

## WORK OF THE LA PLATA ASTRONOMICAL OBSERVATORY

**B**ERNHARD H. DAWSON has a paper with the title, "Observaciones De Planetas y Cometas", published at the La Plata Astronomical Observatory, which deals with his observations during the years 1940-41 (*Obs. Ast. Univ. Nac. de la Plata*, 6, No. 7). The work was carried out with the equatorial instruments of the Observatory, and the visual observations were effected with the filar micrometer of the refractor with aperture 433 mm., using a dark field illuminated with red light. A brief description of certain methods and precautions to ensure accuracy is given. On several occasions it was found necessary to use relatively faint stars as reference points owing to the limited field, but no difficulty was experienced in this procedure, thanks to the "Astrographic Catalogue".

Photographic observations during the first years of earlier observations at the Observatory were carried out entirely by means of the "Astrographic" objective, aperture 342 mm. and focal length 3,417 mm., but more recently the "UV" objective, aperture 160 mm. and focal length 1,500 mm., has come into general use. It was found that the smaller aperture was largely compensated by the greater clarity of the images, and in addition to certain advantages, its larger field is of assistance in the search for planets of uncertain position, and in other ways as well.

In the photometric work on Eros, compensation of half the apparent motion of the planet was effected during the exposures, so that the images of the planet should present the same aspect as those of the stars, and thus could be compared photometrically. Unfortunately, the atmospheric conditions were not favourable for this work, clouds intervening on many occasions. A table shows the positions of Eros during May 28-September 26, 1940, and another table supplies details of the photometric observations during June 11-August 23 in the same year.

Positions of Comets Cunningham, 1940 *b*, Whipple, 1940 *d*, van Gent, 1941 *d*, and Schwassmann-Wachmann, 1941 *f*, are also supplied for a number of dates.

Gualberto M. Iannini has published three papers with the titles, "Medidas Micrometricas De Estrellas Dobles"; "Posible Movimiento Rectilineo De  $\beta$  311"; and "Una Nueva Determinacion De La Orbita De  $\Psi$  Argus" (*Obs. Ast. Univ. Nac. de la Plata*, 6, No. 8). The first of these papers describes the author's measurements of double stars. The micrometer was used in connexion with the equatorial refractor, aperture 433 mm., and the measurements were generally made when the hour angle was less than two hours. Six readings of the position angle were taken, three with the eyes parallel to, and three with the eyes perpendicular to, the micrometer wires, thirty-six stars in all being dealt with. Details of the results are set out for each star in columns which supply the year and fraction of a year of the observation (1900 being taken as the basis), position angle observed, mean distance, etc.

The second paper deals with the possibility of rectilinear motion of the system  $\beta$  311, the components of which are of magnitude 6.7 and 7.0. The equations expressing the movement of the system in right ascension and declination show that there is an annual relative movement of 0.0182" in a direction 130.25° and a minimum distance of 0.336", with an

angle of 40.25° for the year 1941.5. A table gives the relation between observation and calculation, from 1875.92 to 1937.08, and with two exceptions, it shows that the hypothesis of rectilinear motion is satisfactory. A definitive solution of the problem, however, cannot be effected at present.

In the third paper the elements of the orbit of  $\Psi$  Argus are re-determined from forty-one observations. The companion having made considerably more than a revolution since its discovery in 1883.3, the two dynamical elements can be determined by means of a graphic method, and the other elements were obtained by the method of Zwiers. Residuals revealed the presence of a systematic error, and corrections were applied which gave a new orbit. It is interesting to know that Van de Bos had also revised the orbit and his results, not yet published, were brought to the notice of Iannini after the completion of his work. With the exception of *a*, the two sets of elements differ by amounts which do not exceed 2½ times Iannini's mean errors.

