MONTHLY NOTICES
OF THE
ROYAL ASTRONOMICAL SOCIETY
Vol. 119 No. 6

MEETING OF 1959 OCTOBER 9

Professor R. O. Redman, President, in the Chair

The President announced the death of William Hammond Wright, an Associate and Fellow of the Society, in tribute to whose memory the Fellows stood for a few moments in silence.

The election by the Council of the following Fellows was duly confirmed:—
Mark Gerard Landsman, Lamont Geological Observatory, Palisades, New York, U.S.A. (proposed by R. W. Girdler);
William Hedley Savage, Alrose, Stallingboro Road, Healing, Grimsby, Lincs. (proposed by W. T. Gayfer);
Shambu Dayal Sinival, Uttar Pradesh State Observatory, Naini Tal, India (proposed by M. K. Vainu Bappu);
Lawrence Arthur Storer, 25 St. Helen's Street, Chesterfield, Derbyshire (proposed by W. H. Barnett); and

The election by the Council of the following Junior Members was duly confirmed:—
Roger A. Bell, Mount Stromlo Observatory, Mount Stromlo, Canberra, A.C.T., Australia (proposed by W. Buscombe); and
Philip Douglas Charles Heron Goodhart, Hertford College, Oxford (proposed by C. H. Barrow).

One hundred and ninety-five presents were announced as having been received since the last meeting, including:—

International Astronomical Union and International Scientific Radio Union:
Paris symposium on radio astronomy (presented by the I.A.U.);
Sir Harold Jeffreys: The Earth, 4th ed. (presented by the author);
Z. Kopal: Close binary systems (presented by Chapman and Hall Ltd.);
B. V. Kukarkin, Ed.: Voprosy kosmogonii, Vol. VI (presented by the author);
A. Kosmodemianski: Constatin Tsivolkovski (presented by Professor Kukarkin);
S. Strizhevsky: Nikolai Zhukovsky (presented by Professor Kukarkin);
A. Oparine and V. Fessenkov: La vie dans l'univers (presented by Professor Kukarkin);
P. G. Kulikovsky, Ed.: Istoriko-astronomicheskie issledovaniya, Vols. IV and V (presented by the author);
T. G. Mehlin; Astronomy (presented by Chapman and Hall Ltd.);
H.M. Nautical Almanac Office: Seven figure trigonometrical tables (presented by H.M. Nautical Almanac Office);
K. F. Ogorodnikov: Dinamika zvezdnykh sistem (presented by the author);
D. Wattenberg: Mars der rote Planet (presented by the National Book League);
D. Wattenberg: Die Welt der Planeten (presented by the National Book League);
Several papers formerly belonging to the late J. L. E. Dreyer (presented by Commander J. F. R. Dreyer); and
Several papers formerly belonging to the late Henry Perigal (presented by A. E. Perigal).

MEETING OF 1959 NOVEMBER 13

Professor R. O. Redman, President, in the Chair

The election by the Council of the following Fellows was duly confirmed:—
Charles Wilfred Earnshaw, The Old Cottage, The Square, Yarmouth, I.O.W. (proposed by H. P. Wilkins);
John Edward Colston Gliddon, Mill House, Chipping Hill, Witham, Essex (proposed by V. C. A. Ferraro);
Sydney Harold Hall, Imperial College, London, S.W.7 (proposed by R. G. Moon);
Adam B. Malone, B. P. House, Ropemaker Street, London, E.C.2 (proposed by D. T. Germain-Jones);
Edward Glyn Thomas, B.P. House, Ropemaker Street, London, E.C.2 (proposed by D. T. Germain-Jones); and
Margaret I. Watson, 2 Kew Terrace, Great Western Road, Glasgow, W.2 (proposed by T. R. Tannahill).

The election by the Council of the following Junior Members was duly confirmed:—
Stephen Dresner, 70 Riverdene, Edgware, Middx. (proposed by R. H. Garstang);
Michael Friedjung, 33 Appledore Avenue, Ruislip, Middx. (proposed by P. A. Sweet);
Paul Geoffrey Murdin, 92 Northborough Road, London, S.W.16 (proposed by F. H. G. Best);
James Gordon Peters, Goethe Link Observatory, Indiana University, Bloomington, Indiana, U.S.A. (proposed by R. L. Sears);
Ian Walter Roxburgh, 6 Machon Bank, Sheffield 7 (proposed by R. v. d. R. Woolley); and
John B. Whiteoak, Mount Stromlo Observatory, Canberra, A.C.T., Australia (proposed by W. Buscombe).

