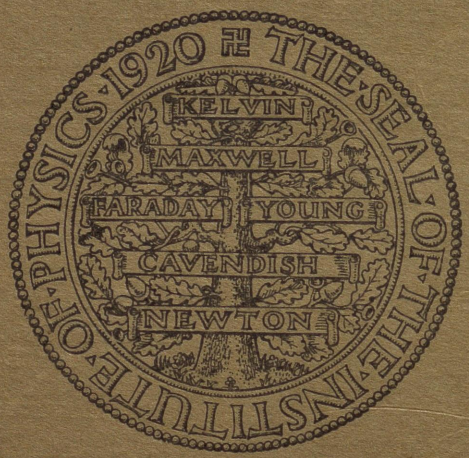
K S Krishnan
17/1/37

THE INSTITUTE OF PHYSICS

INCORPORATED 1920

LIST OF MEMBERS AND REGISTERED STUDENTS

NOVEMBER 15TH, 1936



THE INSTITUTE OF PHYSICS
1 *Lowther Gardens, Exhibition Road*
LONDON, S.W. 7

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1936 - 37

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THE
INSTITUTE OF PHYSICS

INCORPORATED 1920

LIST OF MEMBERS AND REGISTERED STUDENTS

NOVEMBER 15TH, 1936

THE INSTITUTE OF PHYSICS
1 *Lowther Gardens, Exhibition Road*
LONDON, S.W. 7

PAST PRESIDENTS

(The names of those deceased are shown in italics)

Sir RICHARD T. GLAZEBROOK, K.C.B., K.C.V.O., M.A., Sc.D., F.R.S.	1920–21
Sir JOSEPH J. THOMSON, O.M., Kt., M.A., D.Sc., Sc.D., LL.D., Ph.D., F.R.S.	1921–23
The Hon. Sir CHARLES A. PARSONS, O.M., K.C.B., M.A., D.Sc., LL.D., F.R.S.	1923–25
Sir WILLIAM H. BRAGG, O.M., K.B.E., M.A., D.Sc., Sc.D., D.C.L., LL.D., P.R.S.	1925–27
Sir FRANK W. DYSON, Kt., K.B.E., M.A., D.Sc., Sc.D., LL.D., F.R.S.	1927–29
W. H. ECCLES, D.Sc., A.R.C.S., F. Imp. Coll., M.I.E.E., F.R.S.	1929–31
THE LORD RUTHERFORD OF NELSON, O.M., M.A., D.Sc., LL.D., Ph.D., F.R.S.	1931–33
Sir HENRY G. LYONS, D.Sc., Sc.D., F.R.S.	1933–35

THE
INSTITUTE OF PHYSICS

INCORPORATED 1920

List of Members, November 15th, 1936

HONORARY FELLOWS

Date of election	[HON.F.INST.P.]	Served on Board
1932 F.1920	*BRAGG, Sir WILLIAM HENRY, O.M., K.B.E., M.A. (Cantab.), Sc.D. (Cantab., Dubl.), D.Sc. (Brist., Leeds, Lond., Manc., Oxon., Shef., Wales, Brown Univ. Rhode I.), D.C.L. (Dunelm), LL.D. (Glas., St And., Pa.), P.R.S., Fullerian Professor in the Royal Institution and Director of Davy-Faraday Research Laboratory, Albemarle Street, W. 1.	1925–31 P.1925–27
1932 F.1920	*DYSON, Sir FRANK WATSON, Kt., K.B.E., M.A. (Cantab.), LL.D. (Edin., Toronto), D.Sc. (Dunelm., Leeds, Oxon., Melb., Perth), Sc.D. (Cantab.), F.R.S., Formerly Astronomer Royal. *27 Westcombe Park Road, Blackheath, S.E. 3.*	1927–33 P.1927–29
1936	EDDINGTON, Sir ARTHUR STANLEY, Kt., M.A. (Cantab.), D.Sc. (Brist., Dunelm., Manc., Oxon., Witwatersrand), Sc.D. (Dubl.). LL.D. (Edin.), F.R.S., Professor of Astronomy and Experimental Philosophy, University of Cambridge. *The Observatory, Cambridge.*	
1929	FLEMING, Sir JOHN AMBROSE, Kt., M.A. (Cantab.), D.Sc. (Lond.), D.Eng. (Liv.), Hon. M.I.E.E., F.R.S., Emeritus Professor of Electrical Engineering, University of London. *Greenfield, Manor Road, Sidmouth.*	
1929	JEANS, Sir JAMES HOPWOOD, Kt., M.A. (Cantab.), D.Sc. (Oxon.), Sc.D. (Dubl.), LL.D. (Aberd., St And., Johns H.), F.R.S., Professor of Astronomy, Royal Institution, London. *Cleveland Lodge, Dorking, Surrey.*	
1929	LODGE, Sir OLIVER JOSEPH, Kt., M.A. (Birm.), D.Sc. (Liv., Lond., Manc., Oxon., Shef., Toronto), Sc.D. (Cantab.), LL.D. (Aberd., Edin., Glas., St And., Adelaide), Hon. M.I.E.E., F.R.S., Formerly Principal, University of Birmingham. *Normanton House, Lake, Salisbury, Wilts.*	
1928	RUTHERFORD OF NELSON, ERNEST, Baron, O.M., M.A. (Cantab., New Z.), Sc.D. (Cantab., Dubl.), D.Sc. (Brist., Dunelm., Glas., Leeds, Liv., Lond., Manc., Oxon., Melb., New Z., Toronto, Paris), LL.D. (Birm., Edin., McGill, Pa., Wisc., Copenh.), Ph.D. (Giessen, Yale), F.R.S., Cavendish Professor of Physics, University of Cambridge. *Newnham Cottage, Queen's Road, Cambridge.*	1931– P.1931–33
1920	*THOMSON, Sir JOSEPH JOHN, O.M., Kt., M.A., Sc.D. (Cantab., Dubl.), D.Sc. (Manc., Oxon., Columbia, Johns H.), LL.D. (Aberd., Birm., Dunelm., Edin., Glas., Leeds, St And., Göttingen, Paris, Princeton), Ph.D. (Cracow, Oslo), F.R.S., Master of Trinity College, University of Cambridge. *Trinity College, Cambridge.*	1921–27 P.1921–23

* Founder Fellow.

FELLOWS

[F.INST.P.]

Where two dates of election are given, the earlier is the date of election to Associateship. The date 1937 in brackets indicates that the election was made in 1936 but membership was not taken up until 1937.

Date of election		Served on Board
1936	**Ablett, Richard, M.Sc. (Liv.),** Lecturer in Physics, University of Liverpool. *Norwyn, The Crescent, Waterloo Park, Liverpool, 22.*	
1921	***Abram, Harold Helling, M.Sc. (Manc.),** Research Metallurgist, Research Dept., Woolwich, S.E. 18.	
1927	**Addenbrooke, George Leonard, M.I.E.E.,** Consulting Engineer. *35 Holland Villas Road, Kensington, W. 14.*	
1923 1928	**Adderley, Albert John, B.Sc. (Lond.), A.R.C.S., D.I.C.,** Education Officer, Aircraft Depot, Royal Air Force, Drigh Road, Sind, India.	
1935	**Ahmad, Nazir, M.Sc., Ph.D. (Cantab.),** Director, Indian Central Cotton Committee Technological Laboratory, Bombay, India.	
1920	***Allen, Herbert Stanley, M.A. (Cantab.), D.Sc. (Lond.), F.R.S.,** Professor of Natural Philosophy, University of St Andrews.	1920–21 1932–35 V.P.1932–35
1927	**Alty, Thomas, D.Sc. (Liv.), Ph.D. (Cantab.),** Cargill Professor of Applied Physics, University of Glasgow.	
1920	***Anderson, John Spence, M.A., D.Sc. (Glas.), Ph.D. (Göttingen),** Senior Scientific Officer, National Physical Laboratory, Teddington.	1927–34 V.P.1931–34
1920	***Andrade, Edward Neville da Costa, D.Sc. (Lond.), Ph.D. (Heidelb.), F.R.S.,** Quain Professor of Physics, University of London. *69 Exeter Road, N.W. 2.*	1925–29
1929	**Andrews, James Peter, D.Sc. (Lond.),** Professor of Physics, Ceylon University College, Colombo, Ceylon.	
1930	**Archer, Charles Thomas, M.Sc. (Lond.), A.R.C.S., D.I.C.,** Senior Lecturer in Physics, Imperial College of Science and Technology, London. *15 Pollards Hill East, Norbury, S.W. 16.*	
1923 1935	**Astbury, William Thomas, M.A. (Cantab.),** Lecturer in Textile Physics and Director of the Textile Physics Laboratory, University of Leeds.	1933–
1931	†**Atkins, William Ringrose Gelston, O.B.E., Sc.D. (Dubl.), F.I.C., F.R.S.,** Head of Dept. of General Physiology, Marine Biological Association's Laboratory, Plymouth. *Old Vicarage, Antony, Torpoint, Cornwall.*	
1930	**Awbery, James Henry, B.A. (Cantab.), B.Sc. (Lond.),** Scientific Officer, National Physical Laboratory, Teddington.	
1934	**Ayres, Thomas Lidyard Rosgyll, M.A., D.Phil. (Oxon.), M.Sc. (Manc.),** Professor of Physics, University of Egypt, Faculty of Science, Abbassia, Cairo.	
1926	**Bailey, Victor Albert, M.A., D.Phil. (Oxon.),** Professor of Experimental Physics, University of Sydney, Australia.	
1920	***Baillie, Granville H.,** Consulting Engineer. *68 Victoria Street, S.W. 1.*	

* Founder Fellow. † Life Member.

Date of election	FELLOWS	Served on Board
1921	***Bairsto, George Edward, D.Sc. (Lond.), D.Eng. (Liv.), M.I.E.E.,** Head of the Electrical and Ignition Dept., Royal Aircraft Establishment, S. Farnborough, Hants. *Calluna, Chobham Road, Camberley, Surrey.*	
1920	***Baker, Frederick William Watson,** Director, W. Watson and Sons Ltd., London; and Chairman, United Kingdom Optical Co. Ltd., London. *313 High Holborn, W.C. 1.*	
1920	***Baker, Thomas, D.Sc. (Dunelm.), M.Met. (Shef.), F.I.C.,** Research Metallurgist, Steel Peech and Tozer, Sheffield. *Wyndthorpe, 109 Wickersley Road, Rotherham.*	
1925	**Baker, Thomas Thorne, A.M.I.E.E.,** Director of Research, Dufaycolor Inc., New York City. *c/o Merrett and Street, 32 Finsbury Square, E.C. 2.*	
1920	***Baker, Inst. Capt. Thomas Yeomans, R.N. (retd.), B.A. (Cantab.),** Director, Ross Ltd., London. Formerly in Admiralty Research Laboratory, Teddington. *Goldieslie, South Hayling, Hants.*	1920–22 1923–25 1926–7
1934	**Baldes, Edward James, Ph.D. (Lond., Harvard),** Assoc. Professor of Biophysics, University of Minnesota and Mayo Foundation. *Physics Section, Mayo Clinic, Rochester, Minn., U.S.A.*	
1926	**Baldwin, Joseph Mason, M.A., D.Sc. (Melb.),** Government Astronomer of Victoria, Observatory House, South Yarra, S.E. 1, Victoria, Australia.	
1925 1932	**Banner, Edgar Harold Walter, M.Sc. (Birm.), M.I.E.E.,** Chief Instrument Designer, Salford Electrical Instruments Ltd. (G.E.C. Ltd.), Manchester. *Mustapha, 41 Atholl Road, Whalley Range, Manchester, 16.*	
1924 1927	**Barker, Sydney George, O.B.E., D.I.C.,** Scientific Adviser, Indian Jute Mills Assn.; Technical Director, Flexatex Ltd. and allied firms. *191 Coombe Lane, Wimbledon, S.W. 20.*	
1920	***†Barlow, Guy, D.Sc. (Birm., Lond., Wales),** Lecturer in Physics, University of Birmingham.	
1920	***Barnard, Joseph Edwin, F.R.S.,** Head of Department of Applied Optics, National Institute for Medical Research, Hampstead. *Walvens, Eastbury Road, Oxhey, Herts.*	1920–24
1929	**Barnett, Miles Aylmer Fulton, M.Sc. (New Z.), Ph.D. (Cantab.),** Meteorological Assistant, Meteorological Office, Wellington, New Zealand.	
1933	**Barr, Guy, B.A. (Cantab.), D.Sc. (Lond.),** Senior Scientific Officer, National Physical Laboratory, Teddington.	
1920	***Barratt, Thomas, D.Sc. (Lond.), A.R.C.S.,** Research Physicist, Research Dept., Woolwich, S.E. 18.	
1920 1926	**†Barton, Frederick Sherbrooke, M.A. (Cantab.), B.Sc. (Lond.), A.M.I.E.E.,** Principal Technical Officer, Royal Aircraft Establishment, South Farnborough, Hants. *Overdale, Crowthorne, Berks.*	
1928	**Bastings, Lyndon, B.A., D.Sc. (New Z.), M.Sc. (Cantab.),** Associate in Seismology, Dominion Observatory, Wellington, N.Z. *70 The Crescent, Wellington, E. 1, New Zealand.*	
1935	**Bate, Arthur Ernest, M.Sc., Ph.D. (Lond.),** Lecturer in Physics, Northern Polytechnic, N. 7.	

* Founder Fellow. † Life Member.

1924 **Bates, Leslie Fleetwood, B.Sc. (Brist.), D.Sc. (Lond.), Ph.D. (Cantab.),**
Lancashire-Spencer Professor of Physics, University College, Nottingham. *Brampton, Huntingdon Drive, The Park, Nottingham.*

1936 **Beale, Evelyn Stewart Lansdowne, M.A. (Cantab.),**
Consultant in Engineering Physics. *129 Ebury Street, S.W. 1.*

1920 *†**Beatty, Richard Thomas, M.A., B.E., D.Sc. (Belf.), B.A. (Cantab.),**
Senior Scientific Officer, Admiralty Research Laboratory, Teddington.

1921 *†**Bedford, Thomas George, M.A. (Cantab.),**
Lecturer in Physics, University of Cambridge, and Secretary of Oxford and Cambridge Schools Examination Board. *64 Cavendish Avenue, Cambridge.*

1935 **Beevers, Cecil Arnold, M.Sc. (Liv.),**
Lecturer in Physics, University of Manchester. *15 Penarth Road, Northenden, Manchester.*

1927 1930 **Bennett, James Allan Jamieson, M.A., B.Sc., Ph.D. (Glas.), D.I.C.,**
Physicist, Cierra Autogiro Co. Ltd., London. *67 Groveway, Esher, Surrey.*

1924 1931 **Bennett, Maurice George, M.Sc. (Brist.),** 1934–
Assistant to Chief Engineer and Head of Physics Section, London, Midland and Scottish Railway, London. *1 Bedford Park Road, St Albans.*

1920 ***Berkeley, Randal Thomas Mowbray, Earl of, F.R.S.,**
Berkeley Castle, Gloucestershire.

1928 **Bhatnagar, Shanti Swarupa, O.B.E., M.Sc. (Panjab), D.Sc. (Lond.),**
University Professor of Physical Chemistry and Director, University Chemical Laboratories, University of the Panjab, Lahore, India.

1933 **Black, Cecil Patrick, M.Sc., Ph.D. (Belf.),**
Physicist, Linen Industry Research Association, Research Institute, Lambeg, Co. Antrim, N. Ireland.

1936 **Black, Donald Harrison, M.Sc. (New Z.), Ph.D. (Cantab.),**
Head of Valve Laboratory, Standard Telephones and Cables Ltd., London. *7 Copt Hall Drive, Mill Hill, N.W. 7.*

1933 **Blackett, Patrick Maynard Stuart, M.A. (Cantab.), F.R.S.,**
Professor of Physics, Birkbeck College, Breams Buildings, E.C. 4.

1920 *†**Blackie, Capt. Alfred (Jnr.), M.A. (Cantab.),**
Senior Scientific Officer, Fuel Research Station, East Greenwich, S.E. 10. *14 Craven Street, Strand, W.C. 2.*

1921 1927 †**Blake, George Gascoigne, M.I.E.E.,**
Formerly Radiologist. *Holmleigh, 10 Onslow Road, Richmond, Surrey.*

1922 1932 †**Bliss, Ernest William, M.A. (Cantab.), B.Sc. (Birm.),**
Formerly Research Assistant to the Professor of Meteorology, University of London. *102 Trafalgar Road, Moseley, Birmingham, 13.*

1921 ***Boex, George, B.Sc. (Lond.), A.M.I.E.E., Assoc.M. Inst.C.E.,**
Assistant Technical Manager, The British Aluminium Co. Ltd., Adelaide House, King William Street, E.C. 4.

1922 1923 **Bolsover, George Rowland,**
Chief Metallurgist and Director, Saml. Fox and Co. Ltd., Sheffield. *70 Knowle Lane, Sheffield, 11.*

* Founder Fellow. † Life Member.

1922 †**Bond, Wilfred Noël, M.A. (Cantab.), D.Sc. (Lond.), A.R.C.S.,**
Lecturer in Physics, University of Reading.

1927 **Booth, Major Edgar Harold, D.Sc. (Sydney),**
Lecturer in Physics, University of Sydney, and Consulting Physicist, New South Wales Government. *University of Sydney, N.S.W., Australia.*

1920 ***Boulding, Reginald Sidney Henry, O.B.E., B.Sc. (Lond.), A.C.G.I., D.I.C., A.M.I.E.E.,**
Radio Engineer. *94 Kenilworth Avenue, Wimbledon, S.W. 19.*

1920 ***Boys, Sir Charles Vernon, Kt., LL.D. (Edin.), A.R.S.M., F.Imp.Coll., F.R.S.,**
Gas Referee. *St Marybourne, Andover, Hants.*

1928 †**Bracey, Ronald John,**
Physicist, British Scientific Instrument Research Association, London. *15 Holmdene Avenue, North Harrow, Middlesex.*

1920 *†**Bragg, William Lawrence, O.B.E., M.A. (Cantab.), Sc.D. (Dubl.), F.R.S.,** 1931– V.P.1934–
Professor of Physics, University of Manchester.

1933 **Brentano, John Christian Michael, D.Sc. (Munich),**
Lecturer in Physics, University of Manchester. *11 Rathen Road, Didsbury, Manchester.*

1934 **Brett, George Fairburn, M.Sc., Ph.D. (Leeds),**
Engineer, Research and Development Dept., Marconi's Wireless Telegraph Co. Ltd., Chelmsford, Essex.

1928 †**Briggs, George Henry, B.Sc. (Sydney), Ph.D. (Cantab.),**
Assistant Professor of Physics, University of Sydney. *Physical Laboratory, University of Sydney, N.S.W., Australia.*

1933 **Brinkworth, James Hancock, D.Sc. (Lond.), A.R.C.S., D.I.C.**
Lecturer in Physics, Imperial College of Science and Technology, and St Thomas's Hospital Medical School, London. *Imperial College of Science and Technology, S.W.7.*

1920 ***Brodetsky, Selig, M.A. (Cantab.), B.Sc. (Lond.), Ph.D. (Leipzig),**
Professor of Applied Mathematics, University of Leeds. *3 Grosvenor Road, Leeds, 6.*

1927 **Brose, Henry Leopold, M.A., D.Phil. (Oxon.), B.Sc. (Adel.),**
University of Sydney, N.S.W., Australia.

1920 *†**Brown, Sidney George, M.I.E.E., F.R.S.,**
Inventor and Electrical Engineer; Chairman, S. G. Brown Ltd., and Telegraph Condenser Co. Ltd. *41 Elsworthy Road, N.W. 3.*

1920 ***Browning, Helen Mary, M.Sc., Ph.D. (Lond.),**
Lecturer in Physics, University College, Nottingham. *27 Mansfield Grove, Nottingham.*

1934 **Bryan, George Blackford, O.B.E., B.A. (Cantab.), D.Sc. (Lond.), M.I.E.E.,**
Professor of Physics and Electrical Engineering, Royal Naval College, Greenwich, S.E. 10.

1920 ***Bryson, Frederick Francis Smith, M.B.E., M.A. (Edin., Glas.), B.Sc. (Glas.),**
Head of Junior Day Dept., L.C.C. School of Building. *154 Knollys Road, S.W. 16.*

1927 **Buckley, Harry Fawcett, M.Sc. (Manc.),**
Senior Scientific Officer, National Physical Laboratory, Teddington. *Mirador, Carlisle Road, Hampton, Middlesex.*

* Founder Fellow. † Life Member.

Date of election	FELLOWS	Served on Board
1935	**Buckley, Major James William, M.Sc. (Shef.),** Head of Physics Section, Metropolitan Vickers Electrical Co. Ltd., Manchester. *13 Stratton Road, Manchester.*	
1933	**Builder, Geoffrey, B.Sc. (Perth), Ph.D. (Lond.),** Physicist in charge of Research Laboratories, Amalgamated Wireless (Australasia) Ltd., 47 York Street, Sydney, N.S.W., Australia.	
1920	***Bull, Alfred Joseph, M.Sc. (Lond.),** Principal, L.C.C. School of Photo-engraving, Bolt Court, Fleet Street, E.C. 4.	
1935	†**Burch, Cecil Reginald, B.A. (Cantab.),** Research Associate, H. H. Wills Physics Laboratory, University of Bristol. *9 Prince's Buildings, Clifton, Bristol.*	
1924 1929	**Burdon, Roy Stanley, D.Sc. (Adel.),** Lecturer in Physics, University of Adelaide, Australia.	
1920	***Butler-Burke, John Benjamin, M.A. (Cantab., Dubl.),** Formerly Lecturer in Physics, University of Birmingham. *Villa Thornton, Merano (Bolzano), Italy,* and *63 St James's Street, S.W. 1.*	
1924 1929	**Butterworth, Ernest, B.Sc., M.Sc.Tech. (Manc.),** Research Director, Frazer and Haughton Ltd., Cullybackey, Co. Antrim.	
1920	*†**Campbell, Norman Robert, Sc.D. (Cantab.),** Research Physicist, General Electric Co. Ltd., Wembley. *155 Hagden Lane, Watford, Herts.*	1928–32
1935	**Cantelo, Herbert Reginald, M.Sc. (Lond.), A.I.C., A.M.I.E.E.,** Engineer, Research Dept., Marconi's Wireless Telegraph Co. Ltd., Chelmsford, Essex. *Richmond House, Writtle Green, Writtle, Chelmsford, Essex.*	
1934	**Carpenter, Leavett George, B.A., B.Sc. (Oxon.),** Lecturer in Physics, The Physical Laboratory, University College, Southampton.	
1935	**Carruthers, James Norman, M.Sc. (Leeds), D.Sc. (Lond.),** Naturalist, Fisheries Research Staff, Ministry of Agriculture and Fisheries, Lowestoft, Suffolk.	
1936	**Cassie, Arnold Blatchford David, M.A. (Cantab., Edin.), D.Sc. (Edin.), Ph.D. (Lond.),** Scientific Officer, Air Ministry, London. *22 North Drive, Ruislip, Middlesex.*	
1936	**Chadwick, James, M.Sc. (Manc.), Ph.D. (Cantab.), F.R.S.,** Professor of Physics, University of Liverpool.	
1924 1929	**Charnley, Frank, B.Sc. (Manc.),** Chief Assistant, Spinning Dept., British Cotton Industry Research Association, Didsbury. *Durlestone, Woodlands Road, Handforth, Cheshire.*	
1934	**Cherry, Richard Ormond, M.Sc. (Melb.),** Consulting Physicist. c/o *Radio Corporation Pty. Ltd., Box 845 J, Melbourne, Australia.*	
1920	***Cheshire, Frederic John, C.B.E., A.R.C.S.,** Formerly Director and Professor of Optical Engineering Dept., Imperial College of Science and Technology, London. *23 Carson Road, Dulwich, S.E. 21.*	1920–21 1924–26
1921	**Cheshire, Ralph Waldo, B.A. (Cantab.),** Senior Assistant, Admiralty Research Laboratory, Teddington. *23 Carson Road, Dulwich, S.E. 21.*	
1930 1933	**Chilton, Leonard Vincent, M.A. (Cantab.),** Research Physicist, Ilford Ltd., Ilford. *12 Cranbrook Rise, Ilford, Essex.*	

* Founder Fellow. † Life Member.

Date of election	FELLOWS	Served on Board
1920	***Christie, John, M.A. (Cantab.),** Formerly Assistant Master at Eton College. *Glyndebourne, nr. Lewes, Sussex.*	
1924	**Clack, Basil Warren, D.Sc., Ph.D. (Lond.),** Lecturer in Physics, Birkbeck College, London. *Penshurst, 65 Forty Lane, Wembley Park, Middlesex.*	
1923 1927	**†Clark, Leslie Hermann Septimus, M.Sc., Ph.D. (Lond.),** Physicist, Public Health Dept., London County Council. *12 Bramley Hill, South Croydon, Surrey.*	
1921	**†Clarke, Joseph Ryle, M.Sc. (Shef.),** Lecturer in Physics, University of Sheffield.	
1920	***Clay, Reginald Stanley, B.A. (Cantab.), D.Sc. (Lond.),** Formerly Principal, Northern Polytechnic, Holloway. *Eskdale, Fortis Green, N. 2.*	1920–23 1924–33 V.P. 1930–33
1933	**Cockcroft, John Douglas, M.A., Ph.D. (Cantab.), M.Sc. Tech. (Manc.), A.M.I.E.E., F.R.S.,** Lecturer in Physics, University of Cambridge. *Royal Society Mond Laboratory, Cambridge.*	
1930	**Cohen, Capt. Bertram Sydney, O.B.E., M.I.E.E.,** Director, Post Office Engineering Research Station, Dollis Hill, N.W. 2.	
1920	***†Coker, Ernest George, M.A. (Cantab.), D.Sc. (Edin., Sydney), M.Inst.C.E., M.I.Mech.E., F.R.S.,** Formerly Professor of Civil and Mechanical Engineering, University of London. *3 Farnley Road, Chingford, E. 4.*	
1929	**†Constable, Frederick Hurn, M.A., Sc.D. (Cantab.), D.Sc. (Lond.), Ph.D. (Cantab., Lond.), F.I.C.,** Professor of Physics in Faculty of Engineering, Egyptian University, Giza, Egypt.	
1920	***Coste, John Henry, F.I.C.,** Formerly Chemist-in-Chief, London County Council. *Covertside, Smallfield, Horley, Surrey.*	
1920	***†Coursey, Philip Ray, B.Sc. (Lond.), M.I.E.E.,** Technical Director, Dubilier Condenser Co. (1925) Ltd., London. *67 Queen's Road, Richmond, Surrey.*	
1924 1929	**Coutts, John Reginald Horder, M.Sc. (Lond.),** Senior Lecturer in Physics, Natal University College. *P.O. Box 375, Maritzburg, Natal.*	
1932	**Coutts, William Barron, M.A., B.Sc. (Edin.),** Senior Lecturer in Fire Control Instruments, Military College of Science, Woolwich, S.E. 18.	
1935	**Cox, Ernest Gordon, B.Sc. (Brist.),** Lecturer in Physical Chemistry, University of Birmingham. *89 Bournbrook Road, Selly Oak, Birmingham.*	
1922	**Crow, Alwyn Douglas, O.B.E., M.A., Sc.D. (Cantab.),** Director of Ballistic Research, Royal Arsenal, Woolwich. *3 New Street, S.W. 1.*	
1920	***†Crowther, James Arnold, M.A., Sc.D. (Cantab.),** Professor of Physics, University of Reading.	1930– H.S. 1932–
1920 1925	**Croxson, Charles, B.Sc. (Manc.),** Scientific Officer, Research Dept., Woolwich. *461 Footscray Road, New Eltham, S.E. 9.*	
1934	**Curtis, William Edward, D.Sc. (Lond.), A.R.C.S., D.I.C., F.R.S.,** Professor of Physics, Armstrong College, University of Durham, Newcastle-on-Tyne.	
1920	***Cuthbertson, Clive, O.B.E., B.A. (Oxon.), F.R.S.,** Davy-Faraday Research Laboratory (Research). *Campden House Chambers, 29 Sheffield Terrace, W. 8.*	

* Founder Fellow. † Life Member.

1920 ***Darling, Charles Robert, F.I.C.,**
Consultant. Formerly Assistant Professor of Science, Royal Military Academy, Woolwich. *34 Eglinton Hill, Plumstead, S.E. 18.*

1926 **Dasannachyra, Balebail, M.A. (Madras), Dr.Phil. (Munich),**
Professor of Physics, College of Science, Benares Hindu University, Benares, U.P., India.

1928 **Davey, Wheeler P., Ph.D. (Cornell),**
Research Professor of Physics and Chemistry, School of Chemistry and Physics, Pennsylvania State College, State College, Penna., U.S.A.

1920 ***Davies, Benjamin, A.M.I.E.E.,**
Formerly private assistant to Sir Oliver Lodge, and Chief of Dept. of Research, Eastern and Associated Telegraph Companies. *6 South Marine Terrace, Aberystwyth, Cardiganshire.*

1928 **Davies, Edward Roy, B.Sc. (Lond.),**
1933 Director of Research, Kodak Ltd., Wealdstone, Middlesex.

1934 **Davies, Rhisiart Morgan, M.Sc. (Wales),**
Lecturer in Physics, University College of Wales, Aberystwyth. *Bryn Awelon, Buarth Road, Aberystwyth.*

1923 **Daynes, Harold Ashley, D.Sc. (Birm.),**
Physicist in charge of Works Laboratory, Siemens Bros. and Co., Ltd., Woolwich. *69 Shirley Park Road, Croydon, Surrey.*

1928 **†Denham, Humphrey John, M.A., D.Sc. (Oxon.),**
Director of Institute for Research in Agricultural Engineering, University of Oxford, Parks Road, Oxford.

1933 **Deodhar, Dhundiraj Bhaskar, M.Sc. (Allahabad), Ph.D. (Lond.),**
Reader in Physics, Physics Dept., University of Lucknow, India.

1934 **Deodhar, Ganesh Bhaskar, M.Sc. (Allahabad), Ph.D. (Lond.),**
Lecturer in Physics, University of Allahabad, India.

1923 **Desch, Cecil Henry, D.Sc. (Lond.), Ph.D. (Würzb.), F.I.C., F.R.S.,**
Superintendent, Metallurgical Department, National Physical Laboratory, Teddington.

1931 **De Waele, Armand, F.I.C.,**
Director of Research, D. Gestetner Ltd., London. *Silverdale, Eversley Crescent, Winchmore Hill, N. 21.*

1933 **†Dobson, Gordon Miller Bourne, M.A. (Cantab.), D.Sc. (Oxon.), F.R.S.,**
Reader in Meteorology, University of Oxford. *Robinwood, Boar's Hill, Oxford.*

1920 ***Dowling, John Joseph, M.A. (Ireland),**
Professor of Technical Physics, University College, Dublin.

1920 ***Dowsett, Harry Melville, M.I.E.E.,**
Principal of Marconi School of Wireless Communication, Chelmsford College, Chelmsford. *47 Drayton Gardens, Winchmore Hill, N. 21.*

1920 ***Drysdale, Charles Vickery, C.B., O.B.E., D.Sc. (Lond.), F.C.G.I., M.I.E.E.,** 1924–25, 1932–36, V.P. 1932–36
Formerly Director of Scientific Research, Admiralty. Member of the Safety in Mines Research Board. *Derek Corner, Kingsway, Hove, 3, Sussex.*

1921 ***Dudding, Bernard Phineas, M.B.E., A.R.C.S.,**
Research Physicist, Research Laboratories of the General Electric Co. Ltd., Wembley. *Darland, Eastbury Road, Oxhey, Watford.*

* Founder Fellow. † Life Member.

Date of election	FELLOWS	Served on Board
1936	**Dunbar, Robert Taylor, M.A., Ph.D. (Edin.),** Professor of Physics, University College, Cathays Park, Cardiff.	
1920	*†**Dunsheath, Percy, O.B.E., M.A. (Cantab.), D.Sc. (Lond.), M.I.E.E., Assoc.M.Inst.C.E.,** Chief Engineer, W. T. Henley's Telegraph Works Co. Ltd., 11 Holborn Viaduct, E.C. 1.	
1920	***Durack, Capt. Jeremiah Joseph, M.A. (Cantab.),** *69 Wellington Road, Dublin.*	
1920	*†**Eccles, William Henry, D.Sc. (Lond.), A.R.C.S., F.Imp. Coll., M.I.E.E., F.R.S.,** Consulting Engineer. *9 Buckingham Street, S.W. 1.*	1920–25 1929–35 P.1929–31 V.P.1921–25
1931	**Eddy, Cecil Ernest, D.Sc. (Melb.),** Physicist-in-charge, Commonwealth X-ray and Radium Laboratory, University of Melbourne, Carlton, N. 3, Australia.	
1920	***Edgcumbe, Lt.-Col. Kenelm William Edward, M.I.E.E., M.Inst.C.E.,** Chairman, Everett, Edgcumbe and Co. Ltd., London. *Holwell Court, Hatfield, Herts.*	1936–
1933	**Egerton, Alfred Charles Glyn, M.A. (Oxon.), B.Sc. (Lond.), F.I.C., F.R.S.,** Professor of Chemical Technology, Imperial College of Science and Technology, South Kensington, S.W. 7.	
1927	**English, Solomon, D.Sc. (Shef.), F.I.C.,** Director, Holophane Ltd., London. *Sherwood, Heath Drive, Sutton, Surrey.*	
1921	***Eumorfopoulos, Nicholas, B.Sc. (Lond.),** Hon. Research Assistant, University College, University of London. *43 Campden House Court, W. 8.*	
1931	**Evans, Colonel Cecil Hugh Silvester, O.B.E., M.I.E.E., A.M.I.Mech.E.,** Experimental Officer, Air Defence Experimental Establishment, Biggin Hill, Kent.	
1920	***Everitt, Philip Francis, B.Sc. (Lond.),** Superintendent Engineer, Henry Hughes and Son, Ltd., London. *29 Exeter Gardens, Ilford, Essex.*	
1920	*†**Ewan, Thomas, M.Sc. (Manc.), Ph.D. (Munich), F.I.C.,** Formerly Director, Cassel Cyanide Co. Ltd. and Consultant Chemist to I.C.I. (General Chemicals) Ltd. *Linnsburn, Renfrew Road, Paisley.*	
1930 1932	**Fairbrother, Jack Alfred Viveash, B.Sc. (Lond.), Ph.D. (Reading),** Senior Physicist, Printing and Allied Trades Research Association, Patra House, 10 Robin Hood Court, Shoe Lane, Fleet Street, E.C. 4.	
1930	**Farr, Clinton Coleridge, D.Sc. (Adelaide), F.R.S.,** Professor of Physics, Canterbury College, Christchurch, New Zealand.	
1930 1933	**Fereday, Reginald Albert, B.Sc., Ph.D. (Lond.),** Scientific Officer, Radio Research Station, Slough, Bucks.	
1928	**Ferguson, Allan, M.A. (Wales), D.Sc. (Lond.),** Assistant Professor of Physics, Queen Mary College, University of London. *70 Hadham Road, Bishop's Stortford, Herts.*	1928–32 1934–
1924	**Field, James Hermann, C.S.I., M.A. (Cantab.), B.Sc. (Lond.), A.M.I.E.E.,** Formerly Director-General of Observatories, India. *Hoath, Lonesome Lane, Reigate, Surrey.*	

* Founder Fellow. † Life Member.

Date of election	FELLOWS	Served on Board
1920	***Filon, Colonel Louis Napoleon George, C.B.E., B.A. (Cantab.), M.A., D.Sc. (Lond.), F.R.S.,** Professor of Applied Mathematics and Mechanics, University of London. *68 St Augustine's Avenue, S. Croydon, Surrey.*	
1933	**Finch, George Ingle, M.B.E., D.Tech.Chem. (Zürich),** Professor of Electrochemistry, Imperial College of Science and Technology, South Kensington, S.W. 7.	
1930	**Fincham, Edgar Frank,** Lecturer, Applied Optics Dept., Northampton Polytechnic, Clerkenwell, E.C. 1.	
1923	**Fishenden, Margaret, D.Sc. (Manc.),** Honorary Lecturer, Mechanical Engineering Dept., Imperial College of Science and Technology, South Kensington, S.W. 7.	
1920	**Fisher, Ernest Arthur, M.A., B.Sc. (Oxon.), D.Sc. (Lond.), F.I.C.,** Director of Research, Research Association of British Flour Millers, Old London Road, St Albans, Herts.	
1933	**Fleming, Arthur Percy Morris, C.B.E., M.Sc.Tech. (Manc.), M.I.E.E.** Director and Manager, Research and Educational Depts., Metropolitan-Vickers Electrical Co. Ltd., Trafford Park, Manchester, 17.	1935–
1936	**Focken, Charles Melbourne, B.Sc., B.M.E. (Melb.), D.Phil. (Oxon.),** Beverly-Mackenzie Lecturer in Physics, University of Otago, Dunedin, New Zealand.	
1932 1935	**Follett, David Henry, M.A. (Oxon.),** Physicist, Adam Hilger, Ltd., London. *31 Hilldrop Road, N.7.*	
1920	***Fortescue, Cecil Lewis, O.B.E., M.A., M.I.E.E., M.Inst.C.E.,** Professor of Electrical Engineering, City and Guilds College, University of London, Exhibition Road, S.W. 7.	1921–32 V.P.1925–28
1920	*†**Foster, Charles Edwin,** Managing Director, Foster Instrument Co. Ltd., Letchworth. *Kingsweir, Broadway, Letchworth, Herts.*	
1923 1931	**Foster, George Alfred Rea, B.A. (Cantab.),** Senior Research Assistant, British Cotton Industry Research Association, Didsbury. *Fairview, Hawthorn Grove, Wilmslow, Manchester.*	
1920	***Fowler, Alfred, C.B.E., Sc.D. (Cantab.), D.Sc. (Brist., Dunelm.), A.R.C.S., F.Imp.Coll., F.R.S.,** Formerly Yarrow Research Professor, Royal Society. Emeritus Professor of Astrophysics, Imperial College of Science and Technology, London. *18 Oaklands, Argyle Road, Ealing, W. 13.*	1929–33 1935– P.1935–
1934	**Fowler, Ralph Howard, O.B.E., M.A. (Cantab.), F.R.S.,** Professor of Mathematical Physics, University of Cambridge. *Cavendish Laboratory, Cambridge.*	
1920 1925	**Foxwell, Geoffrey Edwin, D.Sc. (Lond.),** Consulting Fuel Technologist and London Manager, Clayton, Son and Co. Ltd., Leeds. *1 Wellesley Crescent, Strawberry Hill, Twickenham.*	
1920	***Freeth, Francis Arthur, O.B.E., D.Sc. (Liv.), Ph.D. (Leiden), F.I.C., F.R.S.,** Headquarters Staff, Imperial Chemical Industries. *19 Hereford Square, S.W.7.*	
1920	***French, James Weir, D.Sc. (Glas.),** Acting Chairman, Barr and Stroud Ltd., Glasgow and London. *23 Kirklee Road, Glasgow.*	

* Founder Fellow. † Life Member.

Date of election	FELLOWS	Served on Board
1935	**Gage, Frederick Hillman, D.Sc. (Wales),** Lecturer in Physics, Cardiff Technical College. *7 Cae Mawr Road, Rhiwbina, nr. Cardiff.*	
1933	**Gall, Douglas Crisp,** Principal, H. Tinsley & Co., Werndee Hall, S. Norwood, S.E. 25.	
1920	***Gardiner, James Henry,** Formerly Technical Director, James Powell and Sons (Whitefriars) Ltd., Wealdstone. *Allington, 247 High Road, Harrow Weald, Middlesex.*	
1926	**George, William Herbert, M.Sc., Ph.D. (Lond.),** Royal Society Sorby Research Fellow and Honorary Lecturer in Physics, University of Sheffield. *22 Devonshire Avenue, Beeston, Notts.*	
1935	**Germain-Jones, Donald Thomas, B.Sc. (Lond.), A.R.C.S., D.I.C.,** Geophysicist, Anglo-Iranian Oil Co. Ltd., Masjid-i-Salaiman, South Iran.	
1921	***Gerrard, Harold, M.Sc. (Manc.), A.M.I.E.E.,** Senior Lecturer in Electrotechnics, University of Manchester.	
1921	***Ghosh, Phanindra Nath, M.A., Ph.D. (Calcutta), Sc.D. (Padua),** Ghosh Professor of Applied Physics, University College of Science and Technology, 92 Upper Circular Road, Calcutta, India.	
1920 1925	†**Gibbs, Reginald Edmund, D.Sc. (Lond.),** Lecturer in Physics, University College, University of London. *Park House, 31 Park Hill, Ealing, W. 5.*	
1920	***Gibson, William Howieson, O.B.E., D.Sc. (Lond.), F.I.C.,** Director of Research, Linen Industry Research Association, Lambeg, Northern Ireland.	
1936	**Goodlet, Brian Laidlaw, B.A. (Cantab.), A.M.I.E.E., Assoc.M.Inst.C.E.,** Research Engineer, Metropolitan-Vickers Electrical Co. Ltd., Manchester. *6 Sylvan Avenue, Brooklands, Sale, Cheshire.*	
1926	**Grant, Kerr, M.Sc. (Melb.),** Professor of Physics, University of Adelaide, Australia.	
1935	**Green, Alfred Leonard, M.Sc., Ph.D. (Lond.), A.M.I.E.E.,** Radio Engineer, Amalgamated Wireless (Australasia) Ltd., 554 Parramatta Road, Ashfield, N.S.W., Australia.	
1925 1927	**Green, Arnold Trevor, F.I.C.,** Assistant Director of Research, British Refractories Research Association, Stoke-on-Trent. *Corbar, Dartmouth Avenue, Newcastle, Staffs.*	
1927 1934	**Green, Henry Lionel, M.A. (Cantab.),** Superintendent, Physics Dept., Experimental Station, Porton, nr. Salisbury, Wilts.	
1921	***Gregory, Sir Richard Arman, Bart., D.Sc. (Leeds, Brist.), LL.D. (St And.), F.R.S.,** Emeritus Professor of Astronomy, Queen's College, London; Editor of *Nature*. *5 North Court, Wood Street, Westminster, S.W. 1.*	1923–34 V.P. 1926–30
1923 1929	†**Gregson, Arthur Leonard, B.Sc. (Lond.),** Examiner, H.M. Patent Office. *Brambletye, 114 Manor Green Road, Epsom, Surrey.*	
1933	**Griffith, Idwal Owain, M.A. (Oxon.),** Fellow and Tutor, Brasenose College, Oxford. *37 Banbury Road, Oxford.*	
1929	**Griffiths, Ezer, D.Sc. (Wales), F.R.S.,** Principal Scientific Officer, Physics Dept., National Physical Laboratory, Teddington. *149 Church Road, Teddington.*	1929–31 1932–36

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1929 **Griffiths, William Henry Frederick, A.M.I.E.E.,**
Chief Engineer, H. W. Sullivan, Ltd., London. *220 Court Road, Eltham, S.E. 9.*

1923 1927 **Griffiths, William Thomas, M.Sc. (Wales), F.I.C.,**
Manager, Research and Development Dept., The Mond Nickel Co. Ltd., Thames House, Millbank, S.W. 1.

1922 **Grimshaw, William Edwin, O.B.E., M.A., D.Sc. (Oxon.),**
Ballistics Research Branch, Research Dept., Royal Arsenal, Woolwich. *Redlac, Station Road, Sidcup, Kent.*

1933 1936 **Guelke, Roland Wilfrid, Ph.D. (Göttingen),**
Research Physicist, Metropolitan-Vickers Electrical Co. Ltd., Manchester. *Owen House Farm, Mobberley, Cheshire.*

1920 ***Guild, John, A.R.C.S., D.I.C.,** 1922–24
Senior Scientific Officer, National Physical Laboratory, Teddington.

1921 *†**Hackett, Felix Edward Walsh, M.A., M.Sc. (Ireland), Ph.D. (Johns Hopkins),**
Professor of Physics and Electrical Engineering, University College, Dublin.

1920 ***Hadfield, Sir Robert Abbott, Bart., D.Sc. (Oxon., Leeds), D.Met. (Shef.), M.I.E.E., M.Inst.C.E., Hon. M.I.Mech.E., F.I.C., F.R.S.,** 1920–25 H.T. 1920–25
Chairman and Managing Director, Hadfields Ltd., Sheffield. *22 Carlton House Terrace, S.W. 1.*

1921 ***Haines, William Burgess, D.Sc. (Lond.), D.I.C.,**
Field Research Officer, Dunlop Plantations Ltd., Paya Lang Estate, Batu Anam, N. Johore, Malaya, S.S.

1921 **Hallowes, Kenneth Alexander Knight, M.A. (Cantab.), A.R.S.M.,**
Formerly member of H.M. Geological Survey of India. *Gillbank, Hawkshead, Ambleside, Westmorland.*

1927 **Hampton, Wilfred Marsh, B.Sc., Ph.D. (Lond.), A.I.C.,**
Director of Research and Development, Chance Bros. & Co. Ltd., Smethwick, Birmingham. *Bradgate, Mirfield Road, Solihull, Warwickshire.*

1930 1934 **Hanstock, Raymond Ford, B.Sc., Ph.D. (Lond.),**
Research Physicist, Research Association of British Paint, Colour and Varnish Manufacturers, Teddington. *The Paint Research Station, Teddington.*

1921 ***Harlow, Frederick James, M.B.E., B.Sc., Ph.D. (Lond.), A.R.C.S., D.I.C.,**
Principal, Chelsea Polytechnic, Manresa Road, S.W. 3.

1931 **Harris, Daniel Thomas, D.Sc. (Lond.), M.D. (Manc.),**
Professor of Physiology, London Hospital Medical College. *40 Alexandra Grove, North Finchley, N. 12.*

1928 1934 **Harris, Norman Leslie, B.Sc. (Lond.),**
Research Physicist, Research Laboratories of the General Electric Company, Ltd., North Wembley, Middlesex. *Duncairn, Lytton Road, Hatch End, Middlesex.*

1921 ***Harris, Tom, B.Sc. (Lond.), A.R.C.S.,**
Head of Branch, Scientific Research Dept., Royal Arsenal, Woolwich. *17 Burbage Road, Herne Hill, S.E. 24.*

1920 ***Harrison, Edward Philip, Ph.D. (Zürich),**
Chief Scientist, H.M.S. *Vernon*, Portsmouth.

1920 ***Harrison, Walter Ernest, B.Sc. (Birm.), A.R.C.S.,**
Formerly Principal, Handsworth Technical College, Birmingham. *7 Milverton Road, Knowle, Warwickshire.*

* Founder Fellow. † Life Member.

Date of election	FELLOWS	Served on Board
1922 1926	**Hart, Morris Daniel, M.Sc., LL.B. (Lond.), Ph.D. (U.S.A.), A.C.G.I., D.I.C., M.I.E.E., A.I.Mech.E.,** Experimental Officer, War Dept., London. *18 Kenwyn Road, Wimbledon, S.W. 20.*	
1933	**Harvey, Alexander, B.Sc., Ph.D. (Dunelm.),** Head of Physics Dept., Wigan and District Mining and Technical College, Wigan, Lancs.	
1920	***Hatfield, William Herbert, D.Met. (Shef.), M.I.Mech.E., F.R.S.,** Director, Brown-Firth Research Laboratories, Thos. Firth and John Brown Ltd., and Firth Vickers Stainless Steels Ltd., Sheffield. *Brincliffe House, Osborne Road, Sheffield.*	
1920	***†Hatschek, Emil,** Formerly Lecturer on Colloids, Sir John Cass Technical Institute, London. *10 Nottingham Mansions, W. 1.*	1931–2 1936–
1920	***Haughton, John Leslie, D.Sc. (Birm.),** Principal Scientific Officer, National Physical Laboratory, Teddington.	
1922	**Hayes, Cecil, M.Sc. (Lond.),** Patent and Research Engineer, Automotive Products Co. Ltd., Leamington Spa. *Inglenook, Windy Arbour, Kenilworth.*	
1920	***†Heath, George Andrew, A.M.I.Mech.E.,** Director and Technical Manager, Heath & Co., New Eltham, S.E. 9.	
1920	***Henderson, Sir James Blacklock, Kt., D.Sc., LL.D. (Glas.), M.I.E.E.,** Formerly Professor of Applied Mechanics, Royal Naval College, Greenwich, and Adviser on Gyroscopic Equipment to the Admiralty. *38 Blackheath Park, S.E. 3.*	
1920	***Henrici, Major Ernst Olaf, R.E. (retd.), A.M.I.E.E., Assoc. Inst. C.E.,** Assistant to Director of Fuel Research, Greenwich. *3 The Terrace, Barnes, S.W. 13.*	1920–26 V.P.1921–22
1923 1929	**Hercus, Eric Oswald, M.Sc. (New Z.), D.Sc. (Melb.),** Associate Professor of Natural Philosophy, University of Melbourne, Australia.	
1921 1927	**Hill, Ernest George, M.Sc. (Brist.), Ph.D. (Lond.),** Admiralty Civil Officer (S.R.E. Dept.). *21 Padwick Avenue, Cosham, Portsmouth.*	
1927	**Hodgkinson, Thomas Gerald, M.I.E.E.,** Head of Branch, Air Defence Experimental Establishment, Biggin Hill, Kent. *Lyndall, Westerham, Kent.*	
1921	***Hodgson, Benjamin, O.B.E., B.Sc. (Dunelm.), Ph.D. (Göttingen),** Research Physicist, Baird Television Ltd., Crystal Palace. *59 Rodenhurst Road, Clapham Park, S.W. 4.*	
1936	**Holmes, John Guyscliffe, B.Sc. (Lond.), A.R.C.S., D.I.C.,** Research Physicist, Chance Bros. and Co. Ltd., Smethwick, Staffs. *27 Dale End, Birmingham, 4.*	
1920	***Hopwood, Frank Lloyd, B.Sc. (Wales), D.Sc. (Lond.), A.R.C.S.,** Professor of Physics, University of London and St Bartholomew's Hospital Medical College, London, and Physicist to St Bartholomew's Hospital, London. *68 Chandos Avenue, Whetstone, N. 20.*	1926–30
1926	**Hosking, Richard, B.A. (Cantab.), D.Sc. (Melb.),** Chief Education Officer, Royal Australian Air Force. *13 St Leonard's Road, Ascot Vale, Melbourne, W. 2, Australia.*	

* Founder Fellow. † Life Member.

Date of election

1933 †**Houstoun, Robert Alexander, M.A., D.Sc. (Glas.), Ph.D. (Göttingen),**
Lecturer on Physical Optics, University of Glasgow. *45 Kirklee Road, Glasgow.*

1920 1924 **Hughes, Henry George, M.Sc. (Brist.), A.M.I.E.E.,**
Senior Scientific Officer, H.M. Signal School, R.N. Barracks, Portsmouth.

1920 1928 **Humphry, Ronald Henry, M.Sc. (Birm.),**
Lecturer in Physics, Sir John Cass Technical Institute, Jewry Street, E.C. 3.

1921 1928 **Hunt, Colonel Frederick Richard William, M.A. (Cantab.),**
Technical Adviser, Vickers-Armstrongs Ltd., Vickers House, Broadway, Westminster, S.W. 1.

1920 *†**Hunter, James de Graaff, C.I.E., M.A., Sc.D. (Cantab.), F.R.S.,**
Formerly Director, Geodetic Branch, Survey of India; Leverhulme Research Fellow. *Mitchell House, Cottenham, Cambs.*

1922 **Hurst, Harold Edwin, C.M.G., M.A., D.Sc. (Oxon.),**
Director-General, Physical Dept., Ministry of Public Works, Egypt.

1933 **Huxley, Leonard George Holden, M.A., D.Phil. (Oxon.),**
Lecturer-in-charge, Physics Dept., University College, Leicester.

1936 **Ibbs, Thomas Leonard, D.Sc., Ph.D. (Birm.),**
Lecturer in Physics, University of Birmingham. *18 Wentworth Road, Harborne, Birmingham, 17.*

1922 1929 **Ingall, Douglas Heber, D.Sc. (Birm.), F.I.C.,**
Principal, Borough Polytechnic, Borough Road, S.E. 1.

1920 ***Ionides, Alexander George, B.A. (Cantab.), M.I.E.E.,**
Consulting Engineer. *The Old Vicarage, Markyate, St Albans, Herts.*

1932 †**Irons, Eric John, B.Sc., Ph.D. (Lond.),**
Lecturer in Physics, Queen Mary College, University of London, E. 1.

1920 ***Jackson, Sir Herbert, K.B.E., F.I.C., F.R.S.,**
Formerly Director, British Scientific Instrument Research Association, London. *9 Parsifal Road, Finchley Road, N.W. 6.*

1929 1936 **Jackson, Willis, D.Sc. (Manc.), D.Phil. (Oxon.), A.M.I.E.E.,**
Research Dept., Metropolitan Vickers Electrical Co., Ltd., Manchester. *Thompson Park Lodge, Burnley, Lancs.*

1933 **James, Reginald William, M.A. (Cantab.), B.Sc. (Lond.),**
Reader in Experimental Physics, Physics Dept., University of Manchester.

1930 **Jameson, Harold, D.Sc. (Dunelm.),**
Superintendent, Colombo Observatory, Ceylon.

1935 **Jay, Alfred Hartley, M.Sc., Ph.D. (Manc.),**
Chief Physicist, Central Research Dept., The United Steel Co. Ltd., Stocksbridge, nr. Sheffield.

1930 1935 **Jessel, Ralph, B.Sc., Ph.D. (Lond.), A.R.C.S., D.I.C.,**
Research Physicist, Refrigeration Dept., Gramophone Co., Ltd., Hayes, Middlesex. *34 Kingfield Road, Ealing, W. 5.*

1922 1924 †**Jevons, Wilfred, D.Sc., Ph.D. (Lond.),**
Fereday Fellow of St John's College, Oxford; Research at Imperial College of Science and Technology, London. *Bradgate, 8 Old Farm Road East, Sidcup, Kent.*

1920 ***Johns, Cosmo,**
Consultant on Production and Manipulation of Steel for Ordnance. *Cefn Bryn, Bradway, nr. Sheffield.*

† Life Member.

* Founder Fellow.

Date of election	FELLOWS	Served on Board
1925	**Jolley, Alfred Charles, A.M.I.E.E.,** Formerly Head of Electrical Engineering Dept., Northampton Polytechnic, London. *67 Wood Vale, Muswell Hill, N. 10.*	
1920	***Jones, Edward Taylor, D.Sc. (Lond., Wales),** Professor of Natural Philosophy, University of Glasgow.	
1920 1923	**Jones, John Jenkin Ashton, M.Sc. (Wales),** Manager, Central Research Dept., United Steel Co. Ltd., Stocksbridge Works, nr. Sheffield.	
1920	***Jones, William Jacob, M.Sc. (Wales), D.Sc. (Manc.), F.I.C.,** Professor of Chemistry, University College, Cathays Park, Cardiff.	
1923	†**Jones, William Morris, M.A. (Cantab.), M.Sc. (Wales),** Director of Education, Rhondda Education Authority. *Education Dept., Council Offices, Pentre, Rhondda.*	
1934	†**Kapitza, Peter, D.Sc. (Acad. Sci. Russia), Ph.D. (Cantab.), F.R.S.,** Director of Institute for Physical Problems, Moscow. *Institute for Physical Problems, Kalonjskoe Shosse 32, Moscow, U.S.S.R.*	
1920	**Kaye, George William Clarkson, O.B.E., M.A. (Cantab.), D.Sc. (Lond.), A.R.C.S.,** Superintendent, Physics Dept., National Physical Laboratory, Teddington. *13 Waldegrave Park, Strawberry Hill, Middlesex.*	1921–25 V.P.1935–
1920	***Keen, Bernard Augustus, D.Sc. (Lond.), F.R.S.,** Assistant Director, Rothamsted Experimental Station, Harpenden, Herts.	1933–36
1920	***Keene, Horace Borton, D.Sc. (Birm.),** Head of Dept. of Physics and Mathematics, Birmingham Central Technical College. *57 Selly Park Road, Birmingham.*	
1920 1935	†**Kershaw, Cecil,** Managing Director, A. Kershaw & Son (Soho) Ltd., Leeds. *Glenroyd, Park Lane, Roundhay, Leeds, 8.*	
1924	†**Kidson, Edward, O.B.E., M.A., D.Sc. (New Z.),** Director, Meteorological Services, P.O. Box 722, Wellington, New Zealand.	
1933	†**Krishnan, Kariamanikkam Srinivasa, D.Sc. (Madras),** Mahendralal Sircar Professor of Physics, Indian Association for the cultivation of science. *210 Bowbazar Street, Calcutta, India.*	
1922	**Laby, Thomas Howell, M.A. (Cantab., Melb.), Sc.D. (Cantab.), F.R.S.,** Professor of Natural Philosophy, University of Melbourne, Australia.	
1923	**Lander, Cecil Howard, C.B.E., D.Sc. (Manc.), M.Inst.C.E., M.I.Mech.E.,** Professor of Mechanical Engineering, City and Guilds Engineering College, South Kensington, S.W. 7.	
1927 1930	†**Lang, Herbert Raphael, B.Sc., Ph.D. (Lond.), A.R.C.S., D.I.C.,** Secretary, The Institute of Physics, and Editor of *Journal of Scientific Instruments. 207 Chamberlayne Road, N.W. 10.*	
1927 1932	**Langley, Lieut.-Com. Alfred John Godwin, R.N., B.Sc. (McGill),** Scientific Officer, Scientific Research Dept., Admiralty, Whitehall, London.	
1922	**Lattey, Robert Tabor, M.A., B.Sc. (Oxon.),** Lecturer and Demonstrator, Electrical Laboratory, University of Oxford. *6 Crick Road, Oxford.*	

* Founder Fellow. † Life Member.

