The Journal
of the
British Astronomical Association.

VOL. 43 SESSION 1932-33 NO. 10

REPORT OF THE COUNCIL ON THE WORK OF THE SESSION, 1932 OCTOBER 1 TO 1933 SEPTEMBER 30, TO BE PRESENTED TO THE MEMBERS OF THE ASSOCIATION AT THE ANNUAL GENERAL MEETING, 1933 OCTOBER 25.

I. Progress of the Association.

(1) *Membership*. On 1932 October 1 the forty-third Session of the British Astronomical Association began, the forty-second Annual Meeting at which the Annual Report of the Council was presented, being held on 1932 October 26.

The position regarding membership on 1933 September 30 is shown in the subjoined Table compared with the figures at the end of the 1931-32 Session:—

Locality	1932 Oct. 1	Elected	Resigned	Deceased	Lapsed	1933 Sept. 30
England	609	50	36	14	16	593
Wales	14	1	1	—	—	14
Scotland	51	—	4	—	—	47
Ireland	6	1	1	—	—	6
Continental Europe	55	3	1	—	1	56
North America	39	3	2	—	3	37
South America	2	—	—	—	—	2
India, China, Japan	16	3	—	1	—	18
Australia and New Zealand	75	5	6	2	4	68
Africa	25	2	2	2	3	20
	892	68	53	19	27	861

The Council records with regret the death of the following members: Mrs. R. Bell, S. H. Bickham, Mrs. R. M. Brook, I. B. Esmatt, C. G. Falkner, F. Garside, Miss F. Herschel, Rev. E. J. How, H. Human, Dr. R. T. A. Innes, F. W. Longbottom, A. W. Meers, F. W. Nash, L. A. Parker, R. C. Sclater, Major J. W. Smith, W. F. H. Waterfield, E. T. Whitelow and J. Williamson.

(2) *Publications*. With No. 1 of the volume of the *Journal*, the *B.A.A. Handbook for* 1933, the twelfth issued by the Association, was distributed. The Twenty-sixth Report of the Section for the Observation of Jupiter was published in 1932 October as Part II, Vol. XXX of the *Memoirs*. Papers and Interim Reports concerned with the activities of the Aurora and Zodiacal Light, Computing, Historical, Jupiter, Lunar, Mars, Solar, Variable Star and Venus Sections were printed in the *Journal*, of which ten