 843, 855; 1930, 1425. (*Signed by*) E. J. Hartung, W. J. Young, A. C. D. Rivett.

DENSHAM, ALEC BRAMLEY, 47, St. George's Square, S.W. 1. British. Chemist in Gas Light & Coke Co. B.A. (1st Class), Oxford, 1930. Research worker on corrosion for the Gas Light & Coke Co. (*Signed by*) J. G. Clark, Frederick C. Smith, J. H. Mead.

HAMAGUCHI, GIHEI, Yamasa, Choshi, Chiba-ken, Japan. Japanese. President of the Yamasa-Shoyu Company. Rigakushi (Tokyo Imp. Univ.). (*Signed by*) Riko Majima, Hiroshi Nomura, Harusoda Sugimoto.

HOPKINS, REGINALD HAYDN, The University, Edgbaston, Birmingham (39, Woodland Road, Northfield, Birmingham). British. Professor of Brewing and Fermentation. D.Sc. (Birmingham, 1928), F.I.C. (1918). Papers in *Biochem. J.*, 1928, **22**, 1145; 1929, **23**, 1022; 1931, **25**, 245, 256, 829, 1860. Several papers in *Journ. Inst. Brewing*, 1925-31. (*Signed by*) Arthur R. Ling, W. O. Kermack, W. N. Haworth.

HOWITT, FREDERICK OLIVER, 68, Seymour Road, West Bridgford, Nottingham. British. Biochemist, Boots Pure Drug Co., Ltd. B.Sc. (1st Class Hons. in Chem.), M.Sc. (Biochemistry, London), A.I.C. Publications: "Mode of Action of Insulin," *Nature*, May 16, 1931; "Starch Envelopes in Pyrenoids," *Nature*, March 15, 1930. Part author of: "A Study of the Oestrus-producing Hormone," *Biochem. J.*, 1928, **22**, 1526; "Electrophoresis of Protein Sols," *Proc. Roy. Soc.*, 1929, **A**, **126**, 126; "Electrophoresis of Protein Sols," *Biochem. J.*, 1931, **25**, 391; "Action of Liver Preparations in Diabetes," *Lancet*, 1931, *i*, 20; etc. (*Signed by*) Frank Lee Pyman, Joseph Marshall, Arthur Nutter Smith.

JONES, ARTHUR, 17, Circle Gardens, Merton Park, S.W. 19. British. Consulting Chemist. M.Sc., Manchester, Hons. Chemistry. Twenty-three years concerned in Research and Development of Cellulose Lacquers and Finishes chiefly on fabrics and leather and motors. Lecturer in Organic Chemistry, Gt. Yarmouth Science School. Chief Chemist to Grant & Co., Ltd., Gt. Yarmouth, twelve years, and T. and W. Farniloe, London, three years. (*Signed by*) M. C. Lamb, Percy Edgerton, Edgar Neumann.

KING, ALEXANDER, Dumbreck, Royston Park Road, Hatch End, Middlesex. British. Demonstrator in Chemistry at Royal College of Science. M.Sc. (Lond.), A.R.C.S., D.I.C. (*Signed by*) H. B. Baker, James C. Philip, H. L. Riley.

LAWSON, ALEXANDER, Chemistry Department, University College, Southampton. British. Lecturer in Chemistry. B.Sc. (Glasgow), Ph.D. (Glasgow). At Glasgow in collaboration with T. S. Patterson, published work on the "Optical Rotation of Derivatives of Lactic Acid" (*J.C.S.*, 1929, 2042), and at Munich University, with H. Wieland, work on the "Dehydrogenating Enzymes of Muscle" (*Annalen*, 1931, **495**, 193). Was Assistant in the Med. Chem. Dept. at Edinburgh University. (*Signed by*) D. R. Boyd, G. H. Jeffery, A. E. Clarence Smith.

LOUDON, JAMES DALRYMPLE, 8, Ralston Street, Airdrie, Lanarkshire. British. University Assistant in Chemistry (Glasgow). B.Sc. (Glasgow). Graduated B.Sc. with 1st Class Hons. in Chemistry at Glasgow, 1929; Research Student, 1929-31; appointed University Assistant, 1931. (*Signed by*) G. G. Henderson, T. S. Patterson, S. Horwood Tucker, David T. Gibson.

MARRIAN, GUY FREDERIC, 65, Fitzjohn's Avenue, N.W. 3 (Department of Physiology and Biochemistry, University College, London). British. Lecturer in Biochemistry, University College. B.Sc. Hons. Chem. (London), M.Sc. Physiology (London), D.Sc. Biochemistry (London). Papers on the chemistry of the sex hormones published in *Biochem. J.*, for which the Meldola medal (1932) was awarded by the Institute of Chemistry. Other papers in various journals on different fields in Biochemistry and Physiology. (*Signed by*) J. C. Drummond, H. W. Dudley, H. Raymond Ing.

MARTIN, JOHN HENRY, 29, Ormeley Road, Balham, S.W. 12. English. Research Student. A.R.C.S., B.Sc. (Lond.), 2nd Class Hons. "Potassium Dibromiodide Hydrate," Cheesman and Martin, *J.C.S.*, 1932, 586. (*Signed by*) H. B. Baker, R. H. Purcell, G. H. Cheesman.

MURRAY, KENNETH ANGUS, 63, Montagu Street, Boksburg, Transvaal, South Africa. British South African. Teacher. B.Sc. (Hons.), University of the Witwatersrand, Johannesburg. Hons. in Physical Chemistry (1st Class). At present a teacher and wish to maintain an interest in chemistry. (*Signed by*) Henry Stephen, O. G. Backeberg, H. R. Raikes.

NIYOGI, MANMATHA NATH, Calcutta, India. Asst. Chemical Examiner for Customs, Rangoon, India. Indian. M.Sc., Calcutta University, 1914. Asst. to the Chemical Examiner for Customs and Excise, Calcutta, for about nine years, there prepared Sikes's tables for use with glass hydrometers and conducted a series of experiments to find out a suitable power alcohol for India. For three years Reader in Analytical Chemistry, Dacca University. (*Signed by*) A. Chaston Chapman, R. L. Jenks, J. R. Nicholls.

OCKRENT, CHARLES, 4, Buccleuch Terrace, Edinburgh. British. Research Chemist. B.Sc. (1st Class Hons.), Ph.D., University of Edinburgh. Four years' research experience, Carnegie Research Scholar. Publications: *J. Physical Chem.*, 1930, **34**, 2286, 2297, 2841; 1931, **35**, 3354; *Nature*, 1930, **125**, 853; *J.C.S.*, 1932, 613. (*Signed by*) James Kendall, J. A. V. Butter, Ronald B. Mooney.

RICHTER, DEREK, 11, Frenchay Road, Oxford. British. Research Student. B.A., B.Sc. (Oxford); D.Phil. (Munich). "The Oxidation of Aldehydes," Wieland and Richter, *Annalen*, 1931, **486**, 226; "Induced Reactions," Richter, *Berichte*, 1931, **64**, 1240. (*Signed by*) Wilson Baker, B. K. Blount, L. H. Briggs.

ROSE, FRANCIS LESLIE, 13, Arundel Street, Nottingham. English. Research Student. B.Sc., Special Chemistry, 1st Class, London External. Two years' post-graduate research at University College, Nottingham. *J.C.S.*, 1931, 3337. (*Signed by*) E. A. Wagstaff, B. D. Shaw, H. H. Barber.

ROSSER, REGINALD JOHN, Endellion, Wilkins Road, Cowley, Oxford. British. Research Chemist. B.Sc. (Wales); B.Sc., D.Phil. (Oxon.). Three years' research in organic chemistry at the Dyson Perrins Laboratory, Oxford. Research Chemist under the Chemical Defence Research Department since October, 1930. Plant and Rosser, *J.C.S.*, 1928, 2454; 1929, 1861. (*Signed by*) Robert Robinson, E. Hope, Wilson Baker.

RUGH, WILLIAM LIVINGSTONE, 22, Seminary Avenue, Rahway, New Jersey, U.S.A. (Mailing address: Laboratory for Pure Research, Merck & Co., Rahway, New Jersey, U.S.A.) American. Research Chemist. B.S., Ph.D. (Princeton). Sayre Fellow, 1927-28; Du Pont Fellow, 1928-29; Research Assistant, 1929-30, at Princeton University. Research Chemist with Merck & Co., 1930 to date. Work on molecular rearrangements and synthetic drugs. *J. Amer. Chem. Soc.*, 1929, **51**, 1456; 1931, **53**, 2662, 3131. (*Signed by*) Alan W. C. Menzies, Wilder D. Bancroft, L. W. McCay.

SANDILANDS, JAMES, 102, Westholmes Gardens, Musselburgh, Midlothian. British. Lecturer in Chemistry. Fellow of the Institute of Chemistry. (*Signed by*) James Kendall, James Walker, T. Slater Price.

SLATER, ROBERT HENRY, 4, Kingsburgh Road, Murrayfield, Edinburgh. British. Research Chemist. B.Sc., Ph.D. (Edinburgh University). Have published sixteen papers on chemical science as follows: ten papers on pure chemistry in the *J.C.S.*, 1924, **125**, 1312, 2278; 1925, **127**, 1490; 1926, **129**, 214, 2760; 1928, **32**, 789; 1930, 1209; 1931, 107, 1938; five papers on biochemistry in the *Biochem. J.*, 1926, 486; 1927, 40, 1065; 1929, 410, 416; and one paper in the *Proc. Roy. Soc. Edin.*, 1930, 243. (*Signed by*) W. O. Kermack, George Barger, T. Slater Price.

STARKEY, JAMES WILLIAM, 410, Billinge Road, Highfield, Pemberton, Wigan (Address until July 1: 350, Crookesmoor Road, Sheffield). British. University Student. B.Sc., Sheffield University, 1931. Studied chemistry up to degree standard. (*Signed by*) G. M. Bennett, S. Glasstone, Arthur W. Chapman.

THOMPSON, HENRY WILLIAM, 23, Beech Croft Road, Oxford. British. Research Student. B.Sc. and Ph.D., London. Keddey Fletcher-Warr Student of the University of London, 1931 to date. (*Signed by*) Robert Robinson, G. S. Ward, P. V. Nair.

WARD, ALFRED THOMAS, 9, Regent Place, Rugby, Warwickshire. British. Research Chemist. B.Sc. (London), 1922; M.Sc. (London), 1924. Graduated from University College, Nottingham. During the last six years I have been mainly concerned with the development and study of synthetic resinous materials. *J.C.S.*, 1924, **125**, 423-6, 426-9, 69-71. (*Signed by*) F. Stanley Kipping, E. B. R. Prideaux, J. B. Firth.

WOODWARD, FOSTER NEVILLE, 20, Staplands Road, Broad Green, Liverpool. British. Research Chemist. B.Sc. (Hons.), University of London. Research Assistant at H.M. Research Establishment, Sutton Oak, Lancs., since Oct. 1930. (*Signed by*) Robert Robinson, O. L. Brady, H. G. G. Mohrhenh.

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

KUNZENBACKER, AUGUST ANTON, 59, Leslie Place, Irvington, N.J., U.S.A. American. Instructor in Chemistry. A.B., Villanova College; M.A. (to be conferred June 1932), Villanova College. Factory foreman in Intermediate Manuf. plants. Instructor in Chemistry (at present). Member Amer. Chemical Society. (*Signed by*) W. H. Fulweiler.

MAZZUCHELLI, ARRIGO, Regia Università di Pisa, Italy. Italian. Professor of Chemistry, University of Pisa. Dottore in chimica e professore di Università. Formerly Professor of General Chemistry at the University of Messina, now Professor of Physical Chemistry at the University of Pisa. (*Signed by*) E. Hope.

TRESSLER, DONALD KITELEY, The Birdseye Laboratories, Gloucester, Massachusetts, U.S.A. American. Chief Chemist. A.B. University of Michigan, 1913. Ph.D. Cornell University, 1918. *Contributions*—Articles: "Some Considerations Concerning the Salting of Fish," "Nutritive Value of Fish and Shellfish," and "Iodine Content of Sea Foods," Bureau of Fisheries Documents Nos. 884, 1000, and 967 respectively. Books: "Marine Products of Commerce"—Chemical Catalog Co., New York, 1923. "The Wealth of the Sea"—The Century Company, New York, 1927. Past positions: Instructor, Oregon Agric. College; Special Ass't., U.S. Bureau of Fisheries; Fellow, Mellon Institute; Professor Univ. of Pittsburgh. Present position: Chief Chemist, The Birdseye Laboratories. (*Signed by*) Edward C. Worden, Joseph Rosin.

## ADDITIONS TO THE LIBRARY.

### I. *Donations.*

BRITISH DRUG HOUSES, LTD. B.D.H. reagents for delicate analysis and "spot" tests. London 1932. pp. iii + 39. (*Reference.*) 2s. 6d. net.

From the Director.

GREENAWAY, ALFRED JOHN, THORPE, JOCELYN FIELD, and ROBINSON, ROBERT. The life and work of Professor William Henry Perkin, M.A., Sc.D., LL.D., Ph.D., F.R.S. London (1932). pp. 138. ill. (*Reference.*)

From the Authors.

INSTITUT INTERNATIONAL DE CHIMIE SOLVAY. Quatrième Conseil de Chimie. Rapports et discussions relatifs à la constitution et à la configuration des molécules organiques. Paris 1931. pp. xiv + 526. ill. (*Reference.*)

From Sir William J. Pope, K.B.E.

LOWRY, THOMAS MARTIN. Inorganic chemistry. 2nd edition. London 1931. pp. xvi + 1102. ill. 25s. net. (*Recd.* 14/5/32.)

From the Publishers: Messrs. Macmillan & Co.

MITCHELL, ALEC DUNCAN, and WARD, ALLAN MILES. Modern methods in quantitative chemical analysis. London 1932. pp. xii + 178. 6s. net. (*Recd.* 6/5/32.)

From the Publishers: Messrs. Longmans Green & Co.

PERKIN, WILLIAM HENRY. *See* GREENAWAY, ALFRED JOHN.

ROGERS, ALLEN. Industrial chemistry. 5th edition. 2 vols. [New York] 1931. pp. xiv + 641 + xiv, xii, 642 to 1518. ill. 60s. net. (*Recd.* 12/5/32.)

From the London Publishers: Messrs. Macmillan & Co.

SANDS, CLAYS AND MINERALS. A magazine devoted to economic minerals. Vol. I, etc., Chatteris 1932 +. (*Reference.*)

From the Publisher: Mr. A. L. Curtis.

SOAP: with which is included an insecticide and disinfectant section. Vol. VIII, etc. New York 1932 +. (*Reference.*)

From the Bureau of Chemical Abstracts.

TAYLOR, FRANK SHERWOOD. Inorganic and theoretical chemistry. London 1931. pp. xii + 818. ill. 12s. 6d. (*Recd.* 19/5/32.) From the Publishers: Messrs. William Heinemann.

## II. By Purchase.

ARRHENIUS, SVANTE. See RIESENFELD, ERNST HERMANN.