Date of election	FELLOWS	Served on Board
1921	*†**Lawson, Robert William, D.Sc. (Dunelm.),** Lecturer in Physics, Physics Laboratory, University of Sheffield.	
1931 1936	**Lay, Arthur William,** Research Engineer, Marconi's Wireless Telegraph Co. Ltd., Chelmsford. *Beresford, Galleywood Road, Chelmsford, Essex.*	
1920	*†**Lees, Charles Herbert, D.Sc. (Manc.), F.R.S.,** Emeritus Professor of Physics, University of London. *Greenacres, Dryhill Road, Tonbridge.*	1920–23 V.P.1921–23
1920	***Lempfert, Rudolf Gustav Karl, C.B.E., M.A. (Cantab.),** Assistant Director, Meteorological Office, London. *35 Fitz James Avenue, W. 14.*	1928–30
1936	**Levin, Nyman, B.Sc., Ph.D. (Lond.), A.R.C.S., D.I.C.,** Research Engineer, Marconi's Wireless Telegraph Co. Ltd., Chelmsford. *6 Harford Walk, Finchley, N. 2.*	
1921 1928	†**Lewis, Joseph Watson, M.Sc. (Manc.),** Senior Science Master, Westminster City School, London. *51 Mayfield Avenue, Orpington, Kent.*	
1921	***Lewis, William Cudmore McCullagh, M.A. (Belf.), D.Sc. (Liv.), F.R.S.,** Professor of Physical Chemistry, University of Liverpool. *Muspratt Laboratory, The University, Liverpool.*	
1932	**Leyshon, Winifred Agnes, B.Sc., Ph.D. (Lond.),** Assistant Lecturer in Physics, London (Royal Free Hospital) School of Medicine for Women, 8 Hunter Street, W.C. 1.	
1933	**Littler, Thomas Simm, M.Sc., Ph.D. (Manc.),** Lecturer in Acoustics, Dept. of Education of the Deaf, University of Manchester.	
1923 1926	†**Lonsdale, Thomas Jackson, M.Sc., Ph.D. (Lond.),** Scientific Officer, Road Research Laboratory, Dept. of Scientific and Industrial Research, Middlesex. *121 Station Road, West Drayton, Middlesex.*	
1923 1927	**Lowery, Harry, M.Ed. (Leeds), M.Sc., Ph.D. (Lond.), D.Sc. (Manc.),** Principal, North-Western Polytechnic, Prince of Wales Road, N.W. 5.	
1920	***Lownds, Louis, B.Sc. (Lond.), Ph.D. (Berlin),** Head of Dept. of Physics, Chelsea Polytechnic, London. *11 Sudbrooke Road, Balham, S.W. 12.*	
1920	***Lyons, Sir Henry George, Kt., D.Sc. (Oxon.), Sc.D. (Dubl.), F.R.S.,** Formerly Director and Secretary, The Science Museum, London. *3 York Terrace, Regent's Park, N.W. 1.*	1931– P.1933–35
1924	†**McAulay, Alexander Leicester, M.A. (Cantab.), B.Sc. (Tasmania), Ph.D. (Manc.),** Professor of Physics, University of Tasmania, Hobart, Tasmania. *Long Way, off Manings Avenue, Lower Sandy Bay, Hobart, Tasmania.*	
1920	***McCance, Andrew, D.Sc. (Lond.), A.R.S.M.,** Director and General Manager, Colvilles Ltd.; Managing Director, Clyde Alloy Steel Co.; Director, Steel Co. of Scotland, Lanarkshire Steel Co., Smith & McLean Ltd., etc. *Westview, Uddingston, Glasgow.*	
1933	**McHenry, John Joseph, M.A. (Cantab.), D.Sc. (Ireland),** Professor of Experimental Physics, University College, Cork, Ireland.	
1931 1935	**Macey, Horace Harrison, M.Sc. (Lond.), A.R.C.S., D.I.C.,** Research Physicist, British Refractories Research Association, The Mellor Laboratories, Stoke-on-Trent, Staffs.	

* Founder Fellow. † Life Member.

Date of election	FELLOWS	Served on Board
1921 1930	**Macnaughtan, Duncan James,** Director of Research and Development, International Tin Research and Development Council, Manfield House, 378 Strand, W.C. 2.	
1930 1936	**Maddock, Alan Julian, M.Sc. (Liv.),** Senior Radio Engineer, Standard Telephones and Cables Ltd., London. *22 Hounsden Road, Winchmore Hill, N. 21.*	
1933	**Madgwick, Edwin, M.Sc. (Dunelm.), Ph.D. (Cantab.),** Formerly Professor of Physics, Raffles College, Singapore. *c/o Sports Club, St James's Square, S.W. 1.*	
1936	**Madsen, John Percival Vissing, B.Sc. (Sydney), D.Sc. (Adel.),** Professor of Electrical Engineering, University of Sydney, N.S.W., Australia.	
1920	***Main, Sidney Arthur, B.Sc. (Lond.),** Head of Research Dept. and Local Director, Hadfields Ltd., Sheffield. *Sunny Bank House, 43 Broomhall Place, Sheffield, 10.*	
1922 1934	**Mainstone, Percy Albert, M.Sc. (Brist.),** Lecturer in Physics, University College of North Wales, Bangor.	
1920	***Makower, Walter, O.B.E., M.A. (Cantab.), D.Sc. (Lond.),** Professor of Science, Royal Military Academy, Woolwich. *153 Eglinton Hill, S.E. 18.*	1926–30
1934	**Mallett, Edward, D.Sc. (Lond.), M.I.E.E., Assoc.M.Inst. C.E.,** Principal and Head of Electrical Engineering Dept., Woolwich Polytechnic, S.E. 18.	
1928 1932	**†Marsh, Malcolm Charles, M.A. (Cantab.), Ph.D. (Lond.),** Head of Physics Dept., Wool Industries Research Association, Headingley, Leeds. *30 St Chad's Avenue, Headingley, Leeds, 6.*	
1923	***Marsh, Sydney, D.Sc. (Wales), Ph.D. (Göttingen),** Head of Dept. of Physics, Battersea Polytechnic, London. *Walcot, 83 Egmont Road, Sutton, Surrey.*	
1935	**Martyn, David Forbes, D.Sc., Ph.D. (Lond.), A.R.C.S.,** Research Physicist, Australian Radio Research Board, and Lecturer in Atmospheric Physics, University of Sydney. *University of Sydney, N.S.W., Australia.*	
1921	***Martyn, George Herbert, B.Sc. (Lond.), A.R.C.S.,** Formerly in Research Dept., Woolwich. *38 Hogarth Hill, N.W. 11.*	
1922	**Mason, Cecil Charles, O.B.E., M.A. (Cantab.),** Joint Managing Director, Cambridge Instrument Co. Ltd. *14 Bentley Road, Cambridge.*	
1920	***Matthew, John Alexander, M.Sc. (Lond.), A.R.C.S.,** Principal Assistant, Linen Industry Research Association, Lambeg, N. Ireland. *165 Sandown Road, Knock, Belfast.*	
1933	**†Mayneord, William Valentine, D.Sc. (Birm.),** Reader in Physics, University of London; Head of Department of Physics, Royal Cancer Hospital (Free), Fulham Road, S.W. 3.	
1931	**Menzies, Alexander Charles George, M.A. (Cantab.), D.Sc. (Lond.),** Professor of Physics, University College, Southampton.	
1920	***Merton, Thomas Ralph, M.A., D.Sc. (Oxon.), F.R.S.,** Formerly Professor of Spectroscopy, University of Oxford. *Winforton House, Hereford.*	
1920	**Metcalfe, Edward Parr, D.Sc. (Lond.),** Vice-Chancellor, University of Mysore, India.	

* Founder Fellow. † Life Member.

1934 **Milne, Edward Arthur, M.B.E., M.A. (Cantab., Oxon.), M.Sc. (Manc.), D.Sc. (Amsterdam), F.R.S.,**
Professor of Mathematics, University of Oxford. *19 Northmoor Road, Oxford.*

1920 †**Milner, Samuel Roslington, D.Sc. (Lond., Brist.), F.R.S.,**
Professor of Physics, University of Sheffield.

1935 **Mitchell, John Henry, B.Sc., Ph.D. (Brist.), A.M.I.E.E.,**
Air Ministry Research Pool, Bawdsey Research Station, nr. Woodbridge, Suffolk.

1920 *†**Mond, Sir Robert Ludwig, Kt., M.A. (Cantab.), LL.D. (Liv., Toronto),**
Director, South Staffordshire Mond Gas Company, International Nickel Co. of Canada, Mond Staffordshire Refinery Co. Ltd. *9 Cavendish Square, W. 1.*

1923 **Monypenny, John Henry Gill,**
Metallurgist, Brown, Bayley's Steel Works, Ltd., Sheffield. *33 Moor Oaks Road, Broomhill, Sheffield, 10.*

1932 **Moore, Burrows, M.Sc.Tech. (Manc.), D.Sc. (Lond.), Ph.D. (Manc.), F.I.C.,**
Director of Research, Thermal Syndicate Ltd., Wallsend-on-Tyne. *41 Hawthorn Gardens, Monkseaton, Northumberland.*

1920 ***Moore, Harold, C.B.E., D.Sc., Ph.D. (Lond.), F.I.C.,**
Director, British Non-Ferrous Metals Research Association, Regnart Buildings, Euston Street, N.W. 1.

1920 ***Moore, Harry, D.Sc. (Lond.), A.R.C.S.,** 1933–
Director of Research and Secretary, British Scientific Instrument Research Association, 26 Russell Square, W.C. 1.

1920 ***Morrison, William Murray, M.I.E.E., M.Inst.C.E.,**
Vice-Chairman and Managing Director, The British Aluminium Co. Ltd., Adelaide House, King William Street, E.C. 4.

1920 *†**Morton, William Blair, M.A. (Belf., Cantab.), D.Sc. (Belf.),**
Formerly Professor of Physics, Queen's University, Belfast. *3 Notting Hill, Malone Road, Belfast.*

1920 *†**Muir, James, M.A. (Cantab.), D.Sc. (Glas.),**
Professor of Natural Philosophy, The Royal Technical College, George Street, Glasgow, C. 1.

1921 †**New, George Francis, B.Sc., Ph.D. (Lond.),**
1928 Development Manager, British Titan Products Co. Ltd., Billingham, Co. Durham.

1920 **Newall, Hugh Frank, M.A. (Cantab.), D.Sc. (Dunelm.), F.R.S.,**
Formerly Professor of Astrophysics and Director of the Solar Physics Observatory, University of Cambridge. *Madingley Rise, Cambridge.*

1920 ***Newman, Frederick Henry, D.Sc. (Lond.), A.R.C.S., D.I.C.,**
Professor of Physics, University College, Exeter. *The Washington Singer Laboratories, Exeter.*

1920 ***Norman, Right Hon. Sir Henry, Bart.,**
Director, Yorkshire Amalgamated Collieries Ltd.; Sheepbridge Coal and Iron Co. Ltd.; Dinnington Main, Rossington Main and Maltby Main Collieries Ltd.; Newstead Colliery Co. Ltd.; Firbeck Main Collieries Ltd.; and Industrial Housing Association Ltd. *The Corner House, Cowley Street, S.W. 1.*

1920 ***Nottage, William Hockley, B.Sc. (Lond.), M.I.E.E.,**
Chief of Patent Dept., Marconi's Wireless Telegraph Co. Ltd. *Mawbyns, 18 Kingsend, Ruislip, Middlesex.*

* Founder Fellow. † Life Member.

Date of election	FELLOWS	Served on Board
1933	**Nuttall, John Mitchell, D.Sc. (Manc.),** Assistant Director of Physical Laboratories, University of Manchester. *3 Cranmer Road, Didsbury, Manchester.*	
1933	**Ockenden, Francis Edmund Jury, A.M.I.E.E.,** Research Engineer, Everett Edgcumbe and Co. Ltd., London. *59 Stanhope Avenue, Church End, Finchley, N. 3.*	
1920	***Ogg, Alexander, M.A., B.Sc., LL.D. (Aberd.), D.Sc. (Cape Town), Ph.D. (Göttingen),** Formerly Professor of Physics, University of Cape Town; Director, Magnetic Observatory, Cape Town. *Magnetic Observatory, University of Cape Town.*	
1920	***Owen, David, B.A. (Cantab.), D.Sc. (Lond.),** Head of Dept. of Physics and Mathematics, Sir John Cass Technical Institute, London. *62 Wellington Road, Enfield, Middlesex.*	1924–28 1931–35 1936–
1920	***Owen, Edwin Augustine, M.A., Sc.D. (Cantab.), M.Sc. (Wales), D.Sc. (Lond.),** Professor of Physics, University College of North Wales, Bangor, North Wales. *Pen Bre, Bangor, North Wales.*	
1920	***Owen, Gwilym, M.A. (Cantab.), M.Sc. (Manc.), D.Sc. (Liv.),** Vice-Principal and Professor of Physics, University College of Wales, Aberystwyth.	
1922	**Owen, Morris, M.Sc. (Wales),** Director of Public Instruction and Secretary to Government, Central Provinces, Nagpur, C.P., India.	
1926	**Paget, Sir Richard Arthur Surtees, Bart.,** Barrister (Patent Law); Technical Adviser, Thermal Syndicate Ltd., Wallsend-on-Tyne. *1 Devonshire Terrace, W. 2.*	
1936	**Paine, Henry Howard, M.A. (Cantab.), B.Sc. (Wales),** Professor of Physics, University of the Witwatersrand, Johannesburg, S. Africa.	
1921 1924	**†Palmer, Lionel Stanley, D.Sc., Ph.D. (Brist.), M.I.E.E.,** Professor of Physics, University College, Hull.	
1924	**†Paris, Edward Talbot, D.Sc. (Lond.),** Principal Scientific Officer, Air Defence Experimental Establishment, Biggin Hill, Kent. *Paddock Lodge, Cudham, Sevenoaks, Kent.*	
1926	**Parnell, Thomas, M.A. (Cantab.),** Professor of Physics, University of Queensland, Australia.	
1921	***Partridge, George Frederick, B.Sc. (Birm.),** Research Physicist, Admiralty Research Laboratory, Teddington. *16 Boxgrove Avenue, Guildford.*	
1921	***Paterson, Clifford Copland, O.B.E., M.I.E.E., M.Inst.C.E.,** Director of Research Laboratories of the General Electric Co. Ltd., Wembley, Middlesex.	1920–32 V.P.1921–25 1928–32
1925 1929	**†Patterson, Arthur Lindo, M.Sc., Ph.D. (McGill),** Assistant Professor of Physics, Bryn Mawr College, Bryn Mawr, Pa., U.S.A.	
1920	***Paul, Robert William, M.I.E.E.,** *69 Addison Road, W. 14.*	1923–31 V.P.1927–31
1933	**Pearce, James George, M.Sc. (Birm.), M.I.E.E.,** Director and Secretary, British Cast Iron Research Association, 21–23 St Paul's Square, Birmingham, 3.	
1921	**Peddle, Cyril James, M.B.E., D.Sc. (Shef.), F.I.C.,** Technical Manager, Forsters Glass Co. Ltd., St Helens, Lancashire. *Moss Hey, Huyton, nr. Liverpool.*	

* Founder Fellow. † Life Member.

1921 **Peirce, Frederick Thomas, D.Sc. (Sydney),**
1925 Head of Testing Dept., British Cotton Industry Research Association, Didsbury. *10 Gorsey Road, Wilmslow, Cheshire.*

1933 **†Pelton, Martin Oakley, M.Sc. (Lond.),**
Chief Assistant, British Cotton Industry Research Association, Shirley Institute, Didsbury, Manchester.

1920 ***Phillips, Major Charles Edmund Stanley, O.B.E., F.R.S.E.,** 1920–24
Honorary Lecturer on Radiology, University College, 1925–
London; Late Physicist, Royal Cancer Hospital; Engaged H.T.1925–
in private research. *Castle House, Shooters Hill, S.E. 18.*

1922 **Phillips, Percy, B.A. (Cantab.), B.Sc. (Lond.), D.Sc. (Birm.),**
Director, Hydrological Service, Physical Dept., Ministry of Public Works, Cairo.

1930 **Phillips, Walter Charles Stanley, B.Sc. (Birm.), M.I.E.E.,**
Head of Dept. of Electrical Engineering and Physics, Borough Polytechnic, London. *Fairdene, Upfield, East Croydon, Surrey.*

1924 **†Pick, William Henry, B.Sc. (Lond.),**
1931 Assistant Superintendent, Meteorological Office, Air Ministry. *Meteorological Office, Royal Air Force Station, Andover, Hampshire.*

1920 ***Piper, Stephen Harvey, D.Sc. (Lond.),**
Reader in Physics, University of Bristol. *Wills Physics Laboratory, Royal Fort, Bristol, 8.*

1934 **Place, William Illingworth, M.Sc. (Leeds), A.M.I.E.E.,**
Head of Electrical Engineering Dept., Municipal Technical School, St Helens, Lancashire. *6 Bishop Road, St Helens, Lancashire.*

1920 ***Pollard, Alan Faraday Campbell, A.R.C.S., A.M.I.E.E.,**
Professor of Instrument Design, Imperial College of Science and Technology, South Kensington, S.W. 7.

1920 ***Porter, Alfred William, B.Sc. (Lond.), D.Sc. (Melb.), F.R.S.,** 1920–26
H.S.1920–26
Emeritus Professor, University of London. *87 Parliament Hill Mansions, N.W. 5.*

1921 **Porter, Harry Leonard, B.Sc. (Lond.),**
Physicist, Research Dept., Woolwich. *23 Grove Park Road, Mottingham, S.E. 9.*

1935 **Potter, Harold Herbert, B.Sc. (Brist.), Ph.D. (Lond.),**
Lecturer in Physics, University of Bristol. *Hillsbro, Hanham, Bristol.*

1921 ***†Powell, James Hugh, D.Sc. (Liv.),**
Scientific Officer, Dept. of Scientific Research Experiment, Admiralty. *H.M.S. Vernon, Portsmouth, Hants.*

1929 **Preston, John Silvey, M.A. (Cantab.), A.M.I.E.E.,**
1934 Scientific Officer, National Physical Laboratory, Teddington.

1920 ***Pullin, Victor Edward Anthony, O.B.E., B.A., B.Sc.,**
Director of Radiological Research, Research Dept., Woolwich. *1 Paper Buildings, The Inner Temple, E.C. 4.*

1924 **Raman, Sir Chandrasekhara Venkata, Kt., M.A. (Madras), D.Sc. (Benares, Calcutta, Dacca, Madras, Paris), LL.D. (Glas., Bombay), Ph.D. (Freib.), F.R.S.,**
Director, Indian Institute of Science, Hebbal, Bangalore, India.

1922 **Rands, Harry Casmey, B.Sc. (Lond.),**
Glass Technologist; Joint Manager, Optical Glass Dept., Chance Bros. and Co. Ltd., Smethwick. *Lindenhurst, 15 Comberton Road, Kidderminster.*

* Founder Fellow. † Life Member.

Date of election	FELLOWS	Served on Board
1920	***Rankine, Alexander Oliver, O.B.E., D.Sc. (Lond.), F.R.S.,** Professor of Physics, Imperial College of Science and Technology, South Kensington, S.W. 7.	1923– H.S.1926–32 V.P.1933–
1933	**Rao, Subbarao Ramachandra, M.A. (Madras), Ph.D. (Lond.),** Professor of Physics, Annamalai University, Annamalainagar P.O., South India.	
1927 1929	**Rawlins, Francis Ian Gregory, M.Sc. (Cantab.),** Scientific Adviser to the Trustees of the National Gallery, London. *The Athenaeum, Pall Mall, S.W. 1.*	1932–36
1920	***†Rayleigh, Robert John Strutt, Baron, M.A. (Cantab.), Sc.D. (Dubl.), D.Sc. (Dunelm.), LL.D. (Edin.), F.R.S.,** Emeritus Professor of Physics, Imperial College of Science and Technology, South Kensington. *Terling Place, Chelmsford, Essex.*	
1920	***†Rayner, Edwin Hartree, M.A., Sc.D. (Cantab.), M.I.E.E.,** Superintendent, Electricity Dept., National Physical Laboratory, Teddington. *40 Gloucester Road, Teddington, Middlesex.*	1920–31 V.P.1923–27
1931 [1937]	**Rayner, Jack Maxwell, B.Sc. (Sydney),** Consultant Geophysicist, North Australia Geophysical Survey, and Geophysicist, Dept. of Mines, New South Wales. *125 William Street, Granville, N.S.W., Australia.*	
1921	***Read, Ralph Sidney, M.A. (Cantab.), B.Sc. (Lond.), A.R.C.S.,** Officer-in-charge, Meteorological Office, Air Port of London, Croydon, Surrey. *37 Hartington Road, Chiswick, W. 4.*	
1921	**Reilly, Joseph, M.A. (Cantab., Dubl., N.U.I.), Sc.D. (Dubl.), D.Sc. (N.U.I.), D.ès.Sc. (Geneva), F.I.C.,** Professor of Chemistry, National University of Ireland; Technical Member, Industrial Alcohol Board (I.F.S.). *Chemistry Dept., University College, Cork, I.F.S.*	
1933	**Reimann, Arnold Luehrs, D.Sc. (Adel.), Ph.D. (Berlin),** Leverhulme Research Fellow, Cavendish Laboratory, Cambridge. *19 Sherlock Road, Cambridge.*	
1921	***Rheinberg, Julius,** Director of Rheinbergs Ltd., London. *Inglenook, 12 Brondesbury Park, N.W. 6.*	
1923	**Richards, Reginald Charles, M.A. (Cantab.), M.Sc. (Lond.),** Education Officer, Electrical and Wireless School, Royal Air Force, Cranwell, Lincs.	
1925	**Richardson, Harry, M.Sc. (Manc.),** Principal, Bradford Technical College.	
1920	***Richardson, Lewis Fry, M.A. (Cantab.), D.Sc. (Lond.), F.R.S.,** Principal, The Technical College, Paisley, Scotland.	
[1937]	**Rimmer, William Bolton, M.Sc. (Manc.), D.I.C.,** Officer-in-charge, Commonwealth Solar Observatory, Mount Stromlo, Canberra, F.C.T., Australia.	
1923	**Roberts, Joseph Harrison Thomson, D.Sc. (Liv.),** Company Director. *18–20 Regent Street, S.W. 1.*	
1932	**Robinson, Bernard Augustus, M.I.E.E., M.I.Mech.E.,** Technical Engineer, Cambridge Instrument Co. Ltd. *Windmill Hill, Hexham, Northumberland.*	
1931	**†Robinson, Harold Roper, D.Sc. (Manc.), Ph.D. (Cantab.), F.R.S.,** Professor of Physics, Queen Mary College, University of London, E. 1.	

* Founder Fellow. † Life Member.

Date of election	FELLOWS	Served on Board
1920	***Robinson, James, M.B.E., D.Sc. (Dunelm.), Ph.D. (Göttingen), M.I.E.E.,** Consulting Engineer. *76 Mill Way, Mill Hill, N.W. 7.*	
1930	**Rogers, James Stanley, B.A. (Melb.), M.Sc. (Cantab., Melb.),** Senior Lecturer, Natural Philosophy Dept., University of Melbourne, Australia.	
1923	**Ross, Alexander David, M.A. (Glas.), B.Sc. (Lond.), D.Sc. (Glas., Adel., Perth),** Professor of Physics, University of Western Australia, Perth, Western Australia.	
1920	***Rotter, Godfrey, C.B., C.B.E., D.Sc., F.I.C.,** Director of Explosives Research, Research Dept., Woolwich. *2 Parkhill Road, Sidcup, Kent.*	
1921	**†Rowell, Henry Snowden, O.B.E., D.Sc. (Lond.), A.R.C.S., M.I.Mech.E., Assoc.M.Inst.C.E.,** *40 New Road, Ware.*	
1926 1932	**Rule, William, M.Sc. (Dunelm.),** Physicist, British Thomson-Houston Co. Ltd., Rugby. *10 Fisher Avenue, Rugby.*	
1920	***Russ, Sidney, C.B.E., D.Sc. (Lond.),** Professor of Physics, University of London. *Foxella, Matfield, Kent.*	1921–22 1925–29
1920	***Russell, Alexander, M.A. (Cantab., Glas.), D.Sc., LL.D. (Glas.), M.I.E.E., F.R.S.,** Principal of Faraday House Electrical Engineering College, London. *49 Welbeck Street, W. 1.*	1924–32 V.P.1928–32
1921	***Saltmarsh, Maud Olive, B.A. (Cantab., Dubl.), Ph.D. (Lond.),** Reader in Physics, Bedford College, University of London. *74 Abbey Road Mansions, N.W. 8.*	
[1937]	**Samuel, Rudolf, Dr.Phil. (Göttingen),** Nizam Professor of Physics, Muslim University, Aligarh, India.	
1929	**Satterly, John, M.A. (Cantab)., D.Sc. (Lond.), A.R.C.S.,** Professor of Physics, University of Toronto, Canada.	
1926 1932	**Sayce, Leonard Alfred, M.Sc., Ph.D. (Dunelm.), F.I.C.,** Lecturer in Chemistry, Armstrong College, University of Durham. *5 Toward Terrace, Sunderland, Co. Durham.*	
1920	***Schall, William Edward, B.Sc. (Lond.),** Governing Director, Schall and Son, Ltd., 75 New Cavendish Street, W. 1.	
1920	***Schofield, Herbert, M.B.E., B.Sc., Ph.D. (Lond.), A.R.C.S., D.I.C., M.I.Mech.E., Assoc.M.Inst.C.E.,** Principal, Loughborough College. *Iffley, Ashby Road, Loughborough, Leics.*	
1931	**Schofield, John, B.Sc. (Lond.), A.R.C.S.,** Textile Consultant; Lecturer and Author. *Moorcroft, Kirkburton, Huddersfield.*	
1921	***†Scott-Taggart, John, M.I.E.E.,** Consulting Engineer. *c/o Franklin Wild and Co., Orient House, 42–5 New Broad Street, E.C. 2.*	
1920	***Sears, John Edward, (Jnr), C.B.E., M.A. (Cantab.), M.I.Mech.E.,** Superintendent, Metrology Dept., National Physical Laboratory, Teddington.	
1932	**Selwyn, Edward William Herbert, B.Sc. (Lond.), A.R.C.S., D.I.C.,** Research Physicist, Kodak Ltd., Wealdstone, Middlesex. *Desborough, Headstone Lane, Harrow, Middlesex.*	

* Founder Fellow. † Life Member.

Date of election	FELLOWS	Served on Board
1921	***Shaw, Herman, D.Sc. (Lond.), A.R.C.S., D.I.C.,** Keeper, Dept. of Science, Science Museum, London. *Woodlands, 29 Northwick Circle, Kenton, Harrow, Middlesex.*	
1927 1932	**Shaw, James Ernest, M.Sc. (Belf.), A.M.I.E.E.,** Scientific Officer, Admiralty Engineering Laboratory, West Drayton, Middlesex.	
1920	***Shaw, Sir William Napier, Kt., Sc.D. (Cantab., Dubl.), D.Sc. (Manc., Harvard), LL.D. (Aberd., Edin.), F.R.S.,** Formerly Director of the Meteorological Office, and Professor of Meteorology, Imperial College of Science and Technology, London. *10 Moreton Gardens, S.W. 5.*	1921–26 V.P. 1923–26
1922	**Shaxby, John Henry, D.Sc. (Lond.),** Lecturer in Special Sense Physiology and Biophysics, University College, Cardiff. *Green Patch, 12 Cyncoed Avenue, Cardiff.*	
1923	**Shearer, George, M.A., D.Sc. (Edin.), Ph.D. (Cantab.),** Senior Scientific Officer, National Physical Laboratory, Teddington.	1930–34
1922 1932	**†Sibree, John Oswald, B.Sc. (Lond.),** Principal, Wimbledon Technical College and Secretary to the Wimbledon District Higher Education Committee. *11 Mansel Road, Wimbledon, S.W. 19.*	
1920	***†Simeon, Frederick, D.Sc. (Lond.),** Chief Physicist, Adam Hilger, Ltd., London. *10 Carleton Gardens, Brecknock Road, N. 19.*	
1920	***Simons, Lewis, D.Sc. (Lond.),** University Reader in Physics, Birkbeck College, University of London. *1 Grove Avenue, Muswell Hill, N. 10.*	
1923	**Simpson, Sir George Clarke, K.C.B., C.B.E., D.Sc. (Manc., Sydney), LL.D. (Aberd.), F.R.S.,** Director of the Meteorological Office, London. *72 Hornsey Lane, Highgate, N. 6.*	
1934	**Sinnatt, Frank Sturdy, C.B., M.B.E., M.Sc.Tech., D.Sc. (Manc.), F.I.C.,** Director of Fuel Research, Fuel Research Station, Greenwich, S.E. 10.	
1920	***Skinner, Sidney, M.A. (Cantab.),** Formerly Principal of Chelsea Polytechnic, London. *17 Sollershott West, Letchworth, Herts.*	
1921	***Smith, Benjamin Spalding, M.I.E.E.,** Superintending Scientist, H.M.S. *Osprey*, Portland, Dorset.	
1920	***Smith, Sir Frank Edward, K.C.B., C.B.E., D.Sc. (Oxon.), LL.D. (Aberd., Birm.), A.R.C.S., Sec.R.S.,** Secretary, Dept. of Scientific and Industrial Research, London. *24 Park Road, Teddington, Middlesex.*	1921–25
1920	***Smith, Samuel Walter Johnson, M.A. (Cantab.), D.Sc. (Lond.), F.R.S.,** Formerly Professor of Physics, University of Birmingham. 130 *Westfield Road, Edgbaston, Birmingham.*	
1920	***Smith, Thomas, M.A. (Cantab.), F.R.S.,** Head of Optics Division, National Physical Laboratory, Teddington. *24 Udney Park Road, Teddington, Middlesex.*	1920–21
1920	***Solomon, Maurice, F.C.G.I., M.I.E.E.,** Director, General Electric Co. Ltd., London. *Homewood, Burkes Road, Beaconsfield, Bucks.*	
1920	***†Speirs, Charles William, M.I.E.E.,** Director, The Morgan Crucible Co. Ltd., Battersea. *The Chesters, Traps Lane, New Malden, Surrey.*	

* Founder Fellow. † Life Member.

Date of election

FELLOWS

1930 **Stanbury, George Reginald, B.Sc. (Lond.), A.R.C.S.,**
Research Physicist, Wool Industries Research Association, Leeds. *9 St Michaels' Villas, Leeds, 6.*

1920 ***Starling, Sydney George, B.Sc. (Lond.), A.R.C.S.,**
Formerly Head of Dept. of Physics, West Ham Municipal College, London. *The Firs, Orpington Road, Chislehurst, Kent.*

1925 **Stead, Gilbert, M.A. (Cantab.),**
Reader in Physics, Guy's Hospital Medical School, University of London, University Lecturer in Physics as applied to Medical Radiology, Cambridge. *10 Cavendish Avenue, Cambridge.*

1930 **Stevenson, Alexander Wight, D.Sc. (Edin.),**
Principal, Scottish Woollen Technical College, Galashiels.

1933 **Stoner, Edmund Clifton, B.A., Ph.D. (Cantab.),**
Reader in Physics, University of Leeds. *Physics Department, The University, Leeds, 2.*

1920 ***Stott, Verney, B.A. (Cantab.),**
Senior Scientific Officer, National Physical Laboratory, Teddington. *56 Clarence Road, Teddington, Middlesex.*

1920 ***Strachan, James,**
Managing Director, British Vegetable Parchment Mills, Northfleet, Kent and New Northfleet Paper Mills, Northfleet, Kent. *The Orchard, Hook Green, Meopham, Kent.*

1920 ***Strang, John Martin, D.Sc. (Glas.),**
Director, Barr and Stroud, Ltd., Glasgow and London. *Thirlestane, Bearsden, nr Glasgow.*

1920 ***Stratton, Frederick John Marrian, O.B.E., M.A. (Cantab.),**
Professor of Astrophysics, University of Cambridge. *Gonville and Caius College, Cambridge.*

1920 *†**Stroud, Henry, M.A. (Cantab., Dunelm.), D.Sc. (Lond., Dunelm.), M.I.E.E.,**
Emeritus Professor of Physics, Armstrong College, University of Durham. *Denver, Bulstrode Way, Gerrard's Cross, Bucks.*

1920 ***Stroud, William, M.A. (Oxon.), D.Sc. (Leeds, Lond.),**
Professor of Physics, University of Leeds; Formerly Chairman, Barr and Stroud, Ltd., Glasgow. *c/o Barr and Stroud, Ltd., Anniesland, Glasgow.*

1920 **Stubbings, George Wilfred, B.Sc. (Lond.), A.M.I.E.E.,**
1927 Formerly Electro-technical Assistant, London Passenger Transport Board. *Linton, Stoney Lane, Winchester.*

1921 ***Sutcliffe, John Hamer, O.B.E.,**
Secretary, British Optical Association; Registrar, Joint Council Qualified Opticians, London. *65 Brook Street, W. 1.*

1923 †**Sutton, Carlton, M.Sc. (Melb.),**
Senior Scientific Officer, Research Dept., Woolwich, S.E. 18.

1923 **Sutton, Leonard Joseph, M.A. (Cantab.),**
1925 Director, Meteorological Service, Physical Dept., Cairo, Egypt.

1929 **Swaine, William, B.Sc. (Manc.),**
Lecturer in Physics, West Ham Municipal College, London. *89 Empress Avenue, Ilford, Essex.*

1920 ***Sykes, Albert Howarth, B.Sc. (Lond.), M.Sc. (Leeds),**
Headmaster, Douglas High School for Boys. *Glion Beg, Cronkbourne Road, Douglas, Isle of Man.*

1935 **Sykes, Charles, M.Sc., Ph.D. (Shef.),**
Liaison Scientist, Metropolitan Vickers Electrical Co., Ltd., Manchester. *2 South Meade, Timperley, Cheshire.*

* Founder Fellow. † Life Member.

1936 **Tagg, George Frank, B.Sc., Ph.D. (Lond.), A.M.I.E.E.,**
Research Assistant, Evershed and Vignoles, Ltd., London. *6 Church Road, Osterley, Middlesex.*

1922 †**Takamine, Toshio, D.Sc. (Tokyo),**
1923 Assistant Professor of Physics, Tokyo Imperial University. *43 Otsuka, Koishikawa, Tokyo, Japan.*

1921 ***Tarrant, Arthur George, B.Sc. (Lond.), A.R.C.S.**
65 The Grove, Isleworth, Middlesex.

1934 **Tarrant, Gerald Thomas Prestoe, M.A., Ph.D. (Cantab.),**
Senior Physics Master, Manchester Grammar School. *Ley Croft, Ley Hey Road, Marple, Cheshire.*

1934 **Tattersall, Arthur Ewart, M.I.E.E.,**
Signal and Telegraph Engineer, London and North Eastern Rly. (Southern Area), Liverpool Street Station, London. *43 Park Grove, Edgware, Middlesex.*

1920 ***Taylor, William, O.B.E., Hon.M.I.Mech.E., F.R.S.,**
Governing Director, Taylor, Taylor and Hobson, Ltd., Leicester. *Laughton Hills, Rugby.*

1935 **Telang, Ankola Venkat Rao, M.A. (Madras),**
Professor of Physics, Central College, University of Mysore, Bangalore, S. India.

1933 **Temple, George Frederick James, D.Sc., Ph.D. (Lond.),**
Professor of Mathematics, King's College, University of London.

1930 **Thomas, Alfred Morris, B.Sc. (Lond.),**
1936 Technical Assistant, British Electrical and Allied Industries Research Association, London. *17 Park Drive, Gunnersbury Park, W. 3.*

1920 ***Thomas, David Edward, M.A. (Cantab.), B.Sc. (Wales),**
Head of Branch, Research Dept., Woolwich, S.E. 18.

1920 †**Thomson, Andrew, M.A. (Toronto),**
Physicist, Meteorological Service of Canada. *Meteorological Office, 315 Bloor Street W., Toronto, Canada.*

1920 ***Tizard, Henry Thomas, C.B., M.A. (Oxon.), F.R.S.,**
Rector of the Imperial College of Science and Technology, London. *161 St James's Court, Buckingham Gate, S.W. 1.*

1920 ***Todd, George William, M.A. (Cantab.), M.Sc. (Dunelm.), D.Sc. (Birm.),**
Professor of Experimental Physics, Armstrong College, University of Durham. *Kenilworth, Darras Road, Ponteland, Northumberland.*

1920 **Toy, Francis Carter, D.Sc. (Lond.),** 1927–31
Deputy Director, British Cotton Industry Research Association, Didsbury, Manchester.

1934 **Treloar, Leslie Ronald George, B.Sc. (Lond.),**
Research Physicist, Research Laboratories of the General Electric Co., Ltd., Wembley. *20 Spencer Road, North Wembley, Middlesex.*

1921 **Tucker, William Sansome, O.B.E., D.Sc. (Lond.), A.R.C.S., A.M.I.E.E.,**
Director of Acoustical Research, Air Defence Experimental Establishment, Biggin Hill, Kent. *The Wayside, 33 Shortlands Road, Shortlands, Kent.*

1927 **Tunstall, Norman, B.Sc. (Manc.),**
Principal, Technical College, Bell Street, Wakefield.

1920 ***Turner, William Ernest Stephen, O.B.E., M.Sc. (Birm.), D.Sc. (Lond.),**
Professor of Glass Technology, University of Sheffield. *30 Whitworth Road, Ranmoor, Sheffield, 10.*

* Founder Fellow. † Life Member.

Date of election	FELLOWS	Served on Board
1920	***Twyman, Frank, F.C.G.I., F.R.S.,** Managing Director, Adam Hilger, Ltd., 98 King's Road, Camden Town, N.W. 1.	1925–29 1930–33 1936– ; V.P. 1936–
1927 1930	**Tyler, Edward, D.Sc. (Birm.),** Lecturer in Physics, Leicester College of Technology. *Avondale, 27 Wynfield Road, Western Park, Leicester.*	
1920	***†Tyndall, Arthur Mannering, D.Sc. (Brist., Lond.), F.R.S.,** Henry Overton Wills Professor of Physics, University of Bristol. *9 Henleaze Gardens, Bristol.*	1933–36
1930 1932	**Tyte, Leonard Charles, B.Sc., Ph.D. (Lond.),** Assistant II, Directorate of Ballistics, Research Dept., Woolwich. *120 Wanstead Park Avenue, Wanstead Park, E. 12.*	
1932	**Vaidhianathan, V. I., M.A., D.Sc. (Madras),** Physicist, Irrigation Research Institute, Lahore, India.	
1922	**Van der Lingen, Jan Stephanus, B.A. (Cape Town), Ph.D. (Johns Hopkins),** Professor of Physics, University of Pretoria. *P.O. Box 217, Fuel Research Institute, Pretoria, Transvaal, S. Africa.*	
1931 1934	**Vedy, Louis George, M.A. (Cantab.), B.Sc. (Lond.),** Private Tutor. *Hurlands, Headley, Bordon, Hants.*	
1932	**Venkatesachar, Bachahalli, M.A. (Madras),** Professor of Physics, Central College, Bangalore, S. India.	
1934	**Verman, Lal Chand, M.Sc., Ph.D. (Cornell),** Research Officer, Industrial Research Bureau, Government Test House, Alipore, Calcutta, India.	
1921 1934	**Vernon, William Somerville, M.Sc. (New Z.),** Head of Dept. of Physics and Applied Physics, The Technical College, Cardiff, S. Wales.	
1920	**†Vincent, Joseph Herbert, M.A. (Cantab.), D.Sc. (Lond.), A.R.C.S.,** Formerly Head of Physics Dept., Paddington Technical Institute. *34 Neeld Crescent, Wembley Hill, Middlesex.*	1925–29
1933	**Vinycomb, Capt., Thomas Bernard, M.A. (Ireland),** Head of Physics and Tele-Communications Dept., Woolwich Polytechnic. *139 Shooters Hill Road, Blackheath, S.E. 3.*	
1927	**Vonwiller, Oscar Ulrich, B.Sc. (Sydney),** Professor of Physics, University of Sydney, Australia.	
1922	**Wade, Edward Bruce Herschel, M.A. (Cantab.),** Formerly Director of Physical Research, Physical Dept., Egypt. *Athenaeum, Pall Mall, S.W. 1.*	
1933	**Waldram, John Malyon, B.Sc. (Lond.), A.C.G.I.,** Research Engineer, Research Laboratories of the General Electric Co., Ltd., Wembley. *24 Hill Road, Pinner, Middlesex.*	
1934	**Wallace, Ernest Hanson,** Head of Dept. of Rubber Technology, Manchester Education Committee. *87 Egerton Road, Whalley Range, Manchester.*	
1933	**†Waller, Mary Désirée, B.Sc. (Lond.),** Lecturer in Physics, London (Royal Free Hospital) School of Medicine for Women. *5 Gloucester Gate, N.W. 1.*	
1928	**Walmsley, Horace Pearson, D.Sc. (Manc.),** Lecturer in Physics, College of Technology, Manchester.	
1922	**Waran, Harihar Parames, M.A., Ph.D. (Cantab.), D.Sc.,** Professor of Physics, Presidency College, Madras, S. India.	
1921 1923	**†Warren, Arthur, M.Sc. (Lond.),** Research Physicist, Research Dept., Woolwich, S.E. 18.	

* Founder Fellow. † Life Member.

Date of election	FELLOWS	Served on Board
1921	**Warren, Arthur George, M.Sc. (Lond.), M.I.E.E.,** Research Physicist, Research Dept., Woolwich. *Fanling, 16 North Park, Eltham, S.E. 9.*	
1920	***Watson, George Neville, Sc.D. (Cantab.), D.Sc. (Lond.), F.R.S.,** Professor of Mathematics, University of Birmingham.	
1921	*†**Watt, Robert Alexander Watson, B.Sc. (Lond., St And.), M.I.E.E.,** Superintendent, Bawdsey Research Station, nr Woodbridge, Suffolk.	1932–35
1936	**Weale, Alfred, M.Sc. (Liv.),** Research Physicist, Imperial Chemical Industries, Ltd., (Explosives Group), Stevenston, Ayrshire.	
1935	**Webster, Hugh Colin, M.Sc. (Melb.), Ph.D. (Cantab.),** Research Physicist, Radio Research Board, Commonwealth Council for Scientific and Industrial Research, Australia. *University of Melbourne, Melbourne, N. 3, Australia.*	
1920	***Wedmore, Edmund Basil, M.I.E.E.,** Director and Secretary, British Electrical and Allied Industries Research Association, 15 Savoy Street, W.C. 2.	
1921	***West, Gilbert Duncan, D.Sc. (Lond.),** Head of Physics Branch, Military College of Science, Red Barracks, Woolwich, S.E. 18.	
1936	**West, Joseph, D.Sc. (Manc.),** Professor of Physics, University of Rangoon, Burma.	
1932	**Wheeler, Thomas Sherlock, B.Sc., Ph.D. (Lond.), M.Sc. (N.U.I.), F.I.C.,** Principal and Professor of Organic Chemistry, Royal Institute of Science, Bombay.	
1920	***Whiddington, Richard, M.A. (Cantab.), D.Sc. (Lond.), F.R.S.,** Cavendish Professor of Physics, University of Leeds.	1936–
1920	***Whipple, Francis John Welsh, M.A., Sc.D. (Cantab.),** Assistant Director, Meteorological Office, London, and Superintendent of Kew Observatory. *Kew Observatory, Old Deer Park, Richmond, Surrey.*	1930–34
1920	*†**Whipple, Robert Stewart, M.I.E.E.,** Formerly Joint Managing Director, Cambridge Instrument Co., Ltd. *13 Holly Lodge Gardens, West Hill, Highgate, N. 6.*	1920–24 1925–28 1929–33 V.P.1925–28, 1934–
1923 1928	**Whitaker, Alfred, M.A. (Cantab.), A.M.I.E.E.,** Manager, Cathode Ray Tube Factory and Domestic Appliance Factory, Electric and Musical Industries Ltd., Hayes, Middlesex. *Dorlen, Fulmer Road, Gerrard's Cross, Bucks.*	
1928 1934	**Whitehead, Stanley, M.A. (Oxon.), Ph.D. (Lond.), A.M.I.E.E.,** Technical Assistant (Director of General Laboratory Research), Electrical Research Association, London. *124 Cheam Common Road, Worcester Park, Surrey.*	
1920	***Wilberforce, Lionel Robert, M.A. (Cantab.),** Formerly Professor of Physics, University of Liverpool. *5 Ashfield Road, Aigburth, Liverpool, 17.*	
1929 1934	**Williams, Thomas Clifford, M.Sc. (Wales),** Research Physicist, British Cotton Industry Research Association, Shirley Institute, Didsbury, Manchester.	
1936	**Williams, William Ewart, M.Sc. (Manc.), D.Sc. (Lond.),** Lecturer in Physics and Leverhulme Fellow, King's College, University of London. *77 Green Hill, Hampstead, N.W. 3.*	

* Founder Fellow. † Life Member.

Date of election	FELLOWS	Served on Board
1920	***Willows, Richard Smith, M.A. (Cantab.), D.Sc. (Lond.),** Director, Tootal Broadhurst Lee Co., Ltd., 56 Oxford Street, Manchester.	
1920	***Wiltshire, William James, B.A. (Oxon.),** Research Physicist, Research Dept., Woolwich. *26 Harrington Gardens, S.W. 7.*	
1920	*†**Wood, Albert Beaumont, D.Sc. (Manc.),** Senior Scientific Officer, Admiralty Research Laboratory, Teddington.	1935–
1920	***Wood, Dudley Orson, M.Sc. (Lond.), A.R.C.S.,** Lecturer in Physics and Sub-Dean of the Faculty of Science, University College, University of London. *63 Ellesmere Road, Chiswick, W. 4.*	1932–35
1936	**Woods, Henry John, B.A. (Oxon.),** Assistant for Research, Textile Physics Laboratory, University of Leeds.	
1932	**Worsnop, Bernard Lister, B.Sc., Ph.D. (Lond.),** Head of Department of Mathematics and Physics, The Polytechnic, Regent Street, London, and Special Lecturer in Radiology, King's College, University of London. *98 Broom Road, Teddington, Middlesex.*	1935–
1920	***Wright, Charles Seymour, O.B.E., M.A. (Cantab., Toronto),** Director of Scientific Research, Admiralty, S.W. 1.	
1922	**Yamada, Kôgorô, D.Sc. (Tokyo),** *182 Ogikubo-Sanchome, Suginamiku, Tokyo, Japan.*	
1920	*†**Young, Frank Bennett, O.B.E., B.A. (Lond.), D.Sc. (Brist.),** Superintendent of Admiralty Research Laboratory, Teddington, Middlesex.	
1920	***Young, Sydney, M.A. (Dubl.), B.Sc. (Manc.), D.Sc. (Lond.), Sc.D. (Brist., Dubl.), F.I.C., F.R.S.,** Formerly Professor of Chemistry, Trinity College, Dublin. *The Ferns, 40 Stoke Hill, Stoke Bishop, Bristol, 9.*	

* Founder Fellow. † Life Member.

ASSOCIATES

Date of election	[A.INST.P.]	Served on Board
1925	**Adams, Thomas William,** *Lessendene, Gaviot's Way, Gerrard's Cross, Bucks.*	
1929	**Adamson, James, M.Sc. (Manc.),** Lecturer, Northampton Polytechnic, London; and Research Consultant, Institute of Ophthalmic Opticians, London. *6 Friary Road, North Finchley, N. 12.*	
1933	**Allen, James Kingsley, B.Sc. (Lond.), A.M.I.E.E.,** Technical Assistant, Siemens Bros. and Co., Ltd., London. *44 Thurlestone Avenue, Ilford, Essex.*	
1934	**Alper, Tikvah (Mrs Max Sterne), M.A. (Cape Town),** Private research. *P.O. Onderstepoort, Transvaal, South Africa.*	
1932	**Ashhurst, William, B.Sc., M.Sc.Tech. (Manc.),** Senior Physics Master, Stretford Grammar School. *Trevone, Kenilworth Grove, Audenshaw, Lancs.*	
1928	**Avery, John William, B.Sc. (Lond.), A.R.C.S., D.I.C.,** Radiological Branch, Research Dept., Woolwich. *11 Castleford Avenue, New Eltham, S.E. 9.*	
1936	†**Baines, Gordon Owen, M.A., Ph.D. (St And.),** Research Physicist, Research Dept., Woolwich. *30 Dallin Road, Plumstead, S.E. 18.*	
1921	**Baker, Wilfred Ernest Watson,** Managing Director, W. Watson and Sons Ltd., 313 High Holborn, W.C. 1.	
1925	**Banerji, Bijan Behari, M.Sc. (Allahabad), Ph.D. (Lond.),** Lecturer in Mathematics and Physics, Indian School of Mines, Dhanbad, India.	
1928	**Barber, Donald Robert, B.Sc. (Lond.),** Assistant, Norman Lockyer Observatory, Sidmouth, Devon.	
1929	†**Barlow, Henry Septimus, M.Sc. (Manc.),** Lecturer in Physics, Northampton Polytechnic, London. *54 Upper Richmond Road, East Sheen, S.W. 14.*	
1931	**Barnard, George Philip, B.Sc. (Lond.),** Assistant, National Physical Laboratory, Teddington. *55 Bingfield Street, King's Cross, N. 1.*	
1936	**Barnes, David Errington, B.Sc. (Leeds), A.M.I.E.E.,** Research Physicist, Research Dept., Woolwich. *380 Green Lane, S.E. 9.*	
1935	**Barnes, Raymond John, B.Sc. (Birm.), Ph.D. (Leeds),** Physicist, Philips Lamps Ltd., 145 Charing Cross Road, W.C. 2.	
1926	†**Bathija, Menghraj Choithram, M.A. (Cantab.),** *Physics Dept., Agra College, Agra, India.*	
1925	**Bell, George Eric, M.Sc. (Lond.),** Scientific Officer, National Physical Laboratory, Teddington.	1934–
1931	**Bell, James, B.Sc. (Belf.),** Research Physicist, Research Laboratories of the General Electric Co., Ltd., Wembley, Middlesex.	
1920	†**Bessent, Percy James Husband, B.Sc. (Lond.), A.R.C.S.,** Research Physicist, Research Dept., Woolwich, S.E. 18.	
1931	**Bird, William George, M.A. (Oxon.),** Technical Adviser, Submarine Signal Co. (London) Ltd. *11 Cranbrook Road, Redland, Bristol, 6.*	
1923	**Black, Robert Pearson, M.A. (Cantab., Glas.), B.Sc. (Glas.),** Assistant Director, Hydrological Service, Physics Dept., Public Works Ministry, Cairo.	

† Life Member.

1931 **Blaylock, Arthur Forster, M.Sc. (Dunelm.), A.M.I.E.E.,** Experimental Officer, Signals Experimental Establishment, Woolwich Common, S.E. 18.

1926 †**Bocking, Irene Edith, M.Sc. (Birm.),** Physics Mistress, Edgbaston Church of England College, Birmingham. *25 Southam Road, Hall Green, Birmingham, 11.*

1934 **Boohariwalla, Dady Barjorji, M.Sc. (Bombay), Ph.D. (Lond.),** *37 Cuffe Parade, Colaba, Bombay, India.*

1933 **Bor, Joseph, B.Sc., M.Sc.Tech. (Manc.),** Demonstrator in Physics, College of Technology, Manchester. *271 Cheetham Hill Road, Manchester, 8.*

1920 †**Borthwick, Chrystabel Jean, B.Sc. (Brist., Lond.),** Head Mistress, Wimbledon County Secondary School. *12a Langham Mansions, Earl's Court Square, S.W. 5.*

1926 **Bowden, Frank Philip, D.Sc. (Tasmania), Ph.D. (Cantab.),** Demonstrator in Physical Chemistry, University of Cambridge. *Caius College, Cambridge.*

1923 **Bratt, Frederick George Cavell,** Technical Assistant, X-ray Dept., St Bartholomew's Hospital, London. *53 Glencairn Road, Streatham, S.W. 16.*

1921 **Brodsky, Gregory,** Consulting Engineer; formerly Instructor in Physics, University of W. Ontario, Canada. *Brantford, Ontario, Canada.*

1923 †**Brotherton, Manfred, B.Sc., Ph.D. (Lond.),** Member of Technical Staff, Bell Telephone Laboratories, Inc., 463 West Street, New York, N.Y., U.S.A.

1920 **Brown, Frederick George William, M.Sc. (Lond.),** Senior Mathematical Master, West Ham Secondary School, London. *25 Wellwood Road, Goodmayes, Ilford, Essex.*

1921 **Bullerwell, John William, M.Sc. (Dunelm.),** Lecturer in Physics, Armstrong College, University of Durham, Newcastle-on-Tyne, 2.

1928 **Cairns, John Edwin Ingliston, M.Sc. (Perth),** *Observatorio Magnetico, Huancayo, Peru.*

1935 **Cameron, Duncan, M.Sc. (Manc.),** Junior Scientific Officer, Royal Aircraft Establishment, South Farnborough. *Technical Staff Mess, R.A.E., S. Farnborough, Hants.*

1924 **Cameron, William Henry Beattie, M.Sc. (Belf.),** Lecturer in Physics, University of Sheffield.

1936 **Cates, Julius, B.Sc. (Lond.), A.R.C.S., D.I.C.,** Research Physicist, Research Laboratories of the General Electric Co., Ltd., Wembley. *137 Barking Road, E. 16.*

1920 **Chatley, Herbert, D.Sc. (Lond.), M.Inst.C.E.,** Engineer-in-Chief, Whangpoo Conservancy, Shanghai. *P.O. Box 159, Shanghai, China.*

1924 †**Cheetham, Arnold, M.Sc. (Birm.),** Senior Science Master, Coleshill Grammar School. *218 Coventry Road, Coleshill, Birmingham.*

1923 **Childs, Charles Bernard, B.Sc., Ph.D. (Birm.),** Lecturer in Physics, University of Edinburgh. *University Physical Laboratory, Drummond Street, Edinburgh.*

1934 **Clack, Basil Noel, B.Sc. (Lond.),** Physicist, Research Laboratories of the General Electric Co., Ltd., Wembley. *65 Forty Lane, Wembley Park, Middlesex.*

† Life Member.

1924 **Clarkson, William, M.Sc., Ph.D. (Dunelm.),**
Architect. *Architectural Association, 34–36 Bedford Square, W.C. 1.*

1927 **Clay, Reginald Eustace, B.Sc. (Lond.), M.Sc. (Cantab.), A.R.C.S., D.I.C.,**
Research Physicist, Royal Institution, Albemarle Street, W. 1.

1931 **Clenshaw, Walter John, B.Sc. (Lond.),**
Assistant II, Engineering Dept., National Physical Laboratory, Teddington. *1 Ember Farm Avenue, East Molesey, Surrey.*

1934 **Clews, Charles John Birkett, B.Sc., Ph.D. (Lond.),**
Engaged in research at University of Vienna. *2 Toronto Avenue, Manor Park, E. 12.*

1936 **Cockburn, Robert, M.Sc. (Lond.),**
Lecturer in Physics, West Ham Municipal College, London. *143 Osborne Road, Forest Gate, E. 7.*

1923 **Congdon, John Francis, B.Sc., Ph.D. (Lond.),**
Schoolmaster, Sutton Secondary School, Plymouth. *16 Cleveland Road, Plymouth.*

1934 **Conway, James Alfred, B.Sc. (Lond.), A.R.C.S., D.I.C.,**
Senior Physics Master, Henry Mellish School, Nottingham. *The Bungalow, Highbury Avenue, Bulwell, Nottingham.*

1931 **Cooper, Bertram Samuel, B.Sc. (Lond.),**
Research Physicist, Research Laboratories of the General Electric Co., Ltd., Wembley. *53 Park View Road, Ealing, W. 5.*

1935 **Cooper, Maurice Algernon, M.Sc., Ph.D. (South Africa),**
Lecturer in Physics, University of Witwatersrand, Johannesburg, South Africa.

[1937] **Crabtree, Raymond William, B.Sc. (Tasmania),**
Physicist, Munitions Supply Laboratories, Maribyrnong, Victoria, Australia.

1927 **Craven, Ernest Cecil, B.Sc. (Lond.), F.I.C.,**
Research Chemist, British Industrial Solvents Ltd., Hull.

1928 **Crawford, Brian Hewson, M.Sc. (Lond.),**
Scientific Officer, National Physical Laboratory, Teddington. *2 Lion Court, Twickenham, Middlesex.*

1934 **Crone, Hans Gordon, B.Sc. (Dunelm.),**
4 Merrick Square, S.E. 1.

1935 **Cunnold, Frank Allan, M.A., D.Phil. (Oxon.),**
Research Physicist, Research Dept., Woolwich. *31 Norfolk Road, Reading.*

1923 **Curry, Philip Arthur, B.A. (Cantab.),**
Deputy Director General, Physical Dept., Public Works Ministry, Cairo, Egypt.

1921 **Dalladay, Arthur James,**
Editor, British Journal of Photography. *88 Darnley Road, Gravesend, Kent.*

1934 †**Darbyshire, James Albert, M.Sc., Ph.D. (Manc.), D.I.C.,**
Research Physicist, Ferranti Ltd., Manchester. *Melandra, Kershaw Street, Failsworth, Manchester.*

1930 **Das, Mathura Mohan, B.Sc. (Birm.),**
Lecturer in Physics, Mining and Technical College, Wigan. *19 Sandringham Road, Ainsdale, Southport.*

1936 **Datta, Manoranjan, M.Sc. (Calcutta), M.Sc.Tech. (Manc.),**
Laboratory Assistant, Bengal Government Electrical Laboratory, 1 Haris Mukherji Road, Elgin Road P.O., Calcutta.

† Life Member.

Date of election

ASSOCIATES

1927 **Datta, Sushil Krishna, M.Sc. (Calcutta),**
Formerly Professor of Physics, St Xavier's College, Calcutta. *181/7 Upper Circular Road, Calcutta, India.*

1934 **Davies, Albert John, B.Sc. (Lond.),**
Technical Assistant, Electroflo Meters Co., Ltd., London. *50 The Fairway, North Wembley, Middlesex.*

1934 **Davies, Reginald John, M.Sc. (Lond.),**
Research Chemist, English Clays Lovering Pochin and Co., Ltd., St Austell, Cornwall. *Ardland, Poltair, St Austell, Cornwall.*

1931 **Davis, Ray, B.Sc. (Adel.), M.Sc. (Perth),**
Lecturer in Mathematics and Physics, Technical College, Perth, W. Australia. *79 Tyrell Street, Nedlands, W. Australia.*

1936 **Davison, Donald William, B.Sc. (Birm.),**
Research Physicist, Brown-Firth Research Laboratories, Princess Street, Sheffield, 4.

1920 **Denne, Mark Thomas, O.B.E.,**
Formerly Consulting Engineer. *16 Orchard Court, Worcester Park, Surrey.*

1924 †**Dickes, Winifred Esther, M.Sc., Ph.D. (Lond.), A.I.C.,**
10 Athenaeum Road, Whetstone, N. 20.

1925 **Dight, Frederick Henry, B.Sc. (Brist.),**
Technical Officer, Meteorological Office, Air Ministry, London. *207 Eden Way, Eden Park, Beckenham, Kent.*

1935 **Dock, Eric Henry, M.Sc. (Lond.), A.R.C.S., D.I.C.,**
Physicist, British Boot, Shoe and Allied Trades Research Association, London. *30 Finsen Road, Ruskin Park, S.E. 5.*

1935 **Dodds, John Mathieson, M.A., B.Sc. (Aberd.), Dr.Ing. (Aachen),**
Research Physicist, Metropolitan Vickers Electrical Co., Ltd., Trafford Park, Manchester.