## MAN: THE FIRE-USING ANIMAL

**O**N March 8 last the Association of Czechoslovak Scientists and Technologists was addressed by Dr. G. W. Himus on "Man: The Fire-Using Animal". Although the lecture started with an account of the origin and the rise of the use of fire by mankind—or as suggested 'fuel squandering'—in the main it surveyed the present state of fuel supplies and prospective fuel technology in Great Britain. Noteworthy is the slowness with which Great Britain became conscious of the importance of efficiency in getting and consuming coal—doubtless owing to the abundance, high quality and cheapness of British coal together with the slender scientific outlook. Without this, waste cannot be recognized, still less corrected. Moreover, in some industries, the cost of fuel is a relatively small item of the cost of production and consequently failed to arouse the attention of the management.

Nevertheless, a time arrived when the importance of a more rational use of coal came to be recognized. It was even found worthy of a place in university studies—at Leeds in 1906, at the Imperial College in 1912, while the Fuel Research Board was established during the War of 1914-18. The two Wars which followed shook the complacency of the State and industry, by the scarcity and steep rise in prices, and in the present War, by the development of acute scarcity.

Although, during the past, knowledge of efficiency in the use of fuel has advanced, experience in the national campaign for fuel saving has revealed a lag in the application of this knowledge. The author illustrates the advance in fuel efficiency by the performances of large industries accustomed to employ considerable technical assistance. These include the public utilities, iron and steel industries and the coal mines. The net saving of coal of these in the period between the two Great Wars is estimated by the author to reach thirty-two millions of tons of coal per annum, while the total saving may be considerably higher. This is a very large quantity of fuel, to supply which would have been a great embarrassment to the Ministry of Fuel and Power to-day.

Some matters of importance, both topical and future, are examined. Emphasis is given to the need

for greater application of technical training for the smaller industrial units—possibly by co-operative effort. The sale of solid fuel in small quantities by weight without allowance for calorific value is criticized. It must, however, be recognized that there are peculiar difficulties, and in some countries solid fuel is sold by volume. The heating value of gaseous fuels in public supply can be easily controlled, whereas it cannot vary appreciably in the case of liquid fuels of given chemical character. Moreover, coal as mined contains variable proportions of incombustible matter, sometimes hard to separate. It is often overlooked that the cleaning of coal involves the production of considerable quantities of coal 'fines' or 'slurry' of little or no commercial value, while accumulations of small coal, if ignited, may become a public nuisance. For steam raising, it is considered possible that consumers will have to adapt themselves to the use of a lower grade of coal. Already the need for widening the range of fuel in use has caused official encouragement to be given to the installation of suitable mechanical equipment.

The lecture mentions a number of fuel problems still in the more speculative stage, and in all gives an interesting survey of the questions now in the minds of modern fuel technologists. H. J. HODSMAN.

## FORTHCOMING EVENTS

(Meeting marked with an asterisk \* is open to the public)

### Saturday, October 14

ASSOCIATION FOR SCIENTIFIC PHOTOGRAPHY (at Caxton Hall, Westminster, London, S.W.1), at 2.30 p.m.—Mr. H. Emmett: "Cinematography of Crystal Growth"; Mr. R. McV. Weston: "Cinematography in Biological Research".

### Monday, October 16

INSTITUTION OF ELECTRICAL ENGINEERS (LONDON STUDENTS' SECTION) (at Savoy Place, Victoria Embankment, London, W.C.2), at 7 p.m.—"Brains Trust" Meeting.

ASSOCIATION OF AUSTRIAN ENGINEERS, CHEMISTS AND SCIENTIFIC WORKERS IN GREAT BRITAIN (at the Austrian Centre, 69 Eton Avenue, Hampstead, London, N.W.3), at 7.30 p.m.—Mr. E. Pribram: "Jet Propulsion, Rocket Propulsion".

### Tuesday, October 17

INSTITUTION OF BRITISH AGRICULTURAL ENGINEERS (at the Institution of Electrical Engineers, Savoy Place, Victoria Embankment, London, W.C.2), at 2 p.m.—Mr. Cornelius Davies: "Harvesting Machinery".

SOCIETY OF CHEMICAL INDUSTRY (AGRICULTURE GROUP) (at the Chemical Society, Burlington House, Piccadilly, London, W.1), at 2.30 p.m.—Dr. H. C. Gough: "Soil Insecticides".