EDER, JOSEF MARIA. Ausführliches Handbuch der Photographie. Vol. III. Part 3. Sensibilisierung und Desensibilisierung. By J. M. EDER and — LÜPPO-CRAMER. Halle (Saale) 1932. pp. viii + 361. ill. M. 27.50. (*Recd.* 11/5/32.)

ELLIS, DAVID. Sulphur bacteria. A monograph. London 1932. pp. x + 261. ill. 21s. net. (*Recd.* 26/4/32.)

FINDLAY, ALEXANDER. The phase rule and its applications. 7th edition. London 1931. pp. xvi + 326. ill. 10s. 6d. net. (*Recd.* 26/4/32.)

GESSNER, OTTO. Die Gift- und Arzneipflanzen von Mitteleuropa: mit besonderer Berücksichtigung ihrer Wirkungen. Heidelberg 1931. pp. viii + 347 + 128 plates. M. 9.50. (*Recd.* 11/5/32.)

JAMIESON, GEORGE S. Vegetable fats and oils. The chemistry, production and utilization of vegetable fats and oils for edible, medicinal and technical purposes. (American Chemical Society Monograph Series.) New York 1932. pp. 444. ill. \$6.50 net. (*Recd.* 26/4/32.)

KASSEL, LOUIS S. The kinetics of homogeneous gas reactions. (American Chemical Society Monograph Series.) New York 1932. pp. 330. ill. \$6.50 net. (*Recd.* 26/4/32.)

KOHLRAUSCH, KARL WILHELM FRITZ. Der Smekal-Raman-Effekt. Berlin 1931. pp. viii + 392. ill. M. 33.80. (*Recd.* 11/5/32.)

NEEDHAM, DOROTHY MOYLE. The biochemistry of muscle. London 1932. pp. viii + 166. ill. 5s. net. (*Recd.* 26/4/32.)

RIESENFELD, ERNST HERMANN. Svante Arrhenius. Leipzig 1931. pp. 110. ill. M. 8.50. (*Recd.* 11/5/32.)

SCHMIDT, JULIUS. A text-book of organic chemistry. 2nd English edition. By HAROLD GORDON RULE. London 1932. pp. xxiv + 844. 25s. net. (*Recd.* 21/4/32.)

SCHWYZER, JULIUS. Die Fabrikation pharmazeutischer und chemisch-technischer Produkte. Berlin 1931. pp. viii + 488. ill. M. 42. (*Recd.* 11/5/32.)

SNODGRASS, KATHARINE. Margarine as a butter substitute. California (1930). pp. xiv + 334. ill. \$3 net. (*Recd.* 26/4/32.)

### III. Pamphlets.

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research*. Bulletin No. 56. A soil survey of . . . Renmark irrigation district, South Australia. By T. J. MARSHALL and P. D. HOOPER. Melbourne 1932. pp. 23. ill.

BUSCH, HENRI ALEXANDER JOHANNES. Synthese von 3 : 4 : 8-Trimethoxyphenanthren. Oxydation von  $\beta$ -Methylmorphimethin. Berlin 1907. pp. 30.

CARMICHAEL, EMMETT B. The effect on the toxicity of tetanus toxin of withholding water from the diet. (From the *J. Med. Assoc. State Alabama*, 1931, 1.)

— The action of ultra-violet radiation on *Limax flavus* Linnaeus. I. (From *Physiol. Zoölogy*, 1931, 4.)

— A convenient preparation for the removal of hair. (From *Science*, 1932, 75.)

GEORGI, CHARLES DENIS VICTOR, BUCKLEY, THOMAS ALFRED, and TEIK, GUNN LAY. Hydnocarpus oils in Malaya. (*Dept. Agric. Straits Settlements and Fed. Malay States, Sci. Series*, 1932, No. 9.)

IMAI, HIROSHI, and HAGIYA, MASAMI. Ueber die Natur der  $\beta$ -Umwandlung der Kupfer-Zinnlegierungen. II. (From the *Mem. Ryojun Coll. Eng.*, 1932, 5.) ill.

KAWAMURA, JIPEI. Über das ätherische Öl von *Sciadopitys verticillata* S. et Z. (From the *Bull. Imp. Forestry Exper. Stat.*, 1931.) [In Japanese. German summary.]

KITAJIMA, KIMIZO, and KAWAMURA, JIPEI. Über die anti-septische Wirkung der höheren Fettsäuren gegen holzzerstörende Pilze. (From the *Bull. Imp. Forestry Exper. Stat.*, 1931.)

MINES DEPARTMENT. *Safety in Mines Research Board*. Paper No. 74. International Conference on Safety in Mines at Buxton, 1931. London 1932. pp. 67. ill.

REGAN, COLSTON JAMES. The ventilation of vehicular tunnels with particular reference to those at Blackwall and Rotherhithe. (From the *Ann. Report L.C.C.*, 1930, 4.)



# PROCEEDINGS

OF THE

## CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, June 2nd, 1932, at 8 p.m., Professor G. G. HENDERSON, M.A., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT announced that Professor P. Debye, of Leipzig, had accepted the invitation of the Council to deliver the Fifteenth Faraday Lecture on March 29th, 1933.

Messrs. F. W. Pinkard and E. G. Cox were formally admitted Fellows of the Chemical Society.

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

Kenneth Walter Francombe, 136, Victoria Street, S.W. 1.

David Thomas Lewis, B.Sc., Edward Davies Chemical Laboratories, University College of Wales, Aberystwyth.

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

Janet Catherine Bell, B.A.

Henry William Blair.

Thomas Robert Bolam, D.Sc.

Bernard Cavanagh, M.A., D.Sc.,  
F.I.C.

Alec Bramley Densham, B.A.

Gihei Hamaguchi.

Reginald Haydn Hopkins, D.Sc.,  
F.I.C.

Frederick Oliver Howitt, M.Sc.,  
A.I.C.

Arthur Jones, M.Sc.

Alexander King, M.Sc., A.R.C.S.,  
D.I.C.

August Anton Kunzenbacher, A.B.

Alexander Lawson, B.Sc., Ph.D.

James Dalrymple Loudon, B.Sc.

Guy Frederic Marrian, D.Sc.

John Henry Martin, B.Sc., A.R.C.S.

Arrigo Mazzucchelli.

Kenneth Angus Murray, B.Sc.

Manmatha Nath Niyogi, M.Sc.

Charles Ockrent, B.Sc., Ph.D.

Derek Richter, B.A., B.Sc., D.Phil.

Francis Leslie Rose, B.Sc.

Reginald John Rosser, B.Sc., D. Phil.

William Livingstone Ruigh, B.S.,  
Ph.D.

James Sandilands, F.I.C.

Robert Henry Slater, B.Sc., Ph.D.

James William Starkey, B.Sc.

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

Donald Kiteley Tressler, A.B., Ph.D.

Alfred Thomas Ward, M.Sc.

Foster Neville Woodward, B.Sc.

The following papers were read :

“The supposed isomerism among the pallado-diammines.” By  
H. D. K. DREW, F. W. PINKARD, W. WARDLAW, and G. H.  
PRESTON.

- “The crystalline structure of tetramminoplatinous chloride.” By E. G. COX.
- “Primary photochemical processes. Part I. The decomposition of formaldehyde.” By R. G. W. NORRISH and F. W. KIRKBRIDE.
- “The structure of glutaconic acids and esters. Part IV. Some cyclic glutaconic derivatives.” By G. A. R. KON and H. R. NANJI.
- “The reaction of selenium dioxide with some unsaturated hydrocarbons.” By H. L. RILEY and N. A. C. FRIEND.

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

	£	s.	d.
Additive reactivity of ethylene derivatives : addition of bromine. S. V. Anantakrishnan. (Univ. Coll., London) ... ..	6	0	0
On the constitution of strychnine alkaloids. L. H. Briggs. (Oxford Univ.) ... ..	10	0	0
The surface tensions of solutions containing more than one solute. J. A. V. Butler. (Edinburgh Univ.) ... ..	13	0	0
Development of terpene chemistry, and in particular the synthesis of cyclic structures containing quaternary carbon atoms which are common members of two ring systems. G. R. Clemo. (Armstrong Coll.) ... ..	10	0	0
Synthetical studies in Jaborandi alkaloids. A. N. Dey. (Imperial Coll.) ... ..	10	0	0
Preparation of poly (acyl amino acyl) amines. G. Discombe. (St. Bartholomew's Medical School) ... ..	6	0	0
The stereochemistry of iridium. H. D. K. Drew. (East London Coll.) ... ..	20	0	0
A study of the polyhalides and of electropositive iodine. D. R. Duncan. (Private laboratory) ... ..	5	0	0
Selenates and other salts of praseodymium. J. A. N. Friend. (Tech. Coll., Birmingham) ... ..	10	0	0
Magnetic susceptibility and other properties of binary and ternary alloys. (Miss) W. R. A. Hollens. (Bedford Coll.) ... ..	6	0	0
The dissociation constants of organic acids ( <i>cont'd.</i> ) G. H. Jeffery. (Univ. Coll., Southampton) ... ..	12	0	0
Constitution of aconitine. A. Lawson. (Univ. Coll., Southampton) ... ..	15	0	0
Structure of dipinenes. R. J. W. Le Fèvre. (Univ. Coll., London) ... ..	10	0	0
Stereochemistry of 2 : 2'-disubstituted diphenyls. (Miss) M. S. Lesslie. (Bedford Coll.) ... ..	5	0	0
Preparation of isomeric acids and their nitriles ( <i>cont'd.</i> ) R. A. Letch. (Imperial Coll.) ... ..	4	0	0
Asymmetric synthesis in the diaryl series. (Miss) E. E. J. Marler. (Bedford Coll.) ... ..	5	0	0
Structure of certain dibasic acids. D. R. Maxted. (Reading Univ.) ... ..	5	0	0

	£	s.	d.
Ring closure of <i>cyclopentane</i> derivatives. E. M. Meade. (Imperial Coll.) ... ..	7	0	0
Cyclic unsaturated acids and esters. B. L. Nandi. (Imperial Coll.) ... ..	7	0	0
Acid catalysts in three carbon tautomerism. K. S. Nargund. (Imperial Coll.) ... ..	7	0	0
Adsorption from gas mixtures. C. Ockrent. (Edinburgh Univ.)	12	0	0
Stereochemistry of quaternary ammonium salts derived from diphenyl. (Miss) F. R. Shaw. (Bedford Coll.) ... ..	4	0	0
Additive properties of certain poly olefinic compounds. A. M. Sheikh. (Imperial Coll.) ... ..	5	0	0
Relation of nuclear reactivity to orientation in aromatic substitution. (Miss) M. S. Smith. (Univ. Coll., London) ...	6	0	0
Spatial structure of <i>cycloparaffins</i> . W. A. Wightman. (Leeds Univ.) ... ..	10	0	0
	£210		0 0

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#### THE LIBRARY.

The Library will be closed for stocktaking from Monday, August 1st, until Saturday, August 13th (inclusive). During the following four weeks (August 15th to September 10th) the Library will close daily at 5 p.m.

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#### 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, 1932.

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 Thursday, December 1st, 1932.

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List of Papers, or Abstracts thereof, received between May 19th and June 16th, 1932. (This List does not include the titles of papers which have been read at an Ordinary Scientific Meeting, or which have appeared in the Journal.)

- “A study of the polyhalides. Part III. Behaviour in solution.”  
By H. W. CREMER and D. R. DUNCAN.
- “The vapour pressure of chlorine heptoxide.” By C. F. GOODEVE  
and J. POWNEY.
- “The basic character of  $\alpha$ -methoxy-derivatives.” By K. C.  
ROBERTS.
- “Molecular dissymmetry dependent on restriction of rotation about  
a single bond. Part II. Optically active 1-ethyl-8-benzene-  
sulphonylethylquinolinium salts.” By W. H. MILLS and J. G.  
BRECKENRIDGE.
- “Some physical properties of tertiary arsines.” By W. J. JONES,  
W. J. C. DYKE, G. DAVIES, D. G. GRIFFITHS, and J. H. E.  
WEBB.
- “Some physical constants of methyl fluoride and the atomic weight  
of fluorine.” By W. CAWOOD and H. S. PATTERSON.
- “The behaviour of chelate groupings attached to platinum and to  
palladium.” By H. D. K. DREW.
- “Substituted malonamides in part derived from arsanilic acid.” By  
J. KENNEDY.

- "Orientation in the substitution reactions of alkylnaphthalenes. Part II. Nitration of  $\alpha$ -methylnaphthalene." By H. W. THOMPSON.
- "Studies in the chemistry of creatine and creatinine. Part II. Supposed acyl derivatives of creatine." By H. R. ING.
- "The influence of Bz.-substituents on some reactions of the anthrones. Part II." By E. DE B. BARNETT.
- "A constant level regulator for water baths." By T. B. VINYCOMB and A. I. VOGEL.
- "On Australian gum. A posthumous note on the work of the late C. O'Sullivan, F.R.S." By H. D. O'SULLIVAN.
- "Note on the ammonium sulphide-formalin precipitate." By C. G. LE FÈVRE and R. J. W. LE FÈVRE.
- "The system magnesium oxide-magnesium chloride-water." By C. R. BURY and E. R. H. DAVIES.
- "The action of halogens on polycyclic indole derivatives. Part II. The bromination of the acyl derivatives of 8 : 9 : 10 : 11-tetrahydro- $\alpha'\beta'$ -naphthacarbazole and 7 : 8 : 9 : 10-tetrahydro- $\alpha\beta$ -naphthacarbazole." By S. G. P. PLANT and (MISS) M. L. TOMLINSON.
- "The action of sulphur on amines. Part III. The orientation of trithio-*o*-toluidine as 2 : 2'-diamino-5 : 5'-ditolyl trisulphide." By H. H. HODGSON and H. V. FRANCE.
- "Researches in the phenanthridine series. Part II. Nitro- and amino-phenanthridines." By G. T. MORGAN and L. P. WALLS.
- "Platinum with a co-valency of four : diquinolinoplatinous chlorides." By E. G. COX, F. W. PINKARD, W. WARDLAW, and H. SAENGER.
- "Glycogen. Part II. Methylation and acetylation experiments." By G. K. HUGHES, A. K. MACBETH, and F. L. WINZOR.
- "Phthalyl fluoride." By A. T. DANN, W. DAVIES, A. N. HAMBLY, R. E. PAUL, and G. S. C. SEMMENS.
- "Organic derivatives of silicon. Part XLVI. Tetranitrotetra-phenylsilicane." By F. S. KIPPING and J. C. BLACKBURN.
- "Organic derivatives of silicon. Part XLVII. *cyclo*Hexylphenyl- and *cyclo*hexyl derivatives." By N. W. CUSA and F. S. KIPPING.
- "Experiments on the synthesis of anthocyanins. Part XIV. Cyanenin chloride, malvenin chloride, and an indication of the synthesis of cyanin chloride." By A. LÉON and R. ROBINSON.
- "Experiments on the synthesis of anthocyanins. Part XV. A synthesis of hirsutin chloride." By R. ROBINSON and A. R. TODD.