1936 **Douglas, Ronald Walter, B.Sc. (Lond.),**
Physicist, Research Laboratories of the General Electric Co., Ltd., Wembley. *28 Rydal Gardens, Wembley, Middlesex.*

1934 **Drummond, David Gordon, M.Sc., Ph.D. (Dunelm.),**
Research Assistant, British Cotton Industry Research Association, Didsbury. *15 Freshfield Road, Heaton Mersey, Manchester.*

1932 †**Earp, Kathleen Frances, M.A. (Cantab.),**
Physics Mistress, Skinners' Company's School for Girls, London. *2 West Bank, Stamford Hill, N. 16.*

1933 **Edlin, Charles Harold, B.Sc. (Lond.),**
Research Physicist, E. Midlands Forensic Science Laboratory (Home Office), Burton Street, Nottingham.

1927 **Edwards, Thomas Iwan, M.Sc. (Wales),**
Physics Master, Pontardawe Secondary School, Swansea. *Pen Coedcae, Pontardawe, Swansea, Glam.*

1931 **Elliot, John Kenneth, M.Sc. (Manc.),**
Senior Physics Master, North Manchester High School, Failsworth, Manchester.

1935 **Elliott, Edward Rae, B.Sc. (Dunelm.),**
Physicist, C. A. Parsons and Co., Ltd., Heaton Works, Newcastle-on-Tyne. *30 Dean Terrace, Ryton, Co. Durham.*

1931 **Eltenton, George Charles, B.A. (Cantab.),**
Research Physicist, Institute of Chemical Physics, Prijutskaja 1, Leningrad 21, U.S.S.R.

† Life Member.

Date of election

ASSOCIATES

1936 **Emmerson, Thomas, B.Sc., Ph.D. (Leeds),**
Development Engineer, Cosmos Lamp Works Ltd., Brimsdown, Middlesex. *Braemar, Bullsmoor Lane, Waltham Cross, Herts.*

1921 **Esserman, Norman Abraham, B.Sc. (Sydney),**
Senior Physicist, Munitions Supply Laboratories, Maribyrnong, Victoria, Australia.

1924 **Evans, Alfred Ernest, B.Sc. (Lond.),**
Senior Lecturer in Physics, Battersea Polytechnic, London. *53 Ealing Village, W. 5.*

1936 **Eyles, Eric David, B.Sc. (Lond.),**
Physicist, Research Laboratories, Kodak Ltd., Wealdstone, Middlesex. *12 Lushington Road, Willesden, N.W. 10.*

1925 **Fahmy, Hassan, D.I.C.,**
Technical Assistant, Physical Dept., Public Works Ministry, Cairo, Egypt.

1935 **Falkner, Hugh, B.Sc. (Lond.), M.Sc. (Wales),**
Education Officer, Air Ministry, London. *Whiteparish, Salisbury, Wilts.*

1920 **Fincham, Walter Henry Angel,**
Lecturer in Applied Optics, Northampton Polytechnic, London. *70 Hillfield Avenue, N. 8.*

1930 †**Flower, William Denis, B.Sc. (Brist.),**
Technical Officer, Meteorological Office, Air Ministry, London. *Lyndene, 114 Liverpool Road, Upton-by-Bache, Chester.*

1935 **Foster, Alan Wilfred, B.Sc., Ph.D. (Leeds),**
Technical Assistant, Imperial Chemical Industries (Fertilizer and Synthetic Products), Ltd., Billingham, Co. Durham. *1 Brankingham Terrace, Norton Road, Stockton-on-Tees.*

1930 **Fowler, Norman Russell, A.R.C.S., D.I.C.,**
Research Branch, Anglo-Iranian Oil Co., Sunbury on Thames. *18 Oaklands, Argyle Road, Ealing, W. 13.*

1936 **France, Ralph Waldo, M.Sc., Ph.D. (Shef.),**
Post-graduate Research Student, University of Sheffield. *21 Broom Crescent, Rotherham.*

1932 **Francis, Victor James, B.Sc. (Lond.), A.R.C.S.,**
Research Physicist, Research Laboratories of the General Electric Co., Ltd., Wembley. *80 The Fairway, N. Wembley, Middlesex.*

1936 **Frost, Herbert John, M.Sc. (Sydney),**
Physicist, Munitions Supply Laboratories, Maribyrnong, Victoria, Australia.

1936 **Gane, Philip Graham, M.Sc. (South Africa), Ph.D. (Lond.),**
c/o O. Weiss, 90 Fox Street, Johannesburg, S. Africa.

[1937] **Garrett, Charles Herbert, B.A. (Cantab.),**
Research Assistant, British Cotton Industry Research Association, Didsbury. *1 Millgate Lane, Didsbury, Manchester.*

1936 **Gauss, Hubert Edward, B.Sc. (Lond.),**
Physicist, The Gramophone Co., Ltd., Hayes, Middlesex. *Arolla, The Fairway, Hillingdon, Middlesex.*

1934 **Gaydon, Alfred Gordon, M.Sc. (Lond.), A.R.C.S., D.I.C.,**
Research Assistant, British Cotton Industry Research Association, Didsbury. *57 Maple Road, Surbiton, Surrey.*

1934 †**Ghosh, Mohinimohan, M.Sc. (Calcutta),**
Senior Professor of Physics, Burdwan Raj College, India. *6 Church Street, Serampore (E.I. Rly.), Hooghly, India.*

† Life Member.

1934 **Gilford, Christopher Leonard Sidney, M.Sc. (Reading),** Research Physicist, Dunlop Rubber Co., Ltd., Birmingham. *46 Orchard Road, Erdington, Birmingham.*

1929 †**Goodall, Kenneth Leslie, M.Sc. (Lond.),** H.M. Inspector of Factories, Home Office, Stoke-on-Trent District. *14 Mayfield Avenue, off Keele Road, Newcastle-under-Lyme, Staffs.*

1934 **Goodier, Jack, B.Sc., Ph.D. (Lond.),** Senior Physics Master, Exeter School, Exeter. *6 Salmon Pool Lane, Exeter.*

1927 **Gould, John Edward, B.Sc. (Birm.),** Engineer, Darwins Ltd., Sheffield. *80 Furniss Avenue, Dore, Sheffield.*

1932 **Gowlland, Geoffrey Price, B.Sc. (Lond.), A.R.C.S.,** Industrial Physicist, Assistant Managing Director, Gowllands Ltd., Morland Road, Croydon. *4 Park Hill Road, Croydon, Surrey.*

1920 **Green, Harry Herbert, B.Sc. (Lond.),** Head of Physics Dept., East Ham Grammar School for Boys, London. *36 Wanstead Gardens, Ilford, Essex.*

1931 †**Greenwood, Gilbert, M.Sc. (Manc.),** Physics Assistant in the Physiology Dept., King's College, University of London. *8 Hillfield Mansions, Haverstock Hill, N.W. 3.*

1923 †**Grew, John Sydney, M.Sc. (Birm.),** Physicist, Research Dept., Woolwich, S.E. 18.

1933 **Grew, Kenneth Edmund, B.Sc., Ph.D. (Birm.),** Lecturer in Physics, Heriot-Watt College, Edinburgh.

1921 **Gunstone, Arthur Charles,** Partner, Solus Electrical Co., London. *Lancaster Cottage, Beaconsfield, Bucks.*

1921 †**Haddon, Cuthbert Leslie, M.Sc. (Dunelm.), F.I.C.,** Research Chemist, British Plaster Board Ltd., Wallasey. *Silverhill, Digby Avenue, Mapperley, Nottingham.*

1930 **Hales, John Sherwood, B.Sc. (Lond.),** Research Physicist, Aga Heat Ltd., Birmingham. *Bradda, 730 Hagley Road West, Quinton, Birmingham.*

1934 **Hall, Henry Warburton, M.Sc. (Wales),** Research Physicist, Fine Cotton Spinners' and Doublers' Association, Experimental Dept., Bollington. *26 Swanscoe Avenue, W. Bollington, nr. Macclesfield, Cheshire.*

1935 **Happey, Frank, B.Sc., Ph.D. (Leeds),** Physicist, Radium Centre, Royal Infirmary, Sheffield.

1930 **Haque, Mohammad Abdul, A.M.I.E.E.,** Headmaster, Government Technical School, Lahore, India. *Street Sirajuddin, Gujranwala, Panjab, India.*

1924 **Harbison, Mrs J.** (née **Elliott, Mary), M.Sc. (Belf.),** Formerly Senior Physics Mistress, The Park School, Preston. *Tardree, Haddington Gardens, Belfast.*

1929 **Harrison, Geoffrey Bond, B.Sc., Ph.D. (Lond.),** Research Physicist, Ilford Ltd., Cine Research Laboratory, Selo Works, Woodman Road, Warley, Essex.

1924 †**Harrison, Thomas Herbert, B.Sc., Ph.D. (Lond.),** Scientific Officer, National Physical Laboratory, Teddington. *58 Gloucester Road, Kingston Hill, Kingston-on-Thames.*

1934 **Henthorne, Thomas Knowles, M.A., M.Sc. (Liv.),** Senior Physics Master, Bolton Municipal Secondary School. *9 Rydal Road, Heaton, Bolton, Lancs.*

† Life Member.

Date of election	ASSOCIATES	Served on Board
1933	**Hibbert, Lawrence John,** Head of the School of Photography; Lecturer in Theory of Photography, photo-optics and photo-chemistry; The Polytechnic, Regent Street, W. 1.	
1921	**Hill, Cyril Francis,** Director, Mersey White Lead Co., Ltd., Goodlass Wall and Lead Industries Ltd., Champion Druce and Co., Ltd., Mersey Carbons Ltd. *Daresbury Hall, Warrington.*	1924–28
1936	**Hoather, William Henry, M.Sc. (Lond.),** Physicist, Electroflo Meters Co., Ltd., London. *26 High Road, Bushey Heath, Herts.*	
1926	**Holmes, Walter Morell, M.A., B.Sc. (Melb.),** Physicist, Melbourne Observatory, South Yarra, S.E. 1, Victoria, Australia.	
1936	**Houghton, James Leonard, B.Sc. (Brist.),** Research Physicist, Kodak Ltd., Wealdstone. *35 Bolton Road, Harrow, Middlesex.*	
1936	**Howell, Henry George, B.Sc., Ph.D. (Dunelm.),** Lecturer in Physics, University College, Southampton.	
1929	**Hsieh, Yu-Ming, B.A. (Peking), M.A. (Columbia), Ph.D. (Chicago),** Assistant Professor, Dept. of Physics, Yenching University, Peiping, China.	
1923	**Hughes, John Alfred, M.Sc. (Wales),** Senior Lecturer in Physics, The Polytechnic, Regent Street, London. *42 Byron Court, Harrow, Middlesex.*	
1925	**Hunter, Harold, D.Sc. (Lond.), F.I.C.,** Departmental Head, British Cotton Industry Research Association, Didsbury. *7 Broadway Avenue, Cheadle, Cheshire.*	
1935	**Hunter, James Shaw, B.Sc., Ph.D. (St And.),** Research Physicist, Imperial Chemical Industries (Alkali) Ltd., Northwich. *Winnington Hall Club, Northwich, Cheshire.*	
1935	**Iball, John, M.Sc., Ph.D. (Wales),** Research Physicist, Research Institute, The Royal Cancer Hospital (Free), London. *271 Whitton Avenue, Greenford, Middlesex.*	
1935	**Ikin, Ailsa Woodroffe, B.Sc., Ph.D. (Lond.), A.R.C.S.,** Physics Research Assistant, Paint and Varnish Research Association, London. *1 Wildwood Rise, N.W. 11.*	
1921	**Jackson, Leonard Cecil, M.Sc. (Lond.),** H. H. Wills Research Fellow in Physics, Wills Laboratory, University of Bristol, Royal Fort, Bristol, 8.	
1935	**Jackson, Roland, M.Sc. (Manc.),** Research Physicist, Applied Science Dept., University of Sheffield. *27 Marlborough Street, Accrington, Lancs.*	
1927	**Jenkins, Henry Grainger, M.Sc. (Belf.),** Research Physicist, Research Laboratories of the General Electric Co., Ltd., Wembley. *Trostan, Woodhall Gate, Pinner, Middlesex.*	
1920	†**Jessup, Capt. Alfred Claude,** Director, The Magnesium Production Co., Ltd. *Orchard Farm, Broadway, Worcestershire.*	
1924	**Johnson, Martin Christopher, M.A. (Cantab.), D.Sc. (Birm.),** Lecturer in Physics, Physics Dept., University of Birmingham.	

† Life Member.

Date of election

ASSOCIATES

1936 **Johnson, William Arthur, B.A. (Cantab.),**
Assistant, Royal Aircraft Establishment, Technical Staff Mess, South Farnborough, Hants.

1923 **Jolin, Dorothy, M.Sc. (Brist.),**
Assistant Mistress, Grammar School for Girls, Southampton. *23b Winn Road, Southampton.*

1934 **Jones, David Evered Harrell, M.Sc. (Lond.),**
Experimental Officer, Air Defence Experimental Establishment, Biggin Hill, Kent.

1933 **Jones, David Owen, M.Sc. (Wales),**
Senior Physics Master, Swansea Grammar School. *Glennydd, Pontardulais, Swansea, Glam.*

1935 **Jones, Edwin Dandy, B.Sc. (Lond.),**
Research Physicist, British Thomson-Houston Co., Ltd., Rugby. *Kingswood, Langton Road, Rugby, Warwickshire.*

1935 **Jones, Harold Goulbourne, M.Sc. (Wales),**
Physics Master, Rhyl Intermediate School. *Aingarth, Elm Grove, Rhyl.*

[1937] **Jones, John Idwal, B.Sc., Ph.D. (Wales),**
Research Student, Physikalisches Institut, Eidg. Technische Hochschule, Zurich. *Pension Jorg, Gladbachstr. 65, Zurich, 7, Switzerland.*

1936 **Jones, Reginald Victor, M.A., D.Phil. (Oxon.),**
Scientific Officer, Air Ministry. *The Clarendon Laboratory, Oxford.*

1928 **Jones, William Harold, M.Sc. (Birm.),**
Assistant Master, Liverpool Institute High School for Boys, Mount Street, Liverpool, 1.

1935 **Kennedy, Sidney John, M.Sc. (Lond.),**
Technical Assistant, A. Gallenkamp and Co., Ltd., London. *42 Skinner Street, Clerkenwell, E.C. 1.*

1926 **Knowler, Arthur Eric, M.Sc. (Lond.),**
Scientific Officer, National Physical Laboratory, Teddington.

1925 **Kœnig, Maxime,**
Government Statistician; Lecturer in Physics, Mauritius Agricultural College. *Rose-Hill, Mauritius.*

1931 **Lal, Shyam Saran, M.Sc. (Lond., Lucknow), D.I.C.,**
Assistant Meteorologist, Indian Meteorological Service. *Meteorological Office, Ganeshkhind Road, Poona, 5, India.*

1921 **Lambourn, Leonard John, M.Sc. (Birm.),**
Chief Assistant, Design Division, Dunlop Rubber Co., Ltd., Birmingham. *Waverley, Poppy Lane, Erdington, Birmingham.*

1933 †**Lang, Mrs Herbert R.** (née **Levi, Ruth**), **B.Sc., Ph.D. (Lond.),**
Formerly Junior Technical Assistant, Electrical Research Association, London. *207 Chamberlayne Road, N.W. 10.*

1932 **Lanigan, George Ernest, M.Sc.Tech. (Manc.),**
Senior Mathematics Master, Chorlton High School. *10 Oakfield Avenue, Chorlton-cum-Hardy, Manchester.*

1934 **Lawson, Dennis Illingworth, M.Sc. (Manc.),**
Part-time Lecturer, Woolwich Polytechnic, London. *39 Shooters Hill Road, Blackheath, S.E. 3.*

1933 **Leavey, Eric William Loraine, M.Sc. (Birm.),**
Physics Master, County Secondary School, West Bridgford. *24 Repton Road, West Bridgford, Notts.*

1920 †**Le Manquais, Joseph Charles Ross, A.R.C.S.,**
Formerly Physics Master, Firth Park Secondary School, Sheffield. *The Laurels, 101 Clifton Street, Swindon, Wilts.*

† Life Member.

Date of election

ASSOCIATES

1927 **Le Quesne, Colin, B.Sc. (Lond.),**
Head of Physical and Textile Section, Aeronautical Inspection Directorate Test-House, No. 1 Stores Depot, R.A.F., Kidbrooke. *Overseas House, Park Place, St James's, S.W. 1.*

1931 **Lethersich, William, B.Sc. (Lond.),**
Technical Assistant, British Electrical and Allied Industries Research Association, London. *Lyng, 2 The Fairway, Hillingdon, Middlesex.*

1928 **Lewin, Edward George, M.Sc. (Liv.),**
Chartered Patent Agent, c/o The Woodall-Duckham Co., 150 Victoria Street, S.W. 1.

1935 **Lewis, David Stephen Goronwy, M.Sc. (Wales),**
Radio Engineer, Mullard Radio Valve Co., Ltd., Mitcham, Surrey.

1925 **Lewis, Frederick George Henry, A.R.C.S., D.I.C.,**
Technical Assistant, H.M. Signal School, Portsmouth. *211 Devonshire Avenue, Southsea, Hants.*

1929 **Lewis, William Clifford, M.A. (Oxon.), B.Sc. (Wales), A.I.C.,**
Chief Physics Master, Whitgift School, S. Croydon, Surrey.

1936 **Lewis, Wyndham James, M.Sc. (Wales),**
Physics Master, Dynevor Secondary School, Swansea. *Ogmore House, Resolven, Glam.*

1936 **Littlefield, Thomas Albert, B.Sc. (Dunelm.),**
Research Student, Armstrong College, University of Durham. *10 Grosvenor Place, North Shields.*

1934 **Lloyd, Daniel William, M.A. (Dubl.), B.Sc. (Lond.),**
Principal, Technical Institute, Old Trafford, Manchester.

1925 **Lodge, Alfred, M.Sc. (Lond.),**
Rector, The Academy, Dumfries.

1936 **McCaig, Malcolm, M.Sc. (Lond.),**
Research Physicist, City and Guilds Engineering College, South Kensington, S.W. 7.

1932 †**McCleery, Instr. Lieut. David Kirk, R.N., M.Sc. (Lond.), A.M.I.E.E.,**
H.M.S. Shropshire, c/o G.P.O. London.

1935 **McDermott, Leslie Henry, B.Sc. (Lond.), A.R.C.S., D.I.C.,**
Scientific Officer, National Physical Laboratory, Teddington. *52 Kings Drive, Surbiton, Surrey.*

1935 **McGill, Donald, M.Sc. (Dunelm.),**
Research Student in Spectroscopy, Armstrong College, University of Durham. *8 Ashfield Grove, North Shields, Northumberland.*

1935 **Magson, Leonard William, B.Sc. (Leeds),**
Head of Boot and Shoe Dept., County Technical College, Stafford. *119 Cannock Road, Stafford.*

1932 **Mahajan, Lachhman Dass, M.Sc. (Panjab),**
Professor of Physics and Head of the Physics Dept., Mohindra College, Patiala, Patiala State, India.

1936 **Manders, Charles Robert Sinden, B.Sc., Ph.D. (Lond.),**
Occasional Lecturer in Physics, Chelsea Polytechnic; Science Master, The Grammar School, Hampton-on-Thames. *Saverne, Waldegrave Park, Strawberry Hill, Twickenham, Middlesex.*

1926 **Mann, James Cameron, M.A., B.Sc. (Edin.),**
Textile Research Physicist, Courtaulds Ltd., Bocking, Braintree, Essex. *Restalrig, London Road, Braintree, Essex.*

† Life Member.

Date of election

ASSOCIATES

1921 **Marley, John, B.Sc. (Lond.),**
57 Hallowell Road, Northwood, Middlesex.

1934 **Martindale, James Graham, B.Sc., Ph.D. (Lond.),**
Research Assistant, British Cotton Industry Research Association, Didsbury. *Rocklyn, Westwood Road, Handforth, Cheshire.*

1927 **Mathews, Mrs A. C. B.** (née **Marshall, Sybil May), M.Sc. (Lond.), A.R.C.S., D.I.C.,**
Formerly Visiting Mistress to Girls Public Day School Trust and other schools. *Larkswood, Iver Heath, Bucks.*

1932 **Mathur, Kailash Nath, D.Sc. (Allahabad),**
Lecturer in Physics, University of Lucknow, India.

1935 **Mawson, May, B.Sc. (Lond.), M.Sc. (Birm.), A.R.C.S.,**
Lecturer in Physics and Chemistry, Gloucester Technical College. *4 Malvern Road, Gloucester.*

1935 **Metzler, Silas John, B.A. (Toronto),**
Insurance Agent. *Napanee, Ontario, Canada.*

1933 **Miller, John Thomas, B.Sc. (Lond.),**
Research Physicist, British Acoustic Films Ltd., London. *The Cottage, Old Park Road, Plumstead, S.E. 2.*

1931 **Moore, Geoffrey Stanley, M.Sc. (Birm.),**
Research Physicist, Ilford Ltd., Brentwood, Essex.

1931 **Moore, Ronald Leslie, B.Sc., M.Sc.Tech. (Manc.),**
Assistant Professor of Physics, St John's College, University of Agra, India.

1936 **Morgan, Mervyn, M.Sc. (Wales),**
Technical Assistant, Marconi's Wireless Telegraph Co., Ltd., Chelmsford, Essex.

1932 **Morton, Hubert, B.Sc. (Lond.),**
Lecturer in Physics, Wigan and District Mining and Technical College. *41 Kenyon Road, Wigan.*

1935 †**Murison, Charles Alexander, M.A. (Aberd.), Ph.D. (Lond.),**
Physicist, Radiological Dept., Royal Infirmary, Edinburgh.

1932 **Mutch, George, B.A. (Lond.), B.Sc. (Manc.), A.M.I.E.E.,**
Headmaster, Nelson Secondary School. *Darra Hill, Halifax Road, Nelson, Lancs.*

1933 **Nancarrow, Harold Albert, M.Sc. (Lond.),**
Research Physicist, Research Dept., Tube Investments Ltd., c/o Bromford Tube Co., Erdington, Birmingham.

1932 **Narayanamurti, Duraiswami, B.Sc. (Mysore), M.Sc. (Bombay), Dr.Ing. (Danzig), A.I.C.,**
Assistant Seasoning Officer, Imperial Forest Research Institute Dehra Dun, India.

1936 **Nelson, James Harvey, B.Sc. (Lond.), A.R.C.S., D.I.C.,**
Research Physicist, Joseph Lucas, Ltd., Birmingham. *22 Evelyn Gardens, S.W. 7.*

1921 **Neville, Bernard Mynott, B.Sc. (Lond.),**
Senior Science Master, William Ellis School, London. *42 Constantine Road, Hampstead, N.W. 3.*

1933 **Noakes, George Robert, M.A. (Oxon.),**
Head of Science Dept., Giggleswick School. *Ribblelands, Stackhouse, Settle, Yorks.*

1936 **Oddie, Thomas Harold, M.Sc. (Melb.),**
Physicist, Radium Branch, Commonwealth X-ray and Radium Laboratory, University of Melbourne, Australia.

1932 **Oldham, Frank, M.A. (Cantab.), B.Sc. (Lond.),**
Headmaster, Hinckley Grammar School, Leics.

† Life Member.

Date of election

ASSOCIATES

1934 **Oliphant, William Douglas, B.Sc. (Edin.), A.M.I.E.E.,** Technical Assistant, British Electrical and Allied Industries Research Association, London. *28 Grange Hill, Edgware, Middlesex.*

1925 **Osborne, Francis William, M.Sc. (Liv.), A.R.S.M.,** Technical Adviser, Ilford Ltd., London. *Georgian House, 8 Scarsdale Villas, Kensington, W. 8.*

1923 **Owen, Albert Edward, B.Sc. (Lond.),** *294 Whitchurch Lane, Edgware, Middlesex.*

1920 **Parr, Edwin Louis,** Works Manager, Wm. Hill and Son, and Norman and Beard Ltd., London. *59 Footscray Road, Eltham, S.E. 9.*

1923 **Payman, Herbert Saul, B.Sc. (Lond., Manc.),** Engineer, Murphy Radio Ltd. *141 Handside Lane, Welwyn Garden City, Herts.*

1936 **Payne, Edwin Malcolm, A.M.I.E.E.,** Engineer Physicist, Electric and Musical Industries Ltd., Hayes, Middlesex. *Tilgate, Long Lane, Hillingdon, Middlesex.*

1921 **Payne, George Inwood, A.I.E.E.,** Managing Director, Tuscan Engineering Co. Ltd., London. *394 Lea Bridge Road, Leyton, E. 10.*

1935 **Pearce, Albert Frederick, B.Sc., Ph.D. (Brist.),** Research Physicist, Electric and Musical Industries Ltd., Hayes, Middlesex. *51 Downend Road, Kingswood, Bristol.*

1934 **Penman, Howard Lattimer, M.Sc. (Dunelm.),** Research Physicist, British Cotton Industry Research Association, Didsbury. *28 Willow Way, Didsbury, Manchester.*

1920 **Percival, George Arncliffe,** *Constable Corner, Ilkley, Yorks.*

1923 **Peters, Sidney Percival, B.Sc. (Lond.),** Technical Officer, Meteorological Office, Air Ministry, London. *40 Sandy Lane South, Wallington.*

1933 **Phillips, Arthur Claud, M.Sc. (Lond.), A.R.C.S., D.I.C.,** Physicist and Instrument Designer, Taylor, Taylor and Hobson Ltd., Leicester. *151 Uppingham Road, Leicester.*

1928 **Phillips, Lewis Waight, M.I.E.E.,** Lecturer in Physics and Electrical Engineering, School of Engineering and Navigation, London. *13 Park Avenue, Bush Hill Park, Enfield, Middlesex.*

1925 **Pollitt, Charles Graham, B.A. (Cantab.),** Research Physicist, Research Dept., Woolwich. *19 Elvendon Road, Palmers Green, N. 13.*

1933 **Poole, Harold Charles, M.Sc. (Leeds),** Physics Master, Chorlton High School for Boys, Manchester. *7 Silverdale Road, Chorlton-cum-Hardy, Manchester.*

1936 **Poultney, Frederick Charles, B.Sc., Ph.D. (Leeds),** Works Physicist, Unilever Ltd. (Erith Oil Works Ltd.). *60 New Road, Abbey Wood, S.E. 2.*

1922 **Pratt, Eric Wigley, M.Sc. (Birm.),** Scientific Officer, Admiralty. *Experimental Dept., H.M.S. Osprey, Portland, Dorset.*

1936 **Priestley, Herbert, B.Sc., Ph.D. (Leeds),** Research Physicist, Wool Industries Research Association, Leeds. *4 Montague Street, Little Horton, Bradford, Yorks.*

1925 **Probert, Major Geoffrey Oliver Carwardine, R.A.,** Assistant Superintendent, Research Dept., Royal Arsenal, Woolwich. *Grote House, Blackheath, S.E. 3.*

Date of election

1935 **Quinlivan, Maurice Patrick, M.Sc. (Belf.),**
Vacuum Physicist, Marconi School of Wireless Telegraphy. *10 Trinity Lane, Chelmsford, Essex.*

1936 **Ray, Binay Bhushan, B.Sc. (Calcutta), M.Sc. (Lond.),**
Research Assistant, British Thomson-Houston Co., Ltd., Rugby. *c/o American Express Co., 6 Haymarket, S.W. 1.*

1930 **Ray, Satyendra Nath, B.A., M.Sc. (Allahabad),**
Lecturer in Physics, University of Lucknow. *Himalaya Brahma Mandir, Secretariat P.O., Simla, India.*

1933 **Redfearn, Sidney Warbrick, B.A. (Cantab.),**
Research Engineer, Metropolitan-Vickers Electrical Co., Ltd., Manchester. *9 Halstead Grove, Gatley, Cheadle, Cheshire.*

1931 **Rees, Alyn Idris, M.Sc. (Wales), A.I.C.,**
Secretary, Advisory Council for Technical Education in South Wales and Monmouthshire, County Hall, Cardiff.

1932 †**Rees, Thomas James, M.Sc. (Wales),**
Senior Physics Master, Secondary School, Pontllanfraith, Newport, Mon. *15 Chapel Road, Nantyglo, Mon.*

1930 **Rhodes, Bernard, B.Sc. (Leeds),**
Production Engineer, John Wright and Co. (Radiation), Birmingham. *20 Heaton Road, Solihull, Warwickshire.*

1924 **Rhodes, Cecil Josiah, M.Sc. (Birm.), M.Ed. (Manc.),**
Senior Physics Master, Tiffin Boys' School, Kingston-on-Thames. *38 Elgar Avenue, Surbiton, Surrey.*

1934 **Richards, Terence Charles, B.Sc., Ph.D. (Lond.), A.R.C.S., D.I.C.,**
Geophysicist, Anglo-Iranian Oil Co., Ltd., Masjid-i-Salaiman, South Iran, Persia.

1931 **Rimer, Eric, M.Sc. (Dunelm.),**
Physics Master, Gateshead Secondary School. *2 Alderley Road, Low Fell, Gateshead, Co. Durham.*

1936 **Robinson, George David, B.Sc., Ph.D. (Leeds),**
Research Assistant, Inorganic Chemistry Dept., University of Leeds. *21 Barthorpe Crescent, Leeds, 7.*

1935 **Rochester, George Dixon, M.Sc. (Dunelm.),**
Commonwealth Fund Fellow. *The Faculty Club, University of California, Berkeley, California, U.S.A.*

1931 **Rooksby, Harold Percy, B.Sc. (Lond.),**
Research Physicist, Research Laboratories of the General Electric Co., Ltd., Wembley. *1 Meadow Way, Wealdstone, Harrow, Middlesex.*

1935 **Roscoe, Robert, B.Sc., Ph.D. (Lond.),**
Demonstrator in Physics, University of Leeds. *Physics Dept., The University, Leeds, 2.*

1932 **Saayman, Edmund Hugo, M.A. (Oxon.), B.Sc. (South Africa),**
Physics Master, High Pavement School, Nottingham. *22 Ennerdale Road, Nottingham.*

1921 **Sarsfield, Leslie Gerald Hunt, M.Sc. (Brist.), M.I.E.E.,**
Research Dept., Woolwich. *44 Abbotswood Road, Streatham, S.W. 16.*

1926 **Sayce, Eric Loxton, B.Sc. (Melb.),**
Senior Physicist, Metrology Section, Munitions Supply Laboratories, Maribyrnong, Victoria, Australia.

1932 **Sexton, Frederick Peake, A.R.C.S., A.M.I.E.E.,**
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1922 **Shaw, Frank, B.Sc. (Lond.), M.Sc.Tech. (Manc.), M.I.E.E.,** Formerly Principal, Government Technical Institute, Insein, Burma. *96 Sunnybank, Woodcote Green, Epsom, Surrey.*

1920 **Shaw, Walter, B.Sc. (Lond.),** Senior Physics Master, County High School for Boys, Ilford. *6 Hamilton Gardens, Barkingside, Ilford, Essex.*

1929 **Simaika, Yusef Marcus, B.Sc. (Birm.),** Assistant Director, Hydrological Service, Physical Dept., Ministry of Public Works, Dawawin, Cairo, Egypt.

1934 **Sinclair, William Sedgwick, M.A., B.Sc. (Edin.),** Assistant Teacher of Science and Mathematics, Robert Gordon's College, Aberdeen. *202 Hilton Drive, Aberdeen.*

1928 **Singh, Har Chand, M.Sc. (Panjab), Ph.D. (Lond.), D.I.C., A.M.I.E.E.,** Assistant Professor of Electrical Engineering, Maclagan Engineering College, Moghalpura, Lahore, India.

[1937] **Singleton, William, B.Sc. (Lond.), A.R.C.S., D.I.C.,** Physicist, Burmah Oil Co., Ltd., Khodaung, Upper Burma.

1934 **Smith, Donald Harry, B.Sc., Ph.D. (Lond.),** Lecturer in Physics, Norwich Technical College. *156 Earlham Road, Norwich.*

1925 †**Smith, Donald Whitby, M.A. (Cantab.),** Research Mathematician, Research Dept., Woolwich. *9 Gilkes Crescent, Dulwich, S.E. 21.*

1932 **Smith, Horace Frank, B.Sc. (Lond.),** Research and Development Engineer, British Sangamo Co., Ltd., Enfield. *41 Beacontree Road, Leytonstone, E. 11.*

1936 **Smith, Humphrey Montague, B.Sc. (Lond.),** Assistant, Royal Observatory, Greenwich. *73 Repton Road, Orpington, Kent.*

1923 **Smith, James Hive, M.Sc. (Liv.),** *166 Dobbin Hill, Sheffield, 11.*

1935 **Smith, Jesse Eyre, B.Sc., Ph.D. (Leeds),** Lecturer in Physics and Chemistry, Hull Municipal Technical College. *80 Finkle Street, Cottingham, East Yorks.*

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1931 **Solomon, David, M.Sc. (Wales),** Teacher, London County Council Service. *14 Carysfort Road, Stoke Newington, N. 16.*

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1933 **Starks, Herbert James Harold, B.Sc., Ph.D. (Birm.), D.I.C.,**
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1931 **Steed, Alfred Harold Lawrence, B.Sc. (Lond.), A.R.C.S., D.I.C.,**
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1936 **Tankard, Joseph, M.Sc. (Manc.),**
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1934 **Tarrant, Mrs H. H.,** (née **Walker, Amy Loïs**), **B.Sc. (Lond.),**
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1936 **Vick, Francis Arthur, B.Sc., Ph.D. (Birm.),**
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1936 **Vincent, Russell Swale, M.Sc. (Lond.), A.M.I.E.E.,**
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1934 **Walke, Harold, M.Sc. (Lond.),**
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1920 †**Walsh, Frank Ford Peregrine,**
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Date of election

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1936 **Walters, Beryl Phyllis Margaret, B.Sc., Ph.D. (Wales),** Physics and Mathematics Mistress, Blyth Secondary School, Norwich.

1932 **Warburton, Frank Lucas, M.Sc. (Lond.), A.R.C.S., D.I.C.,** Research Assistant, Barnato Joel Laboratories, Middlesex Hospital. *Littlecote, Chester Road, Northwood, Middlesex.*

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1933 **Weir, William, M.A. (Cantab.),** Director, Bryce Weir Ltd., Brylex Paint Works, Balmoral Road, Watford, Herts.

1921 **Wells, Reginald Iredale, B.Sc. (Lond.), A.M.I.E.E.,** Senior Technical Officer, Radio Dept., Royal Aircraft Establishment, South Farnborough. *Senior Staff Mess, R.A.E., South Farnborough, Hants.*

1935 **Whelpton, Robert Vaughan, M.Sc. (Shef.),** Scientific Officer, Air Ministry, Bawdsey Research Station, Bawdsey Manor, Woodbridge, Suffolk.

1936 **Widdowson, Ethel Eva, M.Sc. (Lond.),** Assistant Lecturer in Physics, University College, Hull.

1932 **Wilcox, Leonard, M.Sc. (Manc.), A.M.I.E.E.,** Lecturer in Physics, County Technical College, Wednesbury, South Staffs. *62 Bustleholme Lane, West Bromwich.*

1921 †**Williams, Joseph Thomas, M.Sc. (Wales),** Formerly Civil Servant. *The Homestead, Caerwent, nr Chepstow, Mon.*

1935 **Williams, Thomas Evan, B.Sc., Ph.D. (Wales),** Lecturer in Physics, Technical College, Cardiff. *Gwynfa, St Albans Avenue, Heathwood Road, Cardiff.*

1920 **Willott, Frederick John,** Assistant Works Manager, Mond Nickel Co., Ltd., Clydach. *Glais House, Glais, Swansea.*

1935 **Willott, William Harford, B.Sc. (Lond.), Ph.D. (Wales),** Research Physicist, Research Association of British Rubber Manufacturers, Croydon. *7 Altyre Road, Croydon, Surrey.*

1932 †**Wilson, John Spencer, M.A. (Cantab.), B.Sc. (Lond.),** Research Physicist, Road Research Laboratory, Harmondsworth, Middlesex. *Hidcote Vale House, Campden, Glos.*

1930 **Winson, Charles Gordon, B.Sc. (Lond.),** Research Assistant, Textile Laboratory, Research Dept., London, Midland and Scottish Railway, Derby. *Hillsmead, Derby Road, Ilkeston, Derbyshire.*

1932 **Withers, John Granville, B.Sc. (Lond.),** Research Engineer, Anglo-Iranian Oil Co., Ltd., Research Station, P.O. Box 1, Chertsey Road, Sunbury-on-Thames.

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1935 **Wood, Philip Henry, B.Sc. (Lond.),**
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1933 **Wood, Robert Eric, M.Sc. (Liv.),**
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1934 **Woodall, Arthur Joseph, B.Sc., Ph.D. (Lond.),**
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1927 †**Woodman, Rowland Marcus, M.Sc. (Leeds), Ph.D. (Cantab.), F.I.C.,**
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1935 **Yates, Edward Leighton, M.Sc., Ph.D. (Wales),**
Research Student, Cavendish Laboratory, Cambridge. *St John's College, Cambridge.*

1930 **Zeidenfeld, Sidney, B.Sc. (Lond.), A.R.C.S.,**
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Date of election

ORDINARY MEMBERS

1922 BARNARD, CAPT. THOMAS WILLIAM,
Consulting Radiologist to Government of Madras. *The Barnard Institute of Radiology, Government of Madras, India.*

1936 BOURDILLON, ROBERT BENEDICT, M.A., M.D. (OXON.),
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1920 BRIGGS, MAJOR RICHARD ALFRED, M.I.MECH.E., A.I.E.E.,
Managing Director, Qualcast (Australia) Pty., Ltd., West Footscray, Melbourne, W. 12, Australia.

1936 BROOKES, ALFRED, M.ENG. (LIV.), M.I.E.E.,
Technical Engineer and Chief of Research Laboratories, Ericsson Telephones, Ltd., Beeston, Notts. *Avondale, Elm Avenue, Beeston, Notts.*

1921 BULLOCK, WILLIAM HENRY,
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1920 CAMPBELL, ALBERT, M.A. (CANTAB.), A.M.I.E.E.,
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1920 CARDWELL, REV. LAURENCE, S.J., B.SC. (LOND.),
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1935 CRIVELLI, PAUL ANDRÉ,
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1936 GARDINER, GEORGE, A.I.MECH.E.,
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1922 GEE, HARRY THOMAS PAGE,
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1925 GILBERTSON, FREDRICK JAMES, A.I.E.E.,
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1934 HALL, LEONARD EDWARD, B.SC. (MANC.),
Physics Master, The Grammar School, Glossop.

1920 HEATH, HAROLD ERNEST,
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1920 HOLLAND, JOB,
Managing Director, Pickford, Holland and Co., Ltd., Sheffield. *The Gables, Grindleford, nr Sheffield.*

1920 KIDD, ROBERT HICKS, M.A. (CANTAB.),
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1921 LAMB, MORRIS CHARLES,
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1921 LAUWERS, WALTER H. M.,
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1920 LEWIS-ROBERTS, ARCHIBALD,
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1920 McDONALD, DONALD, B.SC. (LOND.), F.I.C.,
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1922 MACINNES, HENRY JACK,
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ORDINARY MEMBERS

Date of election

1920 MILLS, ALBERT EDWARD,
Analytical Chemist. *37 High Street, Keynsham, nr Bristol.*

1920 MOFFAT, ELIEZER,
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1920 MORLEY, HENRY FORSTER, M.A., D.SC. (LOND.),
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1934 MORTON, CHARLES, B.SC. (LOND.),
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1920 SALMON, WALTER,
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1920 SCOURFIELD, DAVID JOSEPH,
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1936 SHONE, JOHN ALFRED VICTOR,
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1934 SMITH, KENNETH ASHBROOKE, B.SC. (LIV.),
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1935 VOGEL, RICHARD FRANZ JULES, B.A. (CANTAB.),
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1920 WATKINSON, HARRY,
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Date of admission

1936 ADAMS, DAVID ERIC, B.SC. (BIRM.),
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1935 ALFORD, MAITLAND WALTON, B.SC. (LOND.), A.R.C.S., D.I.C.,
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1933 ANDERSON, SAMUEL LESLIE, B.SC. (LOND.),
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1936 BARNES, GRAHAM RALPH DENGATE, B.SC. (LOND.),
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1936 BOOT, HENRY ALBERT HOWARD,
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1936 BREWER, ALAN WEST, B.SC. (LOND.),
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1930 BROOKES, DESMOND CANNON, M.A. (CANTAB.),
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1932 BRYAN, ALBERT EUGENE, B.SC. (LOND.),
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1935 CALPINE, HILTON CECIL, B.A. (CANTAB.),
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1930 CARPENTER, HILDA EMILY, B.SC., (LOND.),
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1930 CARTER, DONALD WALTER, B.SC. (LOND.),
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1934 CHALLANDS, ARTHUR CECIL, B.SC. (LOND.),
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1934 DEANE, MARJORIE,
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1935 LEWIS, GETHING MORGAN, B.SC. (LOND.),
Student, University College, University of London. *Isycoed, Ystalyfera, Swansea.*

1935 LITTLE, EDWARD WALLACE RUTHERFORD,
Student, University of Durham. *The Dene, Medomsley, Co. Durham.*

1932 LOTHIAN, GORDON FREDERICK, B.A. (OXON.),
Research Student, Clarendon Laboratory, Oxford. *37 Mayfair Gardens, Woodford Green, Essex.*

1936 MACHIN, CECIL FRANCIS, B.SC. (LOND.),
Research Assistant, Research Laboratories of the General Electric Co., Ltd., Wembley. *64 Draycott Avenue, Kenton, Harrow, Middlesex.*

1935 MARTINDALE, JAMES PATRICK ALEXANDER, B.A. (LOND.),
Student, Birkbeck College, University of London. *11 Cornwall Avenue, Finchley, N. 3.*

1934 MASON, IAN BOWYER, B.SC. (LOND.),
1 Lancaster Road, Brighton, 5, Sussex.

1936 MAYER, PETER ALAN,
Librarian, Signals Experimental Establishment, Woolwich. *7 Hyacinth Road, Roehampton, S.W. 15.*

1936 MIDDLETON, KENNETH NOEL, B.SC. (LOND.),
Trainee, Radio Dept., Standard Telephones and Cables, Ltd., London. *14 Falkland Avenue, New Southgate, N. 11.*

1936 MILNE, KENNETH JAMES, B.SC. (BIRM.),
Technical Assistant, Davis Gas Stove Co., Luton, Beds. *51 North Drive, Heathfield Park, Handsworth, Birmingham, 20.*

1933 MITCHELL, WILLIAM JOHN, B.SC. (LOND.),
Laboratory Engineer, Standard Telephones and Cables, Ltd., London. *63 Palmerston Crescent, Palmers Green, N. 13.*

1933 MOLE, GEORGE, B.SC. (LOND.), A.R.C.S., D.I.C.,
Research Student, Imperial College of Science and Technology, London. *104a Heather Park Drive, Wembley, Middlesex.*

1933 MOORE, JUDITH RACHEL, B.A. (OXON.),
Physics Mistress, County School for Girls, Bexhill. *Little Thorne, Sidley, Bexhill-on-Sea.*

1935 MORRIS, REGINALD BURFORD, B.SC. (LOND.),
Research Physicist, Kodak Ltd., Wealdstone. *86 Nibthwaite Road, Harrow, Middlesex.*

1936 MULLINS, LESLIE, B.SC. (SHEF.),
Research Student, Metallurgical Dept., University of Sheffield. *174 Lydgate Lane, Sheffield, 10.*

1934 NORMAN, LAWRENCE ERNEST JACK,
Research Assistant, Physics Dept., University College, Southampton. *99 Janson Road, Shirley, Southampton.*

1935 PULLEN, WILLIAM JOSEPH,
Assistant, Physical Laboratory, British Oxygen Co., Ltd., London. *22 Florence Road, Angel Road, Edmonton, N. 18.*

1936 PULS, HANS OSKAR, B.SC. (READING),
Research Student, University of Reading. *26a Nightingale Road, Hampton, Middlesex.*

1931 QUARRELL, ARTHUR GEORGE, B.SC., PH.D. (LOND.), A.R.C.S., D.I.C.,
Research Assistant, Metallurgical Dept., University of Sheffield. *136 Whirlowdale Road, Sheffield.*

1936 RAMSAY, BERNARD WALTER, B.SC. (LOND.), A.R.C.S.,
Research Physicist and Technical Adviser, White Hugues and Co., Ltd., London. *29 Leonard Road, Forest Gate, E. 7.*

1934 RAMSAY, IVOR WILLIAM,
Student, Imperial College of Science and Technology, London. *Highworth, Ewelme Road, Forest Hill, S.E. 23.*

1935 REDDING, THOMAS HENRY, B.SC. (LOND.), A.R.C.S.,
Instrument Engineer, Drayton Regulator and Instrument Co., West Drayton, Middlesex. *25 Sipson Road, West Drayton, Middlesex.*

1936 RIGDEN, PHILIP JAMES, B.SC. (READING),
Research Student, University of Reading. *St Patrick's Hall, Reading.*

1935 ROTHERHAM, LEONARD, M.SC. (LOND.),
Assistant Physicist, Brown-Firth Research Laboratories, Sheffield. *31 Beech Hill Road, Sheffield, 10.*

1934 SARSON, ALAN ELMER, B.SC. (LOND.),
Research Assistant, Research Laboratories of the General Electric Co., Ltd., Wembley. *83 London Road, Wembley, Middlesex.*

1936 SCOTT, ROBERT ARTHUR, B.SC. (LOND.),
Research Student, Physics Dept., University College, University of London. *23 Morella Road, Wandsworth Common, S.W. 12.*

1936 SCOWEN, FRANK,
Inspector, Engineering Dept., Post Office Research Station, London. *25 Woolstone Road, S.E. 23.*

1933 SEMPER, EDWARD, B.SC. (LOND.),
Part-time Lecturer, Technical College, Bradford. *39 Tamworth Street, Tyersal, Bradford.*

1936 SHIPP, JOHN CYRIL KNOWLES, B.SC. (READING),
Student, University of Reading. *Bank House, Wokingham, Berks.*

1934 SMITH, REGGIE, B.SC. (LOND.),
Research Physical Chemist and Assistant Lecturer in Physics, Huddersfield Technical College. *21 Lindley Road, Blackley, Elland, Yorks.*

1935 SPEIRS, JOHN MARTIN SLEEMAN, B.A., B.SC. (DUBL.),
Science and Mathematics Master, Barnes High School, Deolali, Bombay, India.

1936 STANDING, HARRY ALAN, B.SC. (LOND.),
Student, University College, University of London. *201 London Road, North End, Portsmouth.*

1936 STEVENS, PHILIP ROWE,
Time Study Engineer, Joseph Lucas, Ltd., Birmingham. *Shirley, Page Heath Lane, Bickley, Kent.*

1933 TAYLOR, HAROLD MORRIS, B.A. (CANTAB.),
Research Assistant, British Cotton Industry Research Association, Didsbury. *46 St Hilda's Road, Old Trafford, Manchester, 16.*

1935 TEUTEN, REGINALD HENRY,
Junior Technical Assistant, Morgan Crucible Co., Ltd., London. *65 Ashford Crescent, Ashford, Middlesex.*

1933 THOMAS, DAVID HYLTON, M.SC.TECH. (MANC.),
Technical Assistant, Research Dept., Metropolitan Vickers Electrical Co., Ltd., Manchester. *Bracklyn, 6 Springfield Road, Altrincham, Cheshire.*

1936 TOMKIN, WILLIAM EWART, B.SC. (LOND.),
69 Goldsworth Road, Woking, Surrey.

1932 TROTT, FRANK RUNCORN, B.A. (CANTAB.),
Research Engineer, Electric and Musical Industries, Ltd., Hayes, Middlesex. *27 Gondar Gardens, N.W. 6.*

1934 TURNER, HAROLD JAMES ARTHUR, B.SC. (LOND.), A.R.C.S.,
Illuminating Engineer, General Electric Co., Ltd., London. *72 Windermere Avenue, Merton Park, S.W. 19.*

1936 TWINEY, FREDERICK JOSEPH, B.SC. (READING),
Research Student, University of Reading. *5 St Anne's Road, Caversham Reading.*

1932 VAN GEENS, ABRAHAM ISIDORE, B.SC., PH.D. (LOND.), A.R.C.S.,
Research Physicist, Standard Telephones and Cables, Ltd., London. *4 St Stephens Road, Bow, E. 3.*

1936 VANSTONE, FREDERICK HAYDN, B.SC. (WALES),
Research Student, University College of Wales, Aberystwyth.

1933 WARD, CECIL WILLIAM LA ROCHE,
Tutor in Physics and Mathematics, British Institute of Engineering Technology, Ltd., London. *97 Boyland Road, Bromley, Kent.*

1936 WARREN, JOHN BERNARD, B.SC., PH.D. (LOND.), A.R.C.S., D.I.C.,
Research Assistant, Beyer International, Ltd., London. *7 Clifford Gardens, Kensal Rise, N.W. 10.*

1936 WHITE, ROBERT WILLIAMSON,
Student, University of Glasgow. *160 Albert Road, Glasgow, S. 2.*

1936 WHITFIELD, GEORGE ALAN,
Student, University of Sheffield. *The University, Western Bank, Sheffield, 10.*

1936 WIDDOWSON, ARTHUR EVERARD,
Student, University of Birmingham. *1 Barnsley Road, Birmingham, 17.*

1934 WIGHT, KENNETH CAMERON,
Assistant, Aerodynamics Dept., National Physical Laboratory, Teddington.

1936 WILDE, FREDERICK GEOFFREY, B.SC. (LOND.),
Research Physicist, British Refractories Research Assoc., Stoke-on-Trent. *Holly Side, Wellington Street, E., Salford, 7, Lancs.*

1936 WILLIAMS, ERIC CHARLES, B.SC. (BIRM.),
Radio Research Assistant, Air Ministry. *6 Radbourne Road, Shirley, Birmingham.*

1933 WILMAN, HARRY, B.SC., PH.D. (LOND.), A.R.C.S., D.I.C.,
Research Assistant, Electrochemistry Dept., Imperial College of Science and Technology, London. *18 Rosaville Road, Fulham, S.W. 6.*

1930 WOODALL, MRS A. J. (*née* SIMMONS, ELSIE AGNES), B.SC. (LOND.),
4 Eagle Court, Hermon Hill, Wanstead, E. 11.

1936 WOODS, EDGAR CHARLES,
Tyre designer, Henley's Tyre and Rubber Co., Ltd., Gravesend. *80 Peacock Street, Gravesend, Kent.*

1933 WOODS, HERBERT PERRY, B.SC. (LOND.),
Physicist, Ship Carbon Co. of Great Britain, Ltd., Chadwell Heath, Essex.

1935 YATES, PETER WESTON, B.SC. (READING),
Telephone Engineer, Siemens Bros. and Co., Ltd., London. *82 Elliscombe Road, S.E. 7.*

SUMMARY OF MEMBERSHIP,
NOVEMBER 15TH, 1936

	Fellows	Associates	Ordinary Members	Registered Students	Total
Great Britain and N. Ireland					
London and Home Counties Branch	268	139	17	61	485
Manchester and District Branch	35	36	3	8	82
Midland Branch	21	24	4	11	60
Scotland	13	6	.	1	20
Other	59	53	2	20	134
	396	258	26	101	781
Australian Branch	27	8	2	1	38
Indian Branch	22	19	1	1	43
Canada, U.S.A. and S. America	7	6	.	.	13
S. Africa and Egypt	9	8	.	1	18
Europe	6	2	1	.	9
Asia	4	5	.	.	9
	471	306	30	104	911

HONORARY SECRETARIES OF BRANCHES

London and Home Counties Branch.	Dr H. LOWERY, F.Inst.P., North-Western Polytechnic, Prince of Wales Road, N.W. 5.
Manchester and District Branch.	Dr S. TOLANSKY, A.Inst.P., Physics Department, University of Manchester.
Midland Branch.	Dr J. H. MITCHELL, F.Inst.P., Bawdsey Research Station, Bawdsey Manor, nr. Woodbridge, Suffolk.
Australian Branch.	Prof. A. D. ROSS, F.Inst.P., University of Western Australia, Perth, Western Australia.
Indian Branch.	Prof. H. P. WARAN, F.Inst.P., Presidency College, Madras, South India.

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W. LEWIS, M.A.
AT THE UNIVERSITY PRESS

THE INSTITUTE OF PHYSICS

NOMINATIONS FOR ELECTION TO THE BOARD OF THE INSTITUTE FOR THE SESSION 1938 - 39

In accordance with Article 47 of the Articles of Association of the Institute, notice is hereby given that the Board has nominated the undermentioned persons to fill the vacancies stated which will occur on September 30th, 1938. Ballot papers will be circulated in due course and the result of the ballot will be announced at the Ordinary General Meeting on May 25th next.

President :

C. C. PATERSON, O.B.E., D.Sc., M.I.E.E., M.Inst.C.E., F.Inst.P.

Vice-Presidents (one vacancy) *:*

T. SMITH, M.A., F.Inst.P., F.R.S.

Honorary Treasurer :

MAJOR C. E. S. PHILLIPS, O.B.E., F.R.S.E., F.Inst.P.

Honorary Secretary :

PROF. J. A. CROWTHER, M.A., Sc.D., F.Inst.P.

Ordinary Members of the Board (two vacancies)

J. D. COCKCROFT, M.A., Ph.D., M.Sc.(Tech.), A.M.I.E.E., F.Inst.P., F.R.S.
E. B. WEDMORE, M.I.E.E., F.Inst.P.

Attention is directed to the terms of Article 48, whch reads as follows:

"After the notice mentioned in the last preceding Article (*Article 47*), any five Members may nominate within two weeks of receipt by them respectively of such notice, but not later, any other duly qualified person as a candidate for election to any one or more of the said Offices by depositing such nomination in writing at the Registered Office of the Institute together with the written consent of the nominee to accept office if elected. No Member may nominate more than one candidate in any year."

The following, not being subject to election, will also serve:

Past Presidents :

SIR HENRY LYONS, Sc.D., D.Sc., F.Inst.P., F.R.S.
PROF. A. FOWLER, C.B.E., D.Sc., Sc.D., A.R.C.S., F.Inst.P., F.R.S.

Vice-Presidents :

G. W. C. KAYE, O.B.E., M.A., D.Sc., A.R.C.S., F.Inst.P.
PROF. W. MAKOWER, O.B.E., M.A., D.Sc., F.Inst.P.
F. TWYMAN, F.C.G.I., F.Inst.P., F.R.S.

Ordinary Members of the Board

PROF. J. CHADWICK, Ph.D., M.Sc., F.Inst.P., F.R.S.
Lt.-Col. K. W. E. EDGCUMBE, M.I.E.E., M.Inst.C.E., F.Inst.P.
A. P. M. FLEMING, C.B.E., D.Sc., M.I.E.E., F.Inst.P.
D. C. GALL, F.Inst.P.
PROF. R. WHIDDINGTON, M.A., D.Sc., F.Inst.P., F.R.S.
B. L. WORSNOP, B.Sc., Ph.D., F.Inst.P.

Appointed by Participating Societies :

British Institute of Radiology ...	W. E. SCHALL, B.Sc., F.Inst.P.
Faraday Society	E. HATSCHEK, F.Inst.P.
Physical Society	D. OWEN, B.A., D.Sc., F.Inst.P. A. B. WOOD, D.Sc., F.Inst.P.
Royal Meteorological Society ...	R. S. READ, M.A., B.Sc., A.R.C.S., F.Inst.P.

J. A. CROWTHER,
Honorary Secretary

April 5th, 1938

THE INSTITUTE OF PHYSICS
INCORPORATED 1920

1 LOWTHER GARDENS
EXHIBITION ROAD
LONDON SW 7

TELEPHONE KENSINGTON 0048

SUMMER SCHOOL

UNIVERSITY OF READING — JULY 7th to 9th, 1938

PURPOSE

The purpose of the Summer School is to provide an opportunity for Members of the Institute and others to obtain information on some of the recent advances in pure and applied physics, especially those likely to be of importance to the practising physicist.

PROGRAMME

It is intended that the lectures and discussions shall be informal in character and they will not be published. The lecturers have been invited to deal with their subjects from elementary first principles, and not to assume any previous specialised knowledge in their audience.

THURSDAY, JULY 7th.

8.45 p.m. — Lecture on PHYSICS IN BIOLOGY, by Professor J. A. Crowther, Sc.D., F.Inst.P., of the University of Reading.

FRIDAY, JULY 8th.

9.30 a.m. — 11 a.m. — Lecture on SOME ELECTRONIC DEVICES AND THEIR APPLICATIONS, by Dr. C. E. Wynn-Williams, of the Imperial College of Science and Technology.

Synopsis: Thermionic valves — Gas discharge devices — Photoelectric cells — Production of high voltages — Counting apparatus — Electron diffraction.

DISCUSSION.

11.30 a.m. — 12.30 p.m. — Lecture on THE THEORY AND PRACTICE OF ELECTRON OPTICAL DEVICES, by Dr. O. Klemperer, of Electrical and Musical Industries, Ltd.

Synopsis: Electron optics and electron mechanics — Magnetic electron lenses — Electric electron lenses — Electron microscope — Picture transformer — Cathode ray receiving tube — Emitron transmitting tube — Super Emitron — Electron image dissector — Electron multiplier.

DISCUSSION.

2.15 p.m. — 5 p.m. — VISIT TO THE ROYAL AIRCRAFT ESTABLISHMENT at South Farnborough, by kind permission of the Air Ministry and the Chief Superintendent of the Establishment.

8.45 p.m. — Lecture on THERMODYNAMICS OF LOW TEMPERATURES, by Dr. E. A. Guggenheim, M.A., of the Imperial College of Science and Technology.

Synopsis: The meaning of low temperatures — The attainment of low temperatures — The measurement of low temperatures — Magnetic and other properties at low temperatures.

DISCUSSION.

SATURDAY, JULY 9th.

9.30 a.m. — 11 p.m. Lecture on THE SIGNIFICANCE OF INTERFACIAL POTENTIALS, by Dr. W. F. K. Wynne-Jones, of the University of Reading.

Synopsis: Surface structure and potential differences — Zeta potentials and streaming potentials — Electrochemical cells — Concentration cells — Reversible electrodes — Hydrogen ion concentration and pH measurement.