EUGENICS SOCIETY (at the Royal Society, Burlington House, Piccadilly, London, W.1), at 5.30 p.m.—Dr. Innes H. Pearse: "The Health Centre and the Family".

CHEMICAL SOCIETY, the ROYAL INSTITUTE OF CHEMISTRY, and the SOCIETY OF CHEMICAL INDUSTRY (EDINBURGH SECTIONS) (joint meeting with the EDINBURGH UNIVERSITY CHEMICAL SOCIETY) (in the Medical Chemistry Lecture Theatre, The University, Teviot Place, Edinburgh), at 7 p.m.—Prof. G. F. Marrian, F.R.S.: "Some Aspects of Heroid Metabolism".

### Wednesday, October 18

INSTITUTE OF FUEL (NORTH-WESTERN SECTION) (at the Engineers' Club, Albert Square, Manchester), at 2.30 p.m.—Mr. G. N. Critchley: "The Economics of Saving Fuel, with particular reference to the Insulation of Steam Ranges".

INSTITUTION OF ELECTRICAL ENGINEERS (TRANSMISSION SECTION) (at Savoy Place, Victoria Embankment, London, W.C.2), at 5.30 p.m.—Mr. H. W. Gimmitt: Inaugural Address as Chairman.

BRITISH ASSOCIATION OF CHEMISTS (LONDON SECTION) (at Wigmore Hall, Wigmore Street, London, W.1), at 6.30 p.m.—Discussion on "The Safeguarding of Key Industries" (to be opened by Mr. Norman Sheldon).\*

IRON AND STEEL INSTITUTE (joint meeting with the MANCHESTER METALLURGICAL SOCIETY and the INSTITUTE OF METALS) (at the Engineers' Club, Albert Square, Manchester), at 6.30 p.m.—Prof. H. W. Swift: "Deformation of Metals".

### Thursday, October 19

CHEMICAL SOCIETY (at Burlington House, Piccadilly, London, W.1), at 2.30 p.m.—Prof. Wilsin Baker: "Non-benzenoid Aromatic Hydrocarbons" (Tilden Lecture).

INSTITUTE OF FUEL (EAST MIDLANDS SECTION) (in the Lecture Theatre of the Nottingham Corporation Gas Department, Parliament Street, Nottingham), at 3 p.m.—Dr. E. W. Smith and Mr. Theodore Turner, K.C., will speak at a *Conversazione*.

SOCIETY OF CHEMICAL INDUSTRY (ROAD AND BUILDING MATERIALS GROUP) (at Gas Industry House, 1 Grosvenor Place, London, S.W.1), at 5 p.m.—Mr. D. C. Broome: "The Substitution of Coal Tar Pitch for Asphaltic Bitumen in Building Mastic".

SOCIETY OF CHEMICAL INDUSTRY (NEWCASTLE SECTION) (at the King Edward VII School of Art, King's College, Newcastle-upon-Tyne), at 5.45 p.m.—Mr. J. Brown: "Assay of Coal for Carbonisation Purposes".

### Friday, October 20

INSTITUTION OF ELECTRICAL ENGINEERS (MEASUREMENTS SECTION) (at Savoy Place, Victoria Embankment, London, W.C.2), at 5.30 p.m.—Dr. W. G. Radley: Inaugural Address as Chairman.

INSTITUTION OF MECHANICAL ENGINEERS (at Storey's Gate, St. James's Park, London, S.W.1), at 5.30 p.m.—Dr. H. R. Ricardo, F.R.S.: "Applied Research" (Presidential Address).

NORTH-EAST COAST INSTITUTION OF ENGINEERS AND SHIPBUILDERS (in the Lecture Theatre of the Literary and Philosophical Society, Newcastle-upon-Tyne), at 6 p.m.—Annual General Meeting. Sir Summers Hunter: Presidential Address.

### Saturday, October 21

BRITISH RHEOLOGISTS' CLUB (at the University, Reading), at 2.30 p.m.—Annual General Meeting. Discussion on "The Measurement of Tack" (Introductory Papers by Dr. N. A. de Bruyne and Dr. R. F. Bowles).

