MONTHLY NOTICES
OF THE
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Dr. J. H. Jeans, President, in the Chair.

David Dietz, 1146 Cleveland Heights Boulevard, Cleveland Heights, Ohio, U.S.A.;
W. K. Green, Ph.D., Director of the Observatory of Amherst College, Amherst, Mass., U.S.A.; and
William Hodge, F.R.C.O., 2 Newton Vale, Chapeltown Road, Leeds,
were balloted for and duly elected Fellows of the Society.

The following candidates were proposed for election as Fellows of the Society, the names of the proposers from personal knowledge being appended:—
Frederick Addey, B.Sc., M.I.E.E., Assistant Inspector of Wireless Telegraphy, G.P.O., Ryecroft, Chinbrook Road, Grove Park, London, S.E.12 (proposed by H. Knox-Shaw);
Alexander Williams Anderson, Commander R.N.R., G.H.Q., British Army, Cologne (proposed by R. A. Sampson);
Candidates Proposed.

C. M. C. Bone, M.A., Surveyor General’s Office, Pretoria, South Africa (proposed by R. T. A. Innes);
Dr. Willem Hendrik van den Bos, Leiden Observatory, Holland, and Union Observatory, Johannesburg, South Africa (proposed by W. de Sitter);
Philip Arthur Curry, B.A., A.Inst.P., Director of the Helwan Observatory, Egypt (proposed by H. Knox-Shaw);
William Stephen Finsen, Union Observatory, Johannesburg, South Africa (proposed by R. T. A. Innes);
David Lamont Forbes, 437 Smith Street, Durban, Natal, South Africa (proposed by R. T. A. Innes);
Capt. Henry Freyne, Nautical Surveyor and Examiner of Masters and Mates for the Irish Free State, 27 Eden Quay, Dublin, Ireland (proposed by M. H. Clarke);
Frederick Gawith, Hawera, New Zealand (proposed by A. C. Gifford);
Rev. Herbert Hedley, M.A., 17 Brockhill Road, Hythe, Kent (proposed by W. A. Parr);
W. W. Heinrich, Observatoire de l’Université tchèque, Prague-Smichov, Czechoslovakia (proposed by A. S. Eddington);
Kiyotsugu Hirayama, D.Sc., Professor of Astronomy at the Imperial University of Tokyo, Astronomical Observatory, Azabu, Tokyo, Japan (proposed by F. W. Dyson);
Alan Patrick Mackerras, B.E., International General Electric Co., Schenectady, New York, U.S.A. (proposed by L. J. Comrie);
Sydney Briton Henry Manning, McLaren Flat, South Australia (proposed by C. J. Merfield);
William Ralph Meechaelis, Head Master of the Alexandra District High School, Alexandra, Otago, New Zealand (proposed by C. E. Adams);
Zeus A. Merfield, Research Physicist, University, Melbourne, Victoria, Australia (proposed by C. J. Merfield);
Patrick O’Dea, M.A., LL.B., Hawera, New Zealand (proposed by C. E. Adams);
William Tyler Olcott, Norwich, Connecticut, U.S.A. (proposed by Ernest W. Brown);
C. Parvulesco, Ploesti, Roumania (proposed by F. J. M. Stratton);
Frederick Charles Pilcher, Survey of India, Belmont, Norris Road, Richmond Town, Bangalore Cantonment, South India (proposed by E. A. Reeves);
Alexander Oliver Rankine, O.B.E., D.Sc., Director of Technical Optics Dept. and Professor of Physics, Imperial College of Science and Technology, London, S.W.7 (proposed by A. Fowler);
N. M. Shah, M.A., Principal of the New Poona College, Poona City, India (proposed by S. R. U. Savoor);
William Francis Herschel Waterfield, Nakusga, British Columbia, Canada (proposed by Francisca Herschel); and
W. H. Watts, B.Sc., The Lydiate, Heswall, Cheshire (proposed by Harold Whichello).
Dec. 1925. A Study of the Nature of Spectroscopic Binaries. 63

Sixty-eight presents were announced as having been received since the last meeting, including, amongst others:—

Algiers Observatory, Catalogue de 9997 étoiles comprises entre $-17^\circ$ 50' et $-23^\circ$ 0' de déclinaison 1855 pour l'équinoxe de 1900.
Cape of Good Hope, Royal Observatory, Astrographic Catalogue, vol. 8.
Cape of Good Hope, Royal Observatory, Annals, vol. 13, pt. 1.
Royal Observatory, Greenwich, Observations of Stellar Parallax from photographs taken and measured . . . in the years 1913-1924.

Professor H. Dingle and Mr. F. Robbins were appointed auditors of the Treasurer's accounts for 1925.

A Study of the Nature of Spectroscopic Binaries.
By Otto Struve.

In a previous paper* I have shown that spectroscopic binaries of periods longer than 2.4 days, if arranged in order of increasing period, exhibit a continuously decreasing orbital velocity. This decrease agrees well with Kepler's third law, written in the form

$$K = CP^{-4}.$$  \(1\)

where \(P\) is the average period for a small group of binaries, \(K\) is the average semi-amplitude of the velocity curve, and \(C\) is a constant depending chiefly upon the average mass of the stars and upon the average value of the sine of the inclination.

For periods shorter than 2.4 days, the observed distribution of the \(K\)’s differs radically from that required by equation (1). \(K\) decreases rapidly for the shorter periods, and only a few eclipsing binaries, with periods shorter than one day, are known that continue to obey equation (1).

Furthermore, I showed that the Cepheid variables do not follow equation (1): \(K\) has a constant value for all periods (+16 km./sec.).

I suggested, therefore, that the stars which are known to have variable radial velocities consist of two groups. The majority obey Kepler's third law. These are beyond any doubt actual binaries, of the same sort as those observed visually. For periods shorter than 2.4 days the percentage of stars belonging to the second group and not obeying Kepler's third law increases rapidly as the period decreases. The nature of these stars must be radically different from that of the members of the first group. The fact that the stars of shortest periods have an average value of \(K\) almost identical with that of the Cepheid variables