DISCUSSION.

11.30 a.m. — 1 p.m. Lecture on INTERFACIAL POTENTIALS IN SYSTEMS OF INDUSTRIAL IMPORTANCE, by Dr. C. G. SUMNER, M.Sc.

Synopsis: Electrode potentials and electrolytic processes — Polarization and depolarization in electrode processes — Potential differences in Metallic corrosion — Potential measurements in analysis and process control — Protein behaviour as a function of pH — Gel formation in relation to pH — Flocculation of colloids.

DISCUSSION.

2 p.m. A RIVER TRIP will be arranged if sufficient members signify their desire for one.

PLACE OF MEETINGS

The Meetings will be held in the lecture theatre of the Physics Department of the University of Reading, by kind permission of the Council of the University.

MEMBERSHIP OF THE SCHOOL

Membership of the School is open to all interested, and applications should be made on the accompanying form before **June 16th next.** The fee for attendance at the School (for either the whole or part of the period) will be 5s. for Fellows, Associates, Subscribers, and Students of the Institute of Physics, and 12s. 6d. for others.

ACCOMMODATION AND CHARGES

By the courtesy of the Council of the University, male members of the School may be accommodated in Wantage Hall, which is a few minutes' walk from the Meeting Room. The charge for rooms and all meals will be at the rate of 11s. per day (including gratuities); the charge for the whole period including dinner on the opening evening (July 7th) and lunch on the closing day (July 9th) will be 22s. **As the available accommodation in Wantage Hall is limited it will be allotted in order of receipt of applications. Early application is therefore advised.**

It may be possible to make arrangements for women, and for men and women, in one of the other University Halls of residence. Enquiries should be made of the Secretary of the Institute of Physics.

The following is a selection of hotels and boarding houses in Reading, with their tariffs and approximate distances from the Meeting Room.

Caversham Bridge Hotel: 1½ miles, overlooking river (Reading 3793) ; single room and breakfast, 8s. 6d. ; double room and breakfast, 17s. ; lunch, 3s. ; dinner, 4s. 6d.

Fifty Three: opposite the University (Reading 4672) ; single room and breakfast, 6s. 6d. ; double room and breakfast, 13s. ; lunch, 2s. ; dinner, 2s. ; whole period of School, £1.

Mansfield House Hotel (unlicensed): three minutes' walk from the University (Reading 462911) ; single room and breakfast, 8s. 6d. ; double room and breakfast, 17s. ; lunch, 3s. ; dinner, 4s. ; whole period of School, £1 9s. 0d.

Members of the School who are not resident in Wantage Hall may obtain meals there at the following rates: lunch, 2s. ; tea, 9d. ; dinner, 2s. 9d.

Lunch (*à la carte*), tea and light refreshments will also be obtainable in the Buttery of the University (adjoining the Meeting Room) between 9.30 a.m. and 6 p.m., and on Saturday between 9.30 a.m. and 2.30 p.m.

EXCURSIONS AND VISITS

The regulations of the Air Ministry render it necessary to restrict the visit to the Royal Aircraft Establishment at South Farnborough to **male British subjects only.** The Establishment is about twenty miles by road from Reading and motor coaches will leave the University at 1.30 p.m. The charge for the return journey will be 2s. 6d. The route taken on the outward and return journeys will enable members to obtain a view of the surrounding country and of some of the local places of historic interest.

If sufficient members signify their desire to take part, arrangements will be made for a river trip for members of the School and their guests on Saturday afternoon, July 9th. The charge (including tea) will not exceed 4s. 6d. per head. The trip will cover some of the most beautiful scenery along the Thames and will return to Reading in time to catch the 6.10 p.m. train to London (Paddington).

TRAVELLING FACILITIES AND CAR PARKS

Third class monthly return tickets are available at the ordinary single fare and one-third for the return journey (being 6s. 4d. return from London — Paddington) from all main line stations in Great Britain, subject to certain advertised minimum fares ; no special vouchers are necessary for these reduced rates. First class return tickets are also available at 50 per cent. above the cost of the corresponding third class fare. Cheap day-return tickets are also issued, for which no special vouchers are required.

Thames Valley motor coaches travel between Victoria Coach Station, London, and Reading (5s. return, seats reservable).

Ledbury motor coaches travel between King's Cross Coach Station, London, and Reading (5s. return, 4s. 6d. day-return, seats not reservable).

Car parks are available during the day time both at the University and at Wantage Hall. The following garages are convenient for the University:—

G. Jarvis and Son, Christchurch Road: ($\frac{1}{4}$-mile from Wantage Hall; $\frac{1}{2}$-mile from University).

~~Queen's Garage, Queen's Road: ($\frac{1}{2}$-mile from University ; $\frac{3}{4}$-mile from Wantage Hall).~~

RECEPTION ROOM AND OFFICE

The reception room and Secretary's office will be in the Physics Department of the University. It will open on Thursday, July 7th, at 5 p.m., and will be open during the Summer School at times to be announced.

In the reception room there will be a staff for issuing tickets and badges and for supplying information regarding arrangements for the meetings and visits. Facilities for writing will also be available.

COMMUNICATIONS

All communications concerning the Summer School should be addressed to the Secretary, The Institute of Physics, 1 Lowther Gardens, Exhibition Road, London, S.W.7. (Kensington 0048.)

J. A. CROWTHER,
Honorary Secretary.

May, 1938.

THE
INSTITUTE OF PHYSICS

INCORPORATED 1920

TWENTIETH ANNUAL REPORT
OF THE BOARD, 1939



TWENTIETH ANNUAL GENERAL MEETING

NOTICE IS HEREBY GIVEN that the Annual General Meeting of the Institute of Physics will be held at 6-45 p.m. on Wednesday, the 5th June, 1940, in the Physics Department of The University, Reading, Berks. The business to be conducted is the consideration of the attached report, accounts and balance sheets, the declaration of the election of the Honorary Officers and other members of the Board nominated and the election of Auditors.

J. A. CROWTHER,
Honorary Secretary.

1 LOWTHER GARDENS,
EXHIBITION ROAD,
LONDON, S.W. 7.
27th May, 1940.

Temporary Offices:

THE UNIVERSITY, READING, BERKSHIRE

Officers and Members of the Board, 1939 - 40

President :

PROFESSOR W. L. BRAGG, O.B.E., M.A., Sc.D., F.Inst.P., F.R.S.

Past Presidents :

PROFESSOR A. FOWLER, C.B.E., D.Sc., Sc.D., A.R.C.S., F.Inst.P., F.R.S.
C. C. PATERSON, O.B.E., D.Sc., M.I.E.E., M.Inst.C.E., F.Inst.P.

Vice-Presidents :

PROFESSOR A. FERGUSON, M.A., D.Sc., F.Inst.P.
PROFESSOR W. MAKOWER, O.B.E., M.A., D.Sc., F.Inst.P.
T. SMITH, M.A., F.Inst.P., F.R.S.
F. TWYMAN, F.C.G.I., F.Inst.P., F.R.S.

Honorary Treasurer :

MAJOR C. E. S. PHILLIPS, O.B.E., F.R.S.E., F.Inst.P.

Honorary Secretary :

PROFESSOR J. A. CROWTHER, M.A., Sc.D., F.Inst.P.

Ordinary Members of the Board :

PROFESSOR J. CHADWICK, M.Sc., Ph.D., F.Inst.P., F.R.S.
J. D. COCKCROFT, M.A., M.Sc. (Tech.), Ph.D., A.M.I.E.E., F.Inst.P., F.R.S.
LT.-COL. K. W. E. EDGCUMBE, M.I.E.E., M.Inst.C.E., F.Inst.P.
D. C. GALL, F.Inst.P.
H. LOWERY, M.Ed., D.Sc., Ph.D., F.Inst.P.
E. B. WEDMORE, C.B.E., M.I.E.E., F.Inst.P.
PROFESSOR R. WHIDDINGTON, M.A., D.Sc., F.Inst.P., F.R.S.
R. S. WHIPPLE, M.I.E.E., F.Inst.P.

Chairmen of Branches in Great Britain :

London and Home Counties Branch	E. R. DAVIES, B.Sc., F.Inst.P.
Manchester and District Branch .	F. C. TOY, D.Sc., F.Inst.P.
Midland Branch	PROFESSOR M. L. E. OLIPHANT, B.Sc., Ph.D., F.Inst.P., F.R.S.

Nominated by Participating Societies :

British Institute of Radiology	W. E. SCHALL, B.Sc., F.Inst.P.
Faraday Society . . .	EMIL HATSCHEK, F.Inst.P.
Physical Society . . .	J. H. AWBERY, B.A., B.Sc., F.Inst.P. D. OWEN, B.A., D.Sc., F.Inst.P.
Royal Meteorological Society .	R. S. READ, M.A., B.Sc., A.R.C.S., F.Inst.P.

Secretary : H. R. LANG, B.Sc., Ph.D., A.R.C.S., F.Inst.P.

Temporary Offices of the Institute : The University, Reading, Berks.

Registered Address of the Institute : 1 Lowther Gardens, London, S.W. 7

Honorary Solicitors : FARRER & CO., 66 Lincoln's Inn Fields, W.C. 2

Auditors : KNOX, CROPPER & CO., *Chartered Accountants*, Spencer House, South Place, London, E.C. 2

THE INSTITUTE OF PHYSICS

BALLOT FOR ELECTION TO THE BOARD, SESSION 1940-41

BALLOT PAPER

OFFICE	NOMINEES	NOMINATED BY	NUMBER TO BE ELECTED
President	PROFESSOR W. L. BRAGG	Board	1
Vice-President ...	DR. B. A. KEEN	Board	1
Honorary Treasurer	MAJOR C. E. S. PHILLIPS ...	Board	1
Honorary Secretary	PROFESSOR J. A. CROWTHER	Board	1
Ordinary Members of the Board ...	PROFESSOR E. A. OWEN ...	Board	2
	DR. C. SYKES	Board	

ARTICLE 51. In the case of a contested election to any office each Member voting shall delete* sufficient names of candidates on his ballot paper to reduce the number to or below the number to be elected to that office and to restrict the number of Associates on the Board to four. The ballot papers shall be deposited at the registered office of the Institute† on or before the day preceding the Ordinary General Meeting at which such election is to take place or shall be delivered at the said General Meeting to the scrutineers. Each ballot paper which is found by the scrutineers to violate these provisions shall be cancelled.

* *As the elections are not contested, no deletions are necessary.*

† *This paper should be sent to The Honorary Secretary, The Institute of Physics, at The University, Reading, Berks; the envelope should be marked "ballot paper" in the top left hand corner.*

THE INSTITUTE OF PHYSICS

REPORT OF THE BOARD FOR THE YEAR 1939

THE Board presents the Twentieth Annual Report on the work of the Institute during the year 1939.

THE BOARD AND COMMITTEES

Committees and Chairmen :

Finance Committee : Lt.-Col. K. W. E. Edgcumbe.

Membership and Examinations Committee : Dr. D. Owen.

General Purposes Committee : Professor W. Makower.

Benevolent Fund Committee : Major C. E. S. Phillips.

Laboratory Arts Committee : Professor J. A. Crowther.

Joint Library Committee of the Institute of Physics and the Physical Society : Dr. J. H. Brinkworth.

Advisory Committee of the Journal of Scientific Instruments : Dr. R. S. Clay.

Organizing Committee of the Third Conference on Industrial Physics : Professor J. A. Crowther.

Emergency Register Committee : Major C. E. S. Phillips.

Prior to the War the Board met four times, and the Committees held thirteen meetings. The present Board took office on the 1st October, 1939. Owing to the uncertainties of the times the members of the Board agreed to appoint the President, the Honorary Treasurer and the Honorary Secretary as an Emergency Committee to exercise on their behalf, subject to certain safeguards, all powers normally residing in the Board and in its Committees. No meeting of the new Board was held during the year 1939.

THE ROLL OF THE INSTITUTE

The table below shows the changes in membership during the year.

	CHANGES DURING 1939							Total at Dec. 31, 1939
	New	Transfers to	Re-signed	Deceased	Removed	Transfers from	Net Increase or Decrease	
Honorary Fellows ...	—	—	—	1	—	—	— 1	7
Fellows	26	11	4	4	—	—	+29	560
Associates	50	25	9	—	1	11	+54	431
Subscribers	11	—	3	1	—	1	+ 6	47
Students	55	—	10	—	6	24	+15	227
Totals	142	36	26	6	7	36	+103	1,272

The progress of the Institute during the past ten years is shown in the table below:

1930	643	1933	765	1936	902	1939	1,272
1931	675	1934	753	1937	1,013		
1932	695	1935	822	1938	1,169		

The Membership and Examinations Committee has scrutinised 171 applications of which 14 were rejected.

OBITUARY

The Board records with regret the deaths of:

Sir Frank Dyson (*Honorary Fellow and Past President*), Professor F. J. Cheshire (*Founder Fellow*), Dr. E. Kidson (*Fellow*), Professor A. W. Porter (*Founder Fellow and First Honorary Secretary*), Dr. H. Walke (*Fellow*), Dr. C. Baynes (*Subscriber*).

ANNUAL GENERAL MEETING

The Annual General Meeting was held in the rooms of the Institute at South Kensington, on the 17th May.

CO-OPERATION OF THE INSTITUTE WITH OTHER ORGANISATIONS

The Institute has been represented on various outside bodies as follows:

Professor J. A. Crowther (*Honorary Secretary*) on the National Committee for Physics.

Professor J. A. Crowther (*Honorary Secretary*) and Mr. R. S. Read (*Fellow*) on the Parliamentary Science Committee.

Mr. V. Stott (*Fellow*) on the British Standards Institution's Committee for the Standardisation of Scientific Glassware.

Mr. T. Smith (*Vice-President*) on the British Standards Institution's Committee for the Standardisation of Letter Symbols.

Dr. H. R. Lang (*Secretary*) at a Conference on Laboratory and Workshop Assistants called by the National Union of Public Employees.

THE INSTITUTE'S ROOMS

The Royal Commissioners of the 1851 Exhibition kindly extended their lease of the Institute's Rooms at 1 Lowther Gardens for a further period of three years from the 1st January, 1939, upon the same generous terms as the original lease.

LIBRARY FACILITIES

The facilities provided by the joint library of the Institute and the Physical Society and by the Science Museum Library were utilised by many Members and Students.

The joint library, which is housed in the Institute's Rooms, was temporarily closed after the outbreak of war, but arrangements were subsequently made for its restricted use.

The Board records its thanks to authors, publishers, and others who have made presentations to the Institute's library.

WORK CARRIED OUT FOR THE PHYSICAL SOCIETY AND OTHER PARTICIPATING SOCIETIES

Under the arrangements made between the Institute and the Physical Society in 1934, members of the Institute staff have carried out certain duties for that Society, particularly in connexion with its publications and the organization of its Annual Exhibition of Scientific Instruments.

These arrangements were, by mutual agreement, suspended in September. The Officers of the Physical Society having decided that it would be more convenient for them to have their work carried out in London, certain of the Institute's rooms and equipment were put at their disposal for this purpose.

Two hundred and sixty-seven subscriptions to Participating Societies, amounting to £534 17s. 4d. were paid through the Institute in accordance with special reduced terms available to the Members of the Institute.

PUBLICITY AND PROPAGANDA

The arrangements for publicity in both the lay and technical press to further one of the objects of the Institute, namely, " the advancement and diffusion of a knowledge of physics, pure and applied " were maintained particularly in connexion with the Industrial Physics Conference held in March.

Posters and circulars calling the attention of prospective and practising physicists to the advantages offered by membership of the Institute were distributed to Universities, Colleges and Research Departments, and produced a gratifying response.

THIRD CONFERENCE ON INDUSTRIAL PHYSICS

The Third Conference on Industrial Physics was held in the University of Leeds from the 23rd to 25th March. The subject chosen for the Conference was " Physics in the Textile Industries," and its chief object was to draw attention to the importance of physics to these industries. Some 250 people attended the Conference, the majority of whom were engaged in textile and allied industries.

The Conference was formally opened by the Vice-Chancellor of the University and was presided over by Professor R. Whiddington. Following the Institute's established practice lectures and discussions were informal in character. The programme included an address by Dr. C. C. Paterson, President of the Institute of Physics, on " Colour and Colour Rendering," and an address by Dr. C. G. Darwin, Director of the National Physical Laboratory, on " Heat Effects in Fibres and Other Systems." In addition the following lectures, which were followed by discussions, were given: " The Physics of Humidity," by Professor R. Whiddington ; " Industrial Humidity Control and Measurement," by Dr. Ezer Griffiths ; " The Contribution of Physics to the Development

of Industrial Process Control," by Dr. M. C. Marsh ; " Automatic Regulators for the Textile Industries," by Mr. D. Harrison.

The Laboratories of the Wool Industries Research Association were opened for the inspection of members during the Conference, and visits were also made to works in the district.

An exhibition of apparatus, instruments and books cognate to the subject of the Conference was held in the Physics Laboratories of the University. Twenty-three firms were represented at the Exhibition, as well as the National Physical Laboratory and the Textile Physics and Chemistry Laboratories of the University of Leeds. A Special Section of the Exhibition was devoted to popular applications of physics in the textile industries and was intended to be of special interest to non-technical visitors to the Exhibition. Special arrangements were made for parties of senior scholars from local schools to visit the Exhibition.

In connexion with this Conference Professor J. A. Crowther (*Chairman of the Organizing Committee*), broadcast two short talks on " Physics in Industry " on the eve of its opening. The Conference also received extensive attention from both the lay and technical press.

The Conference Dinner was held at the Queen's Hotel, Leeds ; among the distinguished guests present were the Lord Mayor and Lady Mayoress of Leeds, representatives of the textile industries, and of the local education authorities, as well as representatives of the University and Civic Officers.

A catalogue of the Exhibition and a handbook of the Conference were published. No Conference fee was charged, the necessary funds being raised by donations and guarantees from exhibitors and from the sales of the Exhibition catalogue and advertisements in it.

Apart from the many valuable contacts which were made and renewed between physicists and industrialists, contacts which should be of permanent mutual benefit, the Conference undoubtedly served its primary object by bringing to the attention of the textile industries the importance of physics and its application to these and allied industries.

TRAINING IN INDUSTRIAL PHYSICS FOR STUDENTS DURING VACATIONS

In this, the fourth year of the scheme by which Students of the Institute are enabled to gain first-hand experience of industrial research and development work in applied physics by spending a portion of their vacations in industrial laboratories, nineteen industrial organisations, two Government establishments, and six research associations offered facilities. Restrictions imposed by Government contracts again prevented many firms from participating.

LABORATORY ARTS CERTIFICATES

Three Certificates in Laboratory Arts were awarded during the year. Twenty candidates were examined for the various sections of the Certificates at the Polytechnic, Regent Street, London, and at the South-

East London Technical Institute, Lewisham, London. Dr. R. S. Clay and Mr. D. O. Wood again acted as assessors.

Requests for laboratory assistants were circulated to holders of the Certificate likely to be interested.

PROFESSIONAL MATTERS

Action, which proved satisfactory, was taken in response to a complaint regarding the terms of appointment offered for a hospital physicist.

THE INSTITUTE AND THE WAR

In accordance with the decision of the Board the offices of the Institute were transferred to the University of Reading, Berkshire, on the 1st September, where accommodation had already been reserved by the kindness of the Council of the University. The detailed plans, which had been made during the summer in view of a possible emergency, worked smoothly. One member of the clerical staff accompanied the Secretary to Reading. The Principal Assistant and the Book-keeper were " called-up " for service before the office was moved, and the remaining members of the staff did not desire to move to Reading. All members of the staff not continuing in the service of the Institute received a gratuity of one month's wages. Temporary assistants have been engaged to carry on the essential activities of the Institute.

The outbreak of war produced a constant stream of requests for information and advice on professional matters, partly from Members, wishing to know their position with regard to the Armed Forces Act, partly from Members desirous of employing their special training and abilities, in work directly connected with the prosecution of the war. The Officers of the Institute have been in constant touch with the Ministry of Labour and National Service, with the Royal Society's section of the Central Register, and with the various Ministries employing physicists, in order to keep themselves informed of the actual position from time to time. A circular letter embodying the relevant information and calling the attention of Students of the Institute to the University Joint Recruiting Boards was sent out in December.

Requests have also been received from various Ministries asking for assistance in securing the services of physicists with special qualifications, and of laboratory attendants. In April, at the request of the Royal Society, the names and addresses of Members normally engaged in, or qualified to undertake scientific research were forwarded to the Society, and additions and alterations in the list have been sent monthly to the Royal Society and to the Ministry of Labour and National Service as a matter of routine.

In the early days of the war a number our senior Members became temporarily disengaged owing to the sudden re-organizations necessitated by war conditions. The Institute, through its Appointments Register, was able to render the assistance required.

The Board wishes to acknowledge the zeal and loyalty with which the Secretary, Dr. Lang, and his Assistant, Miss Neale, the two remaining

members of our permanent staff, have carried out their duties, under novel and harrassing conditions.

APPOINTMENTS REGISTER AND PANEL OF CONSULTING PHYSICISTS

Two hundred and four vacancies for physicists were notified to the Institute during the year as compared with 225 in the previous year. Several candidates were successful in obtaining posts through the medium of the Appointments Register, some of which were not advertised vacancies.

In June the list of post-graduate Students who are Members or Students of the Institute, and who had been personally recommended by their Professor or the Director of the laboratories in which they were working, was circularised to prospective employers ; this again met with most satisfactory results.

Particulars of vacancies for senior physicists have been sent to Professors of Physics, who have again kindly notified any Members of the Institute among their old students that they have considered suitable and likely to be interested.

The services of the Panel of Consultants has been utilised from time to time during the year. Enquiries for technical information and for sources of supply of scientific instruments have continued, and the Board desires to express its thanks to members of the Panel who have advised the Secretary in connexion with these enquiries.

JOURNAL OF SCIENTIFIC INSTRUMENTS

During the year 58 papers and 18 laboratory notes were submitted, and of these 47 papers and 14 notes were accepted for publication. The Board desires to express its thanks to those who have acted as referees of these papers and notes. Forty-four descriptions of new instruments and tools recently placed on the market were published during the year. Each issue has also included a specially invited article by a leading authority, dealing with recent advances in instrument design or some branch of applied physics. The February issue was as usual devoted to the Physical Society's Annual Exhibition of Scientific Instruments and Apparatus.

At the outbreak of war the number of pages in each issue was reduced as a precautionary measure. The response from subscribers to the *Journal* to the annual renewal notices for the 1940 volume was very gratifying and showed only a small reduction on previous years. It was therefore decided that the new volume should again consist of 12 parts to be issued monthly unless unpredictable difficulties supervened.

In view of the large circulation of the *Journal* abroad it was arranged to submit all matter to the Censor before publication, and certain other steps were taken to ensure compliance with the war-time restrictions on technical publications.

ACTIVITIES OF THE BRANCHES

Australia. President : Professor T. H. Laby ; Vice-President : Professor Kerr Grant ; Honorary Secretary and Treasurer: Professor A. D. Ross.

The Committee of the Branch has dealt with applications for membership from Australian and New Zealand candidates and has forwarded them with appropriate recommendations for consideration by the Board.

The Branch has made rapid progress during the year, the number of Fellows and Associates having increased from 53 to 72, and the total membership from 55 to 92. The Eleventh General Meeting of the Branch was held in Melbourne on 22nd and 26th August, and a new constitution drafted and approved for submission to the Board. The Board granted authority to the Branch to discuss professional matters with outside bodies in the Commonwealth.

A register of Australian physicists was prepared during the year and copies lodged with the Commonwealth Government immediately on the outbreak of war. A considerable proportion of the members are engaged in laboratories directly connected with munitions and other war supplies and services. A highly successful Conference of Australian Physicists and Astronomers was held in Melbourne under the auspices of the Branch from 22nd to 26th August.

India. Chairman: Sir C. V. Raman ; Honorary Secretary: Professor H. P. Waran.

The Indian Committee has dealt with applications for membership, and these were forwarded with appropriate recommendations for consideration by the Board.

Manchester and District Branch. Chairman: Dr. F. C. Toy ; Honorary Secretary: Dr. W. H. Taylor.

A lecture on " The Physics of Flight " to which members of the Manchester Branch of the Royal Aeronautical Society were also invited, was delivered by Mr. Ernest F. Relf, on the 13th January.

The Annual General Meeting of the Branch was held on the 17th March. After the completion of the business the Chairman, Dr. F. C. Toy, lectured on " The Physicist in the Textile Industries."

On the 10th May, by courtesy of Messrs. Pilkington Bros., Ltd., Glass Manufacturers, members visited the Research Laboratories and a section of the works at St. Helens.

A Conference on Photography, held on the 3rd and 4th July, included lectures and discussions on the description of photographic processes in terms of atomic physics and related experimental work, colour photography, theories of the action of developers, properties of photographic materials, and applications of photography in scientific research, and concluded with a demonstration of microphotographic methods in the Department of Botany of the University of Manchester.

Owing to the outbreak of war, no autumn meetings were arranged.

Midland Branch. Chairman: Professor M. L. E. Oliphant ; Joint Honorary Secretaries: Dr. T. L. Ibbs and Mr. W. D. Chesterman.

A meeting was held at University College, Leicester, on 21st January, when Dr. L. C. Jackson lectured on " Low Temperature Physics."

At a joint meeting with the Physical and Chemical Society of University College, Nottingham, held on the 2nd March at the College, Dr. K. E. W. Ridler lectured on " Physics in the Design of Aero-Engines."

On the 21st April, by the courtesy of the British Thomson-Houston Co., Ltd., a visit was paid to the firm's Research Laboratories at Rugby and the members were entertained to lunch and tea. In the evening a joint meeting with the local branch of the Association of Scientific Workers was arranged, when Professor P. M. S. Blackett lectured on " Recent Discoveries in Cosmic Ray Research."

Members of the Branch also attended, by special invitation, some distinguished visitors' addresses at the University of Birmingham.

Mr. W. D. Chesterman resigned the appointment of Joint Honorary Secretary at the end of the year, on leaving the district.

Owing to the outbreak of war it was not possible to arrange any meetings for the winter session.

London and Home Counties Branch. Chairman: Mr. E. R. Davies ; Honorary Secretary: Dr. H. Lowery.

On the 7th February, by the courtesy of the John Compton Organ Co., Ltd., a visit was paid to their works at Willesden. An introductory talk was given by Dr. H. Lowery, and the Electrone was described by Mr. J. Taylor, a Director of the firm ; this was followed by a demonstration and inspection of the works.

The Annual General Meeting was held on the 7th March in the Rooms of the Royal Society. After the formal business a lecture on " Quality and Uniformity " was delivered by Dr. B. P. Dudding, acting for Dr. C. C. Paterson, President of the Institute, who was unable to be present owing to illness.

On the 4th April a visit was paid to the Post Office Research Station, Dollis Hill, through the kindness of Dr. Radley. After inspection of the laboratories and tea, a discussion was held on " Physical Methods in the Examination of Materials." A record attendance of over 300 was made on this occasion.

The Summer Meeting of the Branch was held on the 10th June at the Rothamsted Experimental Station, Harpenden, through the courtesy of the Director, Sir John Russell, and by kind arrangement of Dr. B. A. Keen. During the morning parties visited the experimental plots and other outside activities of the Station. After lunch the Director gave a description of the work of the Station, which was followed by an inspection of the laboratories.

The Branch Committee had arranged an extended programme of activities for the session 1939-40. But for the war, this would have included lectures in October and November, 1939. However, as the lecturers for these two months were unable to keep their engagements, Dr. B. P. Dudding kindly agreed to introduce a discussion on " Statistics and Industrial Problems " ; this took place at a well attended meeting held on the 23rd November.

As usual, the social aspect has been well to the fore at all meetings, which have been very well supported.

HONORARY TREASURER'S REPORT

The financial position of the Institute continues to be very satisfactory, the surplus for 1939 being £189 15s. 3d. The income derived from

Members' subscriptions, sales of publications and advertisements in the *Journal* all show further advances.

The contribution made by the Physical Society towards adminstrative expenses was, by mutual agreement, suspended in September, soon after the outbreak of war.

The Life Membership Fund now stands at £2,302 8s. 0d. ; the amount received during the year was only £10 10s. 0d. greater than that transferred to the Reserve Fund in respect of deceased members.

BENEVOLENT FUND

The sum of £68 5s. 0d. was received from subscriptions and donations and £20 10s. 3d. from bank interest and interest on investments.

A donation of £25 was made to a special fund raised on behalf of the widow of a distinguished foreign physicist.

THE INSTITUTE OF PHYSICS

INCOME AND EXPENDITURE ACCOUNT for the year ended 31st December, 1939

1938 £	1938 £		£ s. d.	£ s. d.
	285	*Stock of Publications.* 1st Jan., 1939		308 0 8
		Office Expenses—		
134		Heating, Lighting and Cleaning .	152 8 7	
37		Depreciation of Furniture, Fixtures and Office Equipment . .	26 15 9	
—	171			179 4 4
		Journal Expenses—		
1,346		Printing and Binding . . .	1,303 17 0	
84		Honoraria for Special Articles .	78 15 0	
58		Reprints and Laboratory Notes .	29 0 7	
208		Despatching and Publishing . .	230 11 1	
10		Income Tax	107 12 0	
—	1,706			1,749 15 8
	194	*"Magnetism"—Publishing Expenses*		- - -
		General Expenses—		
1,518		Salaries, Wages and National Insurance	1,447 17 1	
109		Staff Superannuation . . .	114 2 1	
43		Travelling Expenses . . .	31 15 5	
178		Printing and Stationery . . .	161 14 5	
122		Postage and Telephone . . .	111 1 7	
90		Expenses of Branches . . .	91 14 0	
11		Subscription to Parliamentary Science Committee . . .	10 10 0	
39		Propaganda and Publicity . .	24 13 1	
39		Laboratory Arts Examinations .	25 19 0	
66		List of Members	50 0 0	
14		Summer School	- - -	
82		Miscellaneous Expenses . . .	121 9 3	
—		Conference at Leeds . . .	43 18 7	
—		Re-decoration of Rooms . . .	23 15 7	
—	2,311			2,258 10 1
	65	Balance, being Income in excess of Expenditure, transferred to Reserve Fund		189 15 3
	£4,732			£4,685 6 0

1938 £	1938 £		£ s. d.	£ s. d.
	308	*Stock of Publications.* 31st Dec., 1939		209 8 11
		Payment towards Administration Expenses—		
	605	The Physical Society . . .		423 0 0
		Members' Subscriptions—		
1,358		Institute of Physics . . .	1,474 13 9	
44		*Journal* (at Special Members' rates)	42 18 6	
—	1,402			1,517 12 3
	17	*Fees for Certificates in Laboratory Arts*		15 0 0
	1,428	*Sales of Publications*		1,516 11 7
	881	*Advertisements in Journal* . . .		918 9 8
		Dividends and Interest . . .	143 1 3	
		Less Income Tax and Corporation Duty	57 17 8	
	91			85 3 7
	£4,732			£4,685 6 0

BALANCE SHEET

31st December, 1939

LIABILITIES

	£ s. d.	£ s. d.
Life Membership Fund—		
As on 31st December, 1938 . .	2,291 18 0	
Add amounts received, 1939 . .	94 10 0	
	2,386 8 0	
Less transfer to Reserve Fund in respect of deceased Members .	84 0 0	2,302 8 0
Reserve Fund—		
As on 31st December, 1938 . .	1,638 13 9	
Add Entrance Fees received, 1939 .	119 6 0	
Add transfer from Life Membership Fund	84 0 0	
Add Balance of Income and Expenditure Account, 1939 .	189 15 3	2,031 15 0
Sundry Creditors		690 10 4
Amounts received in Advance—		
Members' Subscriptions . . .	39 4 7	
Subscriptions to *Journal* . . .	366 19 3	406 3 10
		£5,430 17 2

ASSETS

	£ s. d.	£ s. d.
Furniture, Fixtures and Office Equipment—		
As on 31st December, 1938 . .	107 2 9	
Less Depreciation	26 15 9	80 7 0
Investments—		
£2,200 3½% War Loan . . .	2,202 15 0	
£100 London Transport 5% "B" Stock	118 1 0	
£120 Great Indian Peninsular Railway 4% Debenture Stock .	123 8 9	
£500 Great Western Railway 4% Debenture Stock . . .	561 5 6	
£500 4% Consolidated Stock . .	550 14 6	
£400 Commonwealth of Australia 3½% Stock	390 1 0	3,946 5 9
[*Total Market Value on 31st December, 1939 : £3,623*]		
Stock of Publications		209 8 11
Sundry Debtors		344 10 0
Payments made in advance . . .		110 12 10
Subscriptions due		32 0 6
Cash at Bank : Current Account . .	695 0 9	
Deposit Account . .	9 19 9	705 0 6
Cash in Hand		2 11 8
		£5,430 17 2

We have audited the above Balance Sheet and have obtained all the information and explanations we have required. We have verified the Bank balances and the investments. In our opinion such Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Institute's affairs according to the best of our information and the explanations given to us and as shown by the books of the Institute.

Spencer House, South Place, London, E.C. 2.
1st May, 1940.

KNOX, CROPPER & CO., *Chartered Accountants.*

BENEVOLENT FUND

INCOME AND EXPENDITURE ACCOUNT for the year ended 31st December, 1939

	£ s. d.		£ s. d.
Grant made during year	25 0 0	Subscriptions and donations received	68 5 0
Balance carried to Capital Account	63 15 3	Interest	20 10 3
	£88 15 3		£88 15 3

CAPITAL ACCOUNT

	£ s. d.		£ s. d.
Balance carried down	606 13 0	Balance brought down from 1938	542 17 9
		Transfer from Income and Expenditure Account	63 15 3
	£606 13 0		£606 13 0

BALANCE SHEET, 31st December, 1939

LIABILITIES	£ s. d.	ASSETS	£ s. d.	£ s. d.
Capital Account	606 13 0	*Investments (at cost)*—		
		£350 3½% War Loan	350 8 9	
		£50 East Indian Railway Company 3½% Debenture Stock	47 3 0	
				397 11 9
		[*Total Market Value on 31st December, 1939 : £365*]		
		Inland Revenue : Income Tax to be reclaimed		9 3
		Institute of Physics General Account— Amount due to Benevolent Fund		9 12 1
		Cash at Bank : Current Account	1 13 5	
		Deposit Account	197 6 6	
				198 19 11
	£606 13 0			£606 13 0

We have audited the above Balance Sheet and have obtained all the information and explanations we have required. We have verified the Bank balances and the investments. In our opinion such Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Fund according to the best of our information and the explanations given to us and as shown by the books of the Fund.

Spencer House, South Place, London, E.C. 2.
1st May, 1940.

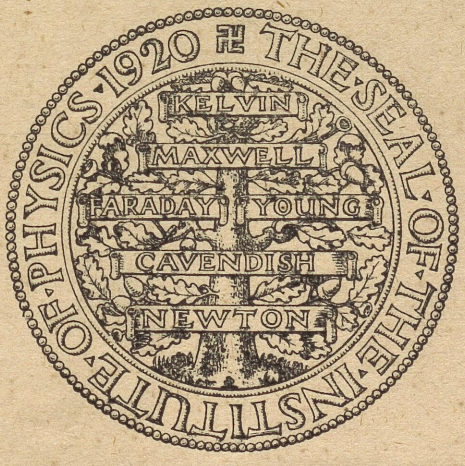
KNOX, CROPPER & CO., *Chartered Accountants.*

THE

INSTITUTE OF PHYSICS

INCORPORATED 1920

TWENTY-FIRST ANNUAL REPORT OF THE BOARD, 1940



Temporary Address :

THE UNIVERSITY, READING, BERKSHIRE

OFFICERS AND MEMBERS OF THE BOARD

1940 - 1941

President :

PROF. SIR LAWRENCE BRAGG, Kt., O.B.E., M.A., Sc.D., F.Inst.P., F.R.S.

Past President :

C. C. PATERSON, O.B.E., D.Sc., M.I.E.E., M.Inst.C.E., F.Inst.P.

Vice-Presidents :

PROF. A. FERGUSON, M.A., D.Sc., F.Inst.P.
B. A. KEEN, D.Sc., F.Inst.P., F.R.S.
PROF. W. MAKOWER, O.B.E., M.A., D.Sc., F.Inst.P.
T. SMITH, M.A., F.Inst.P., F.R.S.

Honorary Treasurer :

MAJOR C. E. S. PHILLIPS, O.B.E., F.R.S.E., F.Inst.P.

Honorary Secretary :

PROF. J. A. CROWTHER, M.A., Sc.D., F.Inst.P.

Ordinary Members of the Board :

PROF. J. CHADWICK, M.Sc., Ph.D., F.Inst.P., F.R.S.
PROF. J. D. COCKCROFT, M.A., Ph.D., M.Sc.Tech., A.M.I.E.E., F.Inst.P., F.R.S.
D. C. GALL, F.Inst.P.
H. LOWERY, M.Ed., D.Sc., Ph.D., F.Inst.P.
PROF. E. A. OWEN, M.A., Sc.D., D.Sc., F.Inst.P.
C. SYKES, Ph.D., D.Sc., F.Inst.P.
E. B. WEDMORE, C.B.E., M.I.E.E., F.Inst.P.
R. S. WHIPPLE, M.I.E.E., F.Inst.P.

Chairmen of Branches in Great Britain :

London and Home Counties Branch : E. R. DAVIES, B.Sc., F.Inst.P.
Manchester and District Branch : F. C. TOY, D.Sc., F.Inst.P.
Midland Branch : PROF. M. L. E. OLIPHANT, B.Sc., Ph.D., F.Inst.P., F.R.S.

Nominated by Participating Societies :

British Institute of Radiology . .	W. E. SCHALL, B.Sc., F.Inst.P.
Faraday Society	R. W. LUNT, M.Sc. (Eng), M.Sc., Ph.D., F.Inst.P.
Physical Society	J. H. AWBERY, B.A., B.Sc., F.Inst.P. PROF. G. I. FINCH, M.B.E., D.Sc., F.Inst.P., F.R.S.
Royal Meteorological Society . .	R. S. READ, M.A., B.Sc., A.R.C.S., F.Inst.P.

Secretary : H. R. LANG, B.Sc., Ph.D., A.R.C.S., D.I.C., F.Inst.P.

Principal Assistant (on military service) : C. R. O'DAY

Registered Office of the Institute :
1 Lowther Gardens, Exhibition Road, London, S.W. 7

Emergency Address : The University, Reading, Berks.

Honorary Solicitors : FARRER & CO.,
66 Lincoln's Inn Fields, London, W.C. 2

Auditors : KNOX, CROPPER & CO., *Chartered Accountants*,
Spencer House, South Place, London, E.C. 2

THE INSTITUTE OF PHYSICS

REPORT OF THE BOARD FOR THE YEAR 1940

THE Board presents the Twenty-first Annual Report on the work of the Institute during the year 1940.

THE BOARD AND COMMITTEES

The present Board took office on the 1st October, 1940, and met on the 13th November when various matters of policy were discussed. Owing to the continued uncertainties of the times the Board re-appointed the President, Honorary Treasurer and the Honorary Secretary as an Emergency Committee to exercise on its behalf, subject to certain safeguards, all powers normally residing in the Board and its Committees.

Membership and Examinations Committee : Chairman, Mr. E. R. Davies.

Benevolent Fund Committee : Chairman, Major C. E. S. Phillips.

THE ROLL OF THE INSTITUTE

	Changes during 1940							Total at Dec. 31, 1940
	New	Transfers to	Re-signed	Deceased	Removed	Transfers from	Net Increase or Decrease	
Honorary Fellows ...	—	—	—	2	—	—	— 2	5
Fellows	9	12	4	7	3	—	+ 7	567
Associates	34	29	—	3	5	12	+43	474
Subscribers	5	—	1	—	2	—	+ 2	49
Students	88	—	4	2	12	29	+41	268
Totals	136	41	9	14	22	41	+91	1,363

The progress of the Institute during the past ten years is shown in the table below:

1931	675	1934	753	1937	1,013	1940	1,363
1932	695	1935	822	1938	1,169		
1933	765	1936	902	1939	1,272		

The Membership and Examinations Committee has scrutinised 93 applications for Fellowship or Associateship of which 16 were rejected and decisions on 6 were deferred for further information.

OBITUARY

The Board records with regret the deaths of:

Honorary Fellows : Sir Oliver Lodge, Sir J. J. Thomson. *Fellows :* Professor A. Fowler (Founder Fellow), Dr. W. E. Grimshaw, Sir

Robert Hadfield (Founder Fellow), The Rt. Hon. Sir Henry Norman (Founder Fellow), Professor G. Owen (Founder Fellow), Mr. B. D. Porritt, Professor H. Stroud (Founder Fellow). *Associates :* Mr. K. J. Milne, Dr. F. C. Poultney, Professor Y. Venkataramaiah. *Students :* Mr. F. Johnson Dix, Mr. P. Ingelby.

ANNUAL GENERAL MEETING

The Annual General Meeting was held at the University of Reading (by kind permission of the Council of the University) on the 5th of June.

CO-OPERATION OF THE INSTITUTE WITH OTHER ORGANISATIONS

The Institute has been represented on various outside bodies as follows:

Professor J. A. Crowther (*Honorary Secretary*) on the National Committee for Physics.

Mr. V. Stott (*Fellow*) on the British Standards Institution's Committee for the Standardisation of Scientific Glassware.

Mr. T. Smith (*Vice-President*) on the British Standards Institution's Committee for the Standardisation of Letter Symbols.

Parliamentary and Scientific Committee

An invitation to become a constituent body of the re-formed Parliamentary and Scientific Committee was accepted and it was agreed to pay an annual subscription of ten guineas to the Committee. This newly formed Committee is continuing the work of the Parliamentary Science Committee of which the Institute was a constituent body.

Professor J. A. Crowther (*Honorary Secretary*) was appointed to represent the Institute on the Executive of the Parliamentary and Scientific Committee, and Dr. H. Lowery (*Ordinary Member of the Board*) and Professor W. Makower (*Vice-President*) to serve on the General Committee.

The British Rheologists' Club

The Institute assisted the inauguration and establishment of " The British Rheologists' Club " under the Presidency of Professor G. I. Taylor, placing its office facilities at the disposal of the Organising Committee. The objects for which the Club is established are the advancement and diffusion of a knowledge of pure and applied rheology (the science of the deformation and flow of matter). The Inaugural Meeting took place in November, and by the end of the year the Club had over 80 members.

Physical Society's Colour Group

The Board accepted an invitation from the Physical Society's Colour Group to become a Founder Society of the Group. Members of the Institute who are not already Members of the Physical Society are entitled to join the Colour Group at a reduced fee.

The American Institute of Physics

On the occasion of the Conference on Applied Nuclear Physics held in the autumn under the auspices of the American Institute of Physics, cables of greetings were exchanged between the two Institutes.

A letter has been received from the Director of the American Institute offering any help in their power in the difficulties in which the Institute of Physics might be involved owing to the war, and the Board wishes to place on record its sincere appreciation of this generous offer and of the sympathetic terms in which it was made.

At the request of the American Institute our Institute has agreed to report to America losses of American publications in transit to the leading scientific and University libraries in this country in order that the American Institute can make arrangements to ensure that at least some copies of each of its issues may be made available to scientists in this country.

The Institute has placed at the disposal of the American Institute the information in its possession regarding the employment of physicists in war work in this country.

The Board would express its deep satisfaction at the very cordial relations which exist between the American Institute of Physics and ourselves.

Other Bodies

An invitation to co-operate with certain other bodies for the discussion of the professional status of scientists was not accepted as the Board was of the opinion that the times were not opportune for such discussions.

LIBRARY FACILITIES

The facilities provided by the joint library of the Institute and the Physical Society and by the Science Museum Library continued to be utilised by Members and Students.

The Board records its thanks to authors, publishers and others who have made presentations to the Institute's library.

PUBLICITY AND PROPAGANDA

Owing to the exigencies of the times publicity in both the lay and technical press has been necessarily curtailed, but some of the Special Articles in the *Journal of Scientific Instruments* have received very considerable notice.

Posters and circulars calling the attention of students to the advantages offered by membership of the Institute were distributed to Universities and Colleges, and produced a gratifying response.

CONFERENCE ON X-RAY ANALYSIS IN INDUSTRY

A Conference on industral applications of X-Ray Crystallography was planned for October but had to be cancelled owing to the difficulties of holding meetings in London at that time.

To facilitate the interchange of information between experts which had been the main aim of the proposed Conference the Board agreed to devote one or two numbers of the *Journal of Scientific Instruments* to a series of reviews dealing with the application of X-ray analysis to the study of industrial problems. Should it be found possible to arrange a Conference at a later date this collection of papers will form a valuable basis for discussion.

TRAINING IN INDUSTRIAL PHYSICS FOR STUDENTS DURING VACATIONS

Five years ago the Institute of Physics arranged a scheme whereby students were enabled to gain first-hand experience of industrial research and development work in applied physics, by spending a portion of their summer vacation in suitable works or laboratories. In each succeeding year several students registered with the Institute have availed themselves of these facilities, and enquiries received in the spring of 1940 showed that there was a demand for the continuation of the scheme in war-time. Although some of the firms and other organisations which normally would have supported the scheme were unable to do so on this occasion, fourteen firms, two government establishments and three research associations kindly offered training facilities under the scheme. There was an increase in the number of students availing themselves of the facilities offered, and it is learned that in some instances the introduction has led to permanent appointments.

LABORATORY ARTS CERTIFICATES AND THEIR HOLDERS

Owing to the employment of most of the possible students on urgent war work the classes in Laboratory Arts have been either much curtailed or suspended. One Certificate in Laboratory Arts was awarded during the year and one candidate was examined in some of its sections at the South East London Technical Institute, Lewisham. Professor J. A. Crowther (*Honorary Secretary*) and Dr. H. Lowery (*Ordinary Member of the Board*) kindly acted as honorary assessors.

A number of requests for laboratory assistants was circulated to such holders of the Certificate as were likely to be interested.

THE INSTITUTE AND THE WAR

Throughout the year there has been a steady stream of enquiries from Members on professional matters. Most of these related to various forms of National Service and to the operation of the Armed Forces Act. A circular letter summarising the position of physicists under the Act was sent to all Members in January, and there is evidence that it was much appreciated. The Officers of the Institute have continued to keep themselves informed of the current position so as to be able to give enquirers the most up-to-date information available. They would express to the various Ministries concerned their thanks for the courtesy with which their enquiries have invariably been met.

The continued increase in the Roll of Membership, even in war-time indicates a growing appreciation amongst physicists generally of the

value of becoming members of their professional body. The results of the voluntary and compulsory registration of physicists indicates that the Institute probably includes within its membership at least two-thirds of those who are entitled to become Members under our present regulations.

The demand for trained physicists for work of National importance both in Government Departments, in industry, and as technical experts with the Armed Forces continues to be urgent, and the supply is not adequate to the demand. The Institute has placed at the disposal of the Ministry of Labour and National Service all the information at its command. The Ministry of Labour and National Service is fully appreciative of the importance of physics in the war effort and is taking all possible steps to ensure that the flow of trained physicists through the Universities and Technical Institutes shall be maintained. As far as Members of British origin are concerned the Board is of opinion that their services are being used to good advantage. The Board has given special consideration to a few refugee and other physicists of non-British origin who are numbered amongst the Members of the Institute, but owing to the restriction of employment of such people has only found it possible to render very limited assistance.

Some complaints regarding salaries offered or paid have been received during the year, and certain representations have been made with satisfactory results.

The Board wishes to acknowledge the zeal and loyalty with which the Secretary, Dr. Lang, and his Assistant, Miss Neale, the two remaining members of our permanent staff, have carried out their duties under the harrassing conditions of war-time.

TECHNICAL ENQUIRIES

In order to assist Members and others who in the present emergency find themselves presented with technical problems in applied physics of which they have not had previous first-hand experience, the facilities of the Institute's panel of Consultants have been extended and enquirers have been put into touch with those Members most likely to be able to offer immediate practical suggestions in any particular case. In the first instance the contact is quite informal ; subsequent arrangements are a matter for private agreement between those concerned. Attention was directed to these facilities through the medium of the technical press.

The Board desires to express its thanks to Fellows who have kindly assisted the Secretary to reply to various enquiries.

APPOINTMENTS REGISTER

One hundred and forty-nine vacancies for physicists were notified to the Institute during the year as compared with two hundred and four in the previous year. Several candidates were successful in obtaining posts through the medium of the Appointments Register, some of which were not advertised vacancies.

As usual in June the list of post-graduate Students who are Members or Students of the Institute, and who had been personally recommended

by their Professor or the Director of the laboratories in which they were working, was circularised to prospective employers ; this again met with most satisfactory results.

Particulars of vacancies for senior physicists have been sent to Professors of Physics, who have again kindly notified any Members of the Institute among their old students that they have considered specially suitable and likely to be interested.

LIST OF MEMBERS

The List of Members which would normally have been issued in 1940 was prepared for publication early in 1941. In view of war-time restrictions it was decided to omit the addresses and occupations of Members from the list. Communications addressed to Members c/o The Institute of Physics will always be forwarded.

JOURNAL OF SCIENTIFIC INSTRUMENTS

During the year 31 papers and 10 laboratory notes were submitted, and of these 29 papers and 7 notes were accepted for publication. This shows a marked decline compared with normal times and is accounted for by the confidential nature of the work upon which most prospective authors are now engaged. The Board desires to express its thanks to those who have acted as referees of these papers and notes. Dr. C. J. Overbeck contributed to the January issue a valuable survey of recent American advances in apparatus and in the technique of experimental physics. Eight other specially invited articles by leading authorities dealing with recent advances in instrument design or some special branch of applied physics were published.

In order to conserve paper supplies without unduly reducing the subject matter, two-column printing with smaller type was adopted during the year. The 1940 volume consisted of the usual twelve monthly parts and ran to 290 pages compared with the normal 436 pages of the peace-time volumes.

The circulation of the *Journal* showed little variation from that of the previous year. The decrease in circulation resulting from the loss of subscribers in enemy occupied territories being largely offset by new subscriptions and by copies distributed to newly elected Members of the Institute.

At the request of the National Savings Committee, advertising space was placed at the Committee's disposal free of charge.

ACTIVITIES OF THE BRANCHES

Australia. President: Professor T. H. Laby ; Vice-President: Professor Kerr Grant ; Honorary Secretary and Treasurer: Professor A. D. Ross.

The Committee of the Branch has dealt with applications for membership from Australian and New Zealand candidates and has forwarded them with appropriate recommendations for consideration by the Board.

Despite war conditions the membership of the Australian Branch has continued to increase. The roll at 31st December contained the names

of 50 Fellows (including 7 in New Zealand), 26 Associates, 6 Subscribers and 25 Students, a total of 107.

A large number of the Members are engaged on special scientific work in connexion with the war effort, and the Commonwealth authorities have expressed their appreciation of the value of the Register of Australian Physicists compiled by the Branch in 1939.

It was found inadvisable to proceed with arrangements for the twelfth General Meeting of the Branch which was to have been held in Adelaide in August.

Divisions of the Australian Branch have been formed with headquarters in Sydney (Chairman: Professor V. A. Bailey ; Honorary Secretary: Dr. R. E. B. Makinson): Melbourne (Chairman: Professor T. H. Laby ; Honorary Secretary: Assoc.-Professor E. O. Hercus): and Perth (Chairman: Mr. W. C. Parkinson ; Honorary Secretary: Dr. S. E. Williams). Each Division has held meetings for the reading of papers and discussions.

India. Chairman: Sir C. V. Raman ; Honorary Secretary: Professor H. P. Waran.

The Indian Committee has dealt with applications for membership, and these were forwarded with appropriate recommendations for consideration by the Board.

Manchester and District Branch. Chairman: Dr. F. C. Toy ; Honorary Secretary: Dr. W. H. Taylor.

The Annual General Meeting of the Branch was held on the 15th March. After the completion of the business Professor Willis Jackson lectured on " Mechanisms of Electrical Breakdowns in Solid Dielectrics."

Owing to the war no autumn meetings were arranged.

Midland Branch. Chairman: Professor M. L. E. Oliphant ; Honorary Secretary: Dr. T. L. Ibbs.

It was not found possible to hold the usual meetings, owing to war conditions and the pre-occupation of members with work of urgent National importance.

London and Home Counties Branch. Chairman: Mr. E. R. Davies ; Honorary Secretary: Dr. H. Lowery.

In spite of war-time difficulties a record number of meetings of the Branch (seven) was held during the year.

The Annual General Meeting took place on the 25th January at the Royal Institution. At the conclusion of the business a lecture was given by Dr. H. Spencer Jones on " The Measurement of Time."

The meeting on the 15th February took the form of a discussion on " Physics in the Glass Industry," presided over by Professor W. E. S. Turner. Five papers were presented and these were followed by a number of informal communications.

A Joint Meeting with the London and South-Eastern Counties Section of the Institute of Chemistry was held on the 19th March when a lecture was given by Dr. D. A. Spencer on " Colour Photography."

On the 30th April, Professor N. F. Mott gave a lecture on " Oxidation of Metals and the Theory of Protective Films."

The Summer Meeting of the Branch was held on the 25th May at the South-West Essex Technical College. The visitors were welcomed by Alderman P. Astins, Chairman of the Governors ; Alderman J. Hewett, Vice-Chairman of the Essex Education Committee ; and Dr. B. E. Lawrence, Chief Education Officer. An address on " Modern Tendencies in Technical Education " was given by Principal H. Lowery. Opportunity was given for inspecting the buildings and equipment of this new College and after tea the visitors were entertained to a concert by some of the students. A few also attended the Students' Union Dance in the evening.

On the 26th October Dr. H. Lowery gave a paper on " The Education of Workers in Applied Physics."

On the 30th November Dr. S. Whitehead lectured on " Dielectrics and the Theory of Solid Structure."

Meetings have been remarkably well attended and there is evidence that physicists in London and the Home Counties are anxious to avail themselves of every opportunity of " getting together " in spite of war-time conditions. As usual, the social aspect has been well to the fore at all meetings, and discussions have been particularly free and helpful.

Thanks are due to Messrs. Kodak, Ltd., and the British Electrical and Allied Industries Research Association for hospitality.

HONORARY TREASURER'S REPORT

The financial position of the Institute continues to be satisfactory, the balance of income in excess of expenditure being £379 9s. 5d. This is to some extent explained by a considerable saving on office expenses owing partly to the very large reduction in staff and partly to much reduced office accommodation. These conditions will only persist for the duration of the war, and a considerable expansion will become necessary when the Institute is placed again on its normal peace-time basis. The increase in membership has also increased the amount collected in subscriptions by £91. The loss of sales of the *Journal* to countries now in enemy occupation has resulted in a decrease in sales of publications, and there has also been a falling off of the advertisement revenue in the *Journal*. On the other hand the decrease in the number of pages in the *Journal* has resulted in the saving of about £100 in printing. The Board has decided, in view of the satisfactory nature of the year's working and the uncertainty of the times, to write down the book value of the fixtures and office equipment to a nominal sum.

A bank account has been opened in Australia which is operated on behalf of the Board by the Officers of the Australian Branch. The subscriptions of Australian Members are paid directly into this account and the funds so accumulated are being held there for the present. An adjustment for the difference on the Australian exchange has been made in the present accounts.

BENEVOLENT FUND

The sum of £56 7s. 9d. was received from subscriptions and donations and £18 18s. 6d. from bank interest and interest on investments.

The donation made to a special fund raised on behalf of the widow of a distinguished foreign physicist was refunded as it was unfortunately impossible to secure her release from Germany before the outbreak of hostilities.

THE INSTITUTE OF PHYSICS

INCOME AND EXPENDITURE ACCOUNT for the year ended 31st December, 1940

1939 £		£ s. d.	£ s. d.
308	*Stock of Publications.* 1st January, 1940		209 8 11
	Office Expenses—		
152	Heating, Lighting and Cleaning	72 1 2	
27	Depreciation of Furniture, Fixtures and Office Equipment	141 17 10	
			213 19 0
	Journal Expenses—		
1,304	Printing and Binding	1,207 7 9	
29	Reprints and Laboratory Notes	14 12 2	
79	Honoraria for Special Articles	42 0 0	
230	Despatching and Publishing	227 19 7	
107	Income Tax	264 0 6	
			1,756 0 0
	General Expenses—		
1,448	Salaries, Wages and National Health Insurance	971 1 8	
114	Staff Superannuation	117 1 9	
32	Travelling Expenses	16 13 10	
162	Printing and Stationery	107 14 7	
111	Postage and Telephone	109 5 6	
92	Expenses of Branches	79 0 2	
10	Subscription to Parliamentary Science Committee	10 10 0	
25	Propaganda and Publicity	3 2 0	
26	Laboratory Arts Examination	- - -	
50	List of Members	42 16 6	
121	Miscellaneous Expenses	103 3 5	
44	Conference at Leeds	- - -	
24	Redecoration of Offices	- - -	
—	Difference on Australian Exchange	23 19 3	
			1,584 8 8
190	*Balance, being Income in excess of Expenditure, transferred to Reserve Fund*		379 9 5
£4,685			£4,143 6 0

1939 £		£ s. d.	£ s. d.
209	*Stock of Publications.* 31st Dec., 1940		300 14 0
	Payment towards Administration Expenses—		
423	The Physical Society		- - -
	Members' Subscriptions—		
1,475	Institute of Physics	1,566 5 1	
43	*Journal* (at Special Members' rates)	47 4 0	
			1,613 9 1
15	*Fees for Certificates in Laboratory Arts*		1 10 6
1,517	*Sales of Publications*		1,293 12 9
918	*Advertisements in Journal*		836 5 3
	Dividends and Interest	164 12 0	
85	*Less* Income Tax and Corporation Duty	66 17 7	
			97 14 5
£4,685			£4,143 6 0

BALANCE SHEET

31st December, 1940

LIABILITIES

	£ s. d.	£ s. d.
Life Membership Fund—		
As on 31st December, 1939	2,302 8 0	
Add Amounts received, 1940	52 10 0	
	2,354 18 0	
Less transfer to Reserve Fund in respect of deceased member	31 10 0	
		2,323 8 0
Reserve Fund—		
As on 31st December, 1939	2,031 15 0	
Add Entrance Fees received, 1940	67 11 0	
Add transfer from Life Membership Fund	31 10 0	
Add Balance of Income and Expenditure Account, 1940	379 9 5	
		2,510 5 5
Sundry Creditors		925 4 10
Amounts received in Advance—		
Members' Subscriptions	20 5 0	
Subscriptions to *Journal*	178 15 9	
		199 0 9
		£5,957 19 0

We have audited the above Balance Sheet and have obtained all the information and explanations we have required. We have verified the Bank balances and the investments. In our opinion such Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Institute's affairs according to the best of our information and the explanations given to us and as shown by the books of the Institute.