- “3- $\beta$ -Phenoxyethyl-4-methyl-2:6-dihydroxypyridine.” By K. MATEJKA, R. ROBINSON, and J. S. WATT.
- “Adsorption at the surface of solutions. Part I. The surface composition of water-alcohol solutions.” By J. A. V. BUTLER and A. WIGHTMAN.
- “Adsorption at the surface of solutions. Part II. The effect of lithium chloride on the surface of water-alcohol solutions.” By J. A. V. BUTLER and A. D. LEES.
- “The isomeric 2':4'-dinitrophenyl derivatives of 3:4-toluylenediamine.” By K. C. ROBERTS.
- “The photochemical oxidation of alcohols by potassium dichromate. Part IV.” By E. J. BOWEN and J. E. CHATWIN.
- “The chemistry of alkylcyclopentanones. Part III. The synthesis of 3-methylcyclopentane-*spiro-cyclohexane*-3:5-dione.” By R. D. DESAI.
- “4-Anilinoquinaldine derivatives.” By O. G. BACKEBERG.
- “Comparison of the directive powers of elements having consecutive atomic numbers. Part III. Nitrations of halogeno-2-phenylbenzopyrylium salts.” By C. G. LE FÈVRE and R. J. W. LE FÈVRE.
- “The constitution of vasicine. Part II.” By T. P. GHOSH, S. KRISHNA, K. S. NARANG, and J. N. RÂY.
- “A crystallographic comparison of certain malonates and sulphoacetates.” By W. R. C. CURJEL.
- “Phlobotannins. I. (a) General. (b) Synthesis of the ester of *p*-diprotocatechuic acid trimethyl ether and 3:4:4'-trimethoxy-*leuco*-flavanone and comparison of the product with fully methylated hemlock tannin. (c) A new method for the synthesis of depsides.” By T. CURRIE and A. RUSSELL.
- “The nitration of benzilic and fluorene-carboxylic acids.” By F. L. ROSE.

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## ADDITIONS TO THE LIBRARY.

### I. Donations.

FRANÇOIS, MARIE THÉRÈSE. Contribution à l'étude des huiles d'animaux marins : les alcools aliphatiques des graisses du cachalot. Laval 1929. pp. vi + 112.

— Influence des corps dissous sur l'abaissement moléculaire du point de congélation dans le benzène et le nitrobenzène. Laval 1929. pp. 113 to 148. (*Recd.* 9/6/32.) From Dr. E. Lewkowitsch.

MUREX WELDING PROCESSES, LTD. Handbook for electric welders. 2nd edition. London 1932. pp. 91. ill. 1s. net. (*Recd.* 16/6/32.) From the Publishers.

**RUBBER INFORMATION.** A compendium of the rubber industry in all its branches. Edited by HARRY BRENNAN CRONSHAW. London (1932). pp. [240] + lxxiii. (*Reference.*) 10s.

From the Publishers: Messrs. W. Leonard Hill.

SIEBERT, G., G.M.B.H. Festschrift zum fünfzigjährigen Bestehen der Platinschmelze. Edited by H. HOUBEN. Hanau 1931. pp. xxiv + 338. ill. *M.* 10. (*Recd.* 23/5/32.) From the Editor.

SUOMALAISTEN KEMISTIEN SEURAN TOIMITTAMA. Suomen Kemistilehti. (*Acta Chemica Fennica.*) Vol. V, etc. Helsinki 1932 +. (*Reference.*) From the Editor.

TIEBIE, GERRIT. Cornelis (Jacobszoon) Drebbel (1572-1633). Amsterdam 1932. pp. x + 128. ill. 4s. 6d. net. (*Recd.* 3/6/32.) From the Author.

## II. *By Purchase.*

ASSOCIATION OF OFFICIAL AGRICULTURAL CHEMISTS. Official and tentative methods of analysis. 3rd edition, 1930. Washington 1931. pp. xviii + 594. ill. \$5.50 net. (*Recd.* 16/6/32.)

GURWITSCH, LEO, and MOORE, HAROLD. The scientific principles of petroleum technology. New edition. London 1932. pp. xii + 572. ill. 30s. net. (*Recd.* 16/6/32.)

LEMMERMANN, OTTO. (Editor.) Methoden für die Untersuchung des Bodens. I. (1 *Beiheft*, *Z. Pflanz. Düng.*) Berlin 1932. pp. 90. ill. *M.* 6. (*Recd.* 15/6/32.)

PRINGSHEIM, HANS. The chemistry of the monosaccharides and of the polysaccharides. New York 1932. pp. xiv + 416. ill. \$4 net. (*Recd.* 16/6/32.)

SIEMENS-KONZERN. Beryllium, its production and application. Translated by RICHARD RIMBACH and A. J. MICHEL. New York 1932. pp. 332. ill. \$10 net. (*Recd.* 16/6/32.)

STIASNY, EDMUND. Gerbereichemie (Chromgerbung). Dresden 1931. pp. xii + 586. ill. *M.* 45. (*Recd.* 24/5/32.)

STOCKS, HERBERT BIRTWHISTLE. Water analysis for sanitary and technical purposes. 2nd edition. By WILLIAM GORDON CAREY. London 1932. pp. viii + 136. ill. 7s. 6d. net. (*Recd.* 16/6/32.)

WAESER, BRUNO. Alkalien und Erdalkalien. Dresden 1931. pp. viii + 196. *M.* 15. (*Recd.* 24/5/32.)

## III. *Pamphlets.*

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research.* Pamphlet No. 24. The preservative treatment of fence posts (with particular reference to Western Australia). By J. E. CUMMINS. Melbourne 1932. pp. 34. ill.

BARMORE, G. MILTON. The effect on wool of temperature and hydrogen ion concentration of the scouring bath. (From the *Amer. Dyestuff Rep.*, 1931, 20.)

HOPPENBROUWERS, WILHELMUS JOHANNES. Oxdiazinen-(1 : 3 : 4). 's-Gravenhage 1932. pp. xvi + 156.

IMPERIAL CHEMICAL INDUSTRIES, LTD. Non-inflammable solvents. London [1932.] pp. 19.

INSTITUTE OF CHEMISTRY OF GREAT BRITAIN AND IRELAND. The relation of food to disease. By STANLEY DIXON. London 1932. pp. 38. ill.

NIERENSTEIN, MAXIMILIAN. Helvetius, Spinoza, and transmutation. (From *Isis*, 1932, 17.)

PETTE, JAN WILLEM. Condensatie van meerwaardige alcoholen, suikers en oxyzuren met aldehyden onder invloed van  $P_2O_5$ . Leiden 1932. pp. xvi + 131.

ROOSMALEN, FRANCISCUS LAMBERTUS WOLTERUS VAN. Chlooren broomderivaten van diphenyl. 's-Gravenhage 1932. pp. xvi + 108.

SCIENTIFIC AND INDUSTRIAL RESEARCH, DEPARTMENT OF. *Engineering Research*. Special Report No. 18. Properties of materials at high temperatures. 6.—The strength at high temperatures of six steels and three non-ferrous metals. By H. J. TAPSELL, A. E. JOHNSON, and W. J. CLENSHAW. London 1932. pp. iv + 44. ill.

— *Food Investigation*. Special Report No. 42. The yellowing of the abdominal fat of frozen rabbits. By J. R. VICKERY. London. 1932. pp. iv + 27. ill.

SEBELIEN, JOHN. Further analyses of old bronzes. (From the *Avh. Norske Vid.-Akad. Oslo*, 1931.)

TRIFONOV, N. A. Über das magnetische Drehungsvermögen binärer flüssiger Systeme. (From the *Sci. Diary, Saratov State Univ.*, 1925, 4.) [In Russian. German summary.]

TRIFONOV, N. A., and TSCHERBOV, S. J. Die thermische Analyse des Systems: Phenylhydrazin—Essigsäure. (From the *Bull. Inst. rec. biol. Perm.*, 1929, 6.) [In Russian. German summary.]

UNITED STATES. *Department of Agriculture*. Circular No. 50. Proximate composition of fresh fruits. Revised edition. By CHARLOTTE CHATFIELD and LAURA I. McLAUGHLIN. Washington 1931. pp. 19.

— — Circular No. 146. Proximate composition of fresh vegetables. By CHARLOTTE CHATFIELD and GEORGIAN ADAMS. Washington 1931. pp. 24.

— — Circular No. 190. Buckwheat milling and its by-products. By MAYNE R. COE. Washington 1931. pp. 11. ill.



PAGES MISSING FROM 65 TO 80

# PROCEEDINGS

OF THE

## CHEMICAL SOCIETY.

Ordinary Scientific Meeting, Thursday, November 3rd, 1932, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., Past-President, in the Chair.

The CHAIRMAN referred to the loss sustained by the Society, through death on December 8th, 1931, of Alexander Smith, who was elected a Fellow of the Society on June 18th, 1925.

It was announced that the Council had appointed the following Representatives :—

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

*Federal Council for Chemistry* :—Professor C. S. Gibson, Sir William J. Pope, and Professor J. F. Thorpe.

*British Editorial Board of the Journal of Physical Chemistry* :—Mr. E. J. Bowen, Professor W. E. Garner, and Professor T. M. Lowry.

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

Desmond Cannon Brookes, B.A., 56, St. James's Street, S.W.1.

Arnold Blatchford David Cassie, M.A., B.Sc., Ph.D., "Penponds," North Drive, Ruislip, Middlesex.

John Leonard D'Silva, Ph.D., 6, Dornton Road, S.W. 12.

Bertram Garforth, Ph.D., 3, Eton Road, West Bridgford, Notts.

Colin Leslie Hewett, M.Sc., 28, Tresco Road, Peckham Rye, S.E. 15.

Edmund Joseph Leeming, M.A., The Oratory School, Caversham, Reading.

Arthur Charles Cecil Newman, B.Sc., A.R.C.S., D.I.C., St. George's School, Harpenden, Herts.

Bhartipudy Srinivasa Vira Raghava-Rao, B.A., M.Sc., 23, Parliament Hill, London, N.W. 3.

John Samuel Wignall, Ph.D., 30, Kingsley Avenue, Hillmorton Paddock, Rugby.

Ralph James Wilkins, B.Sc., 17, Ambrose Avenue, Golders Green, N.W. 11.

The following papers were read :—

"Specific heats of aqueous solutions of formic, acetic, propionic, and *n*-butyric acids." By C. R. BURY and D. G. DAVIES.

- “Studies in electrolytic oxidation. Part I. The electrolytic oxidation of sodium thiosulphate at a platinum anode.” By S. GLASSTONE and A. HICKLING.
- “Studies in electrolytic oxidation. Part II. Further experiments on the electrolytic oxidation of sodium thiosulphate.” By S. GLASSTONE and A. HICKLING.
- “The passivity of metals. Part VII. The specific function of chromates.” By T. P. HOAR and U. R. EVANS.
- “The automatic control and automatic recording of hydrogen-ion concentration by means of the glass electrode.” By C. MORTON.

Ordinary Scientific Meeting, Thursday, November 17th, 1932, at 8 p.m., Professor G. G. HENDERSON, M.A., D.Sc., F.R.S., President, in the Chair.

The PRESIDENT referred to the loss sustained by the Society, through death on November 12th, 1932, of Sir Dugald Clerk, K.B.E., F.R.S., who was elected a Fellow of the Society on May 20th, 1875.

The PRESIDENT announced that :—

1. The next Discussion will be opened by Professor I. M. Heilbron, D.S.O., F.R.S., on Thursday, December 15th, 1932, at 8 p.m., and that the title of the Discussion had been altered to “The Chemistry of the Sterols and Bile Acids.”

2. An Extraordinary General Meeting of the Society will be held on Friday, December 16th, 1932, at 5 p.m. to consider certain alterations in the Bye-Laws proposed by the Council.

3. In accordance with the intimation contained in the notice sent to Fellows on September 12th, the Council has now appointed Local Representatives (see p. 95).

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

Leonard Francis Broadway, Ph.D., Clare College, Cambridge.

Geoffrey Broughton, B.Sc., 117, Peterborough Road, Leyton, E. 10.

William Gunn Burrell, M.A., 1, Colebrook Place, Glasgow, W. 2.

Benjamin Collie, B.Sc., 31, Landale Road, Peterhead, Aberdeenshire.

John Stanley Herbert Davies, B.A., M.Sc.Tech., Ph.D., “Woodland,” Crescent Road, Cheetham Hill, Manchester.

Wilfred James Cecil Dyke, Ph.D., National Institute for Medical Research, Hampstead, N.W. 3.

Kenneth Kershaw Etchells, M.Sc., A.I.C., 413, Bellegrove Road, Welling, Kent.

Alexander Oscar Gettler, M.A., Ph.D., 32, Waverly Place, New York City, U.S.A.

Subimal Chandra Ghosal, M.Sc., c/o Messrs. Thomas Cook & Son, Ltd., Berkeley Street, W. 1.

John Grindley, Ph.D., A.I.C., 12, Lowther Road, Barnes, S.W. 13.

Stanley Reginald William Martin, B.Sc., A.R.C.S., 24, Goldie House, Hazellville Road, N. 19.

William Pugh, B.Sc., Ph.D., F.I.C., Chemistry Department, University of Cape Town, Rondebosch, South Africa.

John Joseph Ritter, M.A., Ph.D., 92, Glen Road, Yonkers, New York, U.S.A.

Kenneth Sams, A.R.C.S., 36, Fernhurst Road, Fulham, S.W. 6.

James Wallace, B.A., 12, St. Mark's Terrace, Mansfield, Notts.

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

Julius Arthur Nieuwland, Prof., B.A., Sc.D., Ph.D., Catholic University of America, Notre Dame, Ind., U.S.A.

A Discussion on "Combustion of Gases in Electric Discharges" was opened by Professor G. Ingle Finch, and continued by Mr. H. T. Tizard, Professor E. K. Rideal, Mr. A. C. G. Egerton, Professor W. E. Garner, and Professor W. A. Bone.

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#### THE LIBRARY.

The Library will be closed for the Christmas Holidays from Friday, December 23rd, at 1 p.m., until Thursday, December 29th, at 10 a.m.

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List of Papers, or Abstracts thereof, received between October 20th and November 17th, 1932. (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.)

- "Ammines. Part X. Cobaltous and cupric compounds from tris-( $\beta$ -hydroxyethyl)-amine. New method of formation of aminocupric salts." By J. C. DUFF and E. H. STEER.
- "The dismutation of some disulphides. Part II." By J. L. D'SILVA and E. W. McCLELLAND.
- "Synthetical experiments on the nature of betanin and related nitrogenous anthocyanins. Part II." By (Mrs.) A. M. ROBINSON and R. ROBINSON.
- "Studies in insulin. Part II. The electrometric titration of normal, inactivated, and reactivated insulin." By E. A. HARVEY, F. O. HOWITT, and E. B. R. PRIDEAUX.
- "The preparation of diphenyl-3-aldehyde." By C. W. SHOPPEE.
- "Symmetrical triad prototropic systems. Part IX. The influence of polynuclear aryl groups upon mobility and equilibrium in the  $\alpha\gamma$ -diarylmethyleneazomethine system." By C. W. SHOPPEE.