SHEFFIELD METALLURGICAL ASSOCIATION (at 198 West Street, Sheffield, 1), at 2.30 p.m.—Mr. A. Preece: "The Oxidation of Steels in Furnace Atmospheres".

QUEKETT MICROSCOPICAL SOCIETY (at the Royal Society, Burlington House, Piccadilly, London, W.1), at 2.30 p.m.—Dr. Nellie B. Eales: "Some Aspects of the Malaria Problem".

## APPOINTMENTS VACANT

APPLICATIONS are invited for the following appointments on or before the dates mentioned:

LECTURER (full-time) IN CHEMISTRY, and a LECTURER (full-time) IN ENGINEERING for Day and Evening Classes—The Principal, College of Technology and Commerce, The Newark, Leicester (October 18).

MATHEMATICS MASTER for the Junior Day Technical School for Boys—The Principal, Wimbledon Technical College, Gladstone Road, London, S.W.19 (October 20).

MATHEMATICS MASTER in the Bristol Junior Technical School—The Chief Education Officer, 2 Cecil Road, Clifton, Bristol, 8 (October 21).

LECTURER (full-time) IN ENGINEERING SUBJECTS in the Medway Technical College, Gillingham—The District Education Officer, Fort Pitt House, Rochester (October 21).

ASSISTANTS AT THE FUEL RESEARCH STATION, Blackwall Lane, Greenwich, London, S.E.10, for abstracting and translating scientific literature relating to Fuels (candidates should have qualifications in one or more of the following subjects: Chemistry, Physics, Engineering; together with a good knowledge of French and German)—The Ministry of Labour and National Service, Room 432, Alexandra House, Kingsway, London, W.C.2 (quoting Reference No. F.2985.A) (October 21).

EXPERIENCED ORGANIC MICROANALYST—The Professor of Organic Chemistry, Imperial College, South Kensington, London, S.W.7 (October 21).

ELECTRICAL ENGINEER to the Borough of Darwen—The Town Clerk, Town Clerk's Office, Darwen (endorsed 'Electrical Engineer') (October 23).

WORKS ENGINEER for development of a permanent Electro-chemical Plant in South Wales—The Ministry of Labour and National Service, Room 432, Alexandra House, Kingsway, London, W.C.2 (quoting Reference No. C.2303.XA) (October 23).

BOROUGH ELECTRICAL ENGINEER AND MANAGER to the Borough of Willesden—The Town Clerk, Town Hall, Dyne Road, Kilburn, London, N.W.6 (endorsed 'Borough Electrical Engineer and Manager') (October 23).

PRINCIPAL of the Blackburn Municipal Technical College, and HEAD of the TEXTILE DEPARTMENT—The Director of Education, Education Office, Library Street, Blackburn (October 23).

LECTURER IN MATHEMATICS, a LECTURER IN PHYSICAL AND INORGANIC CHEMISTRY, and a LECTURER IN MECHANICAL ENGINEERING—The Principal, Brighton Technical College, Brighton (October 23).

FOOD CHEMIST in Food Standards and Labelling Division, Colwyn Bay—The Ministry of Labour and National Service, Central Register, Room 432, Alexandra House, Kingsway, London, W.C.2 (quoting Reference No. F.3042.A.) (October 24).

BOROUGH ENGINEER AND SURVEYOR—The Town Clerk, Town Hall, Kensington, London, W.8 (November 1).

SPEECH THERAPIST—The Chief Education Officer, West House, Halifax.

TEACHER mainly for MATHEMATICS and ENGINEERING SCIENCE in the Junior Technical School and in Senior Day and Evening Classes—The Principal, County Technical College, Gainsborough.

GRADUATE ASSISTANT MASTER to teach MATHEMATICS, SCIENCE and ENGINEERING DRAWING in the Junior Technical School and National Certificate Classes—The Director of Education, 8 Warrington Street, Ashton-under-Lyne, Lancs.

LECTURER IN GEOGRAPHY—The Principal, Training College, Lincoln.

ASSISTANT CURATOR for the Kaffrarian (Natural History) Museum—The Director, Kaffrarian Museum, King William's Town, C.P., South Africa.