Ninety-eight presents were announced as having been received since the last meeting, including:—
M. Caspar: Kepler. Translated by C. D. Hellman (presented by Abelard-Schuman Ltd.);
Sir Harold Spencer Jones: *Life on other worlds*. Revised edition (presented by the author); and
R. Kurth: Introduction to the mechanics of the solar system (presented by the Association of the Special Libraries and Information Bureaux).

**MEETING OF 1959 DECEMBER 11**

Dr. W. H. Steavenson, Vice-President, in the Chair

The Vice-President announced the death of William Moody Witchell, who had been a prominent Fellow of the Society for over forty-five years. The Fellows stood for a few moments in silence in tribute to Mr Witchell's memory.

The election by the Council of the following Fellows was duly confirmed:—
Habeeb Alvi, House No. III-C-3-994 Shah Gunj, Hyderabad Deccan, India (proposed by A. Ali);
Horace W. Babcock, Mount Wilson and Palomar Observatories, 813 Santa Barbara Street, Pasadena, California, U.S.A. (proposed by I. S. Bowen);
William Jack Baggaley, 44 Old Park Avenue, Sheffield 8 (proposed by N. S. Jinkinson);
Robert M. L. Baker, Jr., Department of Astronomy, University of California, Los Angeles 24, California, U.S.A. (proposed by S. Herrick);
William A. Baum, Mount Wilson and Palomar Observatories, Pasadena, California, U.S.A. (proposed by A. J. Deutsch);
William Morley Baxter, 164 Gunnersbury Avenue, Acton, London, W.3 (proposed by A. C. King);
Walter C. Beckmann, Lamont Geological Observatory, Palisades, New York, U.S.A. (proposed by R. W. Girdler);
Emilia P. Belserene, 9 Schley Avenue, New Rochelle, N.Y., U.S.A. (proposed by L. Motz);
Lyman H. Beman, 20336 Cantara, Canoga Park, California, U.S.A. (proposed by E. Burgess);
Irmgard Maria M. H. Berrer, 1 Well Street, Forbrook, Stoke-on-Trent (proposed by E. Finlay-Freundlich);
George William Hobbes Berry, 6 Sunnymede Drive, Ilford, Essex (proposed by C. G. Saul);
Donald E. Billings, High Altitude Observatory, Boulder, Colorado, U.S.A. (proposed by W. O. Roberts);
Kenneth Bispham, 34 Winchester Road, Davyhulme, Urmston, Lancs. (proposed by S. W. R. Mottram);
Deane Robert Blackman, 31 Laver Street, Kensington 4, Victoria, Australia (proposed by R. L. Bryant);
William Blitzstein, Department of Astronomy, University of Pennsylvania, Philadelphia 4, Pa., U.S.A. (proposed by F. B. Wood);
John C. Brandt, Yerkes Observatory, Williams Bay, Wisconsin, U.S.A. (proposed by H. A. Abt);
Ervin J. Brouse, 3215 Liberty, Austin, Texas, U.S.A. (proposed by F. N. Edmonds, Jr.);
Harold H. Brown, 6 Earlspark Avenue, Glasgow, S.3 (proposed by D. Livingston);
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Thomas Richard Carson, Theoretical Physics Division U.K., Atomic Energy Authority, Aldermaston, Berks. (proposed by D. W. N. Stibbs);
Subhash Chandra, Uttar Pradesh State Observatory, Naini Tal, India (proposed by M. K. Vainu Bappu);
Jeffrey Clayton, 16 Seaforth Avenue, Harehills, Leeds 9, Yorks (proposed by L. W. Clarke);
Robert Geoffrey Conway, 18 Granville Road, Wilmslow, Cheshire (proposed by J. G. Davies);
Charles S. Cox, Route 1, Box 43, Del Mar, California, U.S.A. (proposed by W. H. Munk);
Peter Frank Culling, 70 the Drive, Ilford, Essex (proposed by J. Vetterlein);
Trevor Walford Davies, The British Petroleum Co. Ltd., BP House, Ropemaker Street, London, E.C.2 (proposed by D. T. Germain-Jones);
Wendell C. DeMarcus, University of Kentucky, Lexington, Kentucky, U.S.A. (proposed by W. S. Krogdahl);
Charles L. Drake, Lamont Geological Observatory, Palisades, New York, U.S.A. (proposed by R. W. Girdler);