- “Comparison of the directive powers of elements having consecutive atomic numbers. Part IV. Nitration of 2:4:6-triphenylpyrylium perchlorates.” By (MRS.) C. G. LE FÈVRE and R. J. W. LE FÈVRE.
- “Nitration of di-*p*-tolyl- and di-*p*-chlorophenylphenylpyrylium perchlorates.” By (MISS) H. E. JOHNSTONE and R. J. W. LE FÈVRE.
- “Studies of electrolytic polarisation. Part X. Ammines of copper, silver, zinc, and cadmium.” By S. GLASSTONE.
- “The action of ethylmagnesium bromide on thalious chloride and on thalious ethoxide.” By R. C. MENZIES and (MISS) I. S. COPE.
- “Catalytic reduction of aromatic nitro-compounds.” By S. J. GREEN.
- “The hydrolysis of acetonesemicarbazone and of acetoxime. Part I. The partial vapour pressure of acetone in aqueous solutions. Part II. Measurement of the hydrolytic constant of acetonesemicarbazone and the calculation of the heat of the reaction between acetone and semicarbazide.” By J. E. W. RHODES.
- “Depression of the melting point of *r*-isoborneol, *l*-borneol, and *d*-camphoroxime by various substances.” By T. S. PATTERSON, (MISS) JANET H. BLACKWOOD, and J. M. STEWART.
- “Bromination of 2-nitro-*p*-cresol.” By W. O. KERMAK and W. T. SPRAGG.
- “Researches in the menthone series. Part X. The complete optical resolution of *dl*-neomenthol by means of *l*-menthol.” By J. READ and W. J. GRUBB.
- “The rates of detonation in carbon monoxide-oxygen mixtures.” By C. CAMPBELL, C. WHITWORTH, and D. W. WOODHEAD.
- “The formation of organo-metalloidal compounds by micro-organisms. Part I. Trimethylarsine and dimethylethylarsine.” By F. CHALLENGER, (MISS) C. HIGGINBOTTOM, and L. ELLIS.
- “Conditions for estimating antimony by the permanganate method. Potentiometric titrations.” By W. PUGH.
- “Studies of the boron-carbon linkage. Part II. The stability of *n*-propylboric acid. The nitration of *p*-carboxyphenylboric acid.” By A. D. AINLEY and F. CHALLENGER.
- “A new synthesis of cadalene.” By E. DE B. BARNETT and J. W. COOK.
- “The viscosity of nitrobenzene.” By W. M. COX and J. H. WOLFENDEN.
- “The condensation of chloral with the tolyl and nitrophenyl ureas.” By F. D. CHATTAWAY, G. M. T. KERR, and C. G. LAWRENCE.

- "The influence of acid concentration on the oxidation potential of mixtures of ferric and ferrous sulphates in sulphuric acid solution." By T. J. GLOVER.
- "Oxidation of quinol with ammonium persulphate." By J. W. DODGSON.
- "The rotatory dispersion of organic compounds. Part XXI. The rotatory dispersion and circular dichroism of aldehydic sugars." By T. M. LOWRY and H. HUDSON.

FORMS OF RECOMMENDATION FOR FELLOWSHIP. THE  
BALLOT WILL BE HELD AT THE ORDINARY  
SCIENTIFIC MEETING ON THURSDAY, DECEMBER  
1st., 1932.

BELL, RONALD PERCY, "Willowfield," Courthouse Road, Maidenhead. British. Investigator and Teacher of Chemistry. B.A., B.Sc. (Oxon.). Papers on theory of solution and chemical kinetics: *J. Faraday Soc.*, 1927, p. 396; *J. Phys. Chem.*, 1928, p. 882 and 1929, p. 99; *Z. physikal. Chem.* [A], 1930, p. 20; *J. Amer. Chem. Soc.*, 1931, p. 2478; *Trans. Faraday Soc.*, 1931, p. 797; *J.C.S.*, 1931, p. 1371; 1932, p. 338. (Signed by) J. H. Wolfenden, C. N. Hinshelwood, E. J. Bowen.

BROOKES, DESMOND CANNON, 56, St. James's Street, S.W. 1, and Suffolk House, Frinton-on-Sea. British. Chemical Engineer. B.A. (Cantab.), Hons. Natural Sciences; B.A., Hons. Natural Sciences. Graduate Member of Institution of Chemical Engineers. Former Vice-President of Cambridge University Chemical Society. At present engaged upon the technical control of the applications of sodium aluminate to water treatment and purification. (Signed by) Eric K. Rideal, R. G. W. Norrish, H. McCombie.

CASSIE, ARNOLD BLATCHFORD DAVID, "Penponds," North Drive, Ruislip, Middlesex. British. Research Student. M.A. (Hons. Maths.), B.Sc. (Hons. Physics) [Edinburgh]; M.A. (Hons. Physics) [Cambridge]; Ph.D. (Chemistry) [London]. Publications: "Investigations in the Infra-Red Region of the Spectrum," Parts I-VII (*Proc. Roy. Soc.*, 1930, [A], **130**, 133 and 142; *ibid.*, 1931, **132**, 236 and 252; *ibid.*, 1932, **135**, 375; *ibid.*, 1932, **137**, 622; *ibid.*, Nov. or Dec. 1932). Other papers relating to Infra-Red (*Trans. Faraday Soc.*, 1930, **36**, 197), etc. (Signed by) F. G. Donnan, C. R. Bailey, W. Rogie Angus.

CLARKE, WALTER, 296, Katherine Road, Forest Gate, E. 7. British. Works Chemist. Special B.Sc., 1st Class Hons. Chemistry, London. Asst. Chemist at Messrs. Batchelor Robinson & Co., Ltd., Llanelly. Works Chemist at Messrs. The New London Electron Works, Ltd., E. 6. (Signed by) Frank Collingridge, George Dean, Frank Laurence Allen.

CULHANE, KATHLEEN, 42, Sutton Court, W. 4. British. Chemist. B.Sc., London, Royal Holloway College. Publications: *Biochem. J.*, 1927, Vol. XXI, p. 1015; 1929, Vol. XXIII, pp. 384, 1010; *Journ. Biological Chem.*, 1930, Vol. LXXXVI, p. 113; *Quarterly Journ. Pharm.*, 1928, Vol I, p. 517. (Signed by) Charles Alex. Hill, Francis H. Carr, T. S. Moore.

CUTHILL, RONALD, 420, Livingstone Road, Bolton Villas, Bradford. British. Lecturer in Physical Chemistry. B.Sc., 1st Class Hons. Chemistry, M.Sc., Ph.D. (Leeds). Research Chemist, British Silk Research Association,

University, Leeds, 1926-1929. Lecturer in Physical Chemistry, Bradford Technical College since 1929. (*Signed by*) H. M. Dawson, C. G. Lyons, William S. Denham.

DAVIES, DAVID GWYNNE, "Yardley," South Road, Aberystwyth, Cardiganshire. British. Junior Assistant Lecturer. B.Sc., Ph.D. (Wales). Junior Assistant Lecturer at University College of Wales, Aberystwyth. "The Partial Specific Volume of Potassium *n*-Octoate in Aqueous Solution" (with Mr. C. R. Bury), *J.C.S.*, 1930, p. 2263. "Specific Heats of Aqueous Solutions of Formic, Acetic, Propionic, and *n*-Butyric Acids" (with Mr. C. R. Bury), *ibid.*, 1932, p. 2413. (*Signed by*) T. Campbell James, D. M. Williams, C. R. Bury.

D'SILVA, JOHN LEONARD, 6, Dornton Road, S.W. 12. British. Research Chemist. B.Sc., Ph.D. (London, 1931). At present engaged in research for the Asthma Research Council. "Formation of Thionaphthindoles," Part II, *J.C.S.*, 1931, p. 2972; Part III, *ibid.*, 1932, p. 227. (*Signed by*) Samuel Smiles, E. W. McClelland, L. A. Warren.

FRANCOMBE, KENNETH WALTER, Allington House, 136, Victoria Street, S.W. 1. British. Captain. Chemist, City of Birmingham Gas Dept. (1918-27). Chief Chemist, Coal Research Syndicate, Ltd. (1927-29). Chemist, Research Dept., Woodall-Duckham Cos., Ltd. (1929-32). (*Signed by*) H. M. Spiers, Frank E. Thompson, Stephen N. Wellington.

GARFORTH, BERTRAM, 3, Eton Road, West Bridgford, Notts. British. Research Chemist. B.Sc. (Col. Chem.), Leeds; Ph.D., Leeds. Research Chemist, Messrs. Boots Pure Drug Co., 1931 to date. (*Signed by*) Frank Lee Pyman, Joseph Marshall, Fredk. O. Howitt.

HADDOCK, LEONARD ARTHUR, 2, Station Road, Enfield, Middlesex. British. Analytical Chemist. B.Sc., London. First Class Hons. in Chemistry; A.I.C. by examination. Research and analytical experience with Messrs. Allen & Hanburys, Ltd. Engaged in post-graduate research. (*Signed by*) Norman Evers, Henry J. S. Sand, A. M. Ward.

HEADLAND, HENRY WILLIAM, 101, Belgrave Road, Wanstead, E. 11. British. Research Student. B.Sc., 1st Class Hons. (London). Reason: Chemical research. (*Signed by*) H. D. K. Drew, D. C. Jones, E. G. Carter, G. H. Wyatt.

HEWETT, COLIN LESLIE, 28, Tresco Road, Peckham Rye, S.E. 15. British. Research Chemist. M.Sc., London. "Beiträge zur Kenntnis der Anthracen-Derivate," *Ber.*, 1931, **64**, 1572; "The Orientation of the  $\alpha$ -Chloroanthrones," *J.C.S.*, 1932, 506; "The Influence of Bz Substituents upon some Reactions of the Anthrones. I." *ibid.*, 1932, 1452. (*Signed by*) E. L. Kennaway, J. W. Cook, Henry J. S. Sand, A. M. Ward.

HUTTON, HENRY MARK, jun., 23, Montpellier Crescent, New Brighton, Cheshire. British. Director. As a member of the British Launderers Research Association, I am interested in the development and application of Chemistry in the Laundry Industry. (*Signed by*) T. P. Hilditch, Thomas J. Roberts, A. E. Findley.

JENKINS, HYWEL OLIVER, 29, High Street, Gilfach Goch, nr. Bridgend, Glam. British. Research Student. B.Sc., Ph.D. (Wales). Investigations have been carried out on the freezing points of non-ionic solutions, and the results will be published shortly. (*Signed by*) L. J. Huddleston, T. Campbell James, C. R. Bury.

JEPHCOTT, CLARENCE, 198, Rosedale Heights Drive, Toronto, Canada. British subject. Research Chemist (Lister Institute). B.A., M.A., Ph.D., University of Toronto. Demonstrator in Chemistry, University of Toronto, 1923-28.

Research Associate in Physiology, University of Toronto, 1929-31. *J. Amer. Chem. Soc.*, 1928, **50**, 1189; *Trans. Roy. Soc. Canada*, 1931, Sec. V, 183; *Amer. J. Physiol.*, 1932, **100**, 285. (*Signed by*) Arthur Harden, J. Masson Gulland, Robert Robison.

KIRBY, ROLFE FAIRBANK, Highfield House, Weelsby, Grimsby, Lincolnshire. British. Analyst to Manufacturing Chemist. B.Sc. (Pass), University of Sheffield. Intention to join is to keep up with modern developments in chemical science. (*Signed by*) G. M. Bennett, S. Glasstone, Brynmor Jones.

LAWRENCE, EDWIN CHARLES HIGGINS, Organic Research Laboratories, Royal College of Science, South Kensington, S.W. 7. British. Research Student in Organic Chemistry. A.F.C.S. (London), B.Sc. (Hons. London). For three years undergraduate student in Chemistry at Royal College of Science, London (1929-32). Now post-graduate research student in Organic Chemistry at the same college. (*Signed by*) Jocelyn Thorpe, G. A. R. Kon, R. P. Linstead.

LEEMING, EDMUND JOSEPH, The Oratory School, Caversham, Reading. British. Schoolmaster. M.A., Cambridge. Desire to obtain the publications and use the library of the Society. (*Signed by*) Harold A. Scarborough, H. McCombie, F. B. Kipping.

LEWIS, DAVID THOMAS, 3, Pontycapel Road, Cefn Coed, Merthyr Tydfil. British. Research Student, U.C.W., Aberystwyth. First Class Honours in Chemistry at the University of Wales, Aberystwyth; B.Sc. degree. At present nearing completion of 2 years' Research scheme for the Ph.D. degree. Lewis and Hudleston, *J.C.S.*, May 1932 (in publication). Have also recently submitted another paper. (*Signed by*) L. J. Hudleston, T. Campbell James, C. R. Bury, D. M. Williams.

LINNITT, CAPT. CHARLES FREDERICK, 14, Gloucester Row, Weymouth, Dorset. British. Second Master and Senior Science Master at Weymouth Grammar School. B.Sc. (Birmingham). War Service as Divisional Gas Officer to 60th Division and Chemical Adviser to XXth Army Corps, E.E.F. Captain in Army Educational Corps (Regular Reserve of Officers). (*Signed by*) W. Vernon Lloyd, C. S. Kipping, Philip G. G. Moon.

MACARTHUR, JOHN, Schoolhouse, Annbank, Ayrshire, N.B. British. Research Fellow in Chemistry. M.A., B.Sc., Ph.D. (Glasgow). Late Carnegie Scholar. *J.C.S.*, 1932, 1669. (*Signed by*) G. G. Henderson, R. Wright, Stotherd Mitchell.

MILNER, HENRY BREWER, 4, Wycombe Gardens, Golders Green, N.W. 11, and at 92, Victoria Street, Westminster, S.W. 1. British. Consulting Petroleum Technologist. M.A. [Nat. Sci. Trip. (Chemistry, Geology, Mineralogy) Cantab.]; D.I.C. (Lond.); F.G.S.; M.Inst.P.T. Much of my work concerns the chemical and physical testing of rocks, rock-products, and particularly asphalt and allied substances in my own laboratories. (*Signed by*) Arthur Hutchinson, W. J. Pope, B. E. Dixon.

NEWMAN, ARTHUR CHARLES CECIL, St. George's School, Harpenden, Herts. British. Senior Science Master at St. George's School. B.Sc., 1st Class Hons. Chemistry, London; A.R.C.S., Chem. 1st Class; D.I.C. Carried out researches at the Royal College of Science in connection with the specific oxidation of organic compounds by means of Selenium Dioxide as a student working for a higher degree. It is hoped that papers in this connection will shortly be presented to the Chemical Society for publication. (*Signed by*) Jocelyn Thorpe, G. A. R. Kon, M. A. Whiteley.

NISBET, HUGH BRYAN, 32, Millar Crescent, Edinburgh. British. Assistant Lecturer on Chemistry, Heriot-Watt College, Edinburgh. B.Sc. (Edinburgh),



F.I.C. Have published three papers on Organic subjects. *J.C.S.*, 1927, 2081; 1928, 3121; 1929, 1901. (*Signed by*) T. Slater Price, Robt. H. Slater, W. O. Kermack.