Spencer House, South Place, London, E.C. 2.
1st May, 1941.

KNOX, CROPPER & CO., *Chartered Accountants.*

ASSETS

	£ s. d.	£ s. d.
Furniture, Fittings and Office Equipment—		
As on 31st December, 1939	80 7 0	
Additions during the year	66 10 10	
	146 17 10	
Less Amount written off	141 17 10	
		5 0 0
Investments—		
£2,200 3½% War Loan	2,202 15 0	
£100 London Transport 5% "B" Stock	118 1 0	
£120 Great Indian Peninsular Railway 4% Debenture Stock	123 8 9	
£500 Great Western Railway 4% Debenture Stock	561 5 6	
£500 4% Consolidated Stock	550 14 6	
£400 Commonwealth of Australia 3½% Stock	390 1 0	
£500 3% Defence Bonds	500 0 0	
		4,446 5 9
[*Total Market Value on 31st December, 1940: £4,458 6s. 0d.*]		
Stock of Publications		300 14 0
Sundry Debtors		286 15 6
Payments made in Advance		161 15 10
Subscriptions due		25 12 2
Cash at Bank —		
Current Account	316 2 7	
Deposit Account	375 16 9	
Deposit Account—Australia	28 14 9	
		720 14 1
Cash in Hand		11 1 8
		£5,957 19 0

BENEVOLENT FUND

INCOME AND EXPENDITURE ACCOUNT for the year ended 31st December, 1940

	£ s. d.		£ s. d.
Balance carried to Capital Account	100 6 3	Subscriptions received	56 7 9
		Interest	18 18 6
		Grant made in 1939 returned	25 0 0
	£100 6 3		£100 6 3

BALANCE SHEET, 31st December, 1940

LIABILITIES	£ s. d.	£ s. d.	ASSETS	£ s. d.	£ s. d.
Capital Account—			*Investments (at cost)*—		
As on 31st December, 1939	606 13 0		£350 3½% War Loan	350 8 9	
Add Transfer from Income and Expenditure Account	100 6 3		£50 East India Railway Company 3½% Debenture Stock	47 3 0	
		706 19 3			397 11 9
			[*Total Market Value on 31st December, 1940 : £405*]		
			Inland Revenue : Income Tax to be reclaimed		1 3 5
			Institute of Physics General Account— Amount due to Benevolent Fund		11 17 9
			Cash at Bank : Current Account	94 1 4	
			Deposit Account	202 5 0	
					296 6 4
		£706 19 3			£706 19 3

We have audited the above Balance Sheet and have obtained all the information and explanations we have required. We have verified the Bank balances and the investments. In our opinion such Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Fund according to the best of our information and the explanations given to us and as shown by the books of the Fund.

Spencer House, South Place, London, E.C. 2.
1st May, 1941.

KNOX, CROPPER & CO., *Chartered Accountants.*

THE INSTITUTE OF PHYSICS
LONDON

HEAD OFFICE :
1 LOWTHER GARDENS
EXHIBITION ROAD
LONDON SW 7

INDIAN SECTION :
PRESIDENT:
SIR C. V. RAMAN F. R. S., N. L.
HONORARY SECRETARY:
H. P. WARAN D. SC. F. INST. P.
DIRECTOR OF TECHNOLOGY
TRIVANDRUM

Confidential.

28th February 1940.

Application for, Fellowship.

Name. Santilal Banerjee.

Age. 31.

Exemption Degree. D.Sc., in April 1939. University of Dacca.

Other Degree. A first class first in the M.Sc. in Physics with the University Gold Medal in 1931, University of Dacca.

Present appointment. Lecturer in Physics, Dacca University, 1937-38. Research Associate of the Indian Association for the cultivation of science in 1939.

Previous experience.

Research scholar in Physics of the Dacca University 1931- 33.

Papers, publications, etc.

Investigations on Magne-Crystallic Action Parts I, II, III & IV. and 2 other papers (1) The Magnetic Anisotropis of some organic crystals & (2) Magnetic properties of Aromatic molecules.

Proposer & Supporter. Prof. K.S. Krishnan, D.Sc., Prof. P.N. Ghose, D.Sc., & Dr.H. Rakshit, D.Sc.,

Other remarks.

H. P. Waran

Secretary.

To

Dr. K.S. Krishnan, D.Sc.,
Calcutta.

M. K. Nicholson
29/7/41.

THE INSTITUTE OF PHYSICS

INCORPORATED 1920

LIST OF MEMBERS, SUBSCRIBERS AND STUDENTS

JANUARY 1st, 1941



THE INSTITUTE OF PHYSICS

Emergency Address :

THE UNIVERSITY, READING, BERKS.

CHANGES OF ADDRESS, ETC.

Members are requested to inform the Secretary of any changes in their address, designation, or occupation in order that the Institute's Register may be kept up-to-date

War-time restrictions prevent the publication of the addresses and occupations of members.

THE INSTITUTE OF PHYSICS

INCORPORATED 1920

LIST OF MEMBERS, SUBSCRIBERS AND STUDENTS

JANUARY 1st, 1941

THE INSTITUTE OF PHYSICS

Emergency Address:

THE UNIVERSITY, READING, BERKS.

OFFICERS AND MEMBERS OF THE BOARD

1940 - 1941

President :

PROF. SIR LAWRENCE BRAGG, Kt., O.B.E., M.A., Sc.D., F.Inst.P., F.R.S.

Past President :

C. C. PATERSON, O.B.E., D.Sc., M.I.E.E., M.Inst.C.E., F.Inst.P.

Vice-Presidents :

PROF. A. FERGUSON, M.A., D.Sc., F.Inst.P.
B. A. KEEN, D.Sc., F.Inst.P., F.R.S.
PROF. W. MAKOWER, O.B.E., M.A., D.Sc., F.Inst.P.
T. SMITH, M.A., F.Inst.P., F.R.S.

Honorary Treasurer :

MAJOR C. E. S. PHILLIPS, O.B.E., F.R.S.E., F.Inst.P.

Honorary Secretary :

PROF. J. A. CROWTHER, M.A., Sc.D., F.Inst.P.

Ordinary Members of the Board :

PROF J. CHADWICK, M.Sc., Ph.D., F.Inst.P., F.R.S.
J. D. COCKCROFT, M.A., Ph.D., M. Sc. Tech., A. M. I. E. E., F.Inst.P., F.R.S.
D. C. GALL, F.Inst.P.
H. LOWERY, M.Ed., D.Sc., Ph.D., F.Inst.P.
PROF. E. A. OWEN, M.A., Sc.D., D.Sc., F.Inst.P.
C. SYKES, Ph.D., D.Sc., F.Inst.P.
E. B. WEDMORE, C.B.E., M.I.E.E., F.Inst.P.
R. S. WHIPPLE, M.I.E.E., F.Inst.P.

Chairmen of Branches in Great Britain :

London and Home Counties Branch : E. R. DAVIES, B.Sc., F.Inst.P.
Manchester and District Branch : F. C. TOY, D.Sc., F.Inst.P.
Midland Branch : PROF. M. L. E. OLIPHANT, B.Sc., Ph.D., F.Inst.P., F.R.S.

Nominated by Participating Societies :

British Institute of Radiology . .	W. E. SCHALL, B.Sc., F.Inst.P.
Faraday Society	R. W. LUNT, M.Sc. (Eng), M.Sc., Ph.D., F.Inst.P.
Physical Society	PROF. G. I. FINCH, M.B.E., D.Sc., F.Inst.P., F.R.S. J. H. AWBERY, B.A., B.Sc., F.Inst.P.
Royal Meteorological Society . .	R. S. READ, M.A., B.Sc., A.R.C.S., F.Inst.P.

Secretary : H. R. LANG, B.Sc., Ph.D., A.R.C.S., D.I.C., F.Inst.P.

Principal Assistant (on military service) : C. R. O'DAY

Registered Office of the Institute :
1 Lowther Gardens, Exhibition Road, London, S.W. 7

Emergency Address : The University, Reading, Berks.

Honorary Solicitors : FARRER & CO.,
66 Lincoln's Inn Fields, London, W.C. 2

Auditors : KNOX, CROPPER & CO., *Chartered Accountants*,
Spencer House, South Place, London, E.C. 2

PAST PRESIDENTS

(The names of those deceased are shown in italics)

Sir RICHARD T. GLAZEBROOK, K.C.B., K.C.V.O., M.A., Sc.D., Hon.F.Inst.P., F.R.S.	1920-21
Sir JOSEPH J. THOMPSON, O.M., Kt., M.A., Sc.D., D.Sc., LL.D., Ph.D., Hon.F.Inst.P., F.R.S.	1921-23
The Hon. Sir CHARLES A. PARSONS, O.M., K.C.B., M.A., D.Sc., LL.D., F.Inst.P., F.R.S.	1923-25
Sir WILLIAM H. BRAGG, O.M., K.B.E., M.A., Sc.D., D.Sc., D.C.L., LL.D., Hon. F.Inst.P., F.R.S.	1925-27
Sir FRANK W. DYSON, Kt., K.B.E., M.A., LL.D., D.Sc., Sc.D., Hon.F.Inst.P., F.R.S.	1927-29
W. H. ECCLES, D.Sc., A.R.C.S., F.Imp.Coll., M.I.E.E., F.Inst.P., F.R.S.	1929-31
The Lord RUTHERFORD OF NELSON, O.M., M.A., D.Sc., LL.D., Ph.D., Hon.F.Inst.P., F.R.S.	1931-33
Sir HENRY G. LYONS, Kt., D.Sc., Sc.D., F.Inst.P., F.R.S.	1933-35
Prof. ALFRED FOWLER, C.B.E., Sc.D., D.Sc., A.R.C.S., F.Imp.Coll., F.Inst.P., F.R.S.	1935-37
C. C. PATERSON, O.B.E., D.Sc., M.I.E.E., M.Inst.C.E., F.Inst.P.	1937-39

HONORARY OFFICERS OF BRANCHES

AUSTRALIAN BRANCH

President : Prof. T. H. LABY, F.Inst.P., F.R.S.

Vice-President : Prof. KERR GRANT, F.Inst.P.

Hon. Secretary and Treasurer : Prof. A. D. ROSS, F.Inst.P.,
The University of Western Australia,
Perth, Western Australia.

INDIAN BRANCH

President : Sir C. V. RAMAN, F.Inst.P., F.R.S.

Hon. Secretary : Dr. H. P. WARAN, F.Inst.P.,
The University of Travancore,
Glen View, Trivandrum, S. India.

LONDON AND HOME COUNTIES BRANCH

Chairman : Mr. E. R. DAVIES, F.Inst.P.

Hon. Secretary : Dr. H. LOWERY, F.Inst.P.,
South-West Essex Technical College,
Forest Road, Walthamstow, London, E. 17.

MANCHESTER AND DISTRICT BRANCH

Chairman : Dr. F. C. TOY, F.Inst.P.

Hon. Secretary : Dr. W. H. TAYLOR, F.Inst.P.,
College of Technology, Manchester.

MIDLAND BRANCH

Chairman : Prof. M. L. E. OLIPHANT, F.Inst.P., F.R.S.

Hon. Secretary : Dr. T. L. IBBS, F.Inst.P.,
The University, Edgbaston, Birmingham.

SUMMARY OF MEMBERSHIP

JANUARY 1ST, 1941

	Honorary Fellows	*Fellows*	*Associates*	*Subscribers*	*Students*	*Total*
Great Britain and Ireland:						
London and Home Counties Branch	4	311	226	26	155	722
Manchester and District Branch	—	65	77	5	39	186
Midland Branch	—	31	38	4	27	100
Scotland	—	14	15	—	6	35
Other districts	1	51	66	4	38	160
	5	472	422	39	265	1,203
Australian Branch	—	50	23	7	24	104
Indian Branch	—	28	24	—	2	54
Canada and U.S.A.	—	6	3	—	—	9
S. Africa and Egypt	—	11	4	—	4	19
Europe	—	1	2	—	—	3
Asia	—	3	1	—	1	5
	5	571	479	46	296	1,397

SIGNS AND ABBREVIATIONS

P. — President
P.P. — Past-President
V.P. — Vice-President
H.S. — Hon. Secretary
H.T. — Hon. Treasurer
* — Founder Fellow
† — Life Member

Where two dates are given in the left hand column of the list of Honorary Fellows the first is the date of election to Fellowship and the second to Honorary Fellowship; in the list of Fellows the first is the date of election to Associateship and the second of transfer to Fellowship.

THE INSTITUTE OF PHYSICS

LIST OF MEMBERS

JANUARY 1ST, 1941

HONORARY FELLOWS

[HON.F.INST.P.]

Date of election		Served on Board
1920 } 1932 }	*BRAGG, Sir WILLIAM HENRY, O.M., K.B.E., M.A. (Cantab.), Sc.D. (Cantab.), D.Sc. (Birm., Brist., Dubl., Leeds, Lond., Manc., Oxon., Shef., Pa., Wales, Brown Univ. Rhode I.), D.C.L. (Dunelm), LL.D. (Edin., Glas., St. And.), F.R.S.	P.1925-27 P.P.1927-31
1936	EDDINGTON, Sir ARTHUR STANLEY, Kt., O.M., M.A. (Cantab.), D.Sc. (Brist., Dubl., Dunelm, Harvard, Leeds, Manc., Oxon., Witwatersrand, Allahabad, Benares), LL.D. (Edin.), D.L. (Calcutta), F.R.S., Hon. F.R.S.E.	
1929	FLEMING, Sir JOHN AMBROSE, Kt., M.A. (Cantab.), D.Sc. (Lond.), D.Eng. (Liv.), Hon. M.I.E.E., F.R.S.	
1929	JEANS, Sir JAMES HOPWOOD, Kt., O.M., M.A. (Cantab.), D.Sc. (Oxon., Manc., Benares), Sc.D. (Dubl.), LL.D. (Aberd., St. And., Johns Hopkins), D.L. (Calcutta), F.R.S.	
1920 } 1938 }	*SMITH, Sir FRANK EDWARD, G.B.E., K.C.B., A.R.C.S., D.Sc. (Oxon., Shef.), LL.D. (Birm., Aberd.), Hon. M.Inst.C.E., F.Imp.Coll., F.R.S.	1921-25

FELLOWS

[F.INST.P.]

1936	ABLETT, Richard, M.Sc.(Liv.).	
1921	*ABRAM, Harold Helling, M.Sc. (Manc.).	
1927	ADDENBROOKE, George Leonard, M.I.E.E.	
1923 } 1928 }	ADDERLEY, Squadron Leader Albert John, R.A.F., B.Sc. (Lond.), A.R.C.S., D.I.C.	
1935	AHMAD, Nazir, O.B.E., M.Sc., Ph.D. (Cantab.).	
1938	ALDINGTON, John Norman, B.Sc. (Lond.), A.I.C.	
1920	*ALLEN, Prof. Herbert Stanley, M.A. (Cantab), D.Sc. (Lond.), F.R.S.	1920-21 V.P.1932-35
1927	ALTY, Prof. Thomas, D.Sc. (Liv.), Ph.D. (Cantab.).	
1920	*ANDERSON, John Spence, M.A., D.Sc. (Glas.), Ph.D. (Göttingen).	1927-31 V.P.1931-34
1920	*ANDRADE, Prof. Edward Neville da Costa, D.Sc. (Lond.), Ph.D. (Heidelb.), F.R.S.	1925-29
1929	ANDREWS, James Peter, D.Sc. (Lond.).	
1930	ARCHER, Prof. Charles Thomas, M.Sc. (Lond.), A.R.C.S., D.I.C.	
1938	ASTBURY, Norman Frederick, M.A. (Cantab.).	

Date of election	FELLOWS	Served on Board
1923 | 1935	ASTBURY, William Thomas, M.A., Sc.D. (Cantab.), F.R.S.	1933-37
1931	†ATKINS, William Ringrose Gelston, O.B.E., Sc.D. (Dubl.), F.I.C., F.R.S.	
1930	AWBERY, James Henry, B.A. (Cantab.), B.Sc. (Lond.).	1939-
1934	AYRES, Prof. Thomas Lidyard Rosgyll, M.A., D.Phil. (Oxon.), M.Sc. (Manc.).	
1926	BAILEY, Prof. Victor Albert, M.A., D.Phil. (Oxon.).	
1920	*BAILLIE, Granville H.	
1921	*BAIRSTO, George Edward, D.Sc. (Lond.), D.Eng. (Liv.), M.I.E.E.	
1920	*BAKER, Frederick William Watson.	
1925	BAKER, Thomas Thorne, A.M.I.E.E.	
1920	*BAKER, Inst. Capt. Thomas Yeomans, R.N. (retd.), B.A. (Cantab.).	1920-22 1923-25 1926-27
1934	BALDES, Prof. Edward James, Ph.D. (Lond., Harvard).	
1926	BALDWIN, Joseph Mason, M.A., D.Sc. (Melb.).	
1925 | 1932	BANNER, Edgar Harold Walter, M.Sc. (Birm.), M.I.E.E.	
1939	BANNON, Joseph, B.Sc. (N.U.I.).	
1928 | 1938	BARBER, Donald Robert, B.Sc. (Lond.).	
1924 | 1927	BARKER, Sydney George, O.B.E., D.I.C.	
1920	*†BARLOW, Guy, D.Sc. (Birm., Lond., Wales).	
1929 | 1938	†BARLOW, Henry Septimus, M.Sc. (Manc.).	
1940	BARNARD, George Philip, B.Sc., Ph.D. (Lond.).	
1920	*BARNARD, Joseph Edwin, F.R.S.	1920-24
1929	BARNETT, Miles Aylmer Fulton, M.Sc. (New Z.), Ph.D. (Cantab.).	
1933	BARR, Guy, B.A. (Cantab.),D.Sc. (Lond.).	
1920	*BARRATT, Thomas, D.Sc. (Lond.), A.R.C.S.	
1938	BARTLETT, Albert Charles, Sc.D. (Cantab.), A.M.I.E.E.	
1920 | 1926	†BARTON, Frederick Sherbrooke, M.A. (Cantab.), B.Sc. (Lond.), A.M.I.E.E.	
1928	BASTINGS, Lyndon, B.A., D.Sc. (New Z.), M.Sc. (Cantab.).	
1935	BATE, Arthur Ernest, M.Sc., Ph.D. (Lond.).	
1924	BATES, Prof. Leslie Fleetwood, B.Sc. (Brist.), D.Sc. (Lond.), Ph.D. (Cantab.).	
1936	BEALE, Evelyn Stewart Lansdowne, M.A. (Cantab.).	
1920	*†BEATTY, Richard Thomas, M.A., B.E., D.Sc. (Belf.), B.A. (Cantab.).	
1921	*†BEDFORD, Thomas George, M.A. (Cantab.).	
1935	BEEVERS, Cecil Arnold, M.Sc. (Liv.).	
1924 | 1931	BENNETT, Maurice George, M.Sc. (Brist.).	1934-37
1920	*BERKELEY, Randal Thomas Mowbray, Earl of, F.R.S.	
1928	BHATNAGAR, Sir Shanti Swarupa, Kt., O.B.E., M.Sc. (Panjab), D.Sc. (Lond.).	
1931 | 1938	BIRD, William George, M.A. (Oxon.).	
1933	BLACK, Cecil Patrick, M.Sc., Ph.D. (Belf.).	
1936	BLACK, Donald Harrison, M.Sc. (New Z.), Ph.D. (Cantab.).	
1933	BLACKETT, Prof. Patrick Maynard Stuart, M.A. (Cantab.), F.R.S.	
1920	*†BLACKIE, Capt. Alfred (Jnr.), M.A. (Cantab.).	
1921 | 1927	†BLAKE, George Gascoigne, M.I.E.E.	
1936	†BLISS, Ernest William, M.A. (Cantab.), M.Sc. (Birm.).	
1939	BLOCH, Alfred, Dr. Ing. (Munich), M.Sc. (Dubl.).	
1921	*BOEX, George, B.Sc.(Lond.), A.M.I.E.E., Assoc.M.Inst.C.E.	

Date of election	FELLOWS	Served on Board
1922 | 1923	Bolsover, George Rowland.	
1927	Booth, Major Edgar Harold, D.Sc. (Sydney).	
1940	Bosworth, Richard Charles Leslie, Ph.D. (Cantab.), D.Sc. (Adel.).	
1920	*Boulding, Reginald Sidney Henry, O.B.E., B.Sc. (Lond.), A.C.G.I., D.I.C., M.I.E.E.	
1939	†Bowen, William.	
1920	*Boys, Sir Charles Vernon, Kt., LL.D. (Edin.), A.R.S.M., F.Imp.Coll., F.R.S.	
1928	†Bracey, Ronald John	
1920	*†Bragg, Sir William Lawrence, Kt., O.B.E., M.A. (Cantab.), Sc.D. (Dubl.), D.Sc. (Leeds), F.R.S.	1931-34 V.P.1934-38 P.1939-
1933	Brentano, John Christian Michael, D.Sc. (Munich).	
1934	Brett, George Fairburn, M.Sc., Ph.D. (Leeds).	
1928	†Briggs, George Henry, B.Sc. (Sydney), Ph.D. (Cantab.).	
1933	Brinkworth, James Hancock, D.Sc. (Lond.), A.R.C.S., D.I.C.	
1920	*Brodetsky, Prof. Selig, M.A. (Cantab.), B.Sc. (Lond.), Ph.D. (Leipzig.).	
1920	*†Brown, Sidney George, M.I.E.E., F.R.S.	
1920	*Browning, Helen Mary, M.Sc., Ph.D. (Lond.).	
1937	Bruckshaw, John McGarva, M.Sc. (Manc.), Ph.D. (Lond.), D.I.C.	
1937 | 1938	Bryan, Prof. Albert Eugene, B.Sc. (Lond.).	
1934	Bryan, George Blackford, O.B.E., B.A. (Cantab.), D.Sc. (Lond.), M.I.E.E.	
1920	*Bryson, Frederick Francis Smith, M.B.E., M.A. (Edin., Glas.), B.Sc. (Glas.).	
1927	Buckley, Harry Fawcett, D.Sc. (Manc.).	
1935	Buckley, Major James William, M.Sc. (Shef.).	
1933	Builder, Geoffrey, B.Sc. (Perth), Ph.D. (Lond.).	
1920	*Bull, Alfred Joseph, M.Sc. (Lond.).	
1935	†Burch, Cecil Reginald, B.A. (Cantab.).	
1924 | 1929	Burdon, Roy Stanley, D.Sc. (Adel.).	
1939	Burhop, Eric Henry Stoneley, B.A., M.Sc. (Melb.), Ph.D. (Cantab.).	
1920	*Butler-Burke, John Benjamin, M.A. (Cantab., Dubl.).	
1924 | 1929	Butterworth, Ernest, B.Sc., M.Sc.Tech. (Manc.).	
1920	*†Campbell, Norman Robert, Sc.D. (Cantab.).	1928-32
1935	Cantelo, Herbert Reginald, M.Sc. (Lond.), A.I.C., A.M.I.E.E.	
1934	Carpenter, Leavett George, B.A., B.Sc. (Oxon.).	
1935	Carruthers, James Norman, M.Sc. (Leeds), D.Sc. (Lond.).	
1937	Cassie, Alexander Morris, M.A., B.Sc. (Edin.).	
1936	Cassie, Arnold Blatchford David, M.A. (Cantab., Edin.), Ph.D. (Lond.), D.Sc. (Edin.).	
1936	Chadwick, Prof. James, M.Sc. (Manc.), Ph.D. (Cantab.), D.Sc. (Reading), F.R.S.	1937-
1938	Chalmers, Bruce, B.Sc., Ph.D. (Lond.).	
1924 | 1929	Charnley, Frank, B.Sc. (Manc.).	
1934	Cherry, Richard Ormond, M.Sc. (Melb.).	
1921	Cheshire, Ralph Waldo, B.A. (Cantab.).	
1930 | 1933	Chilton, Leonard Vincent, M.A. (Cantab.).	
1920	*Christie, John, M.A. (Cantab.).	
1923 | 1927	†Clark, Leslie Hermann Septimus, M.Sc., Ph.D. (Lond.).	

Date of election	FELLOWS	Served on Board
1939	CLARK, William Jasper, M.Sc., Ph.D. (Dunelm.).	
1921	†CLARKE, Joseph Ryle, M.Sc. (Shef.).	
1920	*CLAY, Reginald Stanley, B.A. (Cantab.), D.Sc. (Lond.).	1920-23 1924-30 V.P.1930-33
1933	COCKCROFT, Prof. John Douglas, M.A., Ph.D. (Cantab.), M.Sc.Tech. (Manc.), A.M.I.E.E., F.R.S.	1938-
1930	COHEN, Capt. Bertram Sydney, O.B.E., M.I.E.E.	
1920	*†COKER, Prof. Ernest George, M.A. (Cantab.), D.Sc. (Edin., Sydney), M.Sc. (McGill), M.Inst.C.E., M.I.Mech.E., F.R.S.	
1929	†CONSTABLE, Frederick Hurn, M.A., Sc.D. (Cantab.), D.Sc. (Lond.), Ph.D. (Cantab., Lond.), F.I.C.	
1931 1938	COOPER, Bertram Samuel, B.Sc. (Lond.).	
1935 1938	COOPER, Maurice Algernon, M.Sc., Ph.D. (South Africa).	
1920	*COSTE, John Henry, F.I.C.	
1920	*†COURSEY, Philip Ray, B.Sc. (Lond.), M.I.E.E.	
1924 1929	COUTTS, John Reginald Horder, M.Sc. (Lond.).	
1932	COUTTS, William Barron, M.A., B.Sc. (Edin.).	
1935	COX, Ernest Gordon, D.Sc. (Brist.).	
1927 1940	CRAVEN, Ernest Cecil, B.Sc. (Lond.), F.I.C.	
1922	CROW, Alwyn Douglas, C.B.E., M.A., Sc.D. (Cantab.).	
1920	*†CROWTHER, Prof. James Arnold, M.A., Sc.D. (Cantab).	1930- H.S.1932-
1920 1925	CROXSON, Charles, B.Sc. (Manc.).	
1934	CURTIS, Prof. William Edward, D.Sc. (Lond.), A.R.C.S., D.I.C., F.R.S.	
1920	*CUTHBERTSON, Clive, O.B.E., B.A. (Oxon.), F.R.S.	
1934 1939	†DARBYSHIRE, James Albert, M.Sc., Ph.D. (Manc.), D.I.C.	
1920	*DARLING, Charles Robert, F.I.C.	
1926	DASANNACHARYA, Prof. Balebail, M.A. (Madras), Dr.Phil. (Munich).	
1938	DASSANAYAKE, Don Tudor Ernest, B.Sc., Ph.D. (Lond.), D.I.C.	
1928	DAVEY, Prof. Wheeler P., Ph.D. (Cornell).	
1920	*DAVIES, Benjamin, A.M.I.E.E.	
1928 1933	DAVIES, Edward Roy, B.Sc. (Lond.).	1937-
1934	DAVIES, Rhisiart Morgan, D.Sc. (Wales).	
1937	DAVIS, Neville Ryland, M.A. (Cantab.), A.M.I.E.E.	
1936 1940	DAVISON, Donald William, B.Sc., Ph.D. (Birm.).	
1923	DAYNES, Harold Ashley, D.Sc. (Birm.).	
1928	†DENHAM, Humphrey John, M.A., D.Sc. (Oxon.).	
1933	DEODHAR, Dhundiraj Bhaskar, M.Sc. (Allahabad), Ph.D. (Lond.).	
1934	DEODHAR, Ganesh Bhaskar, M.Sc. (Allahabad), Ph.D. (Lond.).	
1931	DE WAELE, Armand, F.I.C.	
1933	†DOBSON, Gordon Miller Bourne, M.A. (Cantab.), D.Sc. (Oxon), F.R.S.	
1935 1940	DOCK, Eric Henry, M.Sc. (Lond.), A.R.C.S., D.I.C.	
1920	*DOWLING, Prof. John Joseph, M.A. (N.U.I.).	
1920	*DOWSETT, Harry Melville, M.I.E.E.	
1920	*DRYSDALE, Charles Vickery, C.B., O.B.E., D.Sc. (Lond.), F.Imp.Coll., F.C.G.I., M.I.E.E.	1924-25 V.P.1932-36
1921	DUDDING, Bernard Phineas, M.B.E., Ph.D.(Shef.), A.R.C.S.	

Date of election	FELLOWS	Served on Board
1936	DUNBAR, Robert Taylor, M.A., Ph.D. (Edin.).	
1920	*†DUNSHEATH, Prof. Percy, O.B.E., M.A. (Cantab.), D.Sc. (Lond.), M.I.E.E., Assoc.M.Inst.C.E.	
1920	*DURACK, Capt. Jeremiah Joseph, M.A. (Cantab.).	
1920	*†ECCLES, William Henry, D.Sc. (Lond.), A.R.C.S., F.Imp.Coll., M.I.E.E., F.R.S.	1920-21 V.P.1921-25 P.1929-31 P.P.1931-35
1931	EDDY, Cecil Ernest, D.Sc. (Melb.).	
1920	*EDGCUMBE, Lt.-Col. Kenelm William Edward, M.I.E.E., M.Inst.C.E.	1936-40
1933	EGERTON, Prof. Alfred Charles Glyn, M.A. (Oxon.), B.Sc. (Lond.), F.I.C., Sec.R.S.	
1927	ENGLISH, Solomon, D.Sc. (Shef.), F.I.C.	
1921 1939	ESSERMAN, Norman Abraham, B.Sc. (Sydney).	
1921	*EUMORFOPOULOS, Nicholas, B.Sc. (Lond.).	
1931	EVANS, Colonel Cecil Hugh Silvester, O.B.E., M.I.E.E., A.M.I.Mech.E.	
1920	*EVERITT, Philip Francis, B.Sc. (Lond.).	
1920	*†EWAN, Thomas, M.Sc. (Vict.), Ph.D. (Munich), F.I.C.	
1930 1932	FAIRBROTHER, Jack Alfred Viveash, B.Sc. (Lond.), Ph.D. (Reading).	
1937 1939	FAIRLEY, Thomas, M.Sc., Ph.D. (Shef.).	
1930	FARR, Prof. Clinton Coleridge, D.Sc. (Adel.), F.R.S.	
1930 1933	FEREDAY, Reginald Albert, B.Sc., Ph.D. (Lond.).	
1928	FERGUSON, Prof. Allan, M.A. (Wales), D.Sc. (Lond.).	1928-32 1934-38 V.P.1939-
1933	FINCH, Prof. George Ingle, M.B.E., D.Tech.Chem. (Zürich), D.Sc. (Brussels), F.R.S.	1940-
1930	FINCHAM, Edgar Frank.	
1920 1937	FINCHAM, Walter Henry Angel.	
1933	FISHENDEN, Margaret, D.Sc. (Manc.).	
1920	FISHER, Ernest Arthur, M.A., B.Sc. (Oxon.), D.Sc. (Lond.), F.I.C.	
1933	FLEMING, Arthur Percy Morris, C.B.E., D.Eng. (Liv.), M.Sc.Tech. (Manc.), M.I.E.E., M.I.Mech.E.,	1935-39
1936	FOCKEN, Charles Melbourne, B.Sc., B.M.E. (Melb.), D.Phil. (Oxon.), M.S. (Colorado).	
1932 1935	FOLLETT, David Henry, M.A. (Oxon.).	
1940	FORREST, John Samuel, B.Sc., M.A. (Glas.), A.M.I.E.E.	
1920	*FORTESCUE, Prof. Cecil Lewis, O.B.E., M.A., M.I.E.E., M.Inst.C.E.	1921-25 V.P.1925-28 1928-32
1920	*†FOSTER, Charles Edwin.	
1923 1931	FOSTER, George Alfred Rea, B.A. (Cantab.).	
1930 1937	FOWLER, Norman Russell, A.R.C.S., D.I.C.	
1934	FOWLER, Prof. Ralph Howard, O.B.E., M.A. (Cantab.), F.R.S.	
1920 1925	FOXWELL, Geoffrey Edwin, D.Sc. (Lond.).	
1932 1938	FRANCIS, Victor James, B.Sc. (Lond.), A.R.C.S., A.M.I.E.E.	
1937	FRASER, Ronald George Juta, B.Sc., Ph.D. (Aberd.).	
1920	*FREETH, Francis Arthur, O.B.E., D.Sc. (Liv.), Ph.D. (Leiden), F.I.C., F.R.S.	

Date of election	FELLOWS	Served on Board
1938 | 1940	FREMLIN, John Heaver, M.A., Ph.D. (Cantab.).	
1920	*FRENCH, Sir James Weir, Kt., D.Sc. (Glas.).	
1938	FRIEND, Ronald George, M.A. (Cantab.), B.Sc. (Lond.).	
1935	GAGE, Frederick Hillman, D.Sc. (Wales).	
1933	GALL, Douglas Crisp, A.M.I.E.E.	1937-
1926	GEORGE, William Herbert, M.Sc., Ph.D. (Lond.).	
1935	GERMAIN-JONES, Donald Thomas, B.Sc., Ph.D. (Lond.), A.R.C.S., D.I.C.	
1921	*GERRARD, Harold, M.Sc. (Manc.), A.M.I.E.E.	
1921	*GHOSH, Prof. Phanindra Nath, M.A., Ph.D., Sc.D. (Calcutta).	
1920 | 1925	†GIBBS, Reginald Edmund, D.Sc. (Lond.).	
1920	*GIBSON, William Howisson, O.B.E., D.Sc. (Lond.), F.I.C.	
1937	GILLIES, James Ford, B.E. (N.U.I.), B.Sc. (Eng.) (Lond.), Ph.D. (Belf.), A.R.C.Sc.I., A.M.I.E.E.	
1938	GODFREY, Gordon Hay, M.A., B.Sc. (Sydney).	
1939	GOGATE, Damodar Vinayak, M.Sc. (Lucknow), Ph.D. (Lond.).	
1936	GOODLET, Brian Laidlaw, M.A. (Cantab.), A.M.I.E.E., A.M.Inst.C.E.	
1926	GRANT, Prof. Kerr, M.Sc. (Melb.).	
1935	GREEN, Alfred Leonard, M.Sc., Ph.D. (Lond.), A.M.I.E.E.	
1925 | 1927	GREEN, Arnold Trevor, F.I.C.	
1927 | 1934	GREEN, Henry Lionel, M.A. (Cantab.).	
1940	GREGORY, James, B.Sc. (Manc.).	
1921	*GREGORY, Sir Richard Arman, Bart., D.Sc. (Leeds, Brist.), LL.D. (St. And.), F.R.S.	1923-26 V.P.1926-30 1930-34
1923 | 1929	†GREGSON, Arthur Leonard, B.Sc. (Lond.).	
1933	GRIFFITH, Idwal Owain, M.A. (Oxon.).	
1929	GRIFFITHS, Ezer, D.Sc. (Wales), F.R.S.	1929-31 1932-36
1929	GRIFFITHS, William Henry Frederick, A.M.I.E.E.	
1923 | 1927	GRIFFITHS, William Thomas, D.Sc. (Wales), F.I.C.	
1933 | 1936	GUELKE, Ronald Wilfrid, Ph.D. (Göttingen).	
1920	*GUILD, John, A.R.C.S., D.I.C.	1922-24
1921 | 1938	GUNSTONE, Arthur Charles.	
1921	*†HACKETT, Prof. Felix Edward Walsh, M.A., M.Sc. (N.U.I.), Ph.D. (Johns Hopkins).	
1921	*HAINES, William Burgess, D.Sc. (Lond.), D.I.C.	
1921	HALLOWES, Kenneth Alexander Knight, M.A. (Cantab.), A.R.S.M.	
1927	HAMPTON, Wilfred Marsh, B.Sc., Ph.D. (Lond.), A.I.C.	
1930 | 1934	†HANSTOCK, Raymond Ford, B.Sc., Ph.D. (Lond.).	
1930 | 1938	HAQUE, Mohammad Abdul, D.-ès-Sc. (Paris), A.M.I.E.E.	
1921	*HARLOW, Frederick James, M.B.E., B.Sc., Ph.D. (Lond.), A.R.C.S., D.I.C.	
1931	HARRIS, Prof. Daniel Thomas, D.Sc. (Lond.), M.D. (Manc.).	
1928 | 1934	HARRIS, Norman Leslie, B.Sc. (Lond.).	
1921	*HARRIS, Tom, B.Sc. (Lond.), A.R.C.S.	
1920	*HARRISON, Edward Philip, Ph.D. (Zürich).	
1938	HARRISON, George Ernest, B.Sc., Ph.D. (Birm.).	

Date of election	FELLOWS	Served on Board
1922 } 1926 }	HART, Morris Daniel, M.Sc., LL.B. (Lond.), Ph.D. (U.S.A.), A.C.G.I., D.I.C., M.I.E.E., A.I.Mech.E.	
1937	HARTREE, Prof. Douglas Rayner, M.A., Ph.D. (Cantab.), M.Sc. (Manc.), F.R.S.	
1933	HARVEY, Alexander, B.Sc., Ph.D. (Dunelm).	
1920	*HATFIELD, William Herbert, D.Met. (Shef.), M.I.Mech.E., F.R.S.	
1920	*†HATSCHEK, Emil.	1931-32 1936-40
1920	*HAUGHTON, John Leslie, D.Sc. (Birm.).	
1922	HAYES, Cecil, M.Sc. (Lond.).	
1938	HEALEY, Reginald Henry, D.Sc. (Sydney).	
1920	*†HEATH, George Andrew, A.M.I.Mech.E.	
1920	*HENDERSON, Sir James Blacklock, Kt., D.Sc., LL.D. (Glas.), M.I.E.E.	
1939	HENDERSON, Stanley Thomas, M.A., Ph.D. (Cantab.), B.Sc. (Lond.), F.I.C.	
1920	*HENRICI, Major Ernst Olaf, R.E. (retd.), A.M.I.E.E., Assoc.Inst.C.E.	1920-21 V.P.1921-22 1922-26
1939	HENRY, Philip Sidney Hillard, B.A., Ph.D. (Cantab.).	
1923 } 1929 }	HERCUS, Prof. Eric Oswald, M.Sc. (New Z.), D.Sc. (Melb.).	
1938 } 1940 }	HIGGS, Arthur John, B.Sc. (Sydney).	
1938	HILL, Arthur Sydney George, B.Sc. (Brist.).	
1921 } 1927 }	†HILL, Ernest George, M.Sc. (Brist.), Ph.D. (Lond.).	
1938	HIRST, Arthur Algernon, D.Sc. (Birm.).	
1936 } 1940 }	HOATHER, William Henry, M.Sc. (Lond.).	
1927	HODGKINSON, Thomas Gerald, M.I.E.E.	
1921	*HODGSON, Benjamin, O.B.E., B.Sc. (Dunelm), Ph.D. (Göttingen).	
1937 } 1940 }	HOGG, Arthur Robert, M.Sc. (Melb.).	
1936	HOLMES, John Guyscliffe, B.Sc. (Lond.), A.R.C.S., D.I.C.	
1920	*HOPWOOD, Prof. Frank Lloyd, M.A. (Cantab.), B.Sc. (Wales), D.Sc. (Lond.), A.R.C.S.	1926-30
1926	HOSKING, Richard, B.A. (Cantab.), D.Sc. (Melb.).	
1933	†HOUSTOUN, Robert Alexander, M.A., D.Sc. (Glas.), Ph.D. (Göttingen).	
1920 } 1924 }	HUGHES, Henry George, M.Sc. (Brist.), A.M.I.E.E.	
1920 } 1928 }	HUMPHRY, Ronald Henry, M.Sc. (Birm.).	
1921 } 1928 }	HUNT, Col. Frederick Richard William, M.A. (Cantab.).	
1920	*†HUNTER, James de Graaff, C.I.E., M.A., Sc.D. (Cantab.), F.R.S.	
1935 } 1939 }	HUNTER, James Shaw, B.Sc., Ph.D. (St. And.).	
1922	HURST, Harold Edwin, C.M.G., M.A., D.Sc. (Oxon.).	
1933	HUXLEY, Leonard George Holden, M.A., D.Phil. (Oxon.).	
1935 } 1937 }	IBALL, John, M.Sc., Ph.D. (Wales).	
1936	IBBS, Thomas Leonard, D.Sc., Ph.D. (Birm.).	
1937 } 1939 }	ILLINGWORTH, James William, M.Sc., Ph.D. (Manc.).	
1922 } 1929 }	INGALL, Douglas Heber, D.Sc. (Birm.), F.I.C.	
1920	*IONIDES, Alexander George, B.A. (Cantab.), M.I.E.E.	
1932	†IRONS, Eric John, B.Sc., Ph.D. (Lond.).	

Date of election	FELLOWS	Served on Board
1929 } 1936 }	JACKSON, Prof. Willis, D.Sc. (Manc.), D.Phil. (Oxon.), A.M.I.E.E.	
1933	JAMES, Reginald William, M.A. (Cantab.), B.Sc. (Lond.).	
1930	JAMESON, Harold, D.Sc. (Dunelm).	
1939	JATKAR, Shankar Khando Kulkarni, D.Sc. (Bombay), F.I.C.	
1935	JAY, Alfred Hartley, M.Sc., Ph.D. (Manc.).	
1927 } 1940 }	JENKINS, Henry Grainger, M.Sc. (Belf.).	
1930 } 1935 }	JESSEL, Ralph, B.Sc., Ph.D. (Lond.), A.R.C.S., D.I.C.	
1922 } 1924 }	†JEVONS, Wilfred, D.Sc., Ph.D. (Lond.).	
1920	*JOHNS, Cosmo.	
1920	*JONES, Prof. Edward Taylor, D.Sc. (Lond., Wales).	
1940	JONES, Frank Llewellyn, M.A., D.Phil. (Oxon.).	
1940	JONES, Ifor Ceredig, M.Sc. (Wales).	
1920 } 1923 }	JONES, John Jenkin Ashton, M.Sc. (Wales).	
1936 } 1938 }	JONES, Reginald Victor, M.A., D.Phil. (Oxon.).	
1920	*JONES, Prof. William Jacob, M.Sc. (Wales), D.Sc. (Manc.), F.I.C.	
1923	†JONES, William Morris, M.A. (Cantab.), M.Sc. (Wales).	
1939	KANNULUIK, Walter George, D.Sc. (Melb.).	
1938	KANTOROWICZ, Otto Paul Theodor, Dr.Phil. (Berlin).	
1934	†KAPITZA, Prof. Peter, D.Sc. (Acad. Sci. Russia), Ph.D. (Cantab.), F.R.S.	
1920	KAYE, George William Clarkson, O.B.E., M.A. (Cantab.), D.Sc. (Lond.), A.R.C.S., F.R.S.	1921-25 V.P.1935-39
1920	*KEEN, Bernard Augustus, D.Sc. (Lond.), F.R.S.	1933-36 V.P.1940-
1920	*KEENE, Horace Borton, D.Sc. (Birm.).	
1920 } 1935 }	†KERSHAW, Cecil, M.I.Mech.E.	
1938	KNIGHT, Henry de Boyne, B.Sc. (Manc.), M.I.E.E.	
1938	KOHL, Fritz, M.D. (Freiburg).	
1938	KREIELSHEIMER, Kurt, Dr.-Ing. (Darmstadt).	
1933	†KRISHNAN, Kariamanikkam Srinivasa, D.Sc. (Madras), F.R.S.	
1922	LABY, Prof. Thomas Howell, M.A. (Cantab., Melb.), ScD. (Cantab.), F.R.S.	
1923	LANDER, Prof. Cecil Howard, C.B.E., D.Sc. (Manc.), M.Inst.C.E., M.I.Mech.E.	
1927 } 1930 }	†LANG, Herbert Raphael, B.Sc., Ph.D. (Lond.), A.R.C.S., D.I.C.	
1927 } 1932 }	LANGLEY, Lieut.-Com. Alfred John Godwin, R.N., B.Sc. (McGill).	
1922	LATTEY, Robert Tabor, M.A., B.Sc. (Oxon.).	
1937	LAWS, Bernard Courtney, D.Sc. (Lond.), Dr.-ès-Sc. (Paris), A.R.C.S.	
1921	*†LAWSON, Robert William, D.Sc. (Dunelm).	
1931 } 1937 }	LAY, Arthur William.	
1939	LEE, Horace William, B.A. (Cantab.).	
1920	*†LEES, Prof. Charles Herbert, D.Sc. (Manc.), F.R.S.	1920-21 V.P.1921-23
1931 } 1937 }	†LETHERSICH, William, B.Sc. (Lond.).	
1936	LEVIN, Nyman, B.Sc., Ph.D. (Lond.), A.R.C.S., D.I.C.	
1921 } 1928 }	†LEWIS, Joseph Watson, M.Sc. (Manc.).	
1921	*LEWIS, Prof. William Cudmore McCullagh, M.A. (Belf.), D.Sc. (Liv.), F.R.S.	
1932	LEYSHON, Winifred Agnes, B.Sc., Ph.D. (Lond.).	

Date of election	FELLOWS	Served on Board
1933	LITTLER, Thomas Simm, M.Sc., Ph.D. (Manc.).	
1923 1926	†LONSDALE, Thomas Jackson, M.Sc., Ph.D. (Lond.).	
1938	LOTHIAN, Gordon Frederick, M.A. (Oxon.).	
1923 1927	LOWERY, Harry, M.Ed. (Leeds), M.Sc., Ph.D. (Lond.), D.Sc. (Manc.).	1939-
1937	LUNT, Robert Winstanley, M.Sc., M.Sc. (Eng.), Ph.D. (Liv.).	1940-
1939	LUSBY, Sydney Gordon, B.A. (Cantab.), M.A. (Sydney).	
1920	*LYONS, Sir Henry George, Kt., Col. R.E. (retd.), D.Sc. (Oxon.), Sc.D. (Dubl.), F.R.S.	1931-33 P.1933-35 P.P.1935-39
1924	*†MCAULAY, Prof. Alexander Leicester, M.A. (Cantab.), B.Sc. (Tasmania), Ph.D. (Manc.).	
1920	*†MCCANCE, Andrew, D.Sc. (Lond.), A.R.S.M.	
1933	MCHENRY, Prof. John Joseph, M.A. (Cantab.), D.Sc. (N.U.I.).	
1931 1935	MACEY, Horace Harrison, M.Sc. (Lond.), A.R.C.S., D.I.C.	
1921 1930	MACNAUGHTAN, Duncan James.	
1930 1936	MADDOCK, Alan Julian, M.Sc. (Liv.).	
1933	MADGWICK, Prof. Edwin, M.Sc. (Dunelm), Ph.D. (Cantab.).	
1936	MADSEN, Prof. John Percival Vissing, B.E., B.Sc. (Sydney), D.Sc. (Adel.).	
1932 1937	MAHAJAN, Prof. Lachman Dass, M.Sc., Ph.D. (Panjab).	
1940	MAHANTI, Purnachandra, D.Sc. (Calcutta).	
1920	*MAIN, Sidney Arthur, D.Sc. (N.U.I.), B.Sc. (Lond.).	
1922 1934	MAINSTONE, Percy Albert, M.Sc. (Brist.).	
1920	*MAKOWER, Prof. Walter, O.B.E., M.A. (Cantab.), D.Sc. (Lond.).	1926-30 V.P.1937-
1934	MALLETT, Edward, D.Sc. (Lond.), M.I.E.E., A.M.Inst.C.E.	
1937	MANDELL, Wilson, M.Sc. (Wales), Ph.D. (Lond.).	
1928 1932	†MARSH, Malcolm Charles, M.A. (Cantab.), Ph.D. (Lond.).	
1923	*MARSH, Sydney, D.Sc. (Wales), Ph.D. (Göttingen).	
1939	MARTIN, Leslie Harold, Ph.D. (Cantab.).	
1935	MARTYN, David Forbes, D.Sc., Ph.D. (Lond.), A.R.C.S.	
1921	*MARTYN, George Herbert, B.Sc. (Lond.), A.R.C.S.	
1922	MASON, Cecil Charles, O.B.E., M.A. (Cantab.).	
1932 1939	MATHUR, Kailash Nath, D.Sc. (Allahabad).	
1920	*MATTHEW, John Alexander, M.Sc. (Lond.), A.R.C.S.	
1940	MAXTED, Robert, B.E. (Elec.), B.E. (Mech.) (New Z.), A.M.I.E.E.	
1933	†MAYNEORD, Prof. William Valentine, D.Sc. (Birm.).	
1931	MENZIES, Prof. Alexander Charles George, M.A. (Cantab.), D.Sc. (Lond.).	
1920	*MERTON, Thomas Ralph, M.A., D.Sc. (Oxon.), F.R.S.	
1920	METCALFE, Edward Parr, D.Sc. (Lond.).	
1933 1937	†MILLER, John Thomas, B.Sc. (Lond.).	
1934	MILNE, Prof. Edward Arthur, M.B.E., M.A. (Cantab., Oxon.), M.Sc. (Manc.), D.Sc. (Amsterdam), F.R.S.	
1920	†MILNER, Prof. Samuel Roslington, D.Sc. (Lond., Brist.), F.R.S.	
1935	MITCHELL, John Henry, B.Sc., Ph.D. (Brist.), A.M.I.E.E.	
1923	MONYPENNY, John Henry Gill.	
1932	MOORE, Burrows, M.Sc.Tech., Ph.D. (Manc.), D.Sc. (Eng.) (Lond.), F.I.C., M.I.Chem.E.	
1920	*MOORE, Harold, C.B.E., D.Sc., Ph.D. (Lond.), F.I.C.	

Date of election	FELLOWS	Served on Board
1920	*Moore, Harry, D.Sc. (Lond.), A.R.C.S.	1933-37
1920	*Morrison, William Murray, M.I.E.E., M.Inst.C.E.	
1920	*†Morton, Prof. William Blair, M.A. (Belf., Cantab.), D.Sc. (Belf.).	
1920	*†Muir, Prof. James, M.A. (Cantab.), D.Sc. (Glas.).	
1939	Munro, George Hector, M.Sc. (New Z.), A.M.I.E.E.	
1939	Myers, David Milton, B.Sc., D.Sc. (Eng.) (Sydney), A.M.I.E.E.	
1932 / 1937	Narayanamurti, Duraiswami, B.Sc. (Mysore), M.Sc. (Bombay), Dr.Ing. (Danzig), A.I.C.	
1921 / 1928	†New, George Francis, B.Sc., Ph.D. (Lond.).	
1920	Newall, Prof. Hugh Frank, M.A. (Cantab.), D.Sc. (Dunelm), F.R.S.	
1920	*Newman, Prof. Frederick Henry, D.Sc. (Lond.), A.R.C.S., D.I.C.	
1938	Nimmo, Robert Rutherford, M.Sc. (New Z.), Ph.D. (Cantab.).	
1920	*Nottage, William Hockley, B.Sc. (Lond.), M.I.E.E.	
1933	Nuttall, John Mitchell, D.Sc. (Manc.).	
1938	Nye, James Alfred.	
1937	Ockelford, Charles William George.	
1933	Ockenden, Francis Edmund Jury, M.I.E.E.	
1936 / 1940	Oddie, Thomas Harold, M.Sc. (Melb.).	
1920	*Ogg, Prof. Alexander, M.A., B.Sc., LL.D. (Aberd.), D.Sc. (Cape Town), Ph.D. (Göttingen).	
1937	Oliphant, Prof. Marcus Laurence Elwin, B.Sc. (Adel.), Ph.D. (Cantab.), F.R.S.	1937-
1934 / 1938	Oliphant, William Douglas, B.Sc. (Edin.), A.M.I.E.E.	
1937	Oliver, Donald Arthur, B.Sc. (Eng.), M.Sc. (Lond.).	
1937	Orton, Leonard Herbert Humphrey, B.Sc. (Lond., Reading), Ph.D. (Reading).	
1920	*Owen, David, B.A. (Cantab.), D.Sc. (Lond.).	1924-28 1931-35 1936-40
1920	*Owen, Prof. Edwin Augustine, M.A., Sc.D. (Cantab.), M.Sc. (Wales), D.Sc. (Lond.).	1940-
1922	Owen, Morris, M.Sc. (Wales).	
1926	Paget, Sir Richard Arthur Surtees, Bart.	
1936	Paine, Prof. Henry Howard, M.A. (Cantab.), B.Sc. (Wales).	
1921 / 1924	†Palmer, Prof. Lionel Stanley, D.Sc., Ph.D. (Brist.), M.I.E.E.	
1924	†Paris, Edward Talbot, D.Sc. (Lond.).	
1938	Parker, Herbert Myers, M.Sc. (Manc.).	
1939	Parkinson, Wilfred Charles.	
1926	Parnell, Prof. Thomas, M.A. (Cantab.).	
1939	Parthasarathy, Sarangapani, D.Sc. (Bombay), F.I.C.	
1921	*Partridge, George Frederick, B.Sc. (Birm.).	
1921	*Paterson, Clifford Copland, O.B.E., D.Sc. (Birm.), M.I.E.E., M.I.Inst.C.E.	1920-21 V.P.1921-25 1928-32 P.1937-39 P.P.1939-
1937	Patrick, William Leonard, B.Sc., Ph.D. (Lond.), M.A. (Toronto), A.R.C.S., D.I.C., F.I.C.	
1925 / 1929	†Patterson, Prof. Arthur Lindo, M.Sc., Ph.D. (McGill).	
1920	*Paul, Robert William, M.I.E.E.	1923-27 V.P.1927-31
1933	Pearce, James George, M.Sc. (Birm.), M.I.E.E.	
1921	Peddle, Cyril James, M.B.E., D.Sc. (Shef.), F.I.C.	
1939	Peel, George Neville, M.Sc. (Dunelm), A.M.I.E.E.	

Date of election	FELLOWS	Served on Board
1921 1925	PEIRCE, Frederick Thomas, D.Sc. (Sydney).	
1933	†PELTON, Martin Oakley, M.Sc., Ph.D. (Lond.).	
1920	*PHILLIPS, Major Charles Edmund Stanley, O.B.E., F.R.S.E.	1920-24 H.T.1925-
1930	PHILLIPS, Walter Charles Stanley, B.Sc. (Birm.), M.I.E.E.	
1937	PHILPOT, Albert John, O.B.E., M.A. (Cantab.), B.Sc. (Lond.).	
1924 1931	†PICK, William Henry, B.Sc. (Lond.).	
1920	*PIPER, Stephen Harvey, D.Sc. (Lond.).	
1939	PIRANI, Marcello Stefani, Dr.Phil. (Berlin).	
1934	PLACE, William Illingworth, M.Sc. (Leeds), A.M.I.E.E.	
1920	*POLLARD, Prof. Alan Faraday Campbell, A.R.C.S., A.M.I.E.E.	
1925 1938	POLLITT, Charles Graham, B.A. (Cantab.).	
1921	PORTER, Harry Leonard, B.Sc. (Lond.).	
1935	POTTER, Harold Herbert, B.Sc. (Brist.), Ph.D. (Lond.).	
1921	*†POWELL, James Hugh, D.Sc. (Liv.).	
1940	PRESTON, Eric, D.Sc. (Birm.), Ph.D. (Shef.), F.I.C.	
1929 1934	PRESTON, John Silvey, M.A. (Cantab.), A.M.I.E.E.	
1938	PULLEY, Oliver Owen, B.Sc., B.E. (Sydney), Ph.D. (Lond.), A.M.I.E.E.	
1938	QUARRELL, Arthur George, B.Sc., Ph.D. (Lond.), A.R.C.S., D.I.C.	
1938	†RAKSHIT, Hrishikesh, D.Sc. (Calcutta).	
1924	RAMAN, Sir Chandrasekhara Venkata, Kt., M.A. (Madras), D.Sc. (Benares, Calcutta, Dacca, Madras, Paris), LL.D. (Glas., Bombay), Ph.D. (Freib.), F.R.S.	
1938	RAMA SWAMY, Prof. Subbarao, B.Sc. (Mysore), Ph.D. (Lond.).	
1922	RANDS, Harry Casmey, B.Sc. (Lond.).	
1920	*RANKINE, Alexander Oliver, O.B.E., D.Sc. (Lond.), F.R.S.	1923-26 H.S.1926-32 1932-33 V.P.1933-37
1938	RAO, Akella Subba, M.A., M.Sc., D.Sc. (Madras).	
1933	RAO, Prof. Subbarao Ramachandra, M.A. (Madras), Ph.D. (Lond.).	
1927 1929	RAWLINS, Francis Ian Gregory, M.Sc. (Cantab.).	1932-36
1920	*†RAYLEIGH, Robert John Strutt, Baron, M.A. (Cantab.), Sc.D. (Dubl.), D.Sc. (Dunelm), LL.D. (Edin.), F.R.S.	
1920	*†RAYNER, Edwin Hartree, M.A., Sc.D. (Cantab.), M.I.E.E.	1920-23 V.P.1923-27 1927-31
1931 1937	RAYNER, Jack Maxwell, B.Sc. (Sydney).	
1921	*READ, Ralph Sidney, M.A. (Cantab.), B.Sc. (Lond), A.R.C.S.	1937-
1921	REILLY, Joseph, M.A. (Cantab., Dubl., N.U.I.), Sc.D. (Dubl.), D.Sc. (N.U.I.), D.-ès-Sc. (Geneva), F.I.C.	
1933	REIMANN, Arnold Luehrs, D.Sc. (Adel.), Ph.D. (Berlin).	
1921	*RHEINBERG, Julius.	
1923	RICHARDS, Reginald Charles, M.A. (Cantab.), M.Sc. (Lond.).	
1925	RICHARDSON, Harry, M.Sc. (Manc.).	
1920	*RICHARDSON, Lewis Fry, M.A. (Cantab.), D.Sc. (Lond.), F.R.S.	
1937	RIMMER, William Bolton, M.Sc. (Manc.), D.I.C.	
1938	ROBB, John Glover, A.M.I.E.E.	
1939	ROBERTS, John Eric, B.Sc., Ph.D. (Leeds).	
1923	ROBERTS, Joseph Harrison Thomson, D.Sc. (Liv.).	
1932	ROBINSON, Bernard Augustus, M.I.E.E., M.I.Mech.E.	