John C. Duncan, Department of Astronomy, University of Arizona, Tucson, Arizona, U.S.A. (proposed by H. D. Babcock);
Edwin George Ebbighausen, Department of Physics, University of Oregon, Eugene Oregon, U.S.A. (proposed by A. McKellar);
David Owen Edge, Cavendish Laboratory, Cambridge (proposed by A. Hewish);
Bruce Elsmore, Cavendish Laboratory, Cambridge (proposed by F. G. Smith);
Von Russel Eshleman, 576 Gerona Road, Stanford University, Stanford, California, U.S.A. (proposed by R. N. Bracewell);
Frank Raymond Farley, B.P. House, Ropemaker Street, London, E.C.2 (proposed by D. T. Germain-Jones);
William Edwin Fox, 49 Milner Street, Newark, Notts. (proposed by B. M. Peek);
Kenneth L. Franklin, American Museum-Hayden Planetarium, New York 24, U.S.A. (proposed by J. M. Chamberlain);
George David Garland, Geophysics Department, University of Alberta, Edmonton, Alberta, Canada (proposed by J. A. Jacobs);
Charles E. Gasteley, Van Vieck Observatory, Wesleyan University, Middletown, Conn., U.S.A. (proposed by C. L. Stearns);
Kurt Gottlieb, Mount Stromlo Observatory, Research School of Physical Sciences, Mount Stromlo, Canberra, A.C.T., Australia (proposed by E. Gollnow);
David T. Griggs, Institute of Geophysics, University of California, Los Angeles 24, California, U.S.A. (proposed by J. C. Harrison);
Adelina Gutierrez, Casilla 369, Santiago, Chile (proposed by F. Rutillant);
Peter Spencer Hadley, Green Acre, Peaslake, Surrey (proposed by F. G. G. Carr);
Neville J. Hargrave, 7 Meaker Avenue, West Brunswick, N.12, Victoria, Australia (proposed by B. A. Clark);
Ernst Johannes Hartung, Lavender Farm, Woodend, Victoria, Australia (proposed by R. v. d. R. Woolley);
Bruce C. Heezen, Lamont Geological Observatory, Palisades, N.Y., U.S.A. (proposed by R. W. Girdler);
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Soren W. Henriksen, 6500 Brooks Lane, Washington 25, D.C., U.S.A.
(proposed by H. K. Eichhorn);
Luise Herzberg, Dominion Observatory, Ottawa, Ont., Canada (proposed by
C. S. Beals);
Brett Hilder, 183 Edinburgh Road, Castlecrag, N.S.W., Australia (proposed by
J. R. Brace);
James Victor Hindman, Radiophysics Laboratory, C.S.I.R.O., University
Grounds, Sydney, Australia (proposed by C. S. Gum);
Frederick W. Hoffman, 689 East Avenue, Pawtucket, Rhode Island, U.S.A.
(proposed by C. H. Smiley);
Léo Houziaux, Institut d’Astrophysique de l’Université de Liège, Cointe-Scelessin,
Belgium (proposed by P. Swings);
Charles Morse Huffer, Washburn Observatory, University of Wisconsin,
Madison 6, Wisconsin, U.S.A. (proposed by L. M. Milne-Thomson);
Morris J. S. Innes, 1387 Morley Blud, Ottawa 5, Ont., Canada (proposed by C. S.
Beals);
Syed Mozaffer Iqbal, 5 Yusuf Manzil, Aram Bagh, Desalane, Pakistan (proposed
by A. C. Sanderson);
Robert Jastrow, Goddard Space Flight Center, Washington 25, D.C., U.S.A.
(proposed by N. G. Roman);
Roger Clifton Jennison, Wingfield Cottage, Strawberry Lane, Wilmslow,
Cheshire (proposed by A. C. B. Lovell);
Eberhart Jensen, Institute of Theoretical Astrophysics, Blindern, Norway
(proposed by G. Gjellestad);
Abdul Majid Khan, B-2, Airport, Karachi 11, Pakistan (proposed by C. H.
Smiley);
J. Gerard Kilbride, 160 Bishop Street, Londonderry, Northern Ireland (proposed
by S. P. Logue);
Robert H. Koch, Amherst College Observatory, Amherst, Mass., U.S.A.
(proposed by F. B. Wood);
Karol Koziel, Department of Astronomy, Jagellonian University, Kopernika
27/3, Cracow, Poland (proposed by E. Rybka);
George Lea, 6 George’s Wood Road, Brookmans Park, Hatfield, Herts. (proposed
by W. H. Julian);
Henry Jones Lewis, ‘Vissi D’arte’, Sunnybank Road, Blackwood, Mon.
(proposed by E. Bennett Smith);
James Murray Long, Delta Street, Surrey Hills, E.10, Victoria, Australia