PEARSON, JOHN, 38, Moira Road, Eltham, S.E. 9. British. Research Student. B.Sc. (1st Class Hons.). Organic Research Student at University College, London. Student Demonstrator in Dept. of Chem., Univ. Coll. (*Signed by*) C. K. Ingold, R. J. W. Le Fèvre, J. N. E. Day.

RAGHAVA-RAO, BHARTIPUDY SRINIVASA VIRA, 23, Parliament Hill, N.W. 3. British-Indian. Research Student. B.A., M.Sc. (Madras, India). Published jointly with Dr. H. E. Watson papers mainly on the Phototropy of Mercury Compounds. (*Signed by*) F. G. Donnan, R. Winstanley Lunt, S. V. Anantakrishnan.

REYNOLDS, THELMA MURIEL, Somerville College, Oxford. Australian. 1851 Science Research Scholar. B.Sc. and M.Sc., University of Sydney. Demonstrator in Organic Chemistry, University of Sydney, 1929-1932. "The Celluloses of Two Water Plants, *Ottelia Ovalifolia* (Richard) and *Eichornia crassipes* (Solms)" (with J. C. Earl), *J. Proc. Roy. Soc., N.S.W.*, 1931, **65**, 75. "A Note on the Action of Titanium Tetrachloride on Tetracetyl- $\beta$ -*D*-glucosidoglycollic Ester," *ibid.* (in the press). "The Effect of a 2-*p*-Toluenesulphonyl Group on the Reactivity of the Halogen Atom of a Glucosidyl Halide," *J.C.S.*, 1931, 2626. (*Signed by*) J. C. Earl, Horace Finnemore, Charles E. Fawsitt.

ROBERTS, JOSEPH HARRY, Heaton Moor College, Heaton Moor, Stockport, Cheshire. British. Principal of above School. Inter. B.A., Diploma in Agricultural Chemistry, M.I.H. Lecturer in Agriculture in Weaverham Grammar School, Cheshire, 1903-4; late Head Master of the Grammar School, Hyde, Cheshire. (*Signed by*) E. H. Roberts, C. S. Gibson, G. G. Henderson, Emile Mond.

SHEPPARD, WILLIAM GEORGE, "The Gables," West Mark, Highbridge, Somerset. British. Chemist and Druggist. Passed the Pharmaceutical Society of Great Britain's final C and D exam., and am desirous of obtaining current literature in Research with a view of pursuing study in Chemistry further. (*Signed by*) David J. Williams, H. Lucas, P. H. Woodnoth.

SNELL, FREDERICK ROWLANDSON, Shotover, Park Avenue, Eastbourne. British. Schoolmaster. B.A. (1st Class Hons. in Chemistry); B.Sc. (both of Oxford University). Lecturer in Physical Chemistry at St. John's College, Agra, India, from 1927-32. Paper sent to Indian Chemical Soc. in 1932 on "Conductivity of Soda Zincate Solutions" (not yet published). Appointed Senior Science Master at Eastbourne College from Sept. 1932. "Reaction of Bromine with Formic Acid," *J.C.S.*, 1925, **127**, 2715. (*Signed by*) J. C. Smith, L. H. Briggs, D. Ll. Hammick.

WIGNALL, JOHN SAMUEL, 30, Kingsley Avenue, Hillmorton Paddock, Rugby. British. Lecturer in Chemistry. B.Sc., Ph.D. (London). Student, Technical College, Halifax. Research, Colour Research Department, Technical College, Huddersfield. Teaching, Rugby College of Technology and Arts. Five papers appear in the names of Herbert Henry Hodgson and John Samuel Wignall, *J.C.S.*, 1926, Nos. CCLXXVIII and CCCLXXVI; 1927, Nos. CLVIII and CCXCV; 1928, XLV. (*Signed by*) Herbert H. Hodgson, James Bruce, W. J. Stansfield.

WILKINS, RALPH JAMES, 17, Ambrose Avenue, Golders Green, N.W. 11. British. Research Student in Physical Chemistry. B.Sc. Special, 1st Class Hons. Chemistry, London, June 1932. (*Signed by*) J. R. Partington, H. D. K. Drew, D. C. Jones.

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

COCHRANE, FRANK CHESTER, Pretoria Hospital, P.O. Box 437, Pretoria, South Africa. British. Chief Chemist, Pretoria Hospital, Pretoria, S.A. Pharmaceutical Chemist. Lecturer in Pharmacy and Practical Dispensing at the Witwatersrand Technical Institute, Johannesburg, 1926-8. Lecturer in Chemistry and Physics at the Pretoria Technical College, Pretoria, 1928. (*Signed by*) N. F. Lovasz, Bennett A. Jacobson.

DEULOFEU, (DR.) VENANCIO, Casilla Correo 2539, Buenos Aires, Argentine Republic. Argentine. Assistant Prof. Biochemistry, University of Buenos Aires. Doctor of Chemistry (Buenos Aires). Several research papers published in the *J.C.S.*; *Anales de la Sociedad Española de Física y Química*; *Bulletin de la Société chimique de France*; etc. *J.C.S.*, 1928, 523; 1929, 225 (with R. J. Selva); 1929, 2458; 1930, 2602. (*Signed by*) E. Moles.

JOSHI, SHIAM SUNDER, Head of the Chemistry Dept., Meerut College, Meerut, India. Indian. Professor of Chemistry. D.Sc., M.Sc. (Lucknow). Papers published jointly, *J. Indian Chem. Soc.*, 1928, 5, 300; 1932, 9, 59. D.Sc. (Lucknow), and working as Professor of Chemistry since 1927. *J.C.S.*, 1924, 125, 2482. (*Signed by*) N. R. Dhar, K. P. Chatterjee.

MILNE, GEOFFREY, Amani (via Tanga), Tanganyika Territory, East Africa. British. Soil Chemist. M.Sc. (Leeds). In charge of soil work at the East African Agricultural Research Station, Amani; formerly Lecturer in Agricultural Chemistry, University of Leeds. (*Signed by*) Arthur Smithells.

NARAYANA IYER, KOVELIMADAM RAMA, Agricultural Chemist, Quilon P.O., Travancore State, India. Indian. Agricultural Chemist to the Government of Travancore. B.A. degree of the Madras University; M.Sc. degree of the State University of New Jersey, U.S.A. Two years' training and post-graduate work in the Indian Institute of Science, Bangalore, on the chemistry of oils and fats. Two years' post-graduate work in the Imperial Agricultural Research Institute, Pusa, India, on the biochemistry of peat soils. In charge of the Agricultural Research Laboratory, Travancore. No papers in *J.C.S.*, but has published papers in the *Jour. Indian Inst. Sci.*, Vol. XI., No. 3, on oils and fats; on Lignin-protein Complexes in *Jour. Wash. Acad. Sci.*, Jan. 1932. In *Soil Science*, July 1932, on "Humus nucleus." (*Signed by*) John J. Sudborough.

ROBSON, IVOR LINDOW, "Cliff House," Sandakan, B.N. Borneo. English. Manager of Wholesale and Retail Chemists and Druggists. Member of the Pharmaceutical Society. Degree obtained in Edinburgh. Formerly Student of Chemistry at Heriot-Watt College, Edinburgh. (*Signed by*) A. W. Morgan.

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## ADDITIONS TO THE LIBRARY.

### I. Donations.

BAVINK, BERNHARD. The anatomy of modern science: an introduction to the scientific philosophy of to-day. Translated from the 4th German edition by H. STAFFORD HATFIELD. London 1932. pp. xiv + 684. ill. 21s. net. (*Recd.* 1/11/32.)

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

DENTAL BOARD OF THE UNITED KINGDOM. Four lectures on "Practical points connected with dental mechanics." By CHARLES

STANLEY GIBSON, WILLIAM SIMMS, WILLIAM KELSEY FRY [and others]. London 1932. pp. viii + 88. ill. (*Recd.* 3/11/32.)

From Professor C. S. Gibson, O.B.E., F.R.S.

DHAR, NIL RATAN. *New conceptions in biochemistry.* Allahabad 1932. pp. x + 168. (*Recd.* 7/11/32.) From the Author.

FRIEND, JOHN NEWTON. *A text-book of physical chemistry.* Vol. I. *General properties of elements and compounds.* London 1932. pp. xii + 502. ill. 24s. net. (*Recd.* 28/10/32.)

From the Publishers : Messrs. Charles Griffin & Co.

MARTINDALE, WILLIAM HARRISON, and WESTCOTT, WILLIAM WYNN. *The extra pharmacopœia.* 20th edition. Vol. I. London 1932. pp. xlvi + 1216. (*Reference.*) 27s. 6d. net.

From the Publishers : Messrs. H. K. Lewis & Co.

SOCIETY OF PUBLIC ANALYSTS and OTHER ANALYTICAL CHEMISTS. *Some reminiscences of its first fifty years* by BERNARD DYER, and a review of its activities by CHARLES AINSWORTH MITCHELL. Cambridge 1932. pp. viii + 278. ill. 12s. 6d. net. (*Recd.* 3/11/32.)

From Dr. Bernard Dyer.

## II. *By Purchase.*

BANCO, R. *Der Magnesit und seine Verarbeitung.* Dresden 1932. pp. viii + 64. ill. *M.* 5.80. (*Recd.* 11/11/32.)

BRITISH PHARMACOPŒIA 1932. Published under the direction of the General Council. London 1932. pp. 1 + 714. (*Reference.*) 21s. net.

CASTELFRANCHI, GAETANO. *Recent advances in atomic physics.* 2 vols. Translated by W. S. STILES and JOHN W. T. WALSH. London 1932. pp. xii + 360 + 12, xii + 400 + 12. ill. 30s. net. (*Recd.* 20/10/32.)

DARROW, KARL KELCHNER. *Electrical phenomena in gases.* [Baltimore] 1932. pp. xviii + 492. ill. \$8 net. (*Recd.* 20/10/32.)

EMICH, FRIEDRICH. *Microchemical laboratory manual.* With a section on spot analysis by FRITZ FEIGL. Translated by FRANK SCHNEIDER. New York 1932. pp. xvi + 180. ill. \$3 net. (*Recd.* 20/10/32.)

FAJANS, KASIMIR. (Editor.) *Elektrochemie.* Part I. *Leitfähigkeit und Überführungszahlen in flüssigen und festen Elektrolyten.* By LUDWIG EBERT and CARL TUBANDT. Leipzig 1932. pp. xvi + 495. ill. *M.* 45. (*Recd.* 8/11/32.)

FALKENHAGEN, HANS. *Elektrolyte.* Leipzig 1932. pp. xvi + 346. ill. *M.* 24.80. (*Recd.* 3/11/32.)

FISCHL, VIKTOR, and SCHLOSSBERGER, HANS. *Handbuch der Chemotherapie.* Part I. *Metallfreie organische Verbindungen.* Leipzig 1932. pp. viii + 358. *M.* 29. (*Recd.* 3/11/32.)

GATTERMANN, LUDWIG. Laboratory methods of organic chemistry. Completely revised by HEINRICH WIELAND. Translated from the 22nd German edition by WILLIAM McCARTNEY. London 1932. pp. xviii + 416. ill. 17s. net. (*Recd.* 22/10/32.)

HALAMA, MARTA. Transparentfolien (Cellophan, usw.). Berlin-Steglitz 1932. pp. xvi + 292 + 17 specimens. ill. M. 18. (*Recd.* 11/11/32.)

HEVESY, GEORG VON. Chemical analysis by X-rays and its applications. New York 1932. pp. xiv + 334. ill. \$3 net. (*Recd.* 20/10/32.)

KIND, WALTER. Das Bleichen von Pflanzenfasern. 3rd edition. Berlin 1932. pp. vi + 340. ill. M. 24. (*Recd.* 8/11/32.)

KUHN, ALFRED. Wörterbuch der Kolloidchemie. Dresden 1932. pp. iv + 179. ill. (*Reference.*) M. 8.

LIVERSEEGE, JOHN FRANCIS. Adulteration and analysis of foods and drugs. Birmingham methods and analyses of samples. Review of British prosecutions during half a century. London 1932. pp. xvi + 600. 36s. net. (*Recd.* 20/10/32.)

MARK, HERMANN. Physik und Chemie der Cellulose. Berlin 1932. pp. xvi + 330. ill. M. 45. (*Recd.* 8/11/32.)

MEDICAL RESEARCH COUNCIL. *Special Report Series*, No. 167. Vitamins : a survey of present knowledge. London 1932. pp. 332. ill. 6s. 6d. net. (*Recd.* 22/10/32.)

NIGHTINGALE, S. J. Tin solders : a modern study of the properties of tin solders and soldered joints. London 1932. pp. x + 90. ill. 5s. net. (*Recd.* 22/10/32.)

ORGANIC SYNTHESSES. Collective Volume I; being a revised edition of annual Vols. I—IX. New York 1932. pp. x + 564. ill. (*Reference.*) 27s. 6d. net.

SODDY, FREDERICK. The interpretation of the atom. London 1932. pp. xx + 356. ill. 21s. net. (*Recd.* 20/10/32.)

STAUDINGER, HERMANN. Die hochmolekularen organischen Verbindungen—Kautschuk und Cellulose—. Berlin 1932. pp. xvi + 540. ill. M. 45. (*Recd.* 8/11/32.)

### III. Pamphlets.

AUSTRALIA, COMMONWEALTH OF. *Council for Scientific and Industrial Research*. Bulletin No. 66. The influence of growth stage and frequency of cutting on the yield and composition of a perennial grass—*Phalaris tuberosa*. Melbourne 1932. pp. 35. ill.

— — Pamphlet No. 32. The chemistry of Australian timbers. Part II. The chemical composition of the woods of the Ironbark group. By W. E. COHEN, A. L. BALDOCK, and A. G. CHARLES. Melbourne 1932. pp. 36.

BRITISH STANDARDS INSTITUTION. Indexed list of British standard specifications. Annual report. London 1932. pp. 84.

FERRETTI, UBERTO. Il frigorifero sperimentale della R. Stazione Chimico-Agraria di Roma. (From *Rivista del Freddo*, 1932.)

GODBOLE, N. N. Zur Kenntnis der höchstmolekularen gesättigten Säuren des Erdnussöles. Berlin 1925. pp. 41.

KILCAWLEY, E. J. Weathering resistance of concrete. (*Rensselaer Poly. Inst. Bull., Eng. Sci. Series No. 36.*) Troy 1932. pp. 49. ill.

KULTASHEV, NIKOLAI VICTOROVITSCH. L'influence de la pression sur les courbes de fusion des systèmes binaires avec totale immixtibilité dans l'état cristallique. (From *Schriften Naturf. Ges. Univ. Jurjew*, 1915, 22.) ill. [In Russian. French summary.]

MAROGNA, GAETANO. Sull' analisi degli olii raffinati. II. Sugli oli di 2<sup>a</sup> lavorazione. (From the *Ann. R. Staz. Chim. Agrar. Sperm.*, 1931, [ii], 13.)