Date of election	FELLOWS	Served on Board
1931	†Robinson, Prof. Harold Roper, D.Sc. (Manc.), Ph.D. (Cantab.), F.R.S.	
1920	*Robinson, James, M.B.E., D.Sc., (Dunelm), Ph.D. (Göttingen), M.I.E.E.	
1938	Rodda, Sidney, B.Sc.	
1930	Rogers, James Stanley, B.A. (Melb.), M.Sc. (Cantab.).	
1931 1938	Rooksby, Harold Percy, B.Sc. (Lond.).	
1923	†Ross, Prof. Alexander David, M.A. (Glas.), B.Sc. (Lond), D.Sc. (Glas., Adel., Perth).	
1920	*Rotter, Godfrey, C.B., C.B.E., D.Sc., F.I.C.	
1921	†Rowell, Henry Snowden, O.B.E., D.Sc. (Lond.), A.R.C.S. M.I.Mech.E., Assoc.M.Inst.C.E.	
1936	Roy, Angus Smith, Ph.D. (St. And.).	
1926 1932	Rule, Pilot Officer William, R.A.F.V.R., M.Sc. (Dunelm).	
1920	*Russ, Prof. Sidney, C.B.E., D.Sc. (Lond.).	1921-22 1925-29
1920	*Russell, Alexander, M.A. (Cantab., Glas.), D.Sc., LL.D. (Glas.), Hon.M.I.E.E., F.R.S.	1924-28 V.P.1928-32
1938	Russell, Edward Walter, M.A., Ph.D. (Cantab.).	
1939	Ryde, John Walter.	
1939	Rymer, Thomas Bertram, M.A. (Cantab.), Ph.D. (Lond.).	
1921	*Saltmarsh, Maud Olive, B.A. (Cantab., Dubl.), Ph.D. (Lond.).	
1937	Samuel, Prof. Rudolf, Dr.Phil. (Göttingen).	
1929	Satterly, Prof. John, M.A. (Cantab.), D.Sc. (Lond.), A.R.C.S.	
1926 1938	Sayce, Eric Loxton, B.Sc. (Melb.).	
1926 1932	Sayce, Leonard Alfred, M.Sc., Ph.D. (Dunelm), F.I.C.	
1920	*Schall, William Edward, B.Sc. (Lond.).	1938-
1920	*Schofield, Herbert, M.B.E., B.Sc., Ph.D. (Lond.), A.R.C.S., D.I.C., M.I.Mech.E., Assoc.M.Inst.C.E.	
1931	Schofield, John, B.Sc. (Lond), A.R.C.S.	
1939	Schofield, Robert Kenworthy, M.A,, Ph.D. (Cantab.).	
1937	Scott, John Richard, M.Sc., Ph.D. (Leeds), F.I.C.	
1921	*†Scott-Taggart, John, M.I.E.E.	
1939	Scrase, Frederick John, M.A., Sc.D. (Cantab.).	
1938	Seddon, Eric, B.Sc., Ph.D. (Leeds).	
1932	Selwyn, Edward William Herbert, B.Sc. (Lond.), A.R.C.S., D.I.C.	
1939	Sharman, Charles Frederick, M.A., Ph.D. (Cantab.).	
1921	*Shaw, Herman, D.Sc. (Lond.), A.R.C.S., D.I.C.	
1927 1932	Shaw, James Ernest, M.Sc. (Belf.), M.I.E.E.	
1920	*Shaw, Sir William Napier, Kt., Sc.D. (Athens, Cantab., Dubl., Manc.), D.Sc. (Harvard), LL.D. (Aberd., Edin.), F.R.S.	1921-23 V.P.1923-26
1922	Shaxby, John Henry, D.Sc. (Lond.).	
1923	Shearer, George, M.A., D.Sc. (Edin.), Ph.D. (Cantab.).	1930-34
1938	Shearer, John, B.A., B.Sc. (Perth), M.Sc. (Melb.).	
1922 1932	†Sibree, John Oswald, B.Sc. (Lond.).	
1920	*†Simeon, Frederick, D.Sc. (Lond.).	
1920	*Simons, Lewis, D.Sc. (Lond.).	
1923	Simpson, Sir George Clarke, K.C.B., C.B.E., D.Sc. (Manc., Sydney), LL.D. (Aberd.), F.R.S.	
1934	Sinnatt, Frank Sturdy, C.B., M.B.E., M.Sc.Tech., D.Sc. (Manc.), F.I.C., F.R.S.	
1920	*Skinner, Sidney, M.A. (Cantab.).	
1921	*Smith, Benjamin Spalding, O.B.E., M.I.E.E.	
1937	Smith, Donald Murgatroyd, B.Sc. (Lond.), A.R.C.S., D.I.C.	

Date of election	FELLOWS	Served on Board
1920	*Smith, Prof. Samuel Walter Johnson, M.A. (Cantab.), M.Sc. (Birm.), D.Sc. (Lond.), A.R.C.S., F.R.S.	1937-38
1920	*Smith, Thomas, M.A. (Cantab.), F.R.S.	1920-21 V.P.1938-
1920	*Solomon, Maurice, F.C.G.I., M.I.E.E.	
1920	*†Speirs, Charles William, M.I.E.E.	
1938	Sproule, Donald Orr, M.Sc. (Alberta).	
1930	Stanbury, George Reginald, B.Sc. (Lond.), A.R.C.S.	
1920	*Starling, Sydney George, B.Sc. (Lond.), A.R.C.S	
1925	Stead, Gilbert, M.A. (Cantab.), D.Sc. (Lond.).	
1938	Stevens, Arthur Edwin, B.A. (Oxon.), B.Sc. (Wales).	
1930	Stevenson, Alexander Wight, D.Sc. (Edin.).	
1933	Stoner, Prof. Edmund Clifton, Sc.D. (Cantab.), F.R.S.	
1920	*Stott, Verney, B.A. (Cantab.).	
1920	*Strang, John Martin, D.Sc. (Glas.).	
1920	*Stratton, Prof. Frederick John Marrian, O.B.E., M.A. (Cantab.).	
1920 1927	Stubbins, George Wilfred, B.Sc. (Lond.), A.M.I.E.E.	
1923	†Sutton, Carlton, M.Sc. (Melb.).	
1923 1925	Sutton, Leonard Joseph, M.A. (Cantab.).	
1929	Swaine, William, B.Sc. (Manc.).	
1920	*Sykes, Albert Howarth, B.Sc. (Lond.), M.Sc. (Leeds).	
1935	Sykes, Charles, Ph.D., D.Sc. (Shef.).	1940-
1938	Symons, Albert Stanley Martin, B.Sc., Ph.D. (Lond.), A.R.C.S., D.I.C.	
1936	Tagg, George Frank, B.Sc., Ph.D. (Lond.), A.M.I.E.E.	
1922 1923	†Takamine, Prof. Toshio, D.Sc. (Tokyo).	
1921	*Tarrant, Arthur George, B.Sc. (Lond.), A.R.C.S.	
1934	Tattersall, Arthur Ewart, M.I.E.E.	
1939	Tawde, Nanasaheb Ramji, Ph.D. (Lond.), M.Sc., B.A. (Bombay).	
1938 1940	Taylor, Abraham, M.Sc., Ph.D. (Manc.).	
1937	Taylor, Henry George, M.Sc. (Eng.) (Lond.), D.I.C., A.M.I.E.E.	
1937	Taylor, William Hodge, D.Sc., Ph.D. (Manc.).	
1935	Telang, Prof. Ankola Venkat Rao, M.A. (Madras).	
1933	Temple, Prof. George Frederick James, D.Sc., Ph.D. (Lond.).	
1930 1936	Thomas, Alfred Morris, B.Sc. (Lond.).	
1938	Thomas, Bernard.	
1920	*Thomas, David Edward, M.A. (Cantab.), B.Sc. (Wales).	
1934 1939	Thomas, William Rheinallt, M.Sc., Ph.D. (Wales).	
1920	†Thomson, Andrew, M.A. (Toronto).	
1939	Thomson, John, M.A., D.Sc. (Glas.).	
1939	Tilleard, Dorothy Lilian, B.Sc. (Lond.).	
1920	*Tizard, Sir Henry Thomas, K.C.B., M.A. (Oxon.), F.R.S.	
1920	*Todd, George William, M.A. (Cantab.), M.Sc. (Dunelm), D.Sc. (Birm.).	
1920	Toy, Francis Carter, D.Sc. (Lond.).	1927-31 1937-
1934	Treloar, Leslie Ronald George, B.Sc., Ph.D. (Lond.).	
1921	Tucker, William Sansome, O.B.E., D.Sc. (Lond.), A.R.C.S., A.M.I.E.E.	
1927	Tunstall, Norman, B.Sc. (Manc.).	
1920	*Turner, William Ernest Stephen, O.B.E., M.Sc. (Birm.), D.Sc. (Lond.), F.R.S.	
1920	*Twyman, Frank, F.C.G.I., F.R.S.	1925-29 1930-33 V.P.1936-40

Date of election	FELLOWS	Served on Board
1927 1930	TYLER, Edward, D.Sc. (Birm.).	
1920	*†TYNDALL, Prof. Arthur Mannering, D.Sc. (Lond., Brist.), F.R.S.	1933-36
1930 1932	TYTE, Leonard Charles, B.Sc., Ph.D. (Lond.).	
1922	VAN DER LINGEN, Jan Stephanus, B.A. (Cape Town), Ph.D. (Johns Hopkins).	
1931 1934	VEDY, Louis George, M.A. (Cantab.), B.Sc. (Lond.).	
1932	VENKATESACHER, Prof. Bachahalli, M.A. (Madras).	
1938	VENKATESWARAN, Cadangode Subrahmania, M.A., D.Sc. (Madras.).	
1934	VERMAN, Lal Chand, M.Sc., Ph.D. (Cornell).	
1921 1934	VERNON, William Somerville, M.Sc. (New Z.).	
1933	VINYCOMB, Capt. Thomas Bernard, M.A. (N.U.I.).	
1927	VONWILLER, Prof. Oscar Ulrich, B.Sc. (Sydney).	
1922	WADE, Edward Bruce Herschel, M.A. (Cantab.).	
1933	WALDRAM, John Malyon, B.Sc. (Lond.), A.C.G.I.	
1934	WALLACE, Ernest Hanson.	
1933	†WALLER, Mary Désirée, B.Sc. (Lond.).	
1928	WALMSLEY, Horace Pearson, D.Sc. (Manc.).	
1922	WARAN, Harihar Parames, M.A., Ph.D. (Cantab.), D.Sc.	
1938	WARMISHAM, Arthur, M.Sc. (Manc.).	
1921 1923	†WARREN, Arthur, M.Sc. (Lond.).	
1921	WARREN, Arthur George, M.Sc. (Lond.), M.I.E.E.	
1938	WARREN, Geoffrey William, B.Sc. (Lond.).	
1939	WARREN, Henry William Hugh, M.I.E.E.	
1934 1938	WATSON, Harold Henry, B.Sc. (Reading).	
1921	*†WATT, Robert Alexander Watson, C.B., B.Sc. (Lond., St. And.), M.I.E.E.	1932-35
1936	WEALE, Alfred, M.Sc. (Liv.).	
1939 1939	WEARMOUTH, William Gardiner, B.Sc., Ph.D. (Dunelm).	
1935	WEBSTER, Hugh Colin, M.Sc. (Melb.), Ph.D. (Cantab.).	
1920	*WEDMORE, Edmund Basil, C.B.E., M.I.E.E.	1938-
1939	WEISSENBERG, Karl, Ph.D. (Jena).	
1921	*WEST, Gilbert Duncan, D.Sc (Lond.).	
1936	WEST, Prof. Joseph, D.Sc. (Manc.).	
1932	WHEELER, Thomas Sherlock, D.Sc. (N.U.I.), Ph.D. (Lond.), F.R.C.Sc.I., F.I.C., M.I.Chem.E.	
1920	*WHIDDINGTON, Prof. Richard, M.A. (Cantab.), D.Sc. (Lond.), F.R.S.	1936-40
1920	*WHIPPLE, Francis John Welsh, M.A., Sc.D. (Cantab.).	1930-34
1937	†WHIPPLE, George Allan, M.A. (Cantab.), A.M.I.E.E.	
1920	*†WHIPPLE, Robert Stewart, M.I.E.E.	1920-24 V.P.1925-28 1929-33 1934-38 1939-
1923 1928	WHITAKER, Alfred, M.A. (Cantab.), A.M.I.E.E.	
1938	WHITE, Cyril Spencer, B.Sc. (Lond.), A.M.I.E.E.	
1937	WHITE, Prof. Frederick William George, M.Sc. (New Z.), Ph.D. (Cantab.).	
1928 1934	WHITEHEAD, Stanley, M.A. (Oxon.), Ph.D. (Lond.), M.I.E.E.	
1920	*WILBERFORCE, Prof. Lionel Robert, M.A. (Cantab.).	
1939	WILLIAMS, Prof. Evan James, D.Sc. (Wales), Ph.D. (Cantab., Manc.), F.R.S.	

Date of election	FELLOWS	Served on Board
1929 | 1934	WILLIAMS, Thomas Clifford, M.Sc. (Wales).	
1936	WILLIAMS, William Ewart, M.Sc. (Manc.), D.Sc. (Lond.).	
1935 | 1938	WILLOTT, William Harford, B.Sc. (Lond.), Ph.D. (Wales).	
1937 | 1938	WILMAN, Harry, B.Sc., Ph.D. (Lond.), A.R.C.S., D.I.C.	
1920	*WILTSHIRE, William James, B.A. (Oxon.).	
1938	WINCH, Gordon Thomas, A.M.I.E.E.	
1930 | 1937	WINSON, Charles Gordon, B.Sc. (Lond.).	
1920	*†WOOD, Albert Beaumont, D.Sc. (Manc.).	1935-39
1920	*WOOD, Dudley Orson, M.Sc. (Lond.), A.R.C.S.	1932-35
1927 | 1939	†WOODMAN, Roland Marcus, M.Sc. (Leeds), Ph.D. (Cantab.), F.I.C.	
1936	WOODS, Henry John, B.A. (Oxon.).	
1940	WOOLLEY, Richard van der Riet, M.Sc. (Cape Town), Ph.D. (Cantab.).	
1932	WORSNOP, Bernard Lister, B.Sc., Ph.D. (Lond.).	1935-39
1920	*WRIGHT, Charles Seymour, C.B., O.B.E., M.A. (Cantab., Toronto).	
1922	YAMADA, Kogoro, D.Sc. (Tokyo).	
1935 | 1939	YATES, Edward Leighton, M.Sc., Ph.D. (Wales), Ph.D. (Cantab.).	
1920	*†YOUNG, Frank Bennett, O.B.E., B.A. (Lond.), D.Sc. (Brist.).	

ASSOCIATES

[A.INST.P.]

1939	ADAMS, David Eric, B.Sc., Ph.D. (Birm.).
1925	ADAMS, Thomas William.
1929	ADAMSON, James, M.Sc. (Manc.).
1933	ALLEN, James Kingsley, B.Sc. (Lond.), A.M.I.E.E.
1934	ALPER, Tikvah (Mrs. Max Sterne), M.A. (Cape Town).
1939	ASHDOWN, Geoffrey Lawrence, A.I.Br. (Brussels).
1932	ASHHURST, William, B.Sc., M.Sc.Tech. (Manc.).
1928	AVERY, John William, B.Sc. (Lond.), A.R.C.S., D.I.C.
1939	BAILEY, Gordon Lennox James, B.Sc., Ph.D. (Lond.), A.R.C.S., D.I.C.
1940	BAILEY, John Eric, B.Sc. (Sydney).
1937	BAIN, Flight Lieut. John Taylor, R.A.F.V.R., B.Sc., M.A. (St. And.).
1936	†BAINES, Gordon Owen, M.A., Ph.D. (St.And.).
1937	BAKER, Cecil, B.Sc. (Lond.).
1939	BAKER, Stanley Charles, M.Sc. (Sydney).
1921	BAKER, Wilfred Ernest Watson.
1937	BANKS, Thomas Eric, B.Sc. (Lond.), Ph.D. (Birm.).
1940	BANNISTER, Leslie James, B.Sc. (Leeds).
1936	BARNES, David Errington, B.Sc. (Leeds), A.M.I.E.E.
1935	BARNES, Raymond John, B.Sc. (Birm.), Ph.D. (Leeds).
1926	†BATHIJA, Prof. Menghraj Chorithram, M.A. (Cantab.).
1939	BAXTER, Samuel, M.Sc. (Manc.).
1939	BAYLEY, Frederick Harry, B.Sc. (Lond.).
1937	BEECHING, Richard, B.Sc., Ph.D. (Lond.), A.R.C.S., D.I.C.
1939	BELL, George Anketell, B.Sc. (Melb.).
1925	BELL, George Eric, M.Sc., Ph.D. (Lond.). 1934-38
1931	BELL, James, B.Sc. (Belf.).
1938	BERRY, John Kenneth, M.Sc. (Manc.).
1920	†BESSENT, Percy James Husband, B.Sc. (Lond.), A.R.C.S.
1938	BETTERIDGE, Walter, B.Sc., Ph.D. (Birm.).
1939	BHATT, Nautamlal Bhagwanlal, Sc.D. (Mass. Inst. Tech.).
1940	BHATTACHARYA, Girindra Nath, M.Sc. (Calcutta).
1923	BLACK, Robert Pearson, M.A. (Cantab., Glas.), B.Sc. (Glas.).

Date of election	
1931	BLAYLOCK, Arthur Forster, M.Sc. (Dunelm), A.M.I.E.E.
1926	†BOCKING, Irene Edith, M.Sc. (Birm.).
1934	†BOOHARIWALLA, Prof. Dady Barjorji, M.Sc. (Bombay), Ph.D. (Lond.).
1940	BOOT, Henry Albert Howard, B.Sc. (Birm.).
1940	BOOTH, Andrew Donald, B.Sc. (Lond.).
1933	BOR, Joseph, B.Sc., M.Sc.Tech. (Manc.).
1920	†BORTHWICK, Chrystabel Jean, B.Sc. (Brist., Lond.).
1926	BOWDEN, Frank Philip, D.Sc. (Tasmania), Ph.D. (Cantab.).
1939	BOWLEY, Alan Leslie, B.Sc. (Lond.).
1939	BOWMAN-MANIFOLD, Michael, M.A. (Cantab.).
1923	BRATT, Frederick George Cavell.
1923	†BROTHERTON, Manfred, B.Sc., Ph.D. (Lond.).
1920	BROWN, Frederick George William, M.Sc. (Lond.).
1937	BRUCE, Frederick Malloch, B.Sc., Ph.D. (Dunelm).
1938	BUCHANAN, Thomas Jamieson, M.A. (Glas.).
1939	BULL, Cabot Seaton, B.Sc. (Wales), M.Sc. (Lond.).
1921	BULLERWELL, John William, M.Sc. (Dunelm).
1928	CAIRNS, John Edwin Ingliston, M.Sc. (Perth).
1939	CALPINE, Hilton Cecil, B.A (Cantab.).
1935	CAMERON, Duncan, M.Sc., Ph.D. (Manc.).
1940	CARTER, Donald Walter, B.Sc. (Lond.).
1936	CATES, Julius, B.Sc. (Lond.), A.R.C.S., D.I.C.
1938	CHALLENS, Wallace John, B.Sc. (Lond.).
1939	CHAMBERLAIN, Noel Gordon, B.A. (Perth).
1940	CHANT, Cyril Dinham, M.Sc. (Lond.).
1920	CHATLEY, Herbert, D.Sc. (Lond.), M.Inst.C.E.
1924	†CHEETHAM, Arnold, M.Sc. (Birm.).
1939	CHESTERMAN, William Deryck, B.Sc. (Brist.).
1923	CHILDS, Charles Bernard, B.Sc., Ph.D. (Birm.).
1934	CLACK, Basil Noel, B.Sc. (Lond.).
1938	CLARK, Douglas Ernest, B.Sc., Ph.D. (Lond.).
1924	CLARKSON, William, M.Sc., Ph.D. (Dunelm).
1927	CLAY, Reginald Eustace, B.Sc. (Lond.), M.Sc. (Cantab.), A.R.C.S., D.I.C.
1939	CLAYTON, Robert James, B.A. (Cantab.).
1931	CLENSHAW, Walter John, B.Sc. (Lond.).
1934	CLEWS, Charles John Birkett, B.Sc., Ph.D. (Lond,).
1939	CLOTHIER, William Keith, B.Sc., B.E. (Sydney).
1936	COCKBURN, Robert, M.Sc. (Lond.).
1937	COCKETT, Alfred Horace, B.Sc. (Lond.).
1939	COLEBROOKE, Douglas George Trusler, B.Sc. (Lond.).
1937	COLES, Sidney Bertram, B.Sc., Ph.D. (Leeds).
1923	CONGDON, John Francis, B.Sc., Ph.D. (Lond.).
1939	CONNELL, Leslie James Cambridge, B.Sc. (Lond.).
1934	CONWAY, James Alfred, B.Sc. (Lond.), A.R.C.S., D.I.C.
1938	CONYBEARE, John Geoffrey Gough, B.Sc. (Lond.), M.Sc. (Brist.).
1940	COOK, Edwin Oswald, B.Sc. (Dunelm).
1939	COOK, Harold Frederick, B.Sc. (Lond.).
1937	†CORCORAN, Noel, B.Sc., M.Sc.Tech., B.A. (Manc.).
1938	CORTEEN, Harry, B.Sc. (Liv.).
1939	COSSLETT, Vernon Ellis, B.Sc., Ph.D. (Brist.).
1938	COTTON, Frank Temple, B.Sc. (Lond.).
1939	COWAN, Harold McNeill, M.Sc. (Belf.).
1940	COWHIG, William Thomas, B.Sc. (Wales).
1937	CRABTREE, Raymond William, B.Sc. (Tasmania).
1928	CRAWFORD, Brian Hewson, M.Sc. (Lond.).
1940	CRICK, Francis Harry Compton, B.Sc. (Lond.).
1934	CRONE, Hans Gordon, B.Sc. (Dunelm).
1940	CRONEY, Ronald George William, B.Sc. (Lond.).
1938	CROOKS, Donald Anderson, B.A. (Cantab.).
1935	CUNNOLD, Frank Allan, M.A., D.Phil. (Oxon.).
1938	CURRY, Colin, B.Sc. (Dunelm).

Date of election

ASSOCIATES

1923 CURRY, Philip Arthur, B.A. (Cantab.).
1939 DAKSHINAMURTI, Chirravuri, M.Sc. (Benares).
1921 DALLADAY, Arthur James.
1930 DAS, Mathura Mohan, B.Sc. (Birm.).
1938 DAS-GUPTA, Niraj Nath, M.Sc. (Calcutta), Ph.D. (Lond.).
1927 DATTA, Prof. Sushil Krishna, M.Sc. (Calcutta).
1934 DAVIES, Albert John, B.Sc. (Lond.).
1938 DAVIES, Charles Norman, B.Sc. (Lond.).
1939 DAVIES, Flight Lieut. David Arthur, M.Sc. (Wales).
1937 DAVIES, Flight Lieut. Isaac, M.Sc. (Wales).
1934 DAVIES, Reginald John, M.Sc. (Lond.).
1931 DAVIS, Ray, B.Sc. (Adel.), M.Sc. (Perth).
1938 †DAWTON, Ralph Herbert Vernon Mordaunt, B.Sc. (Lond.).
1930 DENFIELD, Sidney, B.Sc. (Lond.), A.R.C.S.
1920 DENNE, Mark Thomas, O.B.E.
1939 DHAR, Jagattaran, M.Sc. (Calcutta).
1937 DHARMATTI, Shrinivas Shridhar, M.Sc. (Bombay).
1924 †DICKS, Winifred Esther, M.Sc., Ph.D. (Lond.), A.I.C.
1925 DIGHT, Frederick Henry, B.Sc. (Brist.).
1937 DINSDALE, Allen, M.Sc. (Leeds).
1938 DODD, Cyril, B.Sc., Ph.D. (Lond.).
1935 DODDS, John Mathieson, M.A., B.Sc. (Aberd.), Dr.Ing. (Aachen).
1936 DOUGLAS, Ronald Walter, B.Sc. (Lond.).
1939 DRINKWATER, John William, B.Sc., Ph.D. (Lond.).
1934 DRUMMOND, David Gordon, M.Sc., Ph.D. (Dunelm).
1939 DUCE, Richard George, M.Sc. (Lond.).
1940 DUFFEY, John, B.Sc., Ph.D. (Leeds).
1938 DUNFORD, Arthur, B.A. (Cantab.).
1932 †EARP, Kathleen Frances, M.A. (Cantab.).
1939 †EDE, Allan John, B.Sc. (Lond.).
1933 EDLIN, Charles Harold, B.Sc. (Lond.).
1937 EDMUNDS, Ioan Gwilym, M.Sc., Ph.D. (Wales).
1927 EDWARDS, Thomas Iwan, M.Sc. (Wales).
1931 ELLIOT, John Kenneth, M.Sc. (Manc.).
1935 ELLIOTT, Edward Rae, B.Sc. (Dunelm).
1931 ELTENTON, George Charles, B.A. (Cantab.).
1936 EMMERSON, Thomas, B.Sc., Ph.D. (Leeds).
1940 ENGLAND, Thomas Sidney, B.Sc. (Dunelm).
1924 EVANS, Alfred Ernest, B.Sc. (Lond.).
1936 EYLES, Eric David, B.Sc. (Lond.).
1935 FALKNER, Hugh, B.Sc. (Lond.), M.Sc. (Wales).
1939 FARROR, Charles Lewis, B.Sc. (Lond.), A.R.C.S.
1938 FISHER, Dorothy Gertrude, B.Sc. (Lond.).
1940 FISHER, Ivan Kenneth, B.Sc. (Lond.).
1940 FLETCHER, Wilfrid Percy, B.Sc. (Lond.).
1930 †FLOWER, William Denis, B.Sc. (Brist.).
1937 FLOYD, William Frederic, B.Sc. (Lond.).
1939 FORESTER, Gerald Owen, M.Sc. (Manc.).
1935 FOSTER, Alan Wilfred, B.Sc., Ph.D. (Leeds).
1937 FOX, Leslie Llewellyn, B.Sc. (Lond.).
1937 FRANCE, Ralph Waldo, M.Sc., Ph.D. (Shef.).
1938 FRANK, Lorenz, Ph.D. (Brist.).
1939 FREEMAN, Kenneth, B.Sc., M.Sc.Tech. (Manc.).
1938 FREEMAN, Sydney Maurice, B.Sc. (Birm.).
1936 FROST, Herbert John, M.Sc. (Sydney).
1940 FULLER, George Rayner, B.Sc. (Adel).
1940 FULLER, Terence Walter Percy, B.Sc. (Lond.).
1936 GANE, Phillip Graham, M.Sc. (South Africa), Ph.D. (Lond.).
1937 GARRETT, Charles Herbert, M.A. (Cantab.).
1936 GAUSS, Herbert Edward, B.Sc. (Lond.).
1934 GAYDON, Alfred Gordon, M.Sc., Ph.D. (Lond.), A.R.C.S. D.I.C.
1934 †GHOSH, Prof. Mohinimohan, M.Sc. (Calcutta).

Date of election	ASSOCIATES	
1939	GILET, Pieree Mathieu, B.Sc., B.E. (Sydney).	
1934	GILFORD, Christopher Leonard Sidney, M.Sc. (Reading).	
1929	†GOODALL, Kenneth Leslie, M.Sc. (Lond.).	
1940	GOODE, Kenneth Francis, B.Sc. (Birm.).	
1934	GOODIER, Jack, B.Sc., Ph.D. (Lond.).	
1937	†GOUGH, Kathleen Agnes, B.Sc. (Lond.).	
1927	GOULD, John Edward, B.Sc. (Birm.).	
1932	GOWLLAND, Geoffrey Price, B.Sc. (Lond.), A.R.C.S.	
1939	GREEN, Edward, B.Sc., Ph.D. (Leeds).	
1920	GREEN, Harry Herbert, B.Sc. (Lond.).	
1937	GREENLAND, Kenneth Moy, B.Sc,. Ph.D. (Lond.).	
1931	†GREENWOOD, Gilbert, M.Sc. (Manc.).	
1923	†GREW, John Sydney, M.Sc. (Birm.).	
1933	GREW, Kenneth Edmund, B.Sc., Ph.D. (Birm.).	
1939	GRIBBIN, Gordon Farquhar, B.Sc. (Lond.).	
1939	GUERRINI, Vincent Henry, M.Sc. (N.U.I.).	
1940	GURURAJA Doss, Kadarundalige Sitarama, M.Sc. (Mysore), D.Sc. (Madras), A.I.C.	
1939	HABELL, Kenneth Joseph, M.Sc. (Lond.), A.R.C.S., D.I.C.	
1921	†HADDON, Cuthbert Leslie, M.Sc. (Dunelm.), F.I.C.	
1938	HAEGELE, Frederick Gustav Adolf, M.Sc. (Lond.).	
1930	HALES, John Sherwood, B.Sc. (Lond.).	
1934	HALL, Henry Warburton, M.Sc. (Wales).	
1939	HAMMERTON, Thomas Gordon, B.Sc., Ph.D. (Leeds).	
1935	HAPPEY, Frank, B.Sc., Ph.D. (Leeds).	
1939	HARGREAVES, Arnold, B.Sc., M.Sc.Tech. (Manc.).	
1940	HARLE, Tom Frederick, B.Sc. (Lond).	
1938	HARPER, Arthur Frederick Alan, M.Sc. (Sydney).	
1929	HARRISON, Geoffrey Bond, B.Sc., Ph.D. (Lond.).	
1924	†HARRISON, Thomas Herbert, B.Sc., Ph.D. (Lond.).	
1938	HARRISON, Vernon George Wentworth, B.Sc., Ph.D. (Birm.).	
1938	HAWKES, Richard Christian, B.Sc.Eng. (Lond.).	
1939	HENSON, Alec Frank, M.Sc. (Birm.).	
1934	HENTHORNE, Thomas Knowles, M.A., M.Sc. (Liv.).	Served on Board
1933	HIBBERT, Lawrence John.	
1921	HILL, Cyril Francis.	1924-28
1939	HILL, Frederick John, M.Sc. (Lond.).	
1939	HILL, Norman Douglas, B.Sc. (Lond.).	
1937	HILLSON, Samuel Philip, B.Sc. (Lond.).	
1937	HINDLEY, Harry Rostron, B.Sc. (Manc.).	
1938	HIRST, Henry, B.Sc.Eng. (Lond.), D.Phil (Freiburg.), A.M.I.E.E.	
1938	HIRST, Wallace, Ph.D. (Birm.).	
1935	HOBLYN, Mrs. (née Ikin) Ailsa Woodroffe, B.Sc., Ph.D. (Lond.), A.R.C.S.	
1938	HOBSON, Albert, B.Sc., M.Sc.Tech. (Manc.).	
1926	HOLMES, Walter Morell, M.A., B.Sc. (Melb.).	
1938	HOLMES, William Raymond, B.Sc. (Lond.), A.R.C.S.	
1939	HOPPER, Victor David, M.Sc. (Melb.).	
1939	HORNER, Reginald Geoffrey, B.A. (Oxon.).	
1939	HORROCKS, Harry, M.Sc. (Manc.).	
1936	HOUGHTON, James Leonard, B.Sc. (Brist.).	
1936	HOWELL, Henry George, B.Sc., Ph.D. (Dunelm).	
1929	HSIEH, Prof. Yu-Ming, B.A. (Peking), M.A. (Columbia), Ph.D. (Chicago).	
1940	HUFFINGTON, John Dale, B.Sc. (Lond.).	
1923	HUGHES, John Alfred, M.Sc. (Wales).	
1939	HUGHES, John William, B.Sc., Ph.D. (Wales).	
1939	HUMPHREYS, George Maclaren, B.Sc. (Wales).	
1939	HYND, William Christie, M.Sc. (Lond.).	
1938	ISAACS, George Glynn, B.Sc. (Wales).	
1921	JACKSON, Leonard Cecil, M.Sc. (Lond.).	
1935	JACKSON, Roland, M.Sc. (Manc.).	

1938 JARMAN, Charles Alfred, B.Sc. (New Z.).
1937 JEHU, Victor James, B.Sc. (Lond.).
1920 †JESSUP, Capt. Alfred Claude.
1938 JOHN, William Gerwyn, B.Sc., Ph.D. (Wales).
1924 JOHNSON, Martin Christopher, M.A. (Cantab.), D.Sc. (Birm.).
1936 JOHNSON, William Arthur, B.A. (Cantab.).
1940 JOHNSON, William Somerville, B.Sc. (St. And.).
1923 JOLIN, Coy.-Asst. Dorothy, A.T.S., M.Sc. (Brist.).
1934 JONES, David Evered Harrel, M.Sc. (Lond.).
1933 JONES, David Owen, M.Sc. (Wales).
1935 JONES, Edwin Dandy, B.Sc. (Lond.).
1937 JONES, Frederick Wilson, B.Sc. (Shef.).
1935 JONES, Harold Goulbourne, M.Sc. (Wales).
1940 JONES, Ifor, M.Sc. (Wales).
1937 JONES, John Idwal, B.Sc., Ph.D. (Wales).
1928 JONES, William Harold, M.Sc. (Birm.).
1935 KENNEDY, Sidney John, M.Sc. (Lond.).
1939 KERR, Frank John, B.Sc. (Melb.).
1937 KNOWLES, Eric Graham, M.Sc. (Lond.), D.I.C.
1925 KOENIG, Maxime.
1940 KOLSKY, Herbert, B.Sc., Ph.D. (Lond.), A.R.C.S., D.I.C.
1931 LAL, Shyam Saran, M.Sc. (Lond., Lucknow), D.I.C.
1921 LAMBOURN, Leonard John, M.Sc. (Birm.).
1939 LAMERTON, Leonard Frederick, M.Sc. (Lond.).
1939 LAMONT, Hugh Russell Letham, M.A., B.Sc. (Glas.).
1940 LANDON, David Handel, M.Sc. (Wales).
1933 †LANG, Mrs. Herbert R. (née Levi, Ruth), B.Sc., Ph.D. (Lond.).
1939 LANG, William Rawson, B.A., M.Sc. (Perth).
1932 LANIGAN, George Ernest, M.Sc.Tech. (Manc.).
1938 LAWRIE, Claude Alexander, M.Sc. (Panjab).
1934 LAWSON, Dennis Illingworth, M.Sc. (Manc.).
1933 LEAVEY, Eric William Loraine, M.Sc. (Birm.).
1940 LEECH, Percy, M.Sc. (Leeds).
1920 †LE MANQUAIS, Joseph Charles Ross, A.R.C.S.
1940 LENIHAN, Sec.-Lieut. John Mark Anthony, R.Signals, B.Sc. (Dunelm).
1927 LEQUESNE, Colin, B.Sc. (Lond.).
1928 LEWIN, Edward George, M.Sc. (Liv.).
1938 LEWIS, Allan James, B.Sc., Ph.D. (Lond.).
1935 LEWIS, David Stephen Goronwy, M.Sc. (Wales).
1925 LEWIS, Frederick George Henry, A.R.C.S., D.I.C.
1929 LEWIS, William Clifford, M.A. (Oxon.), B.Sc. (Wales), A.I.C.
1936 LEWIS, Wyndham James, M.Sc. (Wales).
1940 LINES, Albert Walter, B.Sc., Ph.D. (Birm.).
1939 LISHMUND, Robert Edward, B.Sc., Ph.D. (St.And.).
1940 LITTLE, Edward Wallace Rutherford, B.Sc. (Dunelm).
1936 LITTLEFIELD, Thomas Albert, B.Sc., Ph.D. (Dunelm).
1934 LLOYD, Daniel William, M.A. (Dubl.), B.Sc. (Lond.).
1938 LOBB, Geoffrey Wilmot, M.A. (Cantab.), B.Sc. (Lond.).
1925 LODGE, Alfred, M.Sc. (Lond.).
1936 MCCAIG, Malcolm, M.Sc. (Lond.).
1939 MCCALE, Charles Henry, M.Sc. (Wales).
1932 MCCLEERY, Instr.-Lieut.-Comm. David Kirk, R.N., M.Sc. (Lond.), A.M.I.E.E.
1935 MCDERMOTT, Leslie Henry, B.Sc. (Lond.), A.R.C.S., D.I.C.
1940 MCFADDEN, Thomas, M.Sc. (Belf.).
1935 MCGILL, Donald, M.Sc. (Dunelm).
1938 MCPHERSON, Leslie, M.Sc. (Dunelm).
1939 MACHIN, Cecil Francis, B.Sc. (Lond.).
1935 MAGSON, Leonard William, B.Sc. (Leeds).

ASSOCIATES

Date of election	
1939	MAKINSON, Richard Elliss Bodenham, Ph.D. (Cantab.), B.Sc. (Sydney).
1936	MANDERS, Charles Robert Sinden, B.Sc., Ph.D. (Lond.).
1926	MANN, James Cameron, B.Sc., M.A. (Edin.).
1939	MARSHALL, Ernest Edward Benjamin, B.Sc. (Lond.).
1939	MARSHALL, George Elder, M.Sc. (Perth).
1934	MARTINDALE, James Graham, B.Sc., Ph.D. (Lond.).
1927	MATHEWS, Mrs. A. C. B. (née Marshall, Sybil May), M.Sc. (Lond.), A.R.C.S., D.I.C.
1937	MAUGHAN, Ralph Leslie, M.Sc. (Wales).
1935	MAWSON, May, B.Sc. (Lond.), M.Sc. (Birm.), A.R.C.S.
1939	MAYO, Richard Lewis, B.Sc. (Lond.).
1940	MEAKIN, Ronald, B.Sc. (Lond.).
1939	MERCER, Edgar Howard, B.Sc. (Adel.).
1939	MEREDITH, William John, M.Sc. (Manc.).
1937	MERRIMAN, James Henry Herbert, M.Sc. (Lond.).
1940	MILL, Colin Campbell, M.Sc. (Reading).
1939	MILNER, Christopher John, M.A., Ph.D. (Cantab.).
1937	MITCHELL, William John, B.Sc. (Lond.).
1931	MOORE, Geoffrey Stanley, M.Sc. (Birm.).
1931	MOORE, Prof. Ronald Leslie, B.Sc., M.Sc.Tech (Manc.).
1936	MORGAN, Merryn, M.Sc. (Wales).
1940	MORRIS, Reginald Burford, B.Sc. (Lond.).
1932	MORTON, Hubert, B.Sc. (Lond.).
1939	MULLINS, Leslie, M.Sc., Ph.D. (Shef.).
1935	†MURISON, Charles Alexander, M.A. (Aberd.), Ph.D. (Lond.).
1933	NANCARROW, Harold Albert, M.Sc. (Lond.).
1937	NELSON, James Harvey, B.Sc. (Lond.), A.R.C.S., D.I.C.
1921	NEVILLE, Bernard Mynott, B.Sc. (Lond.).
1940	NEWMAN, Edward Arthur, B.Sc. (Lond)).
1940	NICHOLSON, Gordon Ramsay, M.A. (Glas.).
1940	NICOL, Phyllis Mary, M.Sc. (Sydney).
1933	NOAKES, George Robert, M.A. (Oxon.).
1939	NOBLE, Sidney Howard, B.Sc. (Lond.).
1932	OLDHAM, Frank, M.A. (Cantab.), B.Sc. (Lond.).
1925	OSBORNE, Francis William, M.Sc. (Liv.), A.R.S.M.
1938	OSMOND, Wilfred George, B.Sc. (Lond.).
1923	OWEN, Albert Edward, B.Sc. (Lond.).
1938	PARKER, Reginald Charles, B.Sc., Ph.D. (Lond.), A.R.C.S.
1940	PARKINSON, Donald, D.Sc., Ph.D. (Birm.).
1920	PARR, Edwin Louis.
1923	PAYMAN, Herbert Saul, B.Sc. (Lond., Manc.).
1936	PAYNE, Edwin Malcolm, A.M.I.E.E.
1935	PEARCE, Albert Frederick, B.Sc., Ph.D. (Brist.).
1939	PEARSON, Eric Bell, M.Sc. (Lond.).
1938	PEGLER, Geoffrey David, M.Sc. (Lond.).
1934	PENMAN, Howard Lattimer, M.Sc. (Dunelm).
1920	PERCIVAL, George Arncliffe.
1933	PHILLIPS, Arthur Claud, M.Sc. (Lond.), A.R.C.S., D.I.C.
1928	PHILLIPS, Lewis Wright, M.I.E.E.
1933	POOLE, Harold Charles, M.Sc. (Leeds).
1938	POTTER, Harry, M.Sc. (Manc.).
1938	POTTS, Archie, B.Sc. (Dunelm).
1922	PRATT, Eric Wigley, M.Sc. (Birm.).
1940	PRENTICE, James Henry, B.Sc. (Lond.).
1939	PRICE, William Lindsay, B.E., B.Sc. (Sydney).
1936	PRIESTLEY, Flight Lieut. Herbert, B.Sc., Ph.D. (Leeds).
1939	PRIOR, Lancelot Sidney, B.Sc. (Perth).
1925	PROBERT, Major Geoffrey Oliver Carwardine, R.A.
1939	PURSLOW, Eric Tressler, B.Sc. (Lond.).
1935	QUINLIVAN, Maurice Patrick, M.Sc. (Belf.).
1938	RAILSTON, William, M.Sc., Ph.D. (Dunelm).
1937	RAJARAMAN, Sambamurthi, M.Sc. (Benares).
1938	RAM, Gurdas, M.Sc., Ph.D. (Panjab).

1936 RAY, Binay Bhushan, B.Sc. (Calcutta), M.Sc. (Lond.).
1930 RAY, Satyendra Nath, B.Sc (Eng.) (Lond.), M.Sc. (Calcutta), A.M.I.E.E.
1938 READ, Cyril William Winch, B.Sc., Ph.D. (Lond.).
1939 †REDDING, Thomas Henry, M.Sc. (Lond.), A.R.C.S.
1933 REDFEARN, Sidney Warbrick, B.A. (Cantab.).
1931 REES, Alyn Idris, M.Sc. (Wales), A.I.C.
1932 †REES, Thomas James, M.Sc. (Wales).
1940 REES, William Howard, M.Sc. (Wales).
1938 REES-JONES, Stephen, M.Sc. (Wales).
1930 RHODES, Bernard, B.Sc. (Leeds).
1924 RHODES, Cecil Josiah, M.Sc. (Birm.), M.Ed. (Manc.).
1934 RICHARDS, Terence Charles, B.Sc., Ph.D.(Lond.), A.R.C.S., D.I.C.
1939 RICHARDSON, Lewis Albert.
1939 RIDLEY, Philip, B.Sc., Ph.D. (Leeds).
1939 RIGDEN, Philip James, M.Sc. (Reading).
1931 RIMER, Eric, M.Sc. (Dunelm).
1939 ROBERTSON, John Francis, M.Sc. (Lond.).
1936 ROBINSON, George David, B.Sc., Ph.D. (Leeds).
1935 ROSCOE, Robert, B.Sc., Ph.D. (Lond.).
1937 ROTHERHAM, Leonard, M.Sc. (Lond.).
1937 ROWSE, Richard Hamilton, B.Sc. (Lond.).
1932 SAAYMAN, Edmund Hugo, M.A. (Oxon.), B.Sc. (South Africa).
1937 SARNA, Hari Ram, M.Sc. (Panjab), Ph.D. (Lond.).
1939 SAVAGE, John, B.Sc. (Lond.).
1939 SCHALK, Flying Officer Jack, R.A.F.V.R., B.Sc. (Lond.), A.R.C.S.
1939 SCOTT, Robert Arthur, B.Sc., Ph.D. (Lond.).
1940 SCOTT, William John Ormiston, B.Sc. (Lond.), A.R.C.S., D.I.C.
1939 SCOWEN, Frank, B.Sc. (Lond.).
1937 †SEATON, Stuart Luman.
1932 SEXTON, Frederick Peake, A.R.C.S., A.M.I.E.E.
1922 SHAW, Frank, B.Sc. (Lond.), M.Sc.Tech (Manc.), M.I.E.E.
1938 SHAYLOR, John Harold, B.Sc. (Lond.).
1939 SILLARS, Ronald William, B.A. (Cantab.), D.Phil. (Oxon.).
1940 SIM, George MacArthur, M.Sc. (Wales).
1929 SIMAIKA, Yusef Marcus, B.Sc. (Birm.).
1934 SINCLAIR, William Sedgwick, M.A., B.Sc. (Edin.).
1928 SINGH, Prof. Har Chand, M.Sc. (Panjab), Ph.D. (Lond.), D.I.C., A.M.I.E.E.
1937 SINGLETON, William, B.Sc. (Lond.), A.R.C.S., D.I.C.
1939 SMARE, David Lorrison, B.Sc., M.Sc.Tech. (Manc.).
1934 SMITH, Donald Harry, B.Sc., Ph.D. (Lond.).
1925 †SMITH, Donald Whitley, M.A. (Cantab.).
1932 SMITH, Horace Frank, B.Sc. (Lond.).
1936 SMITH, Humphrey Montague, B.Sc. (Lond.).
1923 SMITH, James Hive, M.Sc. (Liv.).
1935 SMITH, Jesse Eyre, B.Sc., Ph.D. (Leeds).
1940 SMITH, Reggie, B.Sc. (Lond.).
1937 SNOW, Claude Ivan, B.A., B.Sc. (Oxon.).
1931 SOLOMON, David, M.Sc. (Wales).
1940 SPEIRS, John Martin Sleeman, M.A., M.Sc. (Dubl.).
1935 SPELLS, Kenneth Eyre, B.Sc., Ph.D. (Lond.).
1920 SPIELMANN, Percy Edwin, B.Sc. (Lond.), Ph.D. (Basle), A.R.C.S., F.I.C.
1933 SPILLETT, Eric Ernest, B.Sc. (Lond.).
1924 SRAWLEY, Frank George, M.Sc. (Birm.).
1934 STARBUCK, Leonard, B.Sc. (Lond.).
1933 STARKEY, Thomas Vincent Ivan, B.Sc., Ph.D. (Birm.).
1933 STARKS, Herbert James Harold, B.Sc., Ph.D. (Birm.), D.I.C.

Date of election	ASSOCIATES
1931	STEED, Alfred Harold Lawrence, B.Sc. (Lond.), A.R.C.S., D.I.C.
1936	STEPHENS, Gwyn Owen, B.Sc, Ph.D. (Wales).
1938	STEPHENSON, Maurice, B.Sc. (Manc.).
1939	STEWART, James Cecil Campbell, B.Sc. (Dunelm).
1937	STONE, Rodger, B.A. (Cantab.).
1933	SUBBARAYA, Tippur Subbarayasastry, M.Sc. (Mysore).
1938	SULLY, Arthur Henry, M.Sc. (Wales).
1934	SULSTON, Wilfrid John, M.Sc. (Lond.).
1939	SWIFT, William, B.Sc., Ph.D. (Leeds).
1936	SYMON, Frederick Joseph, B.Sc., Ph.D. (Glas.).
1936	TANKARD, Joseph, M.Sc. (Manc.).
1934	TARRANT, Mrs. H. H. (née Walker, Amy Loïs), B.Sc. (Lond.).
1934	TAYLOR, Denis, M.Sc., Ph.D. (Lond.).
1939	TAYLOR, George Geoffrey, B.Sc. (Lond.).
1939	TEARLE, John Lawrence, B.Sc. (Lond.).
1938	THOMAS, Daniel James, B.Sc., Ph.D. (Wales).
1937	THOMAS, Iowerth Hefin, B.Sc., Ph.D. (Wales).
1937	THOMAS, William John, B.Sc., Ph.D. (Wales).
1937	THORLEY, Norman, B.Sc., Ph.D. (Leeds).
1939	THOSAR, Baji Vinayak, M.Sc. (Nagpur).
1939	THREADGOLD, Stanley Dennis, B.Sc. (Lond.).
1927	THREADGOLD, Thomas Dudley, B.Sc. (Lond.).
1937	THYER, Robert Francis, B.Sc. (Adel.).
1924	TODD, William James.
1931	TOLANSKY, Samuel, B.Sc. (Dunelm), Ph.D. (Lond., Dunelm.), D.I.C.
1939	TOMPA, Hans, Dr.Tech.Ing. (Vienna).
1936	TOOKE, Arthur Ernest, B.Sc. (Lond.), A.R.C.S., D.I.C.
1920	†TOY, Henry Spencer, M.A. (Brist.), B.Sc. (Lond.).
1939	TOYE, Ronald, B.Sc. (Wales).
1940	TURNER, John Frederick, B.Sc. (Lond.).
1930	TYLER, Frank, B.Sc., Ph.D. (Leeds).
1929	UNDERWOOD, Leonard, M.Sc. (Birm.).
1937	VAN GEENS, Abraham Isidore, B.Sc., Ph.D. (Lond.), A.R.C.S.
1939	VANSTONE, Frederick Haydn, B.Sc., Ph.D. (Wales).
1933	VARLEY, Philip Copley, M.A. (Cantab.).
1937	VENKATARAMAN, Subramanyam, B.A., M.Sc. (Madras).
1936	VICK, Francis Arthur, B.Sc., Ph.D. (Birm.).
1927	VICK, John Oliver Curtis, B.Sc. (Lond.), A.R.C.S., D.I.C.
1920	VICKERS, Herbert, M.Eng. (Liv.), Ph.D. (Birm.).
1936	VINCENT, Russell Swale, M.Sc. (Lond.), A.M.I.E.E.
1940	VODDEN, Cyril Charles, M.Sc. (Wales).
1939	VOICE, Ernest Wallace, B.Sc. (Lond.).
1939	WALCH, Frederick Arthur, B.Sc., Ph.D. (Lond.).
1920	WALLACE, Thomas, M.Sc. (Dunelm), A.I.C.
1920	†WALSH, Frank Ford Peregrine.
1937	WALTON, William Henry, B.Sc. (Lond.).
1932	WARBURTON, Frank Lucas, M.Sc. (Lond.), A.R.C.S., D.I.C.
1938	WARD, Prof. Henry Joseph, B.A. (Belf.).
1938	WARING, John Robert Salmond, B.A. (Cantab.).
1935	WARNER, Alec, B.Sc. (Lond.), A.R.C.S., D.I.C.
1920	†WARNES, Arthur Robert, F.I.C.
1939	WARREN, John Bernard, B.Sc., Ph.D. (Lond.), A.R.C.S. D.I.C.
1935	WASS, Charles Alfred Alan, B.Sc. (Lond.).
1927	WATTERS, Bernard Douglas Harrison, M.Sc. (Lond.).
1938	WEINTROUB, Sidney, M.A. (Oxon.).
1933	WEIR, William, M.A. (Cantab.).
1939	WELFORD, Peter Noel McCowen, B.A. (Cantab.).
1921	WELLS, Reginald Iredale, B.Sc. (Lond.), A.M.I.E.E.
1940	WESTON, John Carruthers, B.Sc. (Lond.).

Date of election	ASSOCIATES
1935	WHELPTON, Robert Vaughan, M.Sc. (Shef.).
1939	WHITE, Robert Williamson, B.Sc. (Glas.).
1939	WHITMORE, Edward John, B.Sc., Ph.D. (Lond.), A.R.C.S., D.I.C.
1939	WIDDOWSON, Arthur Everard, B.Sc. (Birm.).
1936	WIDDOWSON, Ethel Eva, M.Sc., Ph.D. (Lond.).
1932	WILCOX, Leonard, M.Sc. (Manc.), A.M.I.E.E.
1937	WILD, Norman Eric, M.Sc. (Birm.).
1938	WILKINSON, Herbert, B.Sc., M.Sc.Tech., Ph.D. (Manc.).
1938	WILLIAMS, Eric Charles, M.Sc. (Birm.).
1937	WILLIAMS, Eric Clydwyn, M.Sc. (Wales).
1939	WILLIAMS, Gordon, M.Sc. (Wales).
1921	†WILLIAMS, Joseph Thomas, M.Sc. (Wales).
1938	WILLIAMS, Roy Ratcliffe, B.Sc. (Lond.), A.R.C.S.
1937	WILLIAMS, Sydney Ernest, M.Sc. (Sydney), Ph.D. (Brist.).
1935	WILLIAMS, Thomas Evan, B.Sc., Ph.D. (Wales).
1920	WILLOTT, Frederick John.
1932	†WILSON, John Spencer, M.A. (Cantab.), B.Sc. (Lond.).
1932	WITHERS, John Granville, B.Sc. (Lond.).
1933	WITTY, Roy, B.Sc., Ph.D. (Lond.).
1939	WOOD, Cyril, B.Sc., M.Sc.Tech. (Manc.).
1939	WOOD, Harley Weston, M.Sc. (Sydney).
1923	WOOD, John Francis, M.Sc. (Dunelm.).
1935	†WOOD, Philip Henry, B.Sc. (Lond.).
1933	WOOD, Robert Eric, M.Sc. (Liv.).
1939	WOODALL, Mrs. A. J. (née Simmons, Elsie Agnes), B.Sc., Ph.D. (Lond.).
1934	WOODALL, Arthur Joseph, B.Sc., Ph.D. (Lond.).
1936	WOODROOFE, Ernest George, B.Sc., Ph.D. (Leeds).
1937	WOODS, Herbert Perry, B.Sc. (Lond.).
1939	WRIGHT, Fred Irvine, B.Sc. (Leeds).
1923	†WRIGHT, Leonard, M.Sc. (Shef.).

SUBSCRIBERS

1939	ACKEROYD, Arthur Gordon.
1920	BRIGGS, Major Richard Alfred, M.I.Mech.E., A.I.E.E.
1921	BULLOCK, William Henry.
1920	CAMPBELL, Albert, M.A. (Cantab.), A.M.I.E.E
1920	CARDWELL, Rev. Laurence, S.J., B.Sc. (Lond.).
1940	CLAYTON, Frederick Hubert, B.Sc. (Lond.).
1938	COZENS, John Harold, B.Sc. (Lond.).
1935	CRIVELLI, Paul André.
1939	DUERDOTH, Arnold Godfrey, B.Sc. (Lond.), A.R.C.S.
1939	EDWARDS, Leonard William Charles.
1937	EYTON, John William Trevor.
1937	FERRIER, Henry Thomas.
1936	GARDINER, George, A.I.Mech.E.
1938	GENT, Alfred Walter, B.Sc. (Manc.).
1925	GILBERTSON, Frederick James, A.I.E.E.
1938	GREENACRE, Charles Rummer.
1934	HALL, Leonard Edward, B.Sc. (Manc.).
1920	HEATH, Harold Ernest
1939	HOARE, Ralph Maurice, B.Sc. (Perth).
1920	HOLLAND, Job.
1920	KIDD, Robert Hicks, M.A. (Cantab.).
1939	KRETCHMAR, Harry Herman, B.Sc. (Perth).
1939	LEACH, Thomas.
1920	MCDONALD, Donald, B.Sc. (Lond.), F.I.C.
1922	MACINNES, Henry Jack.
1940	MARSH, Cyril Harold, B.Sc. (Lond.).
1939	MARTIN, Harry William.
1939	MARTIN, John Frederick.

Date of election	SUBSCRIBERS
1938	MISSELBROOK, Mrs. (née Carpenter, Hilda Emily), B.Sc. (Lond.).
1920	MOFFAT, Eliezer.
1920	MORLEY, Henry Forster, M.A., D.Sc. (Lond.).
1938	MORRIS, Joseph Ernest.
1934	MORTON, Charles, B.Sc. (Lond.).
1939	NELSON, William Leslie.
1939	NOPS, Eng.-Capt. Vivian Douglas, R.N. (retd.), O.B.E., A.M.I.Mech.E.
1939	PICKERING, Thomas John, B.Sc. (Lond.).
1920	SCOURFIELD, David Joseph.
1936	SHONE, John Alfred Victor.
1933	TAYLOR, Harold Morris, M.A. (Cantab.).
1939	THOMAS, David Hylton, M.Sc.Tech. (Manc.).
1939	THOMPSON, Geoffrey Malcolm Millard, B.Sc. (Lond.).
1935	VOGEL, Richard Franz Jules, M.A. (Cantab.).
1940	WARD, Cecil William La Roche, B.Sc. (Lond.).
1940	WILSON, Nicholas Robertson.
1938	WINTER, Henry James Jacques, M.Sc. (Lond.).
1938	WOOD, Harold, B.Sc.Eng. (Lond.), A.M.I.Mech.E.

Date of admission	STUDENTS
1939	ABBOTT, Rolfe Merton Frederick.
1935	ALFORD, Maitland Walton, B.Sc. (Lond.), A.R.C.S., D.I.C.
1938	ALLARD, Edwin, B.Sc. (Lond.), A.R.C.S.
1939	ALLEN, Ronald George, B.Sc. (Lond.).
1940	ALSOP, Keith, B.Sc. (Lond.).
1933	ANDERSON, Samuel Leslie, B.Sc. (Lond.).
1937	ARGUILE, Raymond Darrel, B.Sc. (Lond.).
1940	ARMSTRONG, Derek Sydney, B.Sc. (Lond.).
1938	ATKINSON, James Robert, B.A. (Cantab.).
1938	BAILEY, Edwin Anthony.
1937	BAKER, Cyril James William.
1940	BALLANTYNE, James Graham, B.Sc. (Lond.).
1940	BANKS, Sydney Thomas.
1938	BARBER, Ernest Edward.
1937	BARKER, Ronald Hugh, B.Sc. (Lond.).
1936	BARNES, Graham Ralph Dengate, B.Sc. (Lond.).
1940	BARRITT, Kenneth Denny.
1939	BECK, Gerald Norbert John.
1938	BENNETT, George Edward, B.Sc. (Wales).
1938	BERENBLUT, Israel Isaac, B.Sc. (Lond.), A.R.C.S.
1940	BERRY, James, B.A. (Lond.).
1940	BILMES, Leonard, B.Sc. (Lond.).
1939	BIRTWISTLE, Robert, B.Sc. (Perth).
1938	BLACKWELL, Raymond Franklin, B.Sc. (Lond.), A.R.C.S.
1937	BLINKHORN, John William, B.Sc. (Lond.).
1940	BOOTH, Richard Herbert, B.Sc. (Reading).
1937	BOUND, Richard Augustine Milwyn, B.Sc. (Wales).
1938	BOWDEN, Kenneth Frank, B.Sc. (Lond.).
1940	BOX, Derrick Stanley.
1937	BRANSON, Leslie Clifford, B.Sc. (Lond.).
1938	BROADHURST, John Weston, B.Sc. (Lond.), A.R.C.S.
1940	BROOK, Frank.
1940	BRUMMAGE, Kenneth George, B.Sc. (Lond.).
1939	BULLETT, Thomas Robert.
1938	BURNS, Brian Dermot, B.Sc. (Wales).
1940	BUTLER, Clifford Charles.
1940	CANNON, Cyril George, B.Sc. (Lond.).
1939	CARROLL, Peter, B.A. (Perth).
1939	CASTELL, Henry Conrad.
1938	CHARLESBY, Arthur, B.Sc. (Lond.), Ph.D., A.R.C.S., D.I.C.