(proposed by B. A. Clark);
Ivor Martin Longman, Institute of Geophysics, University of California, Los
Angeles 24, California, U.S.A. (proposed by J. C. Harrison);
Ralph Edwin Loughhead, C.S.I.R.O., Division of Physics, National Standards
Laboratory, Sydney, N.S.W., Australia (proposed by R. J. Bray);
Cornell H. Mayer, Code 7131, U.S. Naval Research Laboratory, Washington 25,
D.C., U.S.A. (proposed by N. G. Roman);
Edward Fifer McClain, Code 7130, U.S. Naval Research Laboratory, Washing-
ton 25, D.C., U.S.A. (proposed by N. G. Roman);
Joseph Henry McGlashen, Chatsworth, Bay View Road, Port Erin, I.O.M.
(proposed by F. Cousins);
Maxwell Herbert McKay, School of Mathematics, University of N.S.W., Box 1, P.O. Kensington, N.S.W., Australia (proposed by A. Keane);
Brian Lawrence Meek, Mathematics Department, King’s College, London, W.C.2 (proposed by F. A. E. Pirani);
Marshall Melin, 66 Brook Road, Milton, Mass., U.S.A. (proposed by T. E. Sterne);
Thuppaly Kochugovinda Menon, Department of Astronomy; University of Pennsylvania, Philadelphia, Pa., U.S.A. (proposed by F. B. Wood);
Stanley William Milbourn, Overton Cottage, Weston Green, Thames Ditton, Surrey (proposed by W. H. Julian);
William Robert Milliken, Gransha Hospital, Londonderry, N. Ireland (proposed by S. P. Logue);
Rudolph L. Minkowski, 813 Santa Barbara Street, Pasadena, Cal., U.S.A. (proposed by I. S. Bowen);
Walter A. Munn, 60 Garden Street, Cambridge, Mass., U.S.A. (proposed by S. I. Gale);
John E. Nafe, Lamont Geological Observatory, Palisades, N.Y., U.S.A. (proposed by R. W. Girdler);
Henry M. Neely, American Museum-Hayden Planetarium, Central Park West at 81st Street, New York City, N.Y., U.S.A. (proposed by K. Heuer);
Edgar Leslie Neufeld, 6 Brantingham Court, Alexandra Road South, Manchester, 16 (proposed by J. Davis);
Frederick William Nicholls, Coombe Bissett, Nr. Salisbury, Wilts. (proposed by F. J. M. Stratton);
Thomas D. Nicholson, American Museum-Hayden Planetarium, New York, 24, N.Y., U.S.A. (proposed by J. M. Chamberlain);
Rajendra Chandra Nigam, Goethe Link Observatory, Indiana University, Bloomington, Indiana, U.S.A. (proposed by R. L. Sears);
Harold Banks Oake, Otterbourne Hotel, Budleigh Salterton, Devon (proposed by C. E. R. Bruce);
Edward Cooper Olson, Goethe Link Observatory, Indiana University, Bloomington, Indiana, U.S.A. (proposed by R. L. Sears);
Vasilije Oskanian, Astronomical Observatory, Dalmatinska 101, Belgrade, Yugoslavia (proposed by I. Atanasijevic);
Valfrids Osvalds, Leander McCormick Observatory, Charlottesville, Virginia, U.S.A. (proposed by H. L. Alden);
Thomas Edward Peacock, 41 Collard Avenue, Cross Heath, Newcastle, Staffs. (proposed by J. G. Porter);
Gordon Eric Patston, 42 Lincoln Street, Belfield, N.S.W., Australia (proposed by H. W. Wood);
Dennis Clifford Penny, British Petroleum Co., Ltd., Ropemaker Street, London, E.C.2 (proposed by D. T. Germain-Jones);
John Louis Perdrix, 43 William Street, Box Hill, E.11, Victoria, Australia (proposed by W. A. Vale);
Charles Gerald Pickering, British Petroleum Co. Ltd., Ropemaker Street, London, E.C.2 (proposed by D. T. Germain-Jones);
Keith Pierce, Aura, 1033, North Park Avenue, Tucson, Arizona, U.S.A. (proposed by J. H. Waddell);
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Lawrence Herbert Austin Pilkington, Stretton House, Lower Stretton, Nr. Warrington, Lancs. (proposed by F. J. Hargreaves);
John Richard Polson, Gransha Hospital, Waterside, Londonderry, N. Ireland (proposed by S. P. Logue);
Frank Press, Seismological Laboratory, 220 North San Rafael Avenue, Pasadena 2, Cal., U.S.A. (proposed by B. Gutenberg);