MINISTRY OF AGRICULTURE AND FISHERIES. Fishery Investigations, Series i, Vol. III, No. 3. 1930. An investigation of the River Lark and the effect of beet sugar pollution. By R. W. BUTCHER, F. K. T. PENTELOW, and JAMES WILLIAM ALLAN WOODLEY. London 1931. pp. 112. ill.

MONCHY, MICHIEL MARINUS DE. Nitratie van meta-chloor- en -broom-aniline-derivaten. 's-Gravenhage 1932. pp. xvi + 85 + iv.

MULLIN, CHARLES E., and HUNTER, H. L. Acetic acid from waste products. (From *Cellulose*, 1930, 1.)

NESSFIELD, VINCENT. A blood test for cancer. London [1932]. pp. 8.

NIERENSTEIN, MAXIMILIAN, and CHAPMAN, P. F. Enquiry into the authorship of the Ordinal of Alchimy. (From *Isis*, 1932, 18.)

NJEGOVAN, V. Razvoj fizike i hemije u poslednjih dvadeset i pet godina. (From *Glasnika Jugoslov. Prof. Društva*, 1931, 12.)

NYROP, J. E. Enzymic action. (From *Protoplasma*, 1932, 14.)

— Cancer-producing substances. (From *Protoplasma*, 1932, 15.)

OGAWA, MASAYOSHI. Versuche über das Cystin. (From the *Bull. Sci. Fak. Terkult.*, 1932, 5.) [In Japanese. German summary.]

PATILLO, DONALD K. The causes, effects and prevention of paper mill slime. (From *Cellulose*, 1930, 1.)

PENFOLD, ARTHUR RAMON. Commercial eucalyptus oils. (*Sydney Technological Museum Bulletin*, No. 2. Revised edition.) Sydney 1931. pp. 31.

— Guide to the extraction of eucalyptus oil in the field. (*Sydney Technological Museum Bulletin*, No. 4. 3rd edition.) Sydney 1932. pp. 34. ill.

PENFOLD, ARTHUR RAMON. Grass tree resin. (*Sydney Technological Museum Bulletin*, No. 16.) Sydney 1931. pp. 20. ill.

PENFOLD, ARTHUR RAMON, and MORRISON, FRANK RICHARD. Tung oil (Chinese wood oil) from Australian grown trees of *Aleurites Fordii* (Hemsley). (*Sydney Technological Museum Bulletin*, No. 12.) Sydney 1931. pp. 21. ill.

—— — Uses of commercial eucalyptus oils. (*Sydney Technological Museum Bulletin*, No. 17.) Sydney 1931. pp. 10.

PERTZOFF, V. A., and AISNER, M. On lecithin. (From the *Urusvati J.*, 1932, 2.)

PERTZOFF, V. A., and BELL, B. Un historique des premières recherches sur la composition de la caséine. (From *Le Lait*, 1932, 12.)

PINTO, MARIO DA SILVA, and FILHO, RAYMUNDO RIBEIRO. A industria do sal no Estado do Rio. (*Servico Geol. Min. Brasil, Boletim* No. 52.) Rio de Janeiro 1930. pp. 145. ill.

PRAKASH, SATYA. Formation of inorganic jellies. (From the *Allahabad Univ. Studies*, 1932, 8.)

RAADSVELD, CHRISTOFFEL WIJTZE. Nitro- en broom-nitro-derivaten van para-amino-acetophenon. 's-Gravenhage 1932. pp. xii + 99.

SAH, PETER P. T. Research on styphnic acid: I. Its preparation and properties. (From the *Sci. Rep. Nat. Tsing Hua Univ.*, 1932, 1.)

SAH, PETER P. T., and LEI, HSING-HAN. Alkyl-benzyl ethers. (From the *Sci. Rep. Nat. Tsing Hua Univ.*, 1932, 1.)

SAH, PETER P. T., and MA, SHAO-YUAN. Amino-biuret and its formaldehyde derivative. (From the *Sci. Rep. Nat. Tsing Hua Univ.*, 1931, 1.)

—— — Studies on phenolic acids: I. Alkyl salicylates and their 3:5-dinitro-derivatives. (From the *Sci. Rep. Nat. Tsing Hua Univ.*, 1931, 1.)

SAH, PETER P. T., LEI, HSING-HAN, and MA, SHAO-YUAN. Preparation of acetone-chloroform. (From the *Sci. Rep. Nat. Tsing Hua Univ.*, 1931, 1.)

SCHILDER, GUSTAV. Katalitička svojstva i pojave starenja kod mineralnih voda Vrnjačke Banje, Arandelovca i Mladenovca. (From the *Croat. Med. J.*, 1932, 54.)

SCHLESINGER, N. A. Gleichgewichtsverschiebungen durch Katalysatoren. Saratov 1932. pp. 170. [In Russian. German summary.]

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. *Fabrics Research Committee*. The viscosity of cellulose solutions. London 1932. pp. vi + 46. ill.

SCIENTIFIC AND INDUSTRIAL RESEARCH, Department of. *Food Investigation*. Special Report No. 41. The freezing, storage, and transport of New Zealand lamb. By EZER GRIFFITHS, J. R. VICKERY, and N. E. HOLMES. London 1932. pp. x + 178. ill.

— *Radio Research*. Special Report No. 11. Thermionic emission: a survey of existing knowledge with particular reference to the filaments of radio valves. By W. S. STILES. London 1932. pp. iv + 116. ill.

SOUTH METROPOLITAN GAS COMPANY. *Chemical Department*. The measurement of the viscosity of coal tars and pitches. By HERBERT PICKARD. London 1932. pp. 57. ill.

SPRUYT, J. P., and DONATH, W. F. The anti-neuritic vitamin content of boiled milk. (From the *Med. Dienst. Volksgesond. Ned.-Indie*, 1932.)

TOMMASI, GIUSEPPI. Esperienze di concimazione con leucite. (From the *Ann. R. Staz. Chim. Agrar. Sperim.*, 1931, [ii], 13.)

— La chimica nei più moderni problemi della produzione agraria. (From the *Ann. R. Staz. Chim. Agr.-Sperim. Roma*, 1932, [ii], 14.)

TOMMASI, GIUSEPPI, and DI DELUPIUS, SERAFINO DOJMI. Esperienze di concimazione con fosforiti. (From the *Ann. R. Staz. Agr.-Sperim. Roma*, 1930, [ii], 13.)

TOMMILA, EERO A. Über die elektrolytische Oxydation einiger aliphatischen Dicarbonsäuren. (From the *Ann. Acad. Sci. Fennicæ*, 1932, A, 36.)

UNITED STATES. *Department of Agriculture*. Circular No. 205. The iron content of vegetables and fruits. By HAZEL K. STIEBELING. Washington 1932. pp. 19.

— Circular No. 216. Production of organic acids from carbohydrates by fermentation: a digest of the literature. By O. E. MAY and H. T. HERRICK. Washington 1932. pp. 30.

— Miscellaneous Publication No. 117. Bibliography of ethylene dichloride. By W. A. GERSDORFF. Washington 1932. pp. 60.

— Miscellaneous Publication No. 120. A digest of the literature of Derris (*Deguelia*) species used as insecticides, 1747—1931. By R. C. ROARK. Washington 1932. pp. 86.

— Miscellaneous Publication No. 126. Fertilizers for cotton soils. By J. J. SKINNER. Washington 1931. pp. 9. ill.

— Technical Bulletin No. 241. Analyses and composition of California lemon and orange oils. By H. D. POORE. Washington 1932. pp. 30.

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### LOCAL REPRESENTATIVES.

- Aberdeen.* Mr. Reginald Craven, B.Sc., A.R.C.S., 2, Richmondhill Gardens, Aberdeen.
- Birmingham.* Dr. W. Wardlaw, F.I.C., Chemistry Department, The University, Edgbaston, Birmingham.
- Bristol.* Dr. E. B. Maxted, F.I.C., Chemical Department, The University, Woodland Road, Bristol.
- Cambridge.* Dr. Hamilton McCombie, D.S.O., M.C., M.A., The Chemical Laboratory, The University, Cambridge.
- Edinburgh.* Dr. Alexander Lauder, F.I.C., College of Agriculture, 13, George Square, Edinburgh.
- Exeter.* Professor W. H. Lewis, M.A., F.I.C., University College, Exeter.
- Glasgow.* Dr. W. M. Cumming, F.I.C., Chemistry Department, Royal Technical College, Glasgow.
- Leeds.* Mr. H. S. Patterson, B.Sc., The University, Leeds.
- Liverpool.* Dr. R. A. Morton, F.I.C., Chemistry Department, The University, Liverpool.
- Manchester.* { Dr. F. Fairbrother, Chemistry Department, The University, Manchester.  
Dr. E. H. Rodd, A.C.G.I., D.I.C., Cranleigh, Moss Lane, Timperley, Altrincham, Cheshire.
- Newcastle and Durham.* Dr. R. Raper, M.A., Chemistry Department, Armstrong College, Newcastle-on-Tyne.
- North Wales.* Dr. F. G. Soper, A.I.C., Chemistry Department, University College of North Wales, Bangor.
- Nottingham.* Dr. B. D. Shaw, Chemistry Department, University College, Nottingham.
- Oxford.* Mr. D. Ll. Hammick, M.A., Oriel College, Oxford.
- St. Andrews and Dundee.* Dr. J. L. A. Macdonald, D.S.O., Cadham, Markinch, Fife.
- Sheffield.* Dr. S. Glasstone, F.I.C., Chemistry Department, The University, Sheffield.
- South Wales.* Professor J. E. Coates, O.B.E., D.Sc., University College, Singleton Park, Swansea.
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**FORTHCOMING MEETINGS OF THE SOCIETY.**

Thursday, December 1st, 1932, at 8 p.m.

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

- “ The action of sodium ethoxide on itaconic, citraconic, and mesaconic esters.” By E. H. COULSON and G. A. R. KON.
- “ The structure of glutaconic acids and esters. Part VII. Derivatives of 3-methylcyclopropene-1 : 2-dicarboxylic acid.” By G. A. R. KON and H. R. NANJI.
- “ Researches in the menthone series. Part X. The complete optical resolution of *dl*-neomenthol by means of *l*-menthol.” By J. READ and W. J. GRUBB.
- “ The complete optical resolution of chloriodomethanesulphonic acid.” By J. READ and (MISS) A. M. McMATH.
- “ The rotatory dispersion of organic compounds. Part XX. Rotatory dispersion and circular dichroism of camphor- $\beta$ -sulphonic acid in the region of absorption.” By T. M. LOWRY and (MISS) H. S. FRENCH.
- “ The rotatory dispersion of organic compounds. Part XXI. The rotatory dispersion and circular dichroism of aldehydic sugars.” By T. M. LOWRY and H. HUDSON.

Thursday, December 15th, 1932, at 8 p.m.

Discussion on “ The Chemistry of the Sterols and Bile Acids ” to be opened by Professor I. M. Heilbron, D.S.O., F.R.S.

Friday, December 16th, 1932, at 5 p.m.

Extraordinary General Meeting to consider certain alterations in the Bye-Laws proposed by the Council.

# PROCEEDINGS OF THE CHEMICAL SOCIETY.

Extra Meeting held in the Medical Lecture Theatre of the University of Birmingham on Friday, November 25th, 1932, at 5.30 p.m., the Chair being taken, in the absence of the President, by Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., Past-President.

The CHAIRMAN welcomed the visitors present and stated that letters of apology had been received from the Vice-Chancellor, Professor S. W. J. Smith, F.R.S., and Professor S. J. Wills.

Messrs. R. H. Hopkins, S. R. Carter, J. Cooper Duff, George King, R. J. W. Reynolds, Allan C. Waive, and Reece H. Vallance were formally admitted as Fellows of the Society.

Dr. F. W. Aston then delivered the Fourth Liversidge Lecture, entitled "Physical Atomic Weights." At the conclusion of the lecture, a Vote of Thanks, proposed by Professor W. N. Haworth and seconded by Professor G. T. Morgan, was passed with acclamation and acknowledged by the Lecturer.

A Vote of Thanks to the Senate of the University for receiving the Society, proposed from the Chair and seconded by Professor C. S. Gibson, was carried unanimously.

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Ordinary Scientific Meeting, Thursday, December 1st, 1932, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., Past-President, in the Chair.

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

	Elected.	Died.
Spencer Mort .....	June 21st, 1928.	Nov. 20th, 1932.
Charles Maddock Stuart .....	May 7th, 1885.	Nov. 22nd, 1932.

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

Lancelot Salisbury Bagster, Prof., D.Sc., The University, Brisbane, Queensland, Australia.

David Mark Cowan, B.Sc., A.R.C.S., 121, Herbert Road, Plumstead, S.E. 18.

- Eric George Cowley, B.Sc., 4, Walsingham Road, Enfield, Middlesex.  
 John Owen Edwards, B.Sc., 90, Anerley Park, S.E. 20.  
 Sidney Frank Haydon, Holland House, Holland Road, Hornsey, N. 8.  
 Max Hutchinson Hey, B.A., B.Sc., 18, Holmdene Avenue, North Harrow, Middlesex.  
 Leslie Alfred Hughes, B.Sc., A.R.C.S., 393, Bromley Road, Catford, S.E. 6.  
 Takeo Ishiguro, 707, 2-chome Daita, Setagaya-ku, Tokyo, Japan.  
 John George Knight, B.Sc., 41, Park Drive, Winchmore Hill, N. 21.  
 Harold Lowe, M.Sc., F.I.C., The Poplars, Park West, Keswall, Cheshire.  
 Harry Work Melville, Ph.D., 18, Kirkhill Gardens, Edinburgh.  
 George Harry James Neville, B.A., 14, Leys Avenue, Cambridge.  
 Jawher Lalchand Panjabi, B.Sc., 21, Rosslyn Hill, Hampstead, N.W. 3.  
 Gordon James Pritchard, B.Sc., 14, Craven Hill Gardens, Lancaster Gate, W. 2.  
 William Charles Victor Rosney, Ph.D., 44, Moss Lane, Walton, Liverpool.  
 Abraham Shannon, B.A., New College, Oxford.