Date of admission	
1939	CHARLESWORTH, George, B.Sc. (Leeds), Ph.D. (Leeds).
1940	CHARTER, Frank Keith.
1938	CLOUGH, George Frederick.
1937	COGHLAN, Raymond Philip, B.Sc. (Reading).
1940	COLE, William Frederick, B.Sc. (Perth).
1940	COOK, Beryl Winifred.
1936	COOPER, George Ronald, B.Sc. (Shef.).
1939	COUSINS, Stanley Walter.
1940	COWDREY, Charles Frederick.
1937	COX, William Frederick, B.Sc. (Brist.).
1936	CRADWICK, Cecil Charles, B.Sc. (Reading).
1937	CROOKS, Raymond Niblett, B.Sc. (Lond.).
1936	CROSBIE, Martin Stuart Stanley.
1939	CROUCHLEY, Jim.
1938	CURRAN, Samuel Crowe, M.A., B.Sc., Ph.D. (Glas.).
1940	DANIELS, Geoffrey, B.Sc. (Leeds).
1940	DAVIES, Cecil.
1939	DAWES, John Geoffrey, B.Sc. (Lond.).
1935	DEADMAN, George Ernest Herbert, B.Sc. (Lond.).
1937	DELL, Richard Christopher, B.Sc. (Lond.).
1932	DENNIS, William Lionel, B.Sc. (Lond.), A.R.C.S.
1939	DENSHAM, Denis William, B.Sc., A.R.C.S.
1940	DENT, John.
1940	DIETRICH, Cornelius Frank, B.Sc. (Lond.).
1940	DONOVAN, Brian.
1938	DRUETT, Henry Arthur, B.Sc. (Lond.).
1940	DUNCANSON, Alistair.
1936	DUNNE, William Francis Michael, B.Sc. (Lond.).
1939	DUTTON, Henry Milton.
1939	EAST, Frederick Henry, B.Sc. (Lond.).
1939	EASTWOOD, Leslie.
1937	EHRLICH, Josiah, B.Sc. (Lond.).
1937	FAHIE, William Cusack.
1940	FALCONER, James Mackenzie.
1939	FARRANT, John Lascelles, B.Sc. (Perth).
1940	FARRAR, Walter, B.Sc. (Lond.).
1937	FIELDGATE, Ivan Oscar, B.Sc. (Lond.).
1940	FORRESTER, George Raymond.
1933	FORSYTH, Percy George.
1940	FOWWEATHER, Frank.
1940	FOX, Joseph William, B.Sc. (Lond.).
1940	FRENCH, Ernest John.
1939	GANT, Dennis Hugh Thomas, B.A. (Cantab.).
1939	GARDENER, Alfred Charles Arnold, B.Sc. (Lond.).
1938	GARRARD, Derrick John.
1937	GARROD, Raymond Ivan, B.Sc. (Lond.), A.R.C.S.
1938	GAY, Derek Gordon, B.Sc. (Lond.).
1938	GIBBS, David Fortnan, B.Sc. (Lond.), A.R.C.S.
1938	GILES, Cyril George, B.Sc. (Lond.).
1936	GILLARD, Kenneth George, B.Sc. (Lond.).
1940	GOBLE, Ormond Leslie.
1937	GOKHALÉ, Narayen Gangadhar, B.Sc. (Lond., Bombay).
1940	GREEN, Douglas Linaker.
1938	GRIFFIN, Helen Sarah.
1938	GRIFFITHS, William James.
1939	GRINDLEY, Joseph.
1938	GUTHRIE, John Charles, M.Sc. (Wales).
1940	HALL, Edward Albert James.
1940	HALLETT, Jack Norton.
1938	HAMMOND, Arthur Bruce, B.Sc. (Lond.).
1940	HASLETT, Roy William George.
1940	HAWKINS, Maldwyn Hubert James.
1940	HEASTIE, Roy, B.Sc. (Lond.).
1938	HEATHCOTE, Alan, B.Sc. (Manc.).

Date of admission	
1939	Heller, Douglas Max.
1938	Henderson, James Porteous, B.Sc. (Wales).
1938	Herbert, Russell James Thomas, B.Sc. (Reading).
1937	Herbert, Sidney, B.Sc. (Lond.).
1938	Hickman, Reginald Elwick Beatty.
1939	Hopkins, Harold Horace, B.Sc. (Lond.).
1939	Human, Shirley Egerton.
1936	Hytch, Arthur Henry Mills.
1939	James, Henry Warneford, B.Sc. (Wales).
1936	Jay, Kenneth Edmund Brian.
1935	Jefferson, Harold, B.A. (Cantab.).
1938	Jelley, John Valentine, B.Sc. (Birm.).
1938	Jennings, John Charles Ellison, B.Sc. (Lond.).
1940	Jewell, Fred, B.Sc. (Lond.).
1940	Johnson, Edwin Richard.
1936	Johnson, James.
1938	Jones, David Charles Edmunds, B.Sc. (Wales).
1939	Jones, David Griffiths, B.Sc. (Lond.).
1936	Jones, Eric Harding.
1940	Jones, Timothy Douglas.
1940	Kellar, Sub. Lieut. James Noel, R.N.V.R., B.Sc. (Reading, Lond.).
1938	Kelly, Joan Margaret.
1938	Lambourne, Norman Charles, B.Sc. (Lond.).
1937	Langmead, Walter Alfred, M.Sc. (Lond.).
1940	Layton, Peter Reginald.
1938	Lean, Dennis, B.Sc. (Lond.).
1940	Ledger, Arthur Stanley Powell, B.Sc. (Lond.).
1936	Ledingham, John Marshall, B.Sc. (Lond.).
1939	Lee, Arthur Henry, B.Sc., Ph.D. (Leeds).
1939	Lee, Margaret.
1939	Leech, John Watson, B.Sc. (Lond.).
1936	Lewis, Gordon Langton, B.Sc. (Lond.), A.R.C.S.
1935	Lewis, Gething Morgan, M.Sc. (Lond.).
1938	Lister, Ronald Arthur.
1938	Littler, Derrik Joseph, B.Sc. (Lond.).
1939	Lougher, Elisabeth Treharne.
1938	Lovell, Edward Arthur, B.Sc. (Lond.), A.R.C.S.
1939	Lucas, Lloyd Newton Douglas.
1940	McIlroy, Ian Clement.
1939	McManus, Hugh, B.Sc. (Birm.).
1940	Macdonald, John Alexander.
1940	Macklen, Victor Harry Burton, B.Sc. (Lond.).
1940	Marvin, Lance Stanley.
1934	Mason, Ian Bowyer, B.Sc. (Lond.).
1940	Maurice, David Myer.
1938	May, Victor John, B.Sc. (Reading).
1936	Mayer, Peter Alan.
1940	Medley, David John.
1938	Meredith, Reginald, B.Sc. (Manc.).
1936	Middleton, Kenneth Noel, B.Sc. (Lond.).
1940	Miller, Norman Edmund.
1939	Mills, John Robert, B.Sc. (Lond.).
1937	Molyneux, Frederick.
1938	Monteath, George Dewar.
1937	Monteith, Gerald Stuart.
1940	Moore, Lawrence.
1938	Morgan, Idris Gareth, B.Sc. (Lond.).
1940	Morris, George William Alfred, B.Sc. (Lond.).
1938	Mussell, Leonard Ernest, B.Sc. (Lond.).
1939	Myford, Thomas William.
1940	Newbery, George Richard, B.Sc. (Lond.).
1938	Nichols, Leslie Hugh Francklyn, B.A. (Cantab.)
1940	Noltingk, Bernard Edward, B.Sc., Ph.D. (Lond.).
1934	Norman, Lawrence Ernest Jack

1940 Norris, Alan William, B.Sc. (Lond.).
1940 North, James Clifford, B.Sc. (Lond.).
1940 Nutting, David Colver.
1937 Oates, Peter Geoffrey, B.A. (Cantab.).
1940 Olding, Harold Clifford, B.Sc. (Lond.).
1939 Otazu, Joseph Marcel, B.Sc. (Lond.).
1937 Paine, Joseph.
1940 Palmer, Walter.
1940 Parbrook, Hubert Derrick.
1940 Parker, Alfred Victor, B.Sc. (Manc.).
1939 Parkinson, Wilfred Dudley.
1940 Parsons, John James, B.Sc. (Lond.).
1940 Patterson, John Laws.
1940 Pearce, John Whyte.
1938 Pearse, Thomas Clive.
1940 Peirson, Douglas Henry.
1937 Peters, Raymond Harry.
1939 Pollard, Howard Frank.
1940 Pollard, John.
1940 Poole, Michael John.
1940 Popham, Tristram Sydney, B.Sc. (Lond.).
1938 Portman, Neville Arthur.
1937 Powell, Michael Edward Arthur.
1938 Pratt, Thomas Henry.
1940 Pringle, Robert William.
1937 Proud, Kenneth John, M.Sc. (South Africa).
1935 Pullen, William Joseph.
1936 Puls, Hans Oskar, B.Sc., Ph.D. (Reading).
1937 Purdie, Andrew Clark.
1940 Quarmby, Raymond Barber, B.Sc.Tech. (Manc.).
1940 Radcliffe, Alec, B.Sc. (Lond.).
1939 Ramm, Colin Arnold.
1936 Ramsay, Bernard Walter, B.Sc. (Lond.), A.R.C.S.
1940 Randall, Richard Francis Yeoman.
1939 Reekie, James, B.Sc., Ph.D. (Edin.).
1940 Reid, Arthur Charles.
1939 Rhodes, Philip.
1938 Richards, George Ronald, B.Sc. (Wales).
1940 Richardson, Joseph Falding.
1938 Rison, Stuart Gorthorn.
1938 Roberts, Emlyn Awenydd O'Donnell, M.Sc. (Wales).
1938 Roberts, Gwilym Emrys.
1939 Roberts, John David.
1940 Robertson, George Henry.
1940 Rodges, Donald Eric, B.Sc. (Lond.).
1937 Rotton, Harold Victor.
1938 Roulston, Kenneth Irwin.
1938 Rutherglen, John Geoffrey.
1940 Sampathu, Srinivas, B.Sc. (Madras).
1940 Saunders, Richard Graham, B.Sc. (Lond.).
1939 Scanlan, Bernard Patrick, B.Sc. (Lond.).
1940 Schofield, Frank.
1938 Scott, John Robert, B.Sc. (Lond.).
1938 Sear, Reginald, B.Sc. (Lond.).
1937 Selwood, George.
1940 Seymour, Gilbert Bedford, B.Sc. (Lond.).
1939 Sexton, Herbert William.
1940 Shapcott, Sidney Edward, B.Sc. (Lond.).
1939 Shaw, Cyril Henry.
1940 Shepherd, Alexander Turnbull.
1940 Shepherd, Leslie Robert, B.Sc. (Lond.).
1940 Simpkin, Graham Frederick.
1938 Smith, George Henry Robert, B.Sc. (Lond.).
1940 Smith, Howard Miles.

Date of admission	
1939	SMITH, Kelvin Blinman.
1939	SMITH, Ronald Neville Aldrich, M.Sc. (Lond.), A.R.C.S., D.I.C.
1938	SMITH, Thomas Leonard.
1939	SPEIRS, Lawrence Arthur Peter Sleeman, B.A., B.Sc. (Dubl.).
1940	SPELLMAN, Joan Una.
1938	STAINSBY, Arthur Geoffrey, B.Sc. (Lond.)
1940	STAMBERGER, Andrew.
1936	STANDING, Harry Alan, B.Sc (Lond.).
1936	STEVENS, Philip Rowe, B.Sc. (Lond.).
1937	STOKES, Eric Vincent.
1940	STOPS, Denis Warwick.
1938	STRATTON, Andrew.
1940	STRAUGHAN, Thomas Anderson, B.Sc. (Dunelm).
1940	SUGARMAN, Bernard.
1939	SULZBERGER, Philip Herbert.
1939	SWEETING, Norman Ellis.
1939	SWINDELL, Gerald Edward, M.Sc. (Belf.).
1940	TAYLOR, Victor Harold, B.Sc. (Lond.).
1939	TEBBLE, Robeft Soulsby, B.Sc. (Lond.).
1940	THEAKER, Derrick Michael.
1939	THOMAS, Meredith, B.Sc. (Wales).
1940	THONEMANN, Peter Clive.
1940	TOMLIN, John Thomas, B.Sc. (Lond.).
1940	TOMLIN, Donald Hugh, B.Sc. (Shef.).
1938	TOWNSEND, George Boris, B.Sc. (Lond.).
1940	TROTT, John James, B.Sc. (Lond.).
1938	TULLEY, Theodore James.
1940	TURNBULL, Albert Hickford.
1934	TURNER, Harold James Arthur, B.Sc. (Lond.).
1937	TWEEDIE, Maurice Charles Kenneth, B.Sc. (Reading).
1936	TWINEY, Frederick Joseph, B.Sc. (Reading).
1939	UNDERHILL, Edward James William, B.Sc. (Lond.).
1939	VENNART, Jack, B.Sc. (Lond.).
1939	VOSS, Evelyn Charles, B.Sc. (Lond.).
1939	WALKER, Albert Edouard.
1937	WALKER, Eric, B.Sc. (Lond.).
1939	WALSH, Alan, B.Sc. (Manc.).
1940	WALTERS, William Llewelyn.
1939	WATSON, Donald.
1937	WATT, David Blair, B.Sc. (Glas.).
1938	WATTS, James.
1937	WATTS, Reginald, B.Sc. (Lond.).
1940	WELCH, Eric Edward, B.Sc. (Lond.).
1940	WELLS, Edward Marshall, B.Sc. (Lond.).
1937	WHIPPLE, Raymond Thomas Pittar, B.Sc. (Cantab.).
1936	WHITFIELD, George Alan.
1938	WIDDOWSON, John Bernard.
1934	WIGHT, Kenneth Cameron.
1937	WILKS, Sydney.
1938	WILLIAMS, Eirwen Meiriona St. John, B.Sc. (Wales).
1937	WILLIAMS, Ernest Charles, B.Sc. (Wales).
1938	WILLIAMS, Raymond Wilson, B.Sc. (Wales).
1940	WILLIS, John Burnett.
1939	WILSON, Kenneth Other.
1937	WINOGRADOFF, Nicholas Nicholas, B.Sc. (Edin.).
1940	WOOD, Fred, B.Sc. (Leeds).
1940	WRIGHT, Eric, B.Sc. (Leeds).
1938	WRIGHT, Walter William, B.Sc. (Lond.).
1940	WYLLIE, George Andrew Park.
1940	WYMER, Peter Osborn.
1935	YATES, Peter Weston, B.Sc. (Reading).
1939	YORK, Elsie Jessica.
1940	YOUNG, Alan Fraser.
1939	YOUNG, Colin Arthur.

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THE INSTITUTE OF PHYSICS

BALLOT FOR ELECTION TO THE BOARD, SESSION 1941-42

BALLOT PAPER

OFFICE	NOMINEES	NOMINATED BY	NUMBER TO BE ELECTED
President	PROFESSOR SIR LAWRENCE BRAGG	Board	1
Vice-President ...	PROFESSOR W. MAKOWER ...	Board	1
Honorary Treasurer	MAJOR C. E. S. PHILLIPS ...	Board	1
Honorary Secretary	PROFESSOR J. A. CROWTHER	Board	1
Ordinary Members of the Board ...	PROFESSOR J. CHADWICK ...	Board	2
	MR. D. C. GALL	Board	

ARTICLE 51. In the case of a contested election to any office each Member voting shall delete* sufficient names of candidates on his ballot paper to reduce the number to or below the number to be elected to that office and to restrict the number of Associates on the Board to four. The ballot papers shall be deposited at the registered office of the Institute† on or before the day preceding the Ordinary General Meeting at which such election is to take place or shall be delivered at the said General Meeting to the scrutineers. Each ballot paper which is found by the scrutineers to violate these provisions shall be cancelled.

* *As the elections are not contested, no deletions are necessary.*

† *This paper should be sent to The Honorary Secretary, The Institute of Physics, at The University, Reading, Berks; the envelope should be marked "ballot paper" in the top left hand corner.*

THE INSTITUTE OF PHYSICS

President :
Professor Sir LAWRENCE BRAGG, O.B.E., M.A., Sc.D., F.Inst.P., F.R.S.
Honorary Treasurer :
Major C. E. S. PHILLIPS, O.B.E., F.Inst.P., F.R.S.E.
Honorary Secretary :
Professor J. A. CROWTHER, M.A., Sc.D., F.Inst.P.

Temporary Offices : THE UNIVERSITY, READING, BERKSHIRE

NOTES AND NOTICES

No. 1 MAY, 1941

Introduction

The need for an Institute " House Journal " has long been felt and has become more urgent now that opportunities for Members to meet are less frequent. To some extent the need has been met by an occasional page in the *Journal of Scientific Instruments* devoted to the Institute's domestic affairs ; for various reasons, however, this is not very satisfactory. These *Notes and Notices* will therefore appear at irregular intervals and will include such matters as notices of meetings, of elections to membership, of recent appointments and of deceases. Summaries of the proceedings of the Board will be included, together with such other communications as the Officers may wish to send Members from time to time.

Members are asked to note that the information in these circulars is not intended for general publication.

Notices

Nominations to the Board

The formal resolution to suspend the Articles relating to the eligibility of the Officers and Members of the Board to hold office for more than the defined periods (notice of which is given on the accompanying sheet and which in accordance with the requirements of the Articles of Association, has already received the approval of the Board of Trade) was referred to in the nomination list circulated on 18th April last. Its object is to enable Members, if they so desire, to re-elect annually the President and other Members of the Board if they are nominated. The Board, while strongly recommending the adoption of this Resolution, desires to emphasise that Members will still retain their right to make nominations to fill vacancies on the Board, different from those made by the Board itself, and the Articles governing the periodic retirement of the Officers and Members of the Board are remaining in force. The less frequent meetings of the Board and its Committees in war-time cause the Board to be reluctant to make changes in its personnel as often as in peace-time and it therefore proposes for the period of the war to submit the names of at least some of those with longer experience of the Board's procedure for re-election each year.

Proposed Change in Regulations governing Admission to the Institute

A Resolution proposing changes in the By-Law governing election to Fellowship and Associateship will be brought before the Ordinary General Meeting convened for 4th June. The terms of the proposed new By-Law are given on the formal notice on the accompanying sheet. In support of the Resolution the Board wishes to make the following remarks. It has for some time been aware that a strict interpretation of the present By-Laws forces them to exclude many men who should be Associates of the Institute. Furthermore, it believes that the regulations governing transfer to Fellowship are so framed that there is little separation between the grades other than that represented by four years' experience. It considers that all practising physicists of proved ability should be eligible for Associateship and that the Fellowship should be reserved for those among them who have made valuable contributions to physics or its applications.

Accordingly after the most thorough and prolonged consideration of the matter in all its aspects the Membership and Examinations Committee which scrutinizes all applications, submitted its proposals to the Board. After a further re-examination by the Board they were duly adopted for submission to the Institute in General Meeting. The Board strongly recommends the adoption of the Resolution.

The Board wishes to emphasise that the proposed changes involve no lowering of the standard of the Associateship but rather a broadening of the basis of admission. The standard of the Fellowship will, if anything, be raised by the new regulations.

The lists of recognised degrees both with high honours and at pass standard will be contained in the regulations, which will also include a clause, as at present, stating that the Board may require a candidate who does not possess one of these degrees or diplomas to submit to a test to show that his knowledge of physics is up to the standard required. The test may be by *viva voce*, written or practical examination or any combination of these.

Proceedings of the Board

In addition to matters referred to elsewhere in these notes and to a quantity of routine and formal business the Board has recently considered the following matters.

Industrial Radiography Group

The Board has acceded to a request from the Committee of the London and Home Counties' Branch for permission to form a discussion group of those specially interested in Industrial Radiography. The inaugural meeting of the Group has been arranged for 20th May ; those interested, who have not already done so, should send their names and addresses to Dr. H. Lowery, F.Inst.P., South-West Essex Technical College, Forest Road, London, E.17. Membership of the Group will not be confined to members of the London and Home Counties' Branch.

At an informal discussion on Industrial Radiography held in January under the auspices of the Branch, over forty names were handed in as potential members of this the first discussion group to be formed.

Abstracts of Publications on Applied Physics

Dr. F. C. Toy made a statement regarding the desirability of including abstracts of important papers on Applied Physics in *Physics Abstracts*

(formerly Science Abstracts A). It was decided to send a communication to the Committee of *Physics Abstracts* calling attention to the desirability of this and suggesting that the Committee pursue the matter in conjunction with the Editors of other Abstracting Journals, particularly those devoted to various industries. A preliminary list of Journals dealing with Applied Physics and not at present covered by *Physics Abstracts* is being prepared for forwarding to the Committee. Names of Journals suggested by Members will be considered for inclusion in the list.

Central Register of the Ministry of Labour and National Service

A proposal that the definition of physicist, contained in the Order for their compulsory registration, should be broadened has been a subject of the Board's deliberations, in connexion with its consideration of the shortage of physicists for work of National importance. Certain proposals are being forwarded to the Ministry.

The Register

Elections to Membership

March, 1941

FELLOWS

Betteridge, Walter, B.Sc., Ph.D., Assistant Chief Metallurgist, Bristol Aeroplane Co., Filton, Bristol. (*Transfer from Associateship.*)

Drinkwater, John William, B.Sc., Ph.D., Physicist, Coventry Gauge & Tool Co., Ltd., Coventry. (*Transfer from Associateship.*)

Harrison, Geoffrey Bond, B.Sc., Ph.D., Chief Physicist, Selo Laboratories, Ilford, Ltd., Brentwood. (*Transfer from Associateship.*)

Harrison, Vernon George Wentworth, B.Sc., Ph.D., Senior Physicist, Printing and Allied Trades' Research Association, London. (*Transfer from Associateship.*)

Pearson, Eric Bell, M.Sc., Scientific Officer, Ministry of Aircraft Production. (*Transfer from Associateship.*)

Spiegler, Gottfried, Ph.D., Private research.

Wooster, William Alfred, B.Sc., M.A., Ph.D., Lecturer, Department of Mineralogy and Petrology, University of Cambridge.

ASSOCIATES

Broadhurst, John Weston, B.Sc., A.R.C.S., Instrument Physicist, I.C.I (General Chemicals) Ltd.

Coghlan, Raymond Philip, B.Sc., Temporary Experimental Officer, H.M. Signal School, Department of Scientific Research, Admiralty.

Druett, Henry Arthur, B.Sc., Experimental Assistant, Physics Department, Chemical Defence Research Department.

Hercock, Robert James, B.Sc., Research Physicist, Selo Laboratories, Ilford, Ltd., Brentwood.

Lovell, Edward Arthur, B.Sc., A.R.C.S., Junior Scientific Officer, Royal Aircraft Establishment.

Maclean, Donald John, B.Sc., Junior Scientific Officer, Road Research Laboratory.

Reid, Joseph Boutelle, B.Sc., B.A., Physicist, Research Laboratory, Kodak Ltd., Wealdstone, Middlesex.

Robins, Malcolm Owen, B.A., Junior Scientific Officer, Royal Aircraft Establishment.

Stevenson, Alexander Inns, B.Sc., Junior Research Physicist, Research Department, Metropolitan-Vickers Electrical Co., Ltd., Manchester.

Taylor, Victor Harold, B.Sc., Temporary Experimental Assistant III, Mine Design Department, H.M.S. " Vernon."

SUBSCRIBERS

Cartwright, Paul Alexander, Methods and Chemical Engineer, C.A.V. Ltd., Acton.

Pike, Edmund John, Research Librarian, High Duty Alloys Ltd., Slough, Bucks.

STUDENTS

Barton, William Horace, University College, London.

Cattemull, Eric Ernest Thomas, B.Sc., University College, Southampton.

Copp, Darrell John Barkwell, University College, Southampton.

Davidson, Ronald, B.Sc., University College, Southampton.

Higgs, David Malcolm John, University of Reading.

Howe, Frederick Albert, Research Assistant III, Road Research Laboratory.

Langton, Norman Harry, University College, Hull.

Price, Derek John, South-West Essex Technical College, Walthamstow.

Threadgold, Philip, University of Reading.

Wilcock, William Leslie, University of Manchester.

Worker, John Alan Meredith, University College, Southampton.

Deceased

Beatty, Richard Thomas, M.A., B.E., D.Sc., B.A., F.Inst.P., Senior Scientific Officer, Admiralty Research Laboratory.

Kaye, George William Clarkson, O.B.E., M.A., D.Sc., A.R.C.S., F.Inst.P., Superintendent of Physics Department, National Physical Laboratory. Member of the Board 1921-25, and Vice-President 1935-39.

Thornely, Philip Cawthorn, M.Sc., A.Inst.P., Pilot-Officer, R.A.F.V.R.

Notes

The Revised Schedule of Reserved Occupations

The age of reservation of physicists remains at 21 in the revised Schedule of Reserved Occupations and Protected Work issued on 10th April, 1941. The age of reservation of University Professors of physics and whole-time lecturers in physics has been lowered from 30 to 25.

A man's age is reckoned as that at the date on which his age class is required to register under the National Service (Armed Forces) Act and his occupation is that recorded at the time of registration. Employers are required to verify occupations stated, so that it is advisable for Members to consult with their employers before registration and to use the appropriate term named in the schedule. It should be noted, for example, that Scientific Research Workers, whether in a University, Research Association or similar Institution are reserved above 25 years of age ; if therefore this term is used in place of physicist there is the corresponding difference in the reservation age.

Members are reminded that they may always refer to the Institute for advice on professional matters.

The Central Register

It is desired to keep the information on the Central Register up-to-date. Those who have returned cards of enrolment for this Register through the Institute of Physics are therefore requested to inform the Secretary of the Institute (at the University, Reading, Berks) of any changes in respect of post, qualifications or address. Members who have not enrolled on the Register are also requested to send similar information to the Secretary for the purpose of the Institute's own records.

American Physicists

According to a survey made by the American Institute of Physics, out of a total of about 5,000 American physicists, some 1,400 are now working on problems of National Defence. The survey indicates that from 130 universities having a total physics staff of 1,100 Professors and instructors over 100 have left on defence tasks. It is also stated that there are some 85 graduate students on full or part-time work, about 300 physicists in full-time employment with government departments including military departments, and perhaps 800 industrial physicists whose work is now mainly on defence.

Science in Parliament

SCIENTIFIC ADVISORY COMMITTEE. On 23rd February in the House of Commons, Capt. Plugge asked the Lord President of the Council whether he can arrange for the newly-appointed Scientific Advisory Committee to review the adequacy or otherwise of the scientific appointments to the various Government Departments, including the permanent scientific advisory personnel and the personnel of the various scientific committees which advise Departments, with a view to ensuring that the fullest use is being made of scientific knowledge in the administration of the national war effort? The Lord President of the Council (Sir John Anderson) replied: "The purpose which the Government had in view in establishing the Scientific Advisory Committee was to ensure the continuance of the fullest co-operation of scientific workers with the Government in the national war effort, and one of the functions specifically assigned to the Committee is to advise on the selection of individuals for scientific work in, or for, the various Government Departments. I think, therefore, that the object indicated by my hon. and gallant Friend is already sufficiently met."

WAR WORK OF SCIENTISTS. A debate on the war work of scientists took place in the House of Lords on 2nd April. Viscount Samuel, in opening the debate, said: ". . . . the view has been expressed that some of the Government Departments, at least, take too narrow a view of the word 'scientists,' that they concentrate too much upon Professors from Universities and the like; and the suggestion is made that industrial men of science ought to be more frequently employed—chemists and physicists who are actually engaged in industry or in practice as consultants . . . . . the criticism is sometimes made that the scientists in the Government Departments are occasionally not sufficiently in touch with actual operations, whether military or industrial, or agricultural, or whatever it may be—that there is not a sufficiency of direct contact. Scientists are often introduced into Government Departments in order to stimulate the bureaucracy, but it is sometimes found that after a month or two, or a year or two, they themselves become bureaucratised. And this tendency is made more marked because very frequently their work is highly secret and they are therefore unable to maintain full

contact with other quarters." Viscount Samuel threw out the suggestion that in order to collect information on development of science in other countries there should be in our Embassies, Science Attachés.

The reply on behalf of the Government was made by Lord Hankey, Chancellor of the Duchy of Lancaster and Chairman of the Scientific Advisory Committee of the War Cabinet. His speech is reported in full in *Nature* for 12th April, 1941, and space will only permit a brief summary of a few of the salient points here.

After outlining the organization of the Government's Scientific Research and Development Departments and the various Committees under whose direction they were conducted, he went on to say in reply to the accusation of the narrow interpretation of the word " scientist " that the reason for the non-inclusion of men with a knowledge of applied science on the Scientific Advisory Committee was that this did not fit into the scheme of the Committee as the Government conceived it. The Government were, however, he said, in touch with the professional societies concerned with a view to the possible establishment of a separate organisation working in the field of applied science and in close touch with the Scientific Advisory Committee. (*The appointment of the Engineering Advisory Committee is referred to later in these Notes.*) He said that the Committee had made a thorough survey of the scientific activities of Government Departments and had concluded that these were far more effective and far more extensive than is commonly realised and that much of the criticism is mainly due to lack of knowledge of the facts. He continued: " For instance, there is one criticism that the Government have failed to make effective use of the services of outside scientists. As a matter of fact, the names of nearly 300 senior outside scientists of the highest class were actually given to the Committee in the course of their investigations and that list did not include the great mass of younger scientists engaged on war work in all those establishments—I think I have mentioned between forty and fifty at least—maintained by the Government for research work, or in the Services. Of course, it would be too much to claim that the fullest use is being made of every senior scientific worker, but I believe that in all the more important fields the majority of those especially well fitted to assist our war effort have been given an opportunity to do so. But there are some fields where the opportunities have not yet appeared and we are conscious of a feeling of frustration in some quarters there. As regards the younger scientists —the junior scientific workers—the demand in the different fields of science is very varying and fluctuates, and it is only possible very gradually to absorb in work of National importance all the very large numbers who are anxious to employ their special knowledge in some form of war work. This problem will be kept constantly in mind, both by the Scientific Advisory Committee and by the Government, and everything possible will be done to find places for those who have not yet been able to pull their whole weight. But in view of all the difficulties the Scientific Advisory Committee believe that serious criticism of the present position is not justified."

Lord Hankey continued: " Having recorded general satisfaction with the range and effectiveness of the Government's scientific activities, the Committee reached the conclusion that some of the existing forms of organisation are better than others . . . . So far as the scientific activities of the Defence Services are concerned the points to which the Committee attach the greatest importance are the following: (1) Provision in the organisation of departmental scientific staffs for regular consultation

with a strong advisory council or committee which includes outside scientific experts. As I have shown, the Departments concerned have applied this principle generally. (2) The utmost possible use of the facilities of the Department of Scientific and Industrial Research and the Medical Research Council. This is already in operation and will probably be extended. (3) A much wider and more intensive study of those problems connected with early and adequate provision for the well-being and efficiency of personnel in the design of new instruments of war. This again, as I have indicated, is well in hand. (4) The close co-operation at every state of research, development and production between the operational and scientific staffs, in other words between research and development on the one side and the user on the other. These principles were discussed at a meeting of the Ministers principally concerned which was convened by the Lord President of the Council. It was found that Government Departments had already applied them to a considerable extent according to their needs and that they were continuing the process."

Engineering Advisory Committee

The Lord President of the Council, with the approval of the Prime Minister, has appointed an Engineering Advisory Committee under the chairmanship of Lord Hankey to advise the Government upon engineering questions connected with the war effort and in particular: (i) to consider how the resources of the engineering profession can best be utilized in connexion with the war work of Government Departments, and to nominate engineers who might suitably be invited to undertake particular tasks ; (ii) to suggest means of improving or supplementing the methods adopted by Government Departments for utilizing engineering science for war purposes ; (iii) to advise on problems referred to them in connexion with the development of new engineering devices, and to advise on methods of bringing such devices speedily into production, and on means of meeting new war requirements in the engineering field ; (iv) to examine new ideas or devices in engineering likely to assist the war effort, to test their technical validity, and to bring to the notice of the Government those which appear to merit further consideration by the Department concerned.

The committee will consist of: Lord Hankey, Chancellor of the Duchy of Lancaster (*Chairman*) ; Lord Falmouth, M.I.Mech.E. (*Vice-Chairman*) ; Sir Henry Tizard, F.R.S., F.R.Ae.S., F.Inst.P., and of the following members, who have been selected after consultation with the Presidents of the Institutions of Civil, Mechanical and Electrical Engineers: Mr. J. R. Beard, M.Sc., M.Inst.C.E., M.I.E.E. ; Dr. A. P. M. Fleming, M.I.Mech.E., M.I.E.E., F.Inst.P. ; Mr. W. T. Halcrow, M.Inst.C.E. ; Mr. B. W. Holman, A.R.S.M., M.Inst.Chem.E. ; Dr. C. C. Paterson, M.I.E.E., F.Inst.P. ; Mr. H. R. Ricardo, F.R.S., A.M.Inst.C.E., M.I.Mech.E. ; Principal A. Robertson, F.R.S., M.I.Mech.E.

Representatives of the Government research establishments and production departments will be associated with the Committee as required from time to time.

It is satisfactory to note that three Fellows of the Institute of Physics have been appointed to this Committee. Dr. Paterson (Director of the Research Laboratories of the General Electric Co., Ltd.) is a past President of the Institute, and Dr. Fleming (Director of the Metropolitan-Vickers Electrical Co., Ltd.) has served on the Board.

Personal Notes and Recent Appointments

Sir Lawrence Bragg (*President*) is in Ottawa, where he will in co-operation with Prof. R. H. Fowler (*Fellow*) act as liaison with Canadian and American Scientists. A meeting between them and representatives of the American Institute of Physics has been arranged.

R. A. Watson Watt (*Fellow*) has been elected a Fellow of the Royal Society.

H. G. Taylor (*Fellow*) has had the degree of D.Sc. (Eng.) conferred on him by the University of London.

J. C. M. Brentano (*Fellow*) is at Northwestern University, Illinois.

H. F. Cook (*Associate*) is now Assistant Physicist at Hammersmith Hospital, London.

W. F. Floyd (*Associate*) is serving as a Flying-Officer in the Technical Branch of the Royal Air Force (V.R.).

G. O. Forester (*Associate*) is now with Tootal Broadhurst Lee, Co., Ltd.

F. Happey (*Associate*) is now on the Staff at a Royal Ordnance Factory.

L. G. H. Huxley (*Fellow*) has joined the Research Staff of the Air Ministry.

J. V. Hughes (*Fellow*) has joined the Admiralty Research and Technical Pool.

F. W. Jones (*Associate*) has been appointed to the staff of the National Physical Laboratory.

Mrs. A. C. B. Mathews (*Associate*) is now with Imperial Chemical Industries (Paints) Ltd.

S. Rees-Jones (*Associate*) is now with Airdale Light Alloys.

H. Tompa (*Associate*) is now Mathematics Master at Worksop College.

F. I. Wright (*Associate*) is now a Research Assistant at the Admiralty.

NOTE.—Members are invited to keep the Secretary informed of changes of appointments, and of awards or distinctions conferred.

Branch Meetings

A meeting of the London and Home Counties' Branch will be held at 6 p.m. on 13th May in the Lecture Hall (Social Centre) of Messrs. Kodak Ltd., at Harrow, when Dr. C. Sykes, F.Inst.P., Superintendent of the Metallurgy Department, National Physical Laboratory, will lecture on "Thermal Effects in Transformations in Metals." The lecture will be followed by a general discussion.

On 17th June, Mr. E. R. Davies, F.Inst.P., Chairman of the Branch, will lecture on a photographic subject.

The Summer Meeting, which will take the form of a Joint Meeting with the Royal Meteorological Society, has been arranged for 19th July, when Sir George C. Simpson, F.Inst.P., F.R.S., will preside over a discussion on "Thunderstorm Problems."

Full particulars of these meetings are being circulated to members of the Branch; others interested will be welcome at the meetings, and can obtain details from the Honorary Secretary of the Branch, Dr. H. Lowery, F.Inst.P., South-West Essex Technical College, London, E.17.

Manchester and District Branch

The Annual General Meeting of the Manchester and District Branch was held in the Physics Department, the University, Manchester, on 2nd May. The future activities of the Branch were considered. After the conclusion of the business of the meeting, Dr. D. A. Spencer lectured on "Photographic Technique in Radiography," and a discussion followed.

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THE INSTITUTE OF PHYSICS

Temporary Address : THE UNIVERSITY, READING, BERKS

Registered Address : 1 Lowther Gardens, London, S.W.7

NOTICE IS HEREBY GIVEN that an *Extraordinary General Meeting* of the Institute of Physics will be held at the University, Reading, Berks, on Wednesday, the 4th day of June, 1941, at 4.20 o'clock in the afternoon, for the purpose of considering and if thought fit, passing with or without modification as a Special Resolution, the subjoined Resolution, that is to say:—

"That the following be temporarily inserted as an additional Article: *42a.* For the duration of hostilities in the present war and until six months thereafter or until the next Ordinary General Meeting whichever is the later the provisions of Articles 38, 40 and 42 whereby the President, Vice-Presidents and Ordinary Members of the Board are not eligible to hold office for more than the periods mentioned in those Articles shall cease to have effect."

The Board's comments on this Resolution will be found in the accompanying Notes.

NOTICE IS HEREBY GIVEN that the *twenty-first Ordinary General Meeting* of the Institute of Physics will be held at the University, Reading, Berks, on Wednesday, the 4th day of June, 1941, at 4.30 o'clock in the afternoon or so soon thereafter as the Extraordinary General Meeting convened for the same afternoon shall have concluded. The Ordinary Business to be conducted is the consideration of the attached annual report, accounts and balance sheets, the declaration of the election of the Honorary Officers and other members of the Board nominated and the election of Auditors.

AND NOTICE IS HEREBY FURTHER GIVEN that the following Resolution will be submitted to the meeting as *Special Business*, for consideration, and if thought fit passing with or without modification, that is to say:—

"That Sections B and C of By-Law 4 be deleted and the following be substituted therefore:

B. FELLOWS.

To qualify for transfer or election to the class of Fellow a candidate must have attained the age of 25 years and must satisfy the Board EITHER

(i) That after receiving such training in physics as shall satisfy the Board he has obtained a degree or diploma (with high honours) recognised by the Board and further that for a period of not less than five years' full-time

work or its equivalent in part-time work he has *either* carried out or been responsible for research work in physics or its applications which in the opinion of the Board forms a valuable contribution to the subject *or* has been professionally employed in a responsible position as a physicist or in a capacity demanding such knowledge of physics as shall satisfy the Board.

OR (ii) That he has carried out or been responsible for work in physics or its applications which constitute such a contribution to the subject as, in the opinion of the Board, make it desirable that he should be a member of the Institute.

C. ASSOCIATES.

To qualify for election to the class of Associate a candidate must have attained the age of 21 years, have received a general education approved by the Board and must satisfy the Board EITHER

(i) That after following a course of study in physics approved by the Board he has obtained a degree or diploma (with high honours) recognised by the Board and further that he has had at least one year's full-time or an equivalent period of part-time experience in work demanding a knowledge of physics under the direction of a Fellow of the Institute or under other approved conditions.

OR (ii) That he has complied with each of the following requirements:

(*a*) that he possesses a knowledge of physics equivalent to that required for a degree (at pass standard) recognised by the Board ; and

(*b*) that for at least three years' full-time or an equivalent period of part-time he has had experience to the satisfaction of the Board in research or development work under the direction of a Fellow of the Institute or under other approved conditions ; and

(*c*) that he has displayed evidence of initiative and originality such as would be required for the efficient prosecution of independent research or development work in physics or its applications.

The Board's comments on the above proposals will be found in the accompanying Notes.

Tea will be served at 4 p.m.

By order of the Board,

J. A. CROWTHER,
Honorary Secretary.

Dated this 8th day of May, 1941.

THE INSTITUTE OF PHYSICS

President:
Professor Sir LAWRENCE BRAGG, O.B.E., M.A., Sc.D., F.Inst.P., F.R.S.
Honorary Treasurer:
Major C. E. S. PHILLIPS, O.B.E., F.Inst.P., F.R.S.E.
Honorary Secretary:
Professor J. A. CROWTHER, M.A., Sc.D., F.Inst.P.

Temporary Offices: THE UNIVERSITY, READING, BERKSHIRE

NOTES AND NOTICES

No. 2 JULY, 1941

Members are asked to note that the information in these circulars is not intended for general publication; copies of *Notes and Notices* should not therefore be passed to libraries.

Editorial

Physicists and the War

The importance of physics and the physicist in this most mechanical of all wars is becoming daily more obvious. There is evidence that the Government are now fully aware of the necessities of the situation, and are either taking or have in contemplation adequate steps to meet it. A certain amount of confusion existed in the early days of the war, and in particular the actual number of physicists who would be required for service either with the forces or in industry was grossly underestimated, even by those who were in the best position to judge, and a certain number of students with respectable but not outstanding qualifications were called up and posted to units where their training could not be adequately used. The exigencies of the situation, assisted perhaps by representations made by Officers of the Institute, and particularly by our President, have produced a complete change. All men completing a University degree course with physics as one of their subjects are interviewed by a Technical Committee, nominated by the University or University College, their capability assessed, and their preferences ascertained. They are then transferred to a central 'pool' from which vacancies in industry and the Universities as well as in the specialized branches of the Forces are filled. I have first-hand knowledge of the efficiency, skill and sympathy with which the officials of Central Register are carrying out this important task.

The Government are fully alive to the necessity of ensuring a continuous flow of trained physicists into the 'pool'. No pressure is at present being exercised upon the Technical Committees, who have the responsibility for the decision, to interrupt a man's scientific training at an unduly early stage, though the stringent scrutiny to which each student is now subjected at each stage of his training will probably result in the partial elimination of the 'third class Honours' man, for which we may feel no regret. It is understood that steps are being taken to ensure an adequate entry of physics students into the Universities from the secondary schools. On the other hand, University departments are to a certain extent modifying and

abridging their courses to adapt them to the urgent needs of the times, and the student of to-day and to-morrow will be less widely read than his predecessors. In particular, he will not have had the advantage, which was becoming fairly general in recent years, of completing his studies with a year or so of research training. It is very much to be hoped that, after the war, the Government will adopt some scheme for returning at any rate the best of their recruits to the Universities for 'reconditioning'.

It must be emphasized that, while the need for more physicists is urgent, the demand at present is mainly for junior physicists; for men, that is, to carry out highly skilled but nevertheless mainly routine jobs, both in industry and in connexion with the fighting forces. The construction, testing, maintenance and operation of new and complicated experimental devices calls for knowledge and technical ability which only the trained physicist can adequately provide; and obviously calls for their employment in large numbers. It is certainly not research, in the sense in which the word is used in peace time, and it is understandable that some of the brilliant young physicists called upon to carry it on (some of whom would have normally been experiencing the thrills and torments of original research) may feel that their talents could be employed to better purpose.

A similar feeling undoubtedly exists among the younger members of industrial research organizations, who, having served a few years apprenticeship in their present jobs would now, except for the war, have been reasonably expecting promotion to more important work. One can sympathize with them in this temporary halting of their career, though it is only fair to point out that many young professional men have had their careers much more drastically interrupted by the demands of military service, and one can appreciate still more their sincere desire to devote all their talents to the service of the nation. The Institute is sparing no effort to ensure that, as far as is possible, this desire shall achieve fulfilment. It must, however, be remembered that this routine work, dull and unimportant as it may seem to the individual worker, is in the aggregate a vital, possibly the most vital part of the war effort; the accuracy and skill with which it is carried out will play a decisive part in the ultimate event.

There is a little evidence that some firms, harassed by pressure of work, are not making it easy for members of their staffs to seek more important posts elsewhere, fearing the difficulties of replacement under present conditions. The Institute is prepared to advise members, should such cases arise; though, where all is so important, questions of 'priorities' are not easy to decide. The Ministry of Labour possesses wide powers in such cases, though it is, quite rightly, reluctant to exercise them, and would only act on the grounds of national, not personal, advantage. In the meantime, we shall continue to notify all members whose names are on the Appointments Register of vacancies as they occur.

Of genuine fundamental war research it is unprofitable to pronounce. Very few people can be in a position to estimate either its magnitude or its quality; and they, for obvious reasons, cannot tell. The new, ad hoc, teams have been manned by the obvious people from the world of pure research, though there is a feeling that a larger admixture of men with industrial research experience might have expedited the work. There may be some justification for this feeling, though it has to be remembered that some of our leading industrial teams are engaged as such on full-time war research. We can, at any rate, welcome the fact that the newly appointed Engineering Advisory Committee has, on its membership, three distinguished Fellows of our own Institute, Dr A. P. M. Fleming (recently a member of the Board), Dr C. C. Paterson (ex-President) and Sir Henry Tizard. Their presence on the committee should ensure that the vital contribution which physics still has to offer to the national effort will not be disregarded.

J. A. CROWTHER

Honorary Secretary, Institute of Physics

Notices

Service on the Board

Notice is hereby given that at an Extraordinary General Meeting of the Institute held at the University, Reading, Berks, on the 4th June 1941, the subjoined Resolution was duly passed as a Special Resolution, that is to say:

'That the following be temporarily inserted as an additional Article: *42a*. For the duration of hostilities in the present war and until six months thereafter or until the next Ordinary General Meeting whichever is the later the provisions of Articles 38, 40 and 42 whereby the President, Vice-Presidents and Ordinary Members of the Board are not eligible to hold office for more than the periods mentioned in those Articles shall cease to have effect.'

The purpose of this Resolution was explained in the previous issue of *Notes and Notices*.

Changes in the Regulations governing Admission to the Institute

In the previous issue of *Notes and Notices* an announcement was made concerning the proposed change in the regulations governing admission to the Institute. In accordance with the terms of By-law 25 notice is now given that at the Ordinary General Meeting of the Institute held on the 4th June 1941 at the University, Reading, Berks, the subjoined resolution was passed unanimously:

'That Sections B and C of By-law 4 be deleted and the following be substituted therefor:

B. FELLOWS.

'To qualify for transfer or election to the class of Fellow a candidate must have attained the age of 25 years and must satisfy the Board **either**

(i) That after receiving such training in physics as shall satisfy the Board he has obtained a degree or diploma (with high honours) recognized by the Board and further that for a period of not less than five years' full-time work or its equivalent in part-time work he has *either* carried out or been responsible for research work in physics or its applications which in the opinion of the Board forms a valuable contribution to the subject *or* has been professionally employed in a responsible position as a physicist or in a capacity demanding such knowledge of physics as shall satisfy the Board.

or (ii) That he has carried out or been responsible for work in physics or its applications which constitute such a contribution to the subject as, in the opinion of the Board, make it desirable that he should be a member of the Institute.

Notwithstanding the provisions of this By-law the applications of candidates, who on the 1st September 1941 were Associates of the Institute, for transfer from Associateship to Fellowship which are received before the 1st September 1945, shall be considered under the By-laws adopted on the 26th May 1937.

C. ASSOCIATES.

To qualify for election to the class of Associate a candidate must have attained the age of 21 years, have received a general education approved by the Board and must satisfy the Board **either**

(i) That after following a course of study in physics approved by the Board he has obtained a degree or diploma (with high honours) recognized by the Board and further that he has had at least one year's full-time or an equivalent period of part-time experience in work demanding a knowledge of physics under the direction of a Fellow of the Institute or under other approved conditions.

or (ii) That he has complied with each of the following requirements:

(*a*) that he possesses a knowledge of physics equivalent to that required for a degree (at pass standard) recognized by the Board; and

(*b*) that for at least three years' full-time or an equivalent period of part-time he has had experience to the satisfaction of the Board in research or development work under the direction of a Fellow of the Institute or under other approved conditions; and

(*c*) that he has displayed evidence of initiative and originality such as would be required for the efficient prosecution of independent research or development work in physics or its applications.'

It will be observed that the resolution as originally proposed was amended at the meeting by the addition of a 'carry-over clause' which will enable the present Associates to have their applications for transfer to Fellowship considered under the old regulations. This suggestion was submitted by an Associate and unanimously adopted.

Proceedings of the Twenty-first Ordinary General Meeting

The Twenty-first Ordinary General Meeting of the Institute was held on Wednesday, 4th June 1941, at the University of Reading. Dr W. Makower (*Senior Vice-President*) presided. A quorum being present the Secretary read the notice convening the meeting. The Minutes of the previous Ordinary General Meeting were read and approved and were then signed by the Chairman. In the unavoidable absence of the Honorary Treasurer, Professor J. A. Crowther (*Honorary Secretary*) moved the adoption of the Accounts and Balance Sheet for the year 1940. This was seconded by Mr E. R. Davies (*Fellow*) and the proposal for their adoption was carried unanimously. Professor Crowther then moved the adoption of the Report of the Board for the year 1940 and this was seconded by Dr H. Lowery (*Fellow*). The Report was unanimously adopted. The Chairman having received the Scrutineers' report declared the following re-elected as Officers and non-official members of the Board to fill the vacancies which will occur on 30th September next: *President:* Professor Sir Lawrence Bragg; *Vice-President:* Dr W. Makower; *Honorary Treasurer:* Major C. E. S. Phillips; *Honorary Secretary:* Professor J. A. Crowther; *Ordinary Members of the Board:* Professor J. Chadwick and Mr D. C. Gall. Messrs Knox Cropper and Co. were elected auditors for the year 1941. Dr J. A. V. Fairbrother (*Fellow*), in proposing a vote of thanks to the President, Honorary Officers and Members of the Board, paid special tribute to the magnificent work for the Institute of Professor J. A. Crowther (*Honorary Secretary*). The vote was carried with acclamation. Votes of thanks to the Commissioners of the 1851 Exhibition for the use, rent free, of the Institute's rooms in London, to the Council of the University of Reading for

the use of a room as an emergency office and the room for the meeting, and to the Honorary Solicitors, Messrs Farrer and Co., were carried with acclamation.

After consideration of the special business concerning the change of the regulations governing admission to the Institute to which reference is made above, the Chairman declared the meeting closed.

The Register

Elections to Membership

June 1941

Fellows

Bor, Joseph, B.Sc., M.Sc. (Tech.), Senior Lecturer in Physics, South-West Essex Technical College, London. (*Transfer from Associateship.*)

Garton, Charles George, Senior Technical Assistant, British Electrical and Allied Trades Research Association, London.

Jnanananda, Swami, D.Sc., Research Student, George Holt Physics Laboratories, University of Liverpool.

Nickson, A. F. B., M.Sc., Radio Research Board of the Council of Scientific and Industrial Research, Australia.

Sheppard, Percival Albert, B.Sc., Assistant Professor of Meteorology, Imperial College of Science and Technology, London.

Simons, Arthur, M.Sc., Research Physicist, Callender's Cable and Construction Co. Ltd.

Vick, Francis Arthur, M.Sc., Ph.D., Lecturer in Physics, University College, London, and Temporary Senior Experimental Officer, Directorate of Scientific Research, Ministry of Supply. (*Transfer from Associateship.*)

Associates

Bastick, Raymond Edward, B.Sc., Ph.D., Research Physicist, Chance Bros. and Co. Ltd., Smethwick, Birmingham.

Charlesworth, George, B.Sc., Ph.D., Junior Scientific Officer, Building Research Station.

Hopkin, Hywel Raymond, B.Sc., Technical Assistant, Royal Aircraft Establishment.

Innes, George Smith, B.Sc., Technical Assistant, Mozelle Sassoon Department, St Bartholomew's Hospital, London.

Jackson, Albert Donald, B.Sc., Flying Officer, Technical Branch (Signals), R.A.F.

Pearson, William Thomas Shipston, B.Sc., Technical Assistant III, Royal Aircraft Establishment.

Schofield, Albert, M.Sc., Experimental Officer, Ministry of Supply.

Scrimshaw, Frank Herbert, B.Sc., Junior Scientific Officer, Royal Aircraft Establishment.

Sommerville, J. M., B.A., B.Sc. (Australia).

Stretton, Theodore Reginald, B.Sc., M.A., Technical Officer, Directorate of Scientific Research, Ministry of Supply.

Subscriber

Brech, Frederick George, X-Ray Metallurgist, Adam Hilger Ltd., London.

Students

Atherton, Edward, Wigan and District Mining and Technical College.

Badcock, Olive Margaret Gwyn, Chelsea Polytechnic.

Charnock, John, University College, London.

Clibbon, Thomas Alan, University College, London.

Connor, Robert Dickson, University of Edinburgh.

Cowell, Janet Lang Hall, Bedford College, University of London.
Dickson, John Munro, University of Edinburgh.
Exall, John Aubrey, University College, London.
Gould, Gertrude, University College, Hull.
Munden, William Andrew, Royal Army Ordnance Corps.
Wright, Maurice Lawson, Laboratory Assistant, Physics Department, Wool Industries Research Association, Leeds. (Leeds Technical College.)

Notes

Members available for work of national importance

Members resident in the British Isles who are available for technical work of national importance, or who would be released at an early date from their present posts, are invited to notify the Secretary immediately. The Institute's list of prospective employers of physicists, at home, contains some 350 names of firms, research associations, and government establishments. It is proposed that very brief particulars (under registration numbers) of those replying to this invitation should be circulated to those on this list. The procedure would then be that the Secretary would notify the Member which organizations had expressed an interest in him and if the Member wishes to proceed he would be requested to communicate directly with the organizations concerned and to make his own arrangements; if, on the other hand, he does not wish to proceed, the organizations concerned would be informed by the Secretary without disclosing the Member's name. A somewhat similar scheme has proved very successful during the past few years in respect of new graduates seeking posts through the Institute, on the completion of their training. It is essential that those participating in these arrangements should ascertain that they can, in fact, expect to be released to take up other work, and in this connexion their attention is directed to the Honorary Secretary's statement which appears on p. 9 of this issue of *Notes and Notices*.

The Ministry of Labour and National Service wish it to be made clear that Students are not free to accept any posts offered to them. By the terms of the deferment from military service granted to them to complete their studies they will be allocated to posts by the Ministry following the recommendations of the Joint Recruiting Boards. Employers wishing to secure their services should therefore communicate to this effect to the Students' Professor or Superintendent and request that this information be conveyed to the University Joint Recruiting Board for inclusion in its recommendation to the Ministry.

Discussion Groups

The announcement below of the formation of the first subject group under the auspices of the Institute marks a further stage in its anticipated development. The new group has the cordial support of the Participating Societies of the Institute. It is already clear that from time to time a demand will arise for other specialist groups to be formed and the Board is prepared to give such proposals sympathetic consideration provided that there is evidence that there will be reasonable support for the proposed group and that similar facilities do not already exist.

Industrial Radiology Group

The Inaugural Meeting of the Group was held on 20th May 1941 at Harrow, about seventy people attending. The title 'Industrial Radiology Group' having been approved by those present, Dr L. Mullins was appointed Honorary Secretary, and the following Committee was elected: Drs W. Betteridge, D. W. Davison, and H. Lowery, Messrs A. N. Gilchrist, W. L.

Harper, H. P. Rooksby, H. S. Tasker, D. E. Thomas and E. J. Tunnicliffe. So constituted, the present Committee includes representatives of those employing X-rays in industry and the manufacturers of industrial X-ray apparatus and films. In addition, the British Institute of Radiology and the Society of Radiographers are to be invited to send one representative each to serve on the Committee. This Committee was given power to elect its own Chairman and to formulate a Constitution for the Group.

In addition to providing a medium for the exchange of views and experiences on the practice of X-ray work in industry, it is hoped that the Group may ultimately issue a Report summarizing many of the essential practical points of importance to industrial users of X-ray plant.

Members wishing to join the Group (for which no additional fee will be charged) should, if they have not already done so, register their names with the Honorary Secretary of the Group, Dr L. Mullins, of the Research Laboratory, Kodak Ltd., Harrow, Middx, who will send further information as soon as it is available. Other persons interested may join the Group by becoming Subscribers of the Institute for which no technical qualifications are required.

Proposed Industrial Electronics Group

A suggestion that an 'Industrial Electronics Group' should be formed under the auspices of the Institute of Physics has been received. It has been prompted by the desire for a medium for the interchange of ideas and experiences among the many practising physicists and others concerned with the utilization (other than in telecommunications) and development of devices such as, for example, gas-filled relays, photocells, cathode-ray tubes, and amplifiers. Before the matter is considered by the Board, it is desired to ascertain the support the proposal is likely to receive. Members interested are therefore invited to notify the Secretary of the Institute (at the University, Reading) who will also be prepared to note the names and addresses of interested non-Members of the Institute.

Suggestions and Acknowledgement

The Officers take this opportunity of thanking the several Members who have expressed their appreciation of the Institute's work during recent months and particularly for the gratifying way in which *Notes and Notices* has been received. The Officers will be happy to consider for publication in it, communications concerning the profession or topics in which a wide circle of Members are likely to be interested.

The Officers are prepared to consider suggestions for still further improving and developing the services which the Institute renders to its Members, or for furthering the objects of the Institute.

Past publications on Physics at reduced prices

The attention of Members is directed to the offer of the Physical Society to supply copies, for their personal use, of past publications of the Physical and Optical Societies at half the published prices (a quarter of the prices to Members of the Physical Society). The publications offered include the reports of a discussion on Vision (1932), on Audition (1931), on Photocells and their Applications (1930), on Hygrometry (1921), and on the Making of Reflecting Surfaces (1920). A detailed list of the publications offered may be obtained from the Assistant Secretary of the Physical Society, 1 Lowther Gardens, Exhibition Road, London, S.W. 7.

Centre for Science

The following letter appeared in the *Daily Telegraph* of 5th May 1941:

SIR,

The work of our scientific societies continues to be done voluntarily, and no one would have it otherwise. But the majority of these bodies either

meet at the invitation of more fortunate institutions which possess their own buildings or under conditions often inadequate for their requirements and purpose.

Some few years ago the numerous medical societies, holding their meetings in various parts of London, saw the advisability of sharing a suitably equipped building where a library could be installed and lecture and other rooms provided, in order to constitute a convenient and central meeting place.

The erection of the large dignified building in Wimpole-street marks the realization of this ideal. Is it too much to hope that some such action might be taken later on in the case of the other scientific societies?

It would be a serious undertaking and might even necessitate a request for temporary financial help from the Government, although no doubt the societies concerned would desire to retain their traditional independence.

This is not the time to deal in detail with the possibilities of such a project, but I gather that preparations are afoot for replanning in London after the war, and if at this stage encouragement were forthcoming in support of the proposal it would be a fitting recognition of the vital part being played by science in the titanic struggle.

Yours faithfully,

CHARLES E. S. PHILLIPS, Major

Honorary Treasurer, Institute of Physics

Personal Notes and Recent Appointments

Sir Lawrence Bragg (*President*) has met the Officers of the American Institute of Physics in New York, and further co-operation between that Institute and ours was discussed.