W. M. Protheroe, Department of Astronomy, University of Pennsylvania, Philadelphia 4, Pa., U.S.A. (proposed by F. B. Wood);
Gabriel Raab, Casilla 1809, Santiago, Chile, S. America (proposed by F. Rutllant);
Peter Alfred Read, 45 Hobart Street, Miramar, Wellington, New Zealand (proposed by W. H. Ward);
John Hunter Reid, Dunsink Observatory, Castleknock, Co. Dublin, Eire (proposed by M. A. Ellison);
Frank Roberts, S.E. London Technical College, Lewisham Way, S.E.4 (proposed by R. G. Foster);
Michael F. Roberts, Dept. of Exploration, B.P. House, Ropemaker Street, E.C.2 (proposed by D. T. Germain-Jones);
Ian Stewart Robertson, Bankhead Schoolhouse, Bucksburn, Aberdeenshire (proposed by R. V. Jones);
Andrew Arthur Neill Rule, 12 The Crescent, Surrey Hills, Melbourne, Australia (proposed by R. L. Bryant);
Netra Ballabh Sanwal, Uttar Pradesh State Observatory, Naini Tal, India (proposed by M. K. Vainu Bappu);
Peter August Georg Scheuer, Cavendish Laboratory, Free School Lane, Cambridge (proposed by F. Graham Smith);
Donald Charles Schmalberger, Goethe Link Observatory, Indiana University, Bloomington, Indiana, U.S.A. (proposed by R. L. Sears);
Branislav Sevarlić, Volgina 7, Belgrade, Yugoslavia (proposed by I. Atansijević);
Conrad H. Slater, Alpine Lodge, 95 Cambridge Road, Southport, Lancs. (proposed by A. C. B. Lovell);
René Simon, Institut d’Astrophysique, Université de Liège, Cointe-Sclessin, Belgium (proposed by P. Swings);
Roy Edward Rodney Smith, Jeffrey’s Orchard, Afton Road, Freshwater Bay, I.O.W. (proposed by P. A. E. Stewart);
Richard Boynton Southworth, Harvard College Observatory, Cambridge 38, Mass., U.S.A. (proposed by T. E. Sterne);
Ranga Sreenivasan, Harvard College Observatory, Cambridge 38, Mass., U.S.A. (proposed by A. M. Naqvi);
Bernhard Sticker, Department of Astronomy, University of Bonn, Germany (proposed by W. Hartner);
Francis Michael Stienon, Harvard College Observatory, Cambridge 38, Mass., U.S.A. (proposed by C. P. Gaposchkin);
Henrietta H. Swope, 813 Santa Barbara Street, Pasadena, Cal., U.S.A. (proposed by I. S. Bowen);
William Tildesley, Electrical Research Association Laboratory, Cleeve Road, Leatherhead, Surrey (proposed by C. E. R. Bruce);
Malcolm M. Thomson, Dominion Observatory, Ottawa, Ont., Canada (proposed by C. S. Beals);
Kenneth Ulyatt, 134 Knight's Hill, London, S.E.27 (proposed by Lord Douglas of Barloch);
Mahendra Singh Vardya, Yale University Observatory, New Haven, Conn.,
U.S.A. (proposed by R. Wildt);
Raymond N. Watts, Jr., Robert T. Longway Planetarium, Flint, Mich., U.S.A.
(proposed by C. H. Smiley);
Donald Ernest Weald, 23 Eden Road, Bexley, Kent (proposed by R. G. Foster);
Bengt Westerlund, Mount Stromlo Observatory, Canberra, A.C.T., Australia
(proposed by W. Buscombe);
Lodewijk Woltjer, Sterrewacht, Leiden, Holland (proposed by S. Chandrasekhar);
and George P. Woollard, Geology Department, University of Wisconsin,

The election by the Council of the following Junior Members was duly
confirmed:—
David Michael Jordan, 16 Pembroke Avenue, Walton-on-Thames, Surrey
(proposed by F. A. E. Pirani);
James Muirden, 90 West Cromwell Road, London, S.W.5 (proposed by
P. Moore); and
Andrew Leslie James Wells, 43 Arlington Crescent, Waltham Cross, Herts.
(proposed by F. A. E. Pirani).

Seventy-one presents were announced as having been received since the
last meeting, including:—

International Astronomical Union: *The rotation of the Earth and atomic
time standards*, Symposium No. 11 (presented by the I.A.U.);
M. Johnson: *Astronomy of stellar energy and decay* (presented by the author);
and
D. W. Sciama: *The unity of the universe* (presented by the author).