Dr. R. J. W. Le Fèvre and Mr. A. J. Stevenson were elected Scrutators, and a ballot for the election of Fellows was held. The following were subsequently declared duly elected as Fellows :

- |   |  |
|---|--|
| Ronald Percy Bell, B.A., B.Sc.                  | Edmund Joseph Leeming, M.A.                        |
| Desmond Cannon Brookes, B.A.                    | David Thomas Lewis, B.Sc.                          |
| Arnold Blatchford                               | Charles Frederick Linnitt, B.Sc.                   |
| David Cassie, M.A., Ph.D.                       | John MacArthur, M.A., B.Sc., Ph.D.                 |
| Walter Clarke, B.Sc.                            | Geoffrey Milne, M.Sc.                              |
| Frank Chester Cochrane.                         | Henry Brewer Milner, M.A., D.I.C.                  |
| Kathleen Culhane, B.Sc.                         | Koovelimadam Rama Narayana Iyer, B.A., M.Sc.       |
| Ronald Cuthill, M.Sc., Ph.D.                    | Arthur Charles Cecil Newman, B.Sc., A.R.C.S.       |
| David Gwynne Davies, B.Sc., Ph.D.               | Hugh Bryan Nisbet, B.Sc., F.I.C.                   |
| Venancio Deulofeu (Dr.).                        | John Pearson, B.Sc.                                |
| John Leonard D'Silva, B.Sc., Ph.D.              | Bhartipudy Srinivasa Vira Raghava-Rao, B.A., M.Sc. |
| Kenneth Walter Francombe.                       | Thelma Muriel Reynolds, M.Sc.                      |
| Bertram Garforth, B.Sc., Ph.D.                  | Joseph Harry Roberts.                              |
| Leonard Arthur Haddock, B.Sc., A.I.C.           | Ivor Lindow Robson.                                |
| Henry William Headland, B.Sc.                   | William George Sheppard.                           |
| Colin Leslie Hewett, M.Sc.                      | Frederick Rowlandson Snell, B.A., B.Sc.            |
| Henry Mark Hutton.                              | John Samuel Wignall, B.Sc., Ph.D.                  |
| Hywel Oliver Jenkins, B.Sc., Ph.D.              | Ralph James Wilkins, B.Sc.                         |
| Clarence Jephcott, M.A., Ph.D.                  |  |
| Shiam Sunder Joshi, D.Sc.                       |  |
| Rolfé Fairbank Kirby, B.Sc.                     |  |
| Edwin Charles Higgins Lawrence, B.Sc., A.R.C.S. |  |

The following papers were read :

- “The action of sodium ethoxide on itaconic, citraconic, and mesaconic esters.” By E. H. COULSON and G. A. R. KON.
- “The structure of glutaconic acids and esters. Part VII. Derivatives of 3-methylcyclopropene-1:2-dicarboxylic acid.” By G. A. R. KON and H. R. NANJI.

- “The rotatory dispersion of organic compounds. Part XX. Rotatory dispersion and circular dichroism of camphor- $\beta$ -sulphonic acid in the region of absorption.” By T. M. LOWR and (MISS) H. S. FRENCH.
- “Researches in the menthone series. Part X. The complete optical resolution of *dl*-neomenthol by means of *l*-menthol.” By J. READ and W. J. GRUBB.
- “The complete optical resolution of chloriodomethanesulphonic acid.” By J. READ and (MISS) A. M. McMATH.

Ordinary Scientific Meeting, Thursday, December 15th, 1932, at 8 p.m., Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., Past-President, being in the Chair, owing to the absence of the President, through illness.

The following were formally admitted Fellows of the Chemical Society: J. Pearson, P. C. Young, A. C. Bottomley, C. L. Hewett, A. J. Stevenson, and D. Richter.

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

Antonio Garcia Banús, Prof., Dr., Plaza Trilla 4, Barcelona.  
 Samuel Francis Boys, B.Sc., A.R.C.S., 643, Fulham Road, S.W. 6.  
 Arthur Herbert Cook, A.R.C.S., 16, Kynaston Road, Stoke Newington, N. 16.  
 Samuel Evans, M.Sc., 15, Elm Grove, Aberdare.  
 Eli Finklestone, 24, Greek Street, London Road, Liverpool.  
 John Leslie Gleave, 14, Camden Square, N.W. 1.  
 Andrew McLean, Ph.D., 42, Spittalfields Road, Inverkeithing.  
 William John Ray, B.Sc., A.R.C.S., 59, Portland Road, Rugby.  
 George Reginald Rigby, Ph.D., A.R.C.S., 90, Campbell Road, Stoke-on-Trent.  
 Eric Arthur Houghton Roberts, B.A., B.Sc., 35/II lks, Kaulbachstrasse, München.  
 James Charles Edward Simpson, Ph.D., 27, Seabank Road, Wallasey.  
 Hermann, Staudinger, Prof., Goethestrasse 4, Freiburg.

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

Walther Rimarski, Ph.D., Chemisch-Technischen Reichsanstalt, Berlin.

A discussion on “The Chemistry of the Sterols and Bile Acids” was opened by Professor I. M. Heilbron and continued by Professor T. M. Lowry, Dr. J. D. Bernal, Professor R. Robinson, Dr. O. Rosenheim, and Dr. N. K. Adam.

Extraordinary General Meeting, Friday, December 16th, 1932, at 5 p.m.

In the absence of the President, through illness, the Chair was

taken by Professor J. F. THORPE, C.B.E., D.Sc., F.R.S., Past-President.

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

I. Bye-Law I (Of the Election and Admission of, and Payments by, Fellows).

(a) *Page 4, paragraph 2*, the first part of which at present reads :

“ The amount of the admission fee, if any, payable on election to Fellowship, and the amount of the annual subscription and of the life composition fee shall be determined by the Council from time to time subject to confirmation by an Extraordinary General Meeting of the Society : Provided that the Council shall have power without such confirmation either wholly to remit or to reduce the admission fee, or to permit its payment by instalments extending over a term of years or otherwise, whenever it may consider it desirable to do so. And provided further that the Council shall have power, without such confirmation, in the case of any person who has been a Fellow for not less than 40 years, wholly to remit or to reduce the annual subscriptions thereafter payable by him whenever it may consider it desirable to do so.”

to be altered by adding at the end of such part the following :

“ and provided further that the Council shall have power without such confirmation to reduce (by not more than one-half thereof) the annual subscription payable by any Fellow who, at the date when such annual subscription becomes payable, is under 25 years of age and who is willing to forego the receipt of certain of the publications of the Society issued to Fellows as hereinafter provided.”

(b) *Page 5, paragraph 2*, the first part of which at present reads :

“ Every Fellow shall have the right to be present and to vote at all meetings of the Society, and to propose Candidates for admission into the Society, and he shall be entitled, so long as his annual subscription be not in arrear, or shall not have been remitted or reduced under the provision hereinbefore contained, to one copy of the *Journal* and of such other publications of the Society as the Council may determine.”

to be altered by adding at the end of such part the following :

“ provided that any Fellow under 25 years of age paying a reduced annual subscription as aforesaid shall forego the receipt of such of the publications of the Society as the Council may determine.”

II. Bye-Law III (Of the Resignation and Readmission of Fellows), which at present reads :

“ Except in special circumstances determined by the Council, the resignation of any Fellow shall be accepted only after payment of all moneys due from him to the Society. Any person, whose resignation from the Fellowship has been duly accepted, may present to the Council a request for readmission. The case of such a person shall then be considered by the Council, which may, if it sees fit, reinstate him as a Fellow. He shall be entitled to receive the publications of the Society issued to Fellows since the date of resignation, and still in print, upon payment of all annual subscriptions due since that date,”

to be altered by adding after the word “ entitled ” (line 8 of the Bye-Law as printed above) the following :

“ (subject to any determination of the Council under Bye-Law I).”

III. Bye-Law X (Of the Secretaries), which at present reads :

“ There shall be two Secretaries and a Foreign Secretary. Among the duties of the Secretaries shall be : 1st. To attend, one or both, at all Meetings of the Society and of the Council ; 2nd. To take minutes of the proceedings and to read them at the ensuing Meeting ; 3rd. To address to every newly elected Fellow a copy of Letter No. 2 in the Appendix, together with a copy of the Obligation and of the Bye-Laws of the Society ; 4th. To intimate to all Fellows ordinarily resident in the United Kingdom the dates on which the Society holds its Meetings during the Session ; 5th. To prepare and circulate the Ballot Papers for the election of the Council ; 6th. To conduct the correspondence of the Society.

The several duties to be performed by each Secretary shall be arranged by the Council.

The Foreign Secretary shall conduct the foreign correspondence of the Society.

Each Secretary shall hold office until a successor has been appointed.”

to be altered by

- (a) Deleting the first sentence, and substituting therefor the following :

“ There shall be such number of Secretaries (but not less than two) as the Council shall from time to time determine having regard to the extent and nature of the duties the Secretaries are called upon to perform, of whom one may be designated as ‘ Foreign Secretary ’ by the Council.”

- (b) Substituting in line 3 of the Bye-Law as printed above the word “ more ” for the word “ both.”

- (c) Deleting the last two paragraphs (lines 16 to 19 of the Bye-Law as printed above) and substituting therefor the following :

“ Each Secretary whose appointment shall take effect in or after 1933 shall vacate the office of Secretary after he shall have held office for six years and shall not be eligible for re-election as Secretary until after the lapse of one year.”

#### IV. Bye-Law XIII (Of Committees).

*Page 14, paragraph 1, which at present reads :*

“ The following shall be included among the Committees : Finance Committee, House Committee, Library Committee, Publication Committee, and Research Fund Committee,”

to be altered by inserting after the word “ Finance ” the words “ and General Purposes ” and deleting the words “ House Committee.”

#### V. Appendix No. 1 (Form of Recommendation).

Add after the words “ in J.C.S.” the following paragraph :

“ If the candidate be under 25 years of age the following further particulars are required :

Date of birth.....

Whether desirous of paying reduced subscription and thereby foregoing right to receive certain publications..... ”

The proposed alterations in the Bye-Laws were considered separately, and on being put to the meeting from the Chair were unanimously adopted.

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

	£	s.	d.
Catalytic activity of hydrochloric acid in non-aqueous solvent. H. W. Ashton. (E. Lond. Coll.) ... ..	7	10	0
Synthesis of derivatives of polyhydroxybenzenes. W. Baker. (Oxford Univ.) ... ..	10	0	0
Heterogeneous addition to unsaturated cyclic acids. E. J. Boor- man. (Imperial Coll.) ... ..	8	10	0
Constitution of sesquiterpenes and their derivatives. A. E. Bradfield. (Univ. Coll., Bangor) ... ..	12	0	0
Kinetics of formation and physical properties of free radicals. L. F. Broadway. (Cambridge Univ.) ... ..	14	0	0
Adsorption of fatty acids from very dilute solutions by silicic acid gel. G. Broughton. (E. Lond. Coll.) ... ..	10	0	0
Adsorption of vapours and gases by porous solids. L. J. Bur- rage. (King's Coll.) ... ..	5	0	0
Synthesis and investigation of cannabinal and related substances. R. S. Cahn. (Univ. Coll., Bangor) ... ..	15	0	0
Investigation of spreading coefficients. E. G. Carter. (E. Lond. Coll.) ... ..	10	0	0
Isomeric change of aromatic compounds ( <i>cont'd.</i> ). A. W. Chap- man. (Sheffield Univ.) ... ..	10	0	0
Solubility and electric conductivity of salts in anhydrous hydro- gen cyanide ( <i>cont'd.</i> ). J. E. Coates. (Univ. Coll., Swansea)	17	0	0
Synthesis of fused-ring systems. A. H. Cook. (Imperial Coll.)	8	10	0
Influence of some substituents on chemical and physical properties of organic compounds. D. M. Cowan. (Woolwich Poly- technic) ... ..	12	0	0
Dielectric polarisation. E. G. Cowley. (E. Lond. Coll.) ...	5	0	0
Investigations in the diphenylene oxide series. N. M. Cullinane. (Univ. Coll., Cardiff) ... ..	10	0	0
Lichen acids. F. H. S. Curd. (Lond. Sch. of Hygiene) ...	15	0	0
Effect of the constitution of isomeric aliphatic alcohols on their mutual solubility. J. O. Edwards. (E. Lond. Coll.) ...	10	0	0
Substituted dibasic acids. K. K. Etchells. (Woolwich Poly- technic) ... ..	12	0	0
Hydrogenation of conjugated compounds. R. A. E. Galley. (Imperial Coll.) ... ..	8	10	0
Michael reaction in relation to acetylenic compounds. S. C. Ghosal. (Imperial Coll.) ... ..	8	10	0
Concentration cells of lithium bromide in absolute ethyl alcohol. J. Glassman. (E. Lond. Coll.) ... ..	7	10	0
Diamagnetic study of ureas. F. W. Gray. (Aberdeen Univ.)...	10	0	0
Optical properties of some aromatic nitro-compounds. N. H. Hartshorne. (Univ. Coll., Swansea) ... ..	5	0	0
The pinacol-pinacolin rearrangement. H. H. Hatt. (E. Lond. Coll.) ... ..	12	0	0
Experiments in hydroaromatic series. R. D. Haworth. (Arm- strong Coll.) ... ..	12	0	0
Stereochemistry of some mixed $\beta$ -tetrammines. F. S. H. Head. (E. Lond. Coll.) ... ..	9	0	0



	£	s.	d.
Influence of ultra-violet radiation on unsaturated fatty acids. F. W. Hodges. (Chelsea Polytechnic) ... ..	7	10	0
Behaviour of polyene systems towards catalytic reduction. L. A. Hughes. (Imperial Coll.) ... ..	7	0	0
Oxidising halogen in organic compounds. L. Hunter. (Univ. Coll., Leicester) ... ..	5	0	0
Cytisine and related alkaloids. H. R. Ing. (Univ. Coll., Lond.)	10	0	0
Isomerisation of dekalin. R. L. Jones. (Imperial Coll.) ...	7	10	0
Investigation of organo-metallic compounds ( <i>cont'd.</i> ). W. J. Jones. (Univ. Coll., Cardiff) ... ..	7	0	0
Synthesis of bases allied to strychnine and brucine. F. E. King. (Oxford Univ.) ... ..	15	0	0
An investigation of some simple substituted glutaconic acids. E. C. H. Lawrence. (Imperial Coll.) ... ..	8	10	0
Solvation of polyhalides. J. H. Martin. (Imperial Coll.) ...	5	0	0
Additive capacities of olefinic and polyene systems. S. R. W. Martin. (Imperial Coll.) ... ..	7	10	0
A study of semi-pinacolinic deamination. A. K. Mills. (Aber- deen Univ.) ... ..	10	0	0
Photosynthesis of HCl. R. B. Mooney. (Cambridge Univ.) ...	12	0	0
Acid catalysts in three-carbon tautomerism. K. S. Nargund. (Imperial Coll.) ... ..	7	10	0
Chlorine-sensitised photochemical decomposition of ozone. G. H. J. Neville. (Cambridge Univ.) ... ..	6	0	0
(a) Synthesis of homocaronic acid. (b) Resolution of <i>trans-dl</i> - caronic acid. J. Owen. (Univ. Coll., Bangor) ... ..	5	0	0
Constitution of $\beta$ -phenylated glutaconic acids and esters. J. L. Panjabi. (Imperial Coll.) ... ..	7	10	0
Studies in oxides of iron, cobalt, and nickel. M. Prasad. (Roy. Inst. of Science, Bombay) ... ..	15	0	0
(a) Rotenone and its derivatives. (b) Glucosides. A. Robert- son. (Lond. Sch. of Hygiene) ... ..	20	0	0
Influence of poles in the simple three-carbon system ( <i>cont'd.</i> ). E. Rothstein. (Leeds Univ.) ... ..	12	0	0
Preparation and properties of large-ring lactones. H. N. Rydon. (Imperial Coll.) ... ..	7	10	0
Preparation and dissociation constants of cyano-acids. K. Sams. (Imperial Coll.) ... ..	7	10	0
Anthelmintic Drugs. W. F. Sandrock. (Lond. Sch. of Hygiene)	12	0	0
Molecular constitution and molar heat of chlorination of organic compounds. F. G. Soper. (Univ. Coll., Bangor) ... ..	10	0	0
Theory of strong electrolytes, with special reference to the ques- tion of complete ionisation. H. I. Stonehill. (E. Lond. Coll.) ... ..	10	0	0
(a) Thermal and catalytic decomposition of substituted dibasic acids ( <i>cont'd.</i> ). (b) Isolation of strainless forms of the <i>cyclo</i> - hexane and substituted <i>cyclohexane</i> rings ( <i>cont'd.</i> ). A. I. Vogel. (Woolwich Polytechnic) ... ..	15	0	0
Kinetics of explosions. J. Wallace. (Cambridge Univ.) ...	10	0	0
Dissociation constants of acids. R. J. Wilkins. (E. Lond. Coll.)	8	0	0

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## ANNUAL REPORTS.