Sir Henry Tizard (*Fellow*) has been appointed an additional member of the Air Council with special responsibility for studying and advising on scientific and technical policy.

Professor J. P. V. Madsen (*Fellow*), Chairman of the Australian Radio Research Board, has been knighted.

R. O. Cherry, Lt.-Col. (*Fellow*), is with the Australian Imperial Forces.

J. S. Forrest (*Fellow*) has been awarded The Coopers Hill War Memorial Prize and Medal by the Institution of Electrical Engineers.

G. D. Pegler, Major, R.A.O.C. (*Associate*), has been appointed D.A.D.O.S. (Engineering) at 2nd Anti-Aircraft Corps Headquarters.

W. Railston (*Associate*) has been appointed to the Mine Design Department of the Admiralty.

J. E. Smith (*Associate*) has joined the staff of Butlers' Ltd., Birmingham.

The Institution of Electrical Engineers has awarded Meter and Instrument Section Premiums for the Session 1940–1 to R. W. Guelke (*Fellow*), R. A. Scott (*Associate*), and S. Whitehead (*Fellow*) and Extra Premiums for the Session to W. F. M. Dunne (*Student*), C. G. Garton (*Fellow*), Professor Willis Jackson (*Fellow*) and R. Jessel (*Fellow*).

Members are requested to keep the Secretary informed of changes of appointments, and of awards or distinctions conferred.

Branch Meetings

A joint meeting of the London and Home Counties' Branch of the Institute of Physics and the London and South Eastern Counties' Section of the Institute of Chemistry was held on 17th June in the Lecture Hall (Social Centre) of Messrs Kodak Ltd., at Harrow, when Dr D. A. Spencer, F.I.C., Hon. F.R.P.S., of the Research Laboratory of Kodak Ltd., lectured on 'Photography in Industry'. He dealt with plan-copying, X-rays, photo-elastic analysis, high speed and cine-photography, infra-red, metallography and speeding up production by use of sensitized metal. The lecture was attended by over 150 persons.

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THE INSTITUTE OF PHYSICS

President:
Professor Sir LAWRENCE BRAGG, O.B.E., M.A., Sc.D., F.Inst.P., F.R.S.
Honorary Treasurer:
Major C. E. S. PHILLIPS, O.B.E., F.Inst.P., F.R.S.E.
Honorary Secretary:
Professor J. A. CROWTHER, M.A., Sc.D., F.Inst.P.

Temporary Office: at THE UNIVERSITY, READING, BERKSHIRE
Registered Address: SPENCER HOUSE, SOUTH PLACE, LONDON, E.C. 2

NOTES AND NOTICES

No. 3 NOVEMBER, 1941

Members are asked to note that the information in these circulars is not intended for general publication; copies of *Notes and Notices* should not therefore be passed to libraries.

Editorial

Physics and the Future

The subject of post-war reconstruction seems, of late, to have been very much in the air—in more senses than one. Ministers have made speeches, the Cabinet has detailed a Minister, professional bodies have appointed committees, and the Division for the Social and International Relations of Science of the British Association has held an admirably publicized conference. It is all to the good that the outbreak of peace, if and when it comes, should not find us entirely without sense of direction. In the absence of all knowledge of what form of society will ultimately emerge from the present chaos, and what resources, in men and materials, it will have at its disposal, it seems inadvisible to divert too much of our energies to the formulation of detailed schemes or policies. As, however, such schemes are, apparently, being considered, and claims are being staked out in advance in the new Utopia, it is desirable that the Institute should hold a watching brief on behalf of the professional physicist, to ensure that his very modest requirements are not completely overlooked. It is possible that the Board may decide to appoint a small committee for this purpose.

Looking forward we may, I think, envisage a further influx of physicists into industry. Even before the war, the larger firms were becoming more and more 'physics conscious', and the same consciousness is now invading some of the Government Departments. In spite of the fact that at least one Department still persists in describing its physicists officially as 'chemists', others are now using the awe-inspiring words 'physics' and 'physicist' quite freely, even in advertisements in the Daily Press. This represents an amazing advance, which is likely to be permanent. It cannot, however, be realized too clearly or too soon that not all the physicists required either now or in the future will be employed on what is, at present, regarded as research. With the increasing complexity of modern appliances, men with some knowledge of physics are required for their testing, application and servicing. What is the proper training for such men, and how they can best be fitted into the membership

of the Institute of Physics, are problems which might well engage our immediate attention. It would, I think, be unfortunate for the continued welfare both of our subject and of our Institute if we were to disclaim responsibility for this useful, and potentially numerous class of physicist.

Closely linked with this problem are the problems raised by the Government scheme, foreshadowed in our last issue and now in full operation, for training men and women for the operation and servicing of radio-devices. Bursaries, tenable at various Universities and other institutions of similar rank, have been freely distributed to boys and girls who have qualified in physics at the recent Higher Certificate examinations, to enable them to follow courses in physics and the principles of radio communications. Some of the bursars will certainly be withdrawn for service at the end of one year only of academic training, and even those who are fortunate to survive to the end of their second year will have had their training seriously biased towards a highly specialized, though admittedly important, branch of physics. There is a distinct danger that the numbers of adequately trained physicists coming from the Universities may be seriously depleted under the new arrangements. The Government are sinking a very large proportion of their scientific capital in radio; let us hope it will prove a good investment.

No estimate of the number of students of subjects other than physics who have been switched over to radio has been published; but it is certainly very considerable, and will undoubtedly be much increased in the near future. It can safely be predicted that by the end of the war we shall have a body of half-trained men and women whose numbers will probably much exceed the present number of fully trained physicists. The existence of this large mass of semi-skilled labour raises a serious problem which will have to be faced, not during some post-war period of reconstruction, but at the moment that demobilization commences. It is vital to the interest of the men themselves, and to the profession of physics, that adequate plans should be prepared beforehand. If the ability of these men is to be utilized, as it should be, in scientific post-war reconstruction, it will be necessary that most of them should be returned to the Universities for further study. It is to be hoped that the Government will not be ungenerous in the provision of the necessary funds; no expenditure could yield a better return. It is equally clear that the courses to be taken at the Universities must be wisely selected if there is not to be a serious scarcity in some branches of science, and disastrous under-employment in others. Radio-bursars and others, who, from the necessities of the times, have been induced to take University courses in physics and radio, should, unless they have shown themselves to have special aptitude for those studies, be sent back to the Universities, not to complete their course in those special subjects taken up under duresse of war, but to resume the courses which they would have chosen had the times been normal. This is a matter on which planning should be undertaken now.

J. A. CROWTHER

Honorary Secretary, Institute of Physics

Notices

The Institute's Rooms

The Emergency Committee has decided, with much regret, not to ask for a renewal of the lease of the premises at 1 Lowther Gardens, South Kensington, which has been the home of the Institute of Physics from its early days. Uncertainty as to the duration of the war, and conditions after the war, coupled with the fact that the tenancy of premises in vulnerable areas carries legal obligations which it might easily be impossible to fulfil, now that our office staff are all in Reading, were some of the reasons which influenced this decision. The registered address has been transferred, by the kind permission

of our Auditors (Messrs Knox, Cropper and Co.), to Spencer House, South Place, London, E.C. 2. The office itself will continue to function from the University of Reading, to which all correspondence should be addressed.

The occasion cannot be allowed to pass without expression of the gratitude of the Board and all members of the Institute to our late landlords, the Royal Commissioners for the Exhibition of 1851, for their great generosity in providing so spacious a home for the early activities of the Institute. To have rented such premises would have been far beyond our financial abilities; while to have been confined to such premises as we could have afforded would have seriously crippled our activities. To the Commissioners and to their kindly Secretary, Dr Evelyn Shaw, we express our very sincere thanks.

Parliamentary and Scientific Committee

The Parliamentary and Scientific Committee continues to provide a useful channel by which matters of importance in the utilization of science in the national effort can be brought to the notice of the Government Departments most nearly concerned, or, if necessary, to the attention of Parliament itself. The Executive of the Committee, on which the Institute of Physics is represented by the Honorary Secretary, is attended by members of both Houses, and affords a valuable common meeting ground for legislators and representatives of scientific organizations. Constructive suggestions for facilitating and increasing the contributions of science in the present emergency are always welcomed, considered, and, if approved, passed on to the proper authorities. Taking the large view, one cannot help being impressed by the magnitude of the organization which has been built up for harnessing science to the war effort; and the readiness of the Government to seek, and not infrequently to act upon, scientific advice. Even the most brilliant improvization may, however, have some weaknesses, and if any members have first-hand knowledge of matters which seem to merit discussion in the national interest, the Honorary Secretary of the Institute will be pleased to pass on their suggestions.

Notes

Message to Russian Scientists

The following is the text of a message sent to the scientists of the Soviet Union:

'On behalf of the Fellows and Associates of the Institute of Physics I wish to send a message of greeting and encouragement to our fellow-scientists in Russia. We follow their struggle against the forces of aggression with the deepest admiration and sympathy. We realize how much the scientists in Russia must be helping the fighting services. Our profound realization of what we owe to Russia at the present time will, we all hope, lead to a deeper and closer contact between our countries in the future, in which we scientists look forward to taking our part.'

W. L. Bragg

President

Personal Notes and Recent Appointments

Sir Lawrence Bragg (*President*) has now returned to this country from Canadian and American missions.

F. S. Barton (*Fellow*) is now with the British Air Commission in Washington.

J. W. Buckley (*Fellow*) has returned to Metropolitan-Vickers Electrical Co. Ltd.

E. Tyler (*Fellow*) is now Head of the Science Department of the S.E. Essex Technical College.

W. H. Willott (*Fellow*) is now in charge of technical development at Messrs Cryselco Ltd.

A. D. Booth (*Associate*) has been awarded a Research Scholarship by the Rubber Producers' Association, and is working in the University of Birmingham.

R. G. W. Croney (*Associate*) is now an Acting Flying Officer in the Technical Branch of the R.A.F.

W. T. Cowhig (*Associate*) has been appointed a Research Physicist in the University of Birmingham.

W. F. Floyd (*Associate*) has been promoted to Squadron-leader in the Technical Branch of the R.A.F. (Volunteer Reserve).

G. E. Lanigan (*Associate*) is serving as an Acting Pilot Officer in the R.A.F. (Volunteer Reserve).

E. W. L. Leavey (*Associate*) has been appointed Physics Master at Watford Grammar School.

D. McGill (*Associate*) has joined the technical staff of the Admiralty.

R. C. Parker (*Associate*) is now Manager of the physical testing laboratory of Ferodo Ltd.

H. L. Penman (*Associate*) has joined the Admiralty technical pool.

A. I. Stevenson (*Associate*) has joined the staff of the Royal Aircraft Establishment.

A. H. Walker (*Associate*) has joined the staff of the British Cotton Industry Research Association.

G. Williams (*Associate*) has been appointed an Assistant Lecturer at King's College, London.

Members are requested to keep the Secretary informed of changes of appointments, and of awards or distinctions conferred.

Correspondence

Sir,

May I be permitted to use your columns to raise a matter which seems to be of lively interest at the present time? It is concerned with the function of the physicist in industry, and incidentally, in society.

There seem to me to be two general types of research activity, which though separated by an indefinite boundary are essentially distinct, and require quite different mental attitudes. The first is concerned with the development or improvement of specific articles of commerce, the control of manufacturing processes, etc., whilst the second deals with the investigation of the fundamental principles underlying phenomena, and is concerned to establish a logical or theoretical structure relating diverse experimental data. These activities may be referred to respectively as technological and fundamental research.

It is not surprising that the non-scientific public, being in contact only with the end-products of technological research, may imagine that the only research of practical importance is of a technological character. But it would be more than surprising if physicists, who are in a position to know and understand the great practical results which have flowed from the work of such pioneers as Newton, Clerk Maxwell or Rutherford, were to fall into an error of this kind. It seems to me that the organization of industrial research in this country does not in fact reveal a proper appreciation on the part of industrialists of the debt which industry owes to fundamental research. Those responsible for the control of industrial research are not, on the whole, providing in their research establishments a soil in which the fundamental research activity can thrive—a soil from which a future Faraday might possibly emerge. They apparently hold the view that fundamental research is none of their business, and should remain inside the Universities. This view I believe to be profoundly mistaken. Research and education cannot be divorced. Research is a life-long process of education. Let us therefore have more of the University spirit in industrial research.

Among the essential conditions to be satisfied if fundamental research is to flourish in an industrial organization I would place the following:

(1) The establishment of a separate staff (not necessarily large in numbers) charged with the duty of carrying out fundamental research as a whole-time job.

(2) Full publication (as a matter of principle) of the results of such research.

(3) The encouragement of free discussion between members of this group and members of scientific or academic institutions, as well as between members of this group and other parts of the organization.

Space forbids me to elaborate these points, each of which might be discussed at some length.

In raising this matter I am not concerned with the question of the promotion of scientific research as an intellectual function of intrinsic value to society (though I believe it to have such value); my point is the strictly practical one of how to utilize scientists to the best industrial advantage. The practical obstacles to the achievement of the ends in view might well be overcome if physicists as a whole were convinced of the necessity of some changes in the direction suggested.

L. R. G. Treloar

Welwyn Garden City, Herts

Branch and Group Activities

London and Home Counties' Branch

The Annual General Meeting of the London and Home Counties' Branch was held on 25th October at the Research Laboratories of the General Electric Co. Ltd., Wembley (by kind permission of the Director). The Honorary Secretary's Report, which was unanimously adopted, recorded a very successful year, and a record number of meetings. Mr E. R. Davies (*Fellow*) was re-elected Chairman of the Branch and Dr H. Lowery (*Fellow*) Honorary Secretary. The resignation of Dr W. E. Williams (*Fellow*) from the Committee, on account of residence abroad, was accepted with regret and Dr J. A. V. Fairbrother (*Fellow*) was elected to fill the vacancy; the other members of the Committee were also re-elected.

The business meeting was followed by a discussion on 'The Adaptation of the Young Physicist to Industrial Conditions' which was opened by Dr V. G. W. Harrison (*Fellow*), and to which many speakers contributed.

At the close of the meeting Members were entertained to tea by the Director of the Laboratories.

On 22nd November Dr W. G. Wearmouth (*Fellow*), who is Head of the Physical Laboratory in the Development Department of Halex Ltd., will lecture to the Branch on 'Physics in the Plastic Industry'. Particulars will be circulated as usual and visitors will be welcome at this meeting.

Manchester and District Branch

A lecture on 'The 200-inch Telescope' was delivered before the Branch by the Astronomer-Royal, Dr H. Spencer Jones, on Friday, 18th July in the University of Manchester. The lecture was fully illustrated by slides and films, and attracted an audience of about 200 members and visitors. Light refreshments were served, but time did not permit of any discussion.

Industrial Radiology Group

The first meeting of the Group was an outstanding success and was attended by some 150 persons from all over the country. It was held on 24th September at the Royal Institution and took the form of an afternoon conference on 'X-rays in Industry'. Prof. J. A. Crowther presided and Sir William Bragg opened the conference. In welcoming the formation of the Group he expressed his conviction that the sharing of experience and knowledge was beneficial

not only to those engaged in technical work in industry but also to the industries themselves.

Three papers were read and a general discussion followed. Some details of these are given in the current issue of the *Journal of Scientific Instruments* (p. 230) and a rather fuller notice appeared in *Nature* for 11th October.

Prof. J. A. Crowther has accepted the invitation to be the first Chairman of the Group; he is a past-president of the British Institute of Radiology.

The Group has set up committees to review the terminology relating to those defects in castings and welds revealed by radiography. Both committees are to work in close co-operation with other organizations interested in these matters.

It is proposed, next year, to hold a series of about six meetings, reviewing particular aspects of the industrial applications of X-rays.

The Register

Elections to Membership

September 1941

FELLOWS

Lipson, Henry, D.Sc., Assistant in Crystallography, University of Cambridge.

Scott-Blair, George William, M.A., Ph.D., A.I.C., Head of Chemistry Department, National Institute for Research in Dairying, Shinfield, Berks.

Sucksmith, Willie, D.Sc., F.R.S., Professor of Physics, University of Sheffield.

Weir, William, M.A., Technical Officer, Royal Aircraft Establishment (*Transfer from Associateship*).

Whelpton, Robert Vaughan, M.Sc., Senior Technical Officer, Royal Aircraft Establishment (*Transfer from Associateship*).

Wilson, Arthur James Cochran, M.Sc., Ph.D., Research Student, University of Cambridge.

Wilson, Charles William, M.Sc., Ph.D., Assistant Physicist, Westminster Hospital, London.

ASSOCIATES

Anderson, Samuel Leslie, B.Sc., Scientific Officer, Balloon Development Establishment.

Bacon, Raymond Clifford, B.Sc., Chief of Valve Technical Department, A. C. Cossor Ltd., London.

Blackburn, Edwin Robinson, B.Sc., Temporary Experimental Assistant III, Admiralty Research Pool.

Bose, Subodh Chandra, M.Sc., Technical Assistant, Marconi's Wireless Telegraph Co. Ltd., Chelmsford, Essex.

Cox, Shaun Maturin, B.A., Chief Physicist, J. A. Jobling and Co. Ltd., Sunderland.

Crooks, Raymond Niblett, B.Sc., Technical Assistant II, Directorate of Instrument Production, Ministry of Supply.

Farebrother, Thomas Henry, B.Sc., Assistant Physicist, Research Department, A. C. Reed and Co., Larkfield, Kent.

Fieldgate, Ivan Oscar, B.Sc., Junior Scientific Officer, Royal Aircraft Establishment.

Freeman, Joan Maie, B.Sc., Commonwealth Research Scholar, University of Sydney, Australia.

Grindley, Joseph, B.Sc., Physicist, Research Department, Metropolitan Vickers Electrical Co. Ltd., Manchester.

Guthrie, John Charles, M.Sc., Flying Officer, R.A.F. (Volunteer Reserve).

Harris, Geoffrey Thomas, B.A., Research Physicist, William Jessop and Sons Ltd., Sheffield.

Jefferson, Harold, B.A., Engineer, Research Department, Marconi's Wireless Telegraph Co. Ltd., Chelmsford, Essex.

Makinson, Kathleen Rachel, B.A., Commonwealth Research Scholar, University of Sydney, Australia.

Marsh, Cyril Harold, B.Sc., Senior Research Physicist, The Metal Box Co. Ltd., London.

Mills, John Robert, B.Sc., Assistant III, Royal Aircraft Establishment.

Newbery, George Richard, B.Sc., Temporary Experimental Officer, Ministry of Supply.

Payne, Bryan Oliver, M.Sc., D.I.C., A.R.C.S., Technical Assistant, Cooke, Troughton and Simms Ltd., York.

Pentland, Neil, M.Sc., Science Master and Lecturer, Acton Technical College, Acton.

Roberts, Norman Frederick, M.Sc., Radio Engineer, Amalgamated Wireless (Australia) Ltd., Australia.

Rogers, William Stephen, M.A., Ph.D., Pomologist, East Malling Research Station (*Elected under By-Law 7*).

Schiller, Kurt, Ph.D., Research Assistant, Ferguson Pailin Ltd., Manchester.

Tasker, Hardwicke Slingsby, B.Sc., M.A., Head of X-Ray Research Department, Ilford Ltd., Watford.

Thomas, Leslie Albert Arthur, B.Sc., Physicist, Research Laboratories of the General Electric Co. Ltd., Wembley.

Thomas, Wilfred Roy, B.Sc., Temporary Assistant III, Royal Aircraft Establishment.

Thurston, Frank Russel, B.Sc., Assistant III, National Physical Laboratory.

Todd, John Browning, B.Sc., Research Assistant, British Cotton Industry Research Association, Manchester.

Turner, Harold James Arthur, B.Sc., A.R.C.S., Research Physicist, Research Laboratories of the General Electric Co. Ltd., Wembley.

Yates, Peter Weston, B.Sc., Telephone Engineer, Siemens Bros. and Co. Ltd., Dewsbury, Yorks.

SUBSCRIBERS

Allen, Frank Arthur, Chief Chemist and Metallurgist, Magnal Products Ltd., Bristol.

Amos, Roger Macdonald, Teacher of Mechanical Optics, Sydney Technical College, Sydney, Australia.

Armstrong, Robert William, District Manager, Victor X-Ray Corporation Ltd., Birmingham.

Bailey, Philip Maurice, Radiologist, High Duty Alloys Ltd., Slough.

Beet, Frederick, B.Met., Chief Radiologist, Ford Motor Co. (Aero Engines) Ltd.

Bennett, Frederick William, M.S.R., Radiographer, X-Ray Department, Briggs Motor Bodies Ltd., Dagenham.

Bigg, William Sylvester, Assistant to Chief Physicist, Ferranti Ltd., Moston, Manchester.

Burnside, Evelyn Elmer, A.M.I.E.E., Director, Newton and Wright Ltd., London.

Clarke, Peter Trevisa, B.A., Control Manager and Research Director, Kraft Cheese Co. Ltd., Hayes, Middlesex.

Cooper, Reginald Joseph, Supervisor, Test House and Laboratory, Boulton Paul Aircraft Ltd.

Crowder, John Clifford, B.Sc., Assistant Master, H.M. Dockyard School, Devonport.

Frommer, Leopold, Dr.-Ing., Research Physicist, High Duty Alloys Ltd., Slough.

Gilchrist, Alexander Norman, M.S.R., Radiologist, Rolls Royce Ltd.

Hargreaves, Frank, A.R.S.M., D.I.C., F.I.C., Chemist, Southern Railway Works, Eastleigh, Hants.

Harvey, Eric Alfred, B.Sc., Research Physicist, Ilford Ltd., Ilford, Essex.

Humphreys, Kenneth Laurence, Examiner, Aeronautical Inspection Directorate, Ministry of Aircraft Production.

Jackson, George Henry, Metallurgist and Radiologist, C.A.V. Ltd., London.

Jervis Smith, Katherine Lucy, Industrial Radiographer, Research Laboratories of the General Electric Co. Ltd., Wembley.
Knight, Alfred Edward, Electrical and Mechanical Engineer, Newark.
Knights, Edward Donovan, B.Sc., Senior Assistant Metallurgist, Research Department, London, Midland and Scottish Railway Co., Derby.
Lippmann, Arthur S., M.D., Research Worker, University of Sydney, Australia.
Mansfield, Frederick Roland, Chief, Radiological Department, Northern Aluminium Co. Ltd., Birmingham.
Martin, Harold, Research Engineer, Murex Welding Processes Ltd., Hertford.
Minns, Arthur James, Chief Engineer, Watson and Sons (Electro-Medical) Ltd., Reading.
Montgomerie, George Alan, B.Sc., Student Apprentice, British Thomson Houston Co. Ltd., Rugby.
Moore, Samuel, Inspector of Materials and Manufacture, Aiton and Co. Ltd., Derby.
Morgan-Davies, Charles, A.M.I.E.E., Consulting Radiological Engineer, Abbots Langley.
Nemet, Anthony, A.M.I.E.E., Dr.-Ing., X-ray Department, Philips Lamps Ltd., London.
Payne, Ronald James Malcolm, B.Sc., Metallurgist, J. Stone and Co. Ltd., Deptford, London.
Pearce, Geoffrey, F.R.P.S., Managing Director, Watson and Sons (Electro-Medical) Ltd., Reading.
Quenten, Herbert Horatius, Partner, J. Quenten and Son, Electrical Engineers, Bedford.
Rennie, William, A.M.I.E.E., Sales Manager, Watson and Sons (Electro-Medical) Ltd., Reading.
Renwick, Frank Forster, F.I.C., F.C.G.I., Hon.F.R.P.S., Director, Ilford Ltd., Ilford, Essex.
Rocky, Charles Newland Loyola, Director, General Radiological Ltd., London.
Snodgrass, Colin Brodie, B.Sc., A.R.S.M., Chief Metallurgist, G. A. Harvey and Co. (London) Ltd., Greenwich.
Taylor, George William Charles, B.Sc., Technical Assistant II, Research Department, Ministry of Supply.
Twyford, Leslie, B.Sc., Radiologist, Aeronautical Inspection Directorate, Test House.
Veale, Frank Leslie, A.M.I.E.E., Technical Engineer, X-Ray Department, Philips Metallix Ltd., London.
Weston, Arthur John, M.S.R., Metallurgical Radiologist, Rolls Royce Ltd., Derby.
Woodall, George Robert, Publicity Manager, Watson and Sons (Electro-Medical) Ltd., Reading.

STUDENTS

Barker, John Robert, Queen Mary College, University of London.
Blamey, John Williams, B.Sc., University of Melbourne, Australia.
Davies, Daniel Cledlyn, University College of Wales, Aberystwyth.
Dean, Kenneth Geoffrey, B.Sc., University of Melbourne, Australia.
Douglas, Gordon Oxenbury, Examiner, Instrument Division, Aeronautical Inspection Directorate.
Edwards, Olive Susannah, B.A., Research Student, Cavendish Laboratory, University of Cambridge.
Faram, Peter Dennis, University College, London.
Garlick, Donald Henry, Technical Assistant III, Air Defence Research and Development Establishment, Ministry of Supply.
Langley, Graham Arthur, B.Sc., Cadet, Royal Signals.
Lilley, William Harry Desmond, Laboratory Assistant, Research Department, Tube Investments Ltd., Birmingham.
Morgan, George Desmond, University College, Swansea.
Smith, Donald Charles George, Recording Engineer, British Broadcasting Corporation, London.

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THE INSTITUTE OF PHYSICS

Registered Address: SPENCER HOUSE, SOUTH PLACE, LONDON, E.C. 2
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NOTICES TO MEMBERS

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Nominations for Elections to the Board of the Institute for the Session 1942–43

In accordance with Article 47 of the Articles of Association of the Institute, notice is hereby given that the Board has nominated the undermentioned persons to fill the vacancies stated which will occur on September 30th, 1942. Ballot papers will be circulated in due course and the result of the ballot will be announced at the Annual General Meeting.

President: PROF. SIR LAWRENCE BRAGG, Kt., O.B.E., M.A., Sc.D., F.Inst.P., F.R.S., Cavendish Professor of Physics, University of Cambridge.

Vice-Presidents: W. MAKOWER, O.B.E., M.A., D.Sc., F.Inst.P., Formerly Professor of Science, Royal Military Academy, Woolwich.

T. SMITH, M.A., F.Inst.P., F.R.S., Superintendent, Light Department, National Physical Laboratory.

Hon. Treasurer: MAJOR C. E. S. PHILLIPS, O.B.E., F.R.S.E., F.Inst.P., Formerly Physicist, Royal Cancer Hospital, London.

Hon. Secretary: PROF. J. A. CROWTHER, M.A., Sc.D., F.Inst.P., Professor of Physics, University of Reading.

Ordinary Members: (four vacancies) PROF. J. CHADWICK, Ph.D., M.Sc., F.Inst.P., F.R.S., Professor of Physics, University of Liverpool.

PROF. J. D. COCKCROFT, M.A., Ph.D., M.Sc. (Tech.), A.M.I.E.E., F.Inst.P., F.R.S., Jacksonian Professor of Natural Philosophy, University of Cambridge.

D. C. GALL, A.M.I.E.E., F.Inst.P., Managing Director, H. Tinsley & Co., Ltd.

E. B. WEDMORE, C.B.E., M.I.E.E., F.Inst.P., Director, British Electrical and Allied Industries Research Association.

Attention is directed to the terms of Article 48, which reads as follows:

"After the notice (*i.e., this notice*) mentioned in the last preceding Article, any five Members may "nominate within two weeks of receipt by them respectively of such notice, but not later, any other "duly qualified person as a candidate for election to any one or more of the said Offices by depositing "such nomination in writing at the Registered Office of the Institute together with the written "consent of the nominee to accept if elected. No Member may nominate more than one candidate "in any year."

The following, not being subject to election, will also serve:

Past President: C. C. PATERSON, O.B.E., D.Sc., M.I.E.E., M.Inst.C.E., F.Inst.P.

Vice-Presidents: PROF. A. FERGUSON, M.A., D.Sc., F.Inst.P.
B. A. KEEN, D.Sc., F.Inst.P., F.R.S.

Ordinary Members of the Board:

H. LOWERY, M.Ed., D.Sc., Ph.D., F.Inst.P.
PROF. E. A. OWEN, M.A., Sc.D., D.Sc., F.Inst.P.
C. SYKES, Ph.D., D.Sc., F.Inst.P.
R. S. WHIPPLE, M.I.E.E., F.Inst.P.

Chairmen of Branches in Great Britain:

London and Home Counties Branch: E. R. DAVIES, B.Sc., F.Inst.P.
Manchester and District Branch: F. C. TOY, D.Sc., F.Inst.P.
Midland Branch: PROF. M. L. OLIPHANT, B.Sc., Ph.D., F.Inst.P., F.R.S.

Appointed by Participating Societies:

British Institute of Radiology: PROF. W. V. MAYNEORD, D.Sc., F.Inst.P.
Faraday Society: R. W. LUNT, M.Sc. (Eng.), M.Sc., Ph.D., F.Inst.P.
Physical Society: PROF. G. I. FINCH, M.B.E., D.Sc., F.Inst.P., F.R.S.
J. H. AWBERY, B.A., B.Sc., F.Inst.P.
Royal Meteorological Society: PROF. P. A. SHEPPARD, B.Sc., F.Inst.P.

J. A. CROWTHER,
Honorary Secretary.

March 15th, 1942.

Announcements

"Notes and Notices." The Board regrets that a new Paper Control Order prevents the production of further issues of *Notes and Notices*. Contact will be maintained with members through circular notices containing essential details, which will be issued from time to time. It may also occasionally be found appropriate to use the columns of the *Journal of Scientific Instruments* as a medium for communications as was the practice before the commencement of *Notes and Notices*.

Vacancies for Physicists. The Institute's Appointments Register continues to receive numbers of requests for qualified physicists. Members who may become free to take up new appointments are therefore invited to place their names on the Register, which works in close touch with the Central Register.

Conference on X-Ray Analysis in Industry. Members of all grades who wish to receive further details of the Conference to be held in Cambridge on April 10th and 11th next who have not already returned the form intimating their intention of attending should do so immediately.

Planning Committee. The Planning Committee, the appointment of which has already been announced, has been devoting its meetings to consideration of the education, training and employment of physicists during the war and is making recommendations to the Board on these matters.

Optical Group. The Board has accepted the invitation of the Physical Society for the Institute of Physics to become a founder society of its new Optical Group. This enables members of the Institute who are not members of the Physical Society to join the Group at a subscription of 5*s*. per annum. The full subscription is 10*s*. 6*d*. per annum. The formation of the Group and its objects were referred to on p. 16 of the January 1942 issue of the *Journal of Scientific Instruments*.

Interviews in London. Members wishing to discuss professional or other matters with the Secretary are reminded that they may do so, by appointment, in London. Dr Lang would be obliged if members writing for appointments would suggest alternative dates and times about a week ahead, so that he may fit in their interviews with his other London engagements.

Honours and Appointments

Sir Frank E. Smith (*Honorary Fellow*) has received the G.C.B.

A. B. Wood (*Fellow*) has received the O.B.E.

Prof. E. A. Milne (*Fellow*) has been awarded a Royal Society Medal.

Prof. P. Kapitza (*Fellow*) has been awarded the Faraday Medal of the Institution of Electrical Engineers.

A. Harvey (*Fellow*) has been appointed Principal, The Modern and Technical School, Scunthorpe.

G. R. Stanbury (*Fellow*) has joined the staff of the Ministry of Home Security.

J. Thomson (*Fellow*) has joined the Admiralty Research Pool.

C. D. Chant (*Associate*) is serving with the R.A.F.

J. A. Conway (*Associate*) has been appointed Senior Physics Master at Cheltenham Grammar School.

N. Corcoran (*Associate*) has joined the staff of the Ministry of Supply.

F. A. Cunnold (*Associate*) is at the Air Defence Research and Development Establishment.

S. Denfield (*Associate*) has been granted a commission in the R.A.O.C.

K. Earp (*Associate*) has joined the staff of the Ministry of Supply.

G. O. Forester (*Associate*) is with Messrs Kelvin, Bottomley & Baird Ltd.

F. G. A. Haegele (*Associate*) is with the Mullard Radio Valve Co. Ltd.

L. F. Lamerton (*Associate*) is serving with the R.A.F.

T. A. Littlefield (*Associate*) is with the Ministry of Home Security.

W. S. Sinclair (*Associate*) has been appointed Lecturer at Robert Gordon's Technical College, Aberdeen.

A. H. L. Steed (*Associate*) has joined the staff of the Ministry of Supply.

C. W. W. Read (*Associate*) has been appointed Deputy Director of Education for West Essex.

S. A. Trivedi (*Associate*) has joined the staff of the Ministry of Supply.

Note. *Members of all grades are requested to keep the Secretary informed of changes of appointments, and of awards or distinctions conferred.*

Branch and Group Activities

Industrial Electronics Group.

In response to the request of the Conference on Electronics organised by the London and Home Counties' Branch and recently held in London under the Chairmanship of Professor J. D. Cockcroft, the Board has authorised the formation of an Industrial Electronics Group. Reports of the Conference will be found on p. 48 of the March issue of the *Journal of Scientific Instruments* and on p. 278 of the 7th March issue of *Nature*. Dr H. Lowery has been appointed convener (*pro tem.*) and a provisional committee is being appointed. Those interested, whether at present members of the Institute or not, should send in their names to the Secretary of the Institute, unless they handed them in at the Conference. Further particulars will be circulated in due course to those who have thus intimated their interest.

Forthcoming Meetings

London and Home Counties Branch.

PROF. M. L. OLIPHANT (*Fellow*) will lecture to a Joint Meeting of the Branch and the corresponding Branch of the Institute of Chemistry at 2.30 p.m. on the 18th March 1942 at the Royal Institution on "The Applications of Nuclear Physics in Chemistry and Biology". Members may introduce friends.

A Joint Meeting of the Branch and the Geological Society of London has been arranged for the afternoon of the 22nd April when a discussion will be held on Geophysical Prospecting. Details are being circulated to members of the Branch and will be sent on request to any others interested.

Midland Branch.

A Joint Meeting with the Industrial Radiology Group has been provisionally arranged for 25th April (see below).

Industrial Radiology Group.

A series of lectures on the fundamentals of industrial radiology is being held in London and the provinces. Subsequent lectures in this series will deal with the following aspects of industrial radiology:

The Properties of X-rays in importance to Industrial Radiology, by Mr W. J. WILTSHIRE (*Fellow*). (Joint Meeting with the Midland Branch; provisionally arranged for the afternoon of 25th April at the University of Birmingham.)

The Response of Photographic Materials to X-rays, by Mr H. S. TASKER (*Associate*).

Applications of X-rays to Industry

(*a*) Light Metals, by Mr W. L. HARPER.

(*b*) Heavy Metals, by Dr R. JACKSON (*Associate*).

(*c*) Uncommon Applications, by Dr L. MULLINS (*Associate*).

Gamma-ray Radiography (lecturer to be announced later).

Quantitative Measurements in Radiology, by Dr R. H. HERZ (*Fellow*).

Further details of these lectures will be circulated in due course, to members concerned.

Membership of the Industrial Radiology Group is open to all grades of membership of the Institute without payment of additional fee. Particulars of the Group will be forwarded on request.

The Register

ELECTIONS TO MEMBERSHIP

An asterisk indicates transfer from Associateship

FELLOWS (*Elected December* 1941)

Berg, Wolfgang F., Dr.Phil., Ph.D.; Kodak Ltd.
Binks, Walter, M.Sc.; N.P.L.
*Clay, Reginald E., M.Sc., D.I.C.; Admiralty.
*Cosslett, Vernon E., M.Sc., Ph.D.; University of Oxford.
Frommer, Leopold, Dr.Ing.; High Duty Alloys Ltd.
*Green, Edward, B.Sc., Ph.D.; Lever Bros. Ltd.
Humphreys, Oliver W., B.Sc.; G.E.C. Ltd.
Jones, Denis Edward A., B.Sc.; London County Council.
*Maughan, Ralph L., M.Sc.; Constantine Technical College.
*Phillips, Lewis W.; North Western Polytechnic.

FELLOWS (*Elected February* 1942)

Adams, Charles A., B.Sc.; Ministry of Supply.
*Baines, Gordon O., M.A., Ph.D.; Ministry of Supply.
Herz, Richard H., Dr.Phil.Nat.; Kodak Ltd.
Lubszynski, Gerhard, Dr.Ing.; E.M.I. Ltd.
*Noakes, George R., M.A.; Giggleswick School.
*Redding, Thomas H., M.Sc., A.R.C.S.; Simmonds Aerocessories Ltd.

ASSOCIATES (*Elected December* 1941)

Berenblut, Israel I., B.Sc., A.R.C.S.; Halex Ltd.
Clayton, Frederick H., B.Sc.; Brocklehurst Whiston Amalgamated Ltd.
Din, Mumtaz Ud, B.A., M.Sc.; Marconi's W/T Co. Ltd.
Dunne, William F. M., B.Sc.; Napier & Son Ltd.
Eames, Trevor A., M.Sc.; L.M.S. Railway.
East, Frederick Henry, B.Sc.; R.A.E.
Forsyth, Percy George; Ministry of Supply.
Fowweather, Frank, B.Sc.; Ferranti Ltd.
Garratt, Arthur John, B.Sc.; Ministry of Supply.
Hayward, Francis W., B.Sc.; Aylesford Paper Mills.
Jay, Kenneth E. B., B.Sc.; Ministry of Aircraft Production.
Johns, Thomas Frost, B.Sc.; R.A.E.
Kirkpatrick, Colin B., B.Sc.; Amalgamated Wireless Valve Co.
Lean, Denis, B.Sc.; R.A.E.
Lehany, Frederick J., M.Sc.; Amalgamated Wireless Valve Co.
Mullins, Leonard, B.Sc.; Ministry of Supply.
Newton, Leonard S., B.Sc.; Pilkington Bros. Ltd.
Norris, Alan William, B.Sc.; N.P.L.
Richards, George Ronald, B.Sc.; R.A.E.
Shearman, Anthony C., B.Sc., A.R.C.S., D.I.C.; I.C.I. Ltd.
Stokes, Eric Vincent, B.Sc.; R.A.F.
Turnbull, Albert Hickford, B.Sc.; R.A.E.
Vennart, Jack, B.Sc.; Boots Pure Drug Co. Ltd.

ASSOCIATES (*Elected February* 1942)

Andrewartha, George G., M.Sc.; R.A.F.
Ashmore, Sydney Eric, B.Sc.; Grove Park County School.
Beckett, Clark, B.Sc., B.S.; Kodak Ltd.
Beverstock, Albert G., B.Sc.; R.A.E.
Carlisle, Charles H., M.Sc.; University of London.
Cawte, Edwin G., B.Sc.; Wash. Chem. Co.
Charlesby, Arthur, B.Sc., Ph.D., A.R.C.S., D.I.C.; Imperial College, London.
Cox, Arthur, B.Sc., B.A.; Taylor, Taylor & Hobson Ltd.
Craggs, John D., M.Sc.; Met.-Vick. Electr. Co. Ltd.
Daniels, Geoffrey, B.Sc.; Crompton Parkinson Ltd.
Garrod, Raymond I., B.Sc., A.R.C.S.; Taylor, Taylor & Hobson Ltd.
Godbold, Brian C., B.Sc.; Central Electricity Board.
Howell, Ben W. L., B.Sc.; R.A.E.
Johnson, James, B.Sc.; Met.-Vick. Electr. Co. Ltd.
Leach, Joe R., B.Sc.; Ministry of Aircraft Production.
Lloyd, Emlyn H., B.Sc., A.R.C.S.; High Duty Alloys Ltd.
McEnhill, John J., M.A.; Ministry of Supply.
Mason, Ian Bowyer, B.Sc.; A.D.R.D.E.
Middleton, Kenneth N., B.Sc., B.Sc.(Eng.); Standard Telephones & Cables Ltd.
Oates, Peter Geoffrey, B.A.; Patent Office.
Payne, Kenneth G., B.Sc., A.R.C.S.; Cooke, Troughton & Simms, Ltd.
Pickering, Stanley T., B.Sc.; Umbroc Ltd.
Rowlands, John Samuel, B.Sc.; R.A.F.
Sarson, Alan Elmer, B.Sc.; G.E.C. Ltd.
Smith, Eric Edward, B.Sc., N.P.L.
Steadman, Ernest James, B.Sc.; G.E.C. Union Works.
Stevens, Philip Rowe, B.Sc.; W. T. Henley's Telegraph Works Co. Ltd.
Tebble, Robert Soulsby, B.Sc.; Admiralty.
Thurston, Richard C. A., B.Sc.; N.P.L.
Tunnicliffe, Edward J.; Siemens Schuckert (G.B.) Ltd.

SUBSCRIBERS (*Elected December* 1941)

Alsop, Keir R.
Beasley, John W.
Brasher, Dora M., B.Sc., A.I.C.
Caldwell, John T.
Chapman, F. C.
Cunningham, John
Dain, John G.
Durant, Ronald L.
Eade, R. W., B.Sc.
Fry, Sydney L. G.
Gibson, Leslie P.
Gill, Vernon
Grover, Harry W.
Hayward, L. H.
Inglis, Frank K.
Laws, William H.
Mannering, M. H.
Matthews, Henry C.
Porter, Allan W.
Raymond, Basil W.
Spencer, Alan W.
Thomas, Eric, B.Sc.
Vickers, Frederick P.
Vines, Benjamin
Wagner, Philip H.

SUBSCRIBERS (*Elected February* 1942)

Andrews, Philip A.
Baker, Joan M., M.Sc.
Bott, Percy S.
Carr, L. R., B.A.
Chapman, Gilda D.
Couchman, Ralph O.
Dolby, George R.
Gottfeld, Fritz
Medcalf, Richard J.
Rockley, Jack
Ryder, Henry A.

STUDENTS (*Admitted December* 1941)

Allan, Harold R.
Badcoe, Stanley R.
Bailey, Norman R.
Baird, John W.
Bluhm, Max M.
Boyes-Watson, M. J.
Bradshaw, Francis J.
Brickell, John E.
Bushe, John
Caffyn, John E.
Cochran, W.
Drew, Dina J. S.
Elson, David W.
Gebert, Johann
Goldberger, Franz G.
Holt, Francis R.
Johnston, Ronald F.
Kay, Robert H.
Kennedy, Alfred J.
Landmann, C. R. C.
Leak, George M.
Lewis, Ian A. D.
Logie, K. B., B.A.
Menter, James W.
Merson, Robert H.
Morgan, Peter L.
Mutch, Eric N.
Newson, Peter A.
Pallant, Dennis
Parker, Audrey M. B.
Putley, Ernest H.
Stansfield, James R.
Stewart, Kenneth H.
Stott, Alan
Taylor, Charles A.
Townley, Aubrey B.
Woolley, Robert L.
Woolner, Anthony F.
Zaky, Mohamed T.

STUDENTS (*Admitted February* 1942)

Chapman, Dennis R.
Dalziel, James A. W.
Dawson, A. J. A.
Evans, Gareth W.
Jenkins, Howard
Lear, Peter R.
Morgan, Rowland L.
Motchaloff, Irene
Oliver, Raymond
Peirson, Geoffrey
Pescud, Kenneth A.
Raphael, Alfred J.
Rutter, Philip E. H.
Shinn, Douglas H.
Soole, Bernard W.
Stapleton, Ruth E.
Waddington, A. F.

DECEASED

BERKELEY, RANDAL THOMAS MOWBRAY, EARL OF, F.R.S. (*Founder Fellow*)
HARRIS, TOM, B.Sc., A.R.C.S. (*Founder Fellow*)
RHEINBERG, JULIUS (*Founder Fellow*).
DUNFORD, ARTHUR, B.A., Capt. R.M. (*Associate*).

THE INSTITUTE OF PHYSICS

LONDON.

INDIAN SECTION

LIST OF MEMBERS

FELLOWS OF THE INSTITUTE.

A. Adderley, Esq., F. Inst. P.,
Station Headquarters,
Royal Air Force,
KOHAT, N. W. Frontier, India.

Dr. N. Ahmad, F. Inst. P.,
Indian Central Cotton Committee,
Technology Laboratory,
Matunga, BOMBAY, India.

Prof. J. P. Andrews, F. Inst. P.,
University College of Ceylon,
COLOMBO.

Dr. S. S. Bhatnagar, F. Inst. P.,
University Chemical Laboratories,
Punjab University,
LAHORE, India.

Sir Chandrasekhara V. Raman, Kt., F. Inst. P., F.R.S.,
Institute of Science, Hebbal,
BANGALORE, India.

Dr. B. Dasannacharya, F. Inst. P.,
Central Hindu College,
Benares Hindu University,
BENARES, India.

Dr. G. B. Deodhar, F. Inst. P.,
Physics Department,
Allahabad University,
ALLAHABAD, India

Dr. D. B. Deodhar, F. Inst. P.,
Physics Department,
Lucknow University,
INDIA.

Dr. P. N. Ghosh, F. Inst. P.,
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PATIALA, Punjab, India.

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Assistant Seasoning Officer,
Forest Research Institute,
DEHRA DUN, India.

Prof. M. Owen, F. Inst. P.,
Director of Public Instruction,
NAGPUR, C. P., India.

H. Rakshit D. Sc., F. Inst. P.,
Assistant Lecturer in Physics,
University of Calcutta,
CALCUTTA.

Dr. S. R. Rao, F. Inst. P.,
Annamalai University,
ANNAMALAINAGAR,
South India.

Prof. A. V. R. Telang, F. Inst. P.,
Central College,
BANGALORE, India.

Prof. V. I. Vaidhianathan, F. Inst. P.,
Irrigation Research Institute,
LAHORE, India.

Prof. B. Venkatesachar, F. Inst. P.,
Director, Indian Institute of Science,
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Dr. H. P. Waran, F. Inst. P.,
Presidency College,
MADRAS, S. India.

Prof. T. S. Wheeler, F. Inst. P.,
Royal Institute of Science,
BOMBAY, India.

THE INSTITUTE OF PHYSICS

LONDON.

INDIAN SECTION

LIST OF MEMBERS

Associate ~~FELLOWS~~ OF THE INSTITUTE.

Dr. B. B. Banerji, A. Inst. P.,
Indian School of Mines,
Dhanbad, India.

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Agra College,
AGRA, India

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CALCUTTA, India.

S. S. Dharmatti, M.Sc., A. Inst. P.
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Royal Institute of Science,
BOMBAY.

M. Ghosh, Esq., A. Inst. P.,
c/o Prof. K. C. Kar, D. Sc.,
Physical Research Lab.,
Presidency College,
CALCUTTA, India.

Dr. M. A. Haque, A. Inst. P.,
"Haq" Mauzil Street,
Siraj Dun, Gujranwala,
PUNJAB, India.

S. S. Lal, Esq., A. Inst. P.,
Assistant Meteorologist,
Meteorological Office,
Caneshkhind Road,
POONA, 5, India.

K. N. Mathur, Esq., A. Inst. P.,
Department of Physics,
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LUCKNOW, India.

R. L. Moore, Esq., A. Inst. P.,
St. John's College,
AGRA, India.

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79, Chatram Road,
BOWRINGPET, South India.

Rajaraman Sambamurti, M. Sc. A. Inst. P.
Technological Assistant,
Cotton Research Laboratory,
LYALLPUR, India.

Ram. Gurdas, M. Sc., A. Inst. P.,
Research Assistant,
Irrigation Research Institute,
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S. N. Ray, Esq., A. Inst. P.,
14-B, Hewett Road,
LUCKNOW, India.

Sarna Hari Ram, M. Sc. A., Inst. P.
Physics Lecturer,
Department of Education,
PUNJAB.

Singleton W, B. Sc., A. Inst. P.,
Physicist, Burma Oil Company,
Masimpur P. O.
CACHAR, Assam. India.

F. Shaw, Esq., A. Inst. P.,
Government Technical Institute,
Insein, BURMA.

H. C. Singh, A. Inst. P.,
Maclagan,
Engineering College,
LAHORE, India.

T. S. Subbaraya, Esq. A. Inst. P.
Department of Physics,
Central College,
BANGALORE, South India.

Dr. N. R. Tawde, A. Inst. P.,
Royal Institute of Science,
Mayo Road, BOMBAY.

T. T. Thomas, A., Inst. P.,
College of Science,
TRIVANDRUM, S. India.

Y. Venkataramaiah, Esq., A. Inst. P.,
Vioyavati Devi,
Radio Laboratory,
VIZIANAGRAM, S. India.

S. Venkataraman, B.A., M. Sc., A. Inst., P.
Lecturer in Physics,
Nizam College,
HYDERABAD, India

INSTITUTE OF PHYSICS.

Rules for the government of the Indian Section.

1. The name of the Section shall be the Indian Section of the Institute of Physics, hereinafter referred to as the Section.

2. The aim of the Section shall be to arrange special meetings of members from time to time to discuss the applications of Physics in various industries and for other purposes; to receive and deal with enquiries on the part of individual firms for professional advice and assistance and in other ways to encourage the co-operation between physics and industry; to recommend to the Board the names of candidates for membership of the Institute.

3. Membership of the Section is open to all classes of members of the Institute without payment of fee. Any person ceasing to be a member of the Institute shall, ipso facto, cease to be a member of the Section.

4. The affairs of the Section shall be managed by a Committee consisting of a Chairman, an Honorary Secretary (who will also act as Honorary Treasurer) and four other members. All members of the Committee shall be Corporate members of the Institute.

5. The Committee shall hold office for three years and each member shall be eligible for re-election. The persons elected shall take office on the first day of January next following. The members of the Committee whose terms of service would otherwise expire on the 31st day of December in any year shall in all cases continue to serve until others are elected in their place.

6. The Committee shall be elected tri-ennially by members of the Section resident in India at the time of election, which shall be carried out by correspondence. The Committee shall appoint a Chairman and Honorary Secretary from among its own members.

7. Provided the Committee is satisfied that a sufficient number of members will be present, a meeting of the Section shall be held annually during the Indian Science Congress week, or at such other places and times as the Committee shall appoint.

8. In the absence of the Chairman from any meeting, the Committee shall appoint one of its own members to act in his place.

9. At least fourteen days' notice shall be given of all meetings.

10. The Honorary Secretary shall keep minutes of all meetings of the Section.

11. All rules relating to the Section are subject to the approval of the Board of the Institute and any proposal to alter or depart from the rules must be submitted to the Board.

12. The Section shall not discuss any matter of professional conduct or status with an outside body without the authority of the Board of the Institute.

Note:-

The first Committee shall be

Sir C.V. Raman (Chairman).
Dr. H.P. Waran.
~~Dr. E.P. Metcalfe.~~ Left India — Honsee
Dr. P.N. Ghosh.
Dr. S.S. Bhatnagar.
Mr. M. Owen (~~Honorary Secretary~~).

and shall continue in office until December 31st, 1936.

THE INSTITUTE OF PHYSICS

X-ray Analysis Group

Visitors from abroad coming to July Conference. To 1st July, 1946.

U.S.A.	Address
Brockway, L. O.	Green Park
Buerger, M. J.	Berners
Donnay, J. D. H.	Berners
Fankuchen, I.	Berners
Germer, L. H.	Berners
Harker, D.	Berners
McLachlan, D.	Green Park
Wyckoff, R. W. G.	Berners
Zachariasen, W. H.	Berners

France	
Bernard, P.	Green Park
Cauchois, Mlle. Y.	Green Park
Chaudron, G.	Berners
Grison, E.	
Guinier, A.	Cumberland
Hocart, R.	Flemings
Laval, J.	Green Park
Moiroud, Mlle. J.	Green Park
Morel-Klopstein, L.	Regent Palace
Paic, Dr. M. et Mme.	Rembrandt
Petitpas, Mlle. G.	Rembrandt
Petitpas, Mlle. T.	Rembrandt
Stora, Mlle. C.	Regent Palace
Tertian, R.	Green Park
Trillat, J. J.	Berners
Walter-Levy, Mme. L.	
Weill, Mme. A. R.	
Wyart, J.	Berners

Czechoslovakia	
Kochanovská, Mrs. A.	Green Park
Novák, J.	Green Park
Petržílka, V.	Berners

Switzerland	
Meyer, K. H.	Green Park
Nowacki, W.	Regent Palace
Scherrer, P. et Mme.	Rembrandt
Weigle, J.	Cumberland

Norway	
Finbak, Ch.	Waldorf
Hassel, O.	Flemings
Oftedal, I.	Cumberland

Belgium	
Brasseur, H.	Cumberland
Homès, G. A.	Regent Palace

/OVER

	Address
Sweden	
Hambraeus, G.	Rembrandt
Linden, Miss E.	Rembrandt
Sillén, L. G.	
Waller, I.	
Denmark	
Jensen, A. T.	Strand Palace
Holland	
Bijvoet, J. M.	Browns
Burgers, W. G. et Mme.	c/o H. R. Kraus, 3 Deerhurst Road, Willesden Green, N.W.2.
Favejee, J. C. L.	Parkhurst
Custers, J. F. H.	
Hermans, J. J.	
Jong, W. F. de	Berners
Ketelaar, J. A. A.	Green Park
Lange, J. J. de	Green Park
MacGillavry, Miss C. H.	c/o Mrs. Lonsdale, 121 Station Road, West Drayton, Middx.
Perdok, W. G.	
Reyen, L. L. van	Green Park
Stryk, Miss B.	Waldorf
Terpstra, P.	
Wiebenga, E. H.	
Woldringh, J. S.	Green Park
Kolkmeijer, N. H.	Green Park
Finland	
Wasastjerna, J.	Green Park
Germany	
Hermann, C.	c/o Mrs. Lonsdale, (as above).
Laue, M. von	c/o Mr. Bannister, 34 Monahan Avenue, Purley, Surrey.
Laves, F.	c/o Mrs. Lonsdale, (as above).
India	
Krishnan Sir K. S.	c/o Royal Institution

Berners Hotel, Berners Street, London, W.1.
Browns Hotel, Albemarle Street, London, W.1.
Cumberland Hotel, Marble Arch, London, W.1.
Flemings Hotel, Half Moon Street, London, W.1.
Green Park Hotel, Half Moon Street, London, W.1.
Parkhurst Hotel, Queen's Gate, South Kensington, London, S.W.7.
Regent Palace Hotel, Glasshouse Street, London, W.1.
Rembrandt Hotel, Thurloe Place, South Kensington, London, S.W.7.
Strand Palace Hotel, Strand, London, W.C.2.
Waldorf Hotel, Aldwych, W.C.2.

INSTITUTE OF PHYSICS

X-ray Analysis Group

Names and addresses of X-ray crystallographers resident in Great Britain who have changed their addresses during the last few years.

ASTBURY, W.T. Professor of Biomolecular Physics, The University, Leeds, 2.

BERNAL, J.D. Professor of Physics, Birkbeck College, London, E.C.4.

BORN, M. Professor of Mathematical Physics, The University, Drummond Street, Edinburgh 8.

BUNN, C.W. I.C.I.(Plastics) Ltd., Black Fan Road, Welwyn Garden City, Herts.

COX, E.C. Professor of Inorganic & Physical Chemistry, The University, Leeds, 2.

DOUGLAS, Mrs.A.M.B. Department of Chemistry, The University, Leeds 2.

EWALD, P.P. Queen's University, Department of Physics, Belfast.

HODGKIN, Mrs.D. Department of Mineralogy, University Museum, Oxford.

LIPSON, H. College of Technology, Manchester, 1.

OROWAN, E. Crystallographic Laboratory, Free School Lane, Cambridge.

PERUTZ, M. " " " " " "

POWELL, H.M. Department of Mineralogy, University Museum, Oxford.

RANDALL, J.T. Professor of Physics, The University, St. Andrews.

ROBERTSON, J.M. Gardiner Professor of Chemistry, University of Glasgow W.2.

ROGERS, Mrs.B.W. Department of Chemical Crystallography, University Museum Oxford.

STOKES, A.R. Department of Physics, Royal Holloway College, Englefield Green, Surrey.

SYKES, C. The Brown-Firth Research Laboratories, Princess Street Sheffield, 4.

TAYLOR, W.H. Crystallographic Laboratory, Free School Lane, Cambridge.

UBBELOHDE, A.R. Department of Chemistry, Queen's University, Belfast.

WELLS, A.F. I.C.I. (Dyestuffs) Ltd., Hexagon House, Blackley, Manchester.

WILSON, A.J.C. Physics Department, University College Cathays Park, Cardiff.

WOODWARD, Miss I. Department of Chemistry, Queen's University, Belfast.

INSTITUTE OF PHYSICS

X-ray Analysis Group

Names and home addresses of visitors from abroad to July Conference.

BERNARD, P. Laboratoire Central de l'Artillerie Navale, 10, rue Sextius Michel, Paris XV, FRANCE.

BIJVOET, J.M. van 't Hoff-Laboratorium, Rijks-Universiteit Utrecht, Sterrenbosch 19, Utrecht, HOLLAND

BRASSEUR, H. Laboratoire d'Applications des Rayons X, Univers de Liége, 1A Quai des Etats-Unis, Liége, BELGIUM.

BROCKWAY, L.O. University of Michigan, Ann Arbor, Michigan, U.S.A.

BUERGER, M.J. Department of Geology, Massachusetts Institute of Technology, Cambridge 39, Massachusetts, U.S.A.

BURGERS, W.G. Laboratorium voor physische Chemie, Technische Hoogeschool, Julianalaan 136, Delft, HOLLAND

CAUCHOIS, Mlle. Y. Laboratoire de Chimie-Physique, 11 rue Pierre-Curie, Paris V, FRANCE.

CHAUDRON, G. Laboratoire de Chimie, La Sorbonne, 1 rue Victor-Cousin, Paris V, FRANCE

CUSTERS, J.F.H. Natuurkundig Laboratorium, N.V.Philips' Gloeilampenfabrieken, Kastanjelaan, Eindhoven, HOLLAND

DONNAY, J.D.H. Geology Department, Johns Hopkins University, Baltimore 18, Maryland, U.S.A.

FANKUCHEN, I. Brooklyn Polytechnic Institute, 85 Livingstone Street, Brooklyn 2, New York, U.S.A.

FAVEJEE, J.Ch.L. Keramisch Instituut T.N.O., Lange Tiendeweg 79, Gouda, HOLLAND

FINBAK, Ch. Vidarsgt 10C, Oslo, Norway

GERMER, L.H. Bell Telephone Laboratories, Murray Hill, New Jersey, U.S.A.

GRISON, E. Laboratoire Central des Services Chimiques de l'Etat, 12, Quai Henri IV, Paris IV, FRANCE.

GUINIER, A. Laboratoire d'Essais, Conservatoire des Arts et Metiers, 292 rue St.Martin, Paris III, FRANCE.

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