Fellows are reminded that applications for the Annual Reports for 1932, Volume XXIX, at 5s. 6d. per copy must be received by January 16th, 1933.

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 THE INSTITUTE OF FUEL.

A meeting of the Institute of Fuel will be held in the Rooms of the Chemical Society on Wednesday, January 11th, 1933, at 6 p.m., when a paper will be read entitled

“The Manufacture of Organic Products from Coke Oven Gas,” by T. E. OESTERRIETH and G. DESCAMPS.

Fellows of the Chemical Society are cordially invited to attend the meeting, and advance proofs of the paper can be obtained from the Secretary, The Institute of Fuel, 53, Victoria Street, S.W. 1

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List of Papers, or abstracts thereof, received between November 17th and December 15th, 1932. (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.)

- “Physico-chemical studies of complex formation involving weak acids. Part VI. Alkali solutions of thorium tartrate.” By H. T. S. BRITTON and W. E. BATTRICK.
- “Colour reactions of naphthaquinones.” By A. B. BECK, A. K. MACBETH, and F. L. WINZOR.
- “Physico-chemical studies of complex acids. Part IX. Tantallic acid.” By H. T. S. BRITTON and R. A. ROBINSON.
- “Researches in the menthone series. Part XI. A contribution to the diagnosis and characterisation of the stereoisomeric menthols.” By J. READ, W. J. GRUBB, and D. MALCOLM.
- “New derivatives of *p*-arsanilic acid. Part IV. *p*-Arsonoamidipanic acid and related compounds.” By G. T. MORGAN and E. WALTON.
- “The formula of hypophosphoric acid.” By F. BELL and S. SUGDEN.
- “A new volumetric method for the estimation of dithionates.” By S. GLASSSTONE and A. HICKLING.
- “Applications of thallium compounds in organic chemistry. Part IX. Changes observed on replacing dialkylthallium by trimethylplatinum in chelate rings.” By R. C. MENZIES and E. R. WILTSHIRE.

- “Ternary liquid systems. Part I. A study of the solubility of certain chlorine substituted hydrocarbons in water-acetone mixtures.” By J. HUNTER and J. K. WOOD.
- “Some new substituted glucosides.” By (MISS) T. M. REYNOLDS.
- “Studies of the boron-carbon linkage. Part III. The nitration of phenylboric acid.” By A. D. AINLEY and F. CHALLENGER.
- “Cryoscopic studies and activities. The dissociation of pyridine *o*-chlorophenoxide in benzene.” By H. M. GLASS and W. M. MADGIN.
- “The isomeric (–)menthyl  $\alpha$ -naphthyl glycollates.” By A. MCKENZIE and (MISS) E. R. L. GOW.
- “Derivatives of methylene-blue.” By H. D. K. DREW and F. S. H. HEAD.
- “An improved crucible support.” By E. G. RADLEY.
- “Studies on alkylated complex cyanides. Part I. The isomerism of the alkylated ferrocyanides. Part II. Hexaethylated ferrocyanides.” By E. G. J. HARTLEY and H. M. POWELL.
- “The ternary systems constituted by mercuric chloride and water in conjunction with an alkaline-earth chloride or cupric chloride.” By H. BASSETT, G. W. BARTON, A. R. FOSTER, and C. R. J. PATEMAN.
- “A mode of studying nitration.” By J. A. HETHERINGTON and I. MASSON.
- “The hydrolysis of salts of the halogen-substituted aliphatic acids in aqueous solution.” By H. M. DAWSON and N. B. DYSON.
- “Podophyllotoxin.” By A. ROBERTSON and R. B. WATERS.
- “Monothioethylene glycol. Part IV. Aryl- $\beta$ -hydroxy- and  $\beta$ -chlorosulphides.” By G. BADDELEY and G. M. BENNETT.
- “The influence of the sulphur atom on the reactivity of adjacent atoms or groups. Part VI. Aromatic side-chain and nuclear reactivity.” By G. BADDELEY and G. M. BENNETT.
- “Electrometric studies of the precipitation of hydroxides. Part VIII. Standardisation of acid solutions by means of mercuric oxide.” By H. T. S. BRITTON and (MISS) B. M. WILSON.
- “Tricarboyanines.” By (MISS) N. I. FISHER and (MISS) F. M. HAMER.
- “Note on the preparation of ethyl  $\beta$ -iodopropionate.” By J. W. BAKER.
- “Studies in dielectric polarisation. Part V. Benzene solutions of pyrones, thiopyrones, and thioketones. Dioxan solutions of ureas and thioureas.” By E. C. E. HUNTER and J. R. PARTINGTON.
- “Natural and synthetic indican.” By A. ROBERTSON and R. B. WATERS.

- “Influence of poles and polar linkings on the course pursued by elimination reactions. Part X. Formation and decomposition of dibenzylallylammonium hydroxide.” By L. HEY and C. K. INGOLD.
- “Influence of poles and polar linkings on the course pursued by elimination reactions. Part XI. Decomposition of quaternary ammonium hydroxides containing the *tert*-butylcarbonyl group.” By C. K. INGOLD and C. S. PATEL.
- “Influence of poles and polar linkings on the course pursued by elimination reactions. Part XII. Decomposition of quaternary ammonium alkoxides.” By C. K. INGOLD and C. S. PATEL.
- “Influence of poles and polar linkings on the course pursued by elimination reactions. Part XIII. Decompositions of some quaternary ammonium salts containing the methyl, benzyl, and benzhydryl groups.” By E. D. HUGHES and C. K. INGOLD.
- “Influence of poles and polar linkings on the course pursued by elimination reactions. Part XIV. The action of tertiary amines on triphenylmethyl halides.” By E. D. HUGHES.
- “A contribution to the relationship of structure to the photographic developing properties (developing function) of compounds of the naphthalene series.” By R. B. FORSTER and H. T. HANSON.
- “Primary photochemical processes. Part II. The absorption spectrum and photochemical decomposition of diazomethane.” By F. W. KIRKBRIDE and R. G. W. NORRISH.
- “Experiments on the synthesis of cyanomaclurin and its derivatives. Part I. Dihydrocyanomaclurin pentamethyl ether.” By A. L. BHALLA and J. N. RAY.
- “The configurations of the aldoximes from measurements of electric dipole moment.” By T. W. J. TAYLOR and L. E. SUTTON.
- “The interaction of carbon monoxide and nitric oxide.” By F. F. MUSGRAVE and C. N. HINSHELWOOD.
- “The synthesis of tartaric acid.” By A. C. C. NEWMAN and H. L. RILEY.

## ADDITIONS TO THE LIBRARY.

### I. *Donations.*

HEDGES, ERNEST SYDNEY. Chapters in modern inorganic and theoretical chemistry. London (1932). pp. viii + 279. ill. 12s. 6d. net. (*Recd.* 21/11/32.)

From the Publishers: Messrs. Edward Arnold & Co.

— Liesegang rings and other periodic structures. London 1932. pp. viii + 122. ill. (Second copy.)

From Mr. Emil Hatschek.

TINKLER, CHARLES KENNETH, and MASTERS, HELEN. Applied chemistry. A practical handbook for students of household science and public health. 2nd edition. Vol. II. London 1932. pp. xii + 284. ill. 15s. net. (*Recd.* 25/11/32.) From the Authors.

### II. *By Purchase.*

ANNUAL REVIEW OF BIOCHEMISTRY. Vol. I. Edited by JAMES MURRAY LUCK. Stanford 1932. pp. viii + 724. ill. (*Reference.*) \$5.

FARADAY, MICHAEL. Diary: being the various philosophical notes of experimental investigation during the years 1820—1862 and bequeathed by him to the Royal Institution of Great Britain. Edited by THOMAS MARTIN. Vols. I and II. London 1932. pp. xxviii + 430, xviii + 468. ill. (*Reference.*) Subscription price 36s. per vol.

RUPE, HANS. Adolf von Baeyer als Lehrer und Forscher. Erinnerungen aus seinem Privatlaboratorium. (Sammlung, N.F. Heft. 15.) Stuttgart 1932. pp. 26.

SALMONY, ALFRED. Über das Trockeneis, seine Herstellung, Verwendung und wirtschaftliche Bedeutung. (Sammlung, N.F. Heft 16.) Stuttgart [1932]. pp. 61. ill.

SCHLENK, WILHELM, and BERGMANN, ERNST. Ausführliches Lehrbuch der organischen Chemie. Vol. I. Leipzig 1932. pp. viii + 806. ill. *M.* 36. (*Recd.* 5/12/32.)

### III. *Pamphlets.*

CHARLTON, JAMES. Single value soil properties of tropical soils. (From the *Indian J. Agric. Sci.*, 1932, 2.)

INDIA. *Society of Biological Chemists.* Some aspects of plant nutrition. By B. VISWA NATH. (Bangalore) 1932. pp. 39.

— — — Symposium on "The rôle of organic matter in soil." (Bangalore) 1932. pp. 14.

INSTITUTE OF CHEMISTRY OF GREAT BRITAIN AND IRELAND. Two lectures on an "Outline of an electrochemical (electronic) theory of the course of organic reactions." By ROBERT ROBINSON. London 1932. pp. 52.

KOGERMAN, PAUL NICOLAI. On the chemistry of the Estonian oil shale "Kukersite." A monograph. (From the *Arch. Naturkunde Estlands*, 1931, [i], 10.)

MILLARD, EDGAR JAMES. Notes on the British Pharmacopœia 1932. London [1932]. pp. 44.

NATIONAL JOINT INDUSTRIAL COUNCIL FOR THE FLOUR MILLING INDUSTRY. Technical Education Series. Pamphlet No. 9. The wheats of commerce. I. General considerations. By ERNEST ARTHUR FISHER and CHARLES ROBERT JONES. London 1932. pp. 51. ill.

NESFIELD, VINCENT. Viscosity of the blood and its bearing on high blood pressure in the absence of renal disease. London [n.d.]. pp. 19.

RICHTER, DEREK. On the application of the chain reaction theory to biochemical processes. Oxford 1932. pp. 8.

SINGH, DALIP, and NIJHAWAN, SUKH DAYAL. A study of the physico-chemical changes accompanying the process of reclamation in alkali soils. (From the *Indian J. Agric. Sci.*, 1932, 2.)

UNITED STATES. *Department of Agriculture*. Technical Bulletin No. 276. The fractionation of American gum spirits of turpentine and evaluation of its pinene content by optical means. By S. PALKIN. Washington 1932. pp. 13. ill.

UNITED STATES. *Department of Agriculture*. Technical Bulletin No. 291. The effect of air drying on the hydrogen-ion concentration of the soils of the United States and Canada. By ERNEST H. BAILEY. Washington 1932. pp. 43. ill.

— — Food and Drug Administration. Service and Regulatory Announcements. Food and Drug No. 2. (Second Revision.) Definitions and standards for food products. Washington 1931. pp. 19.

— — *Department of Commerce*. Bureau of Mines. Bulletin 333. Refining of light petroleum distillates. By H. P. RUE and RALPH H. ESPACH. Washington 1930. pp. vi + 111. ill.

— — Bureau of Standards. Miscellaneous Publication No. 118. The optical rotation of liquids, its variation with wave length, temperature, solvent, and concentration. By THOMAS MARTIN LOWRY. Washington 1932. pp. iv + 106.

UNIVERSITY OF ILLINOIS. *Agricultural Experiment Station*. Bulletin 369. Vitamin-B and vitamin-G content of cereals. By ROSSLEENE ARNOLD HETLER, CLARA ROCKE MEYER, and DOROTHY HUSSEMAN. Urbana 1931. pp. ii + [45]. ill.

UPTHEGROVE, C., and HERZIG, A. J. The effect of the products of combustion on the shrinkage of metal in the brass industry. (*Univ. Michigan Eng. Research Bull.*, No. 22.) Ann Arbor 1931. pp. vi + 66. ill.

VLES, SIMON ERICH. Bepaling van de hydrolysesnelheid van zuuranhydriden met behulp van de anilinewatermethode. 's-Gravenhage 1932. pp. xii + 148.

VOEGTLIN, CARL, JOHNSON, J. M., and ROSENTHAL, SANFORD M. The catalytic action of copper in the oxidation of crystalline glutathione. (From the *U.S. Public Health Reports*, 1931, 46.)

YAMAFUJI, KAZUO. Über zwei neue Glykoside der Tabakblätter. (I). Über die chemischen Bestandteile des Tabaks. II. (From the *Bull. Agr. Chem. Soc. Japan*, 1932, 8.)

**MEETINGS OUTSIDE LONDON.**

*Birmingham.* After the Fourth Liversidge Lecture, entitled "Physical Atomic Weights," by Dr. F. W. Aston, F.R.S., on November 25th, an informal dinner was held at the Queen's Hotel, and was presided over by Professor W. N. Haworth. The health of the Lecturer was proposed by Professor C. S. Gibson, and Professor G. T. Morgan expressed thanks to Dr. W. Wardlaw for his services, as local representative, in arranging the meeting and dinner.

The thanks of the Council have been conveyed to Dr. F. W. Aston, and also to the Senate of the University of Birmingham and Dr. W. Wardlaw.

*Liverpool.* Fellows are reminded that the Ostwald Memorial Lecture will be delivered by Professor F. G. Donnan, C.B.E., F.R.S., in the Chemistry Lecture Theatre of the University of Liverpool, on Friday, January 27th, 1933, at 6 p.m.

The presence of visitors will be welcomed.





**FORTHCOMING MEETINGS OF THE SOCIETY.**

Thursday, January 19th, 1933, at 8 p.m.

Ordinary Scientific Meeting.

Friday, January 27th, 1933, at 6 p.m.

Ostwald Memorial Lecture, by Professor F. G. Donnan, C.B.E., F.R.S., in the Chemistry Lecture Theatre of the University of Liverpool.

Thursday, February 2nd, 1933, at 8 p.m.,

Ordinary Scientific Meeting.

Thursday, February 16th, 1933, at 8 p.m.

Discussion on "The Raman Effect in Relation to some Chemical Problems," to be opened by Dr. J. J. Fox, O.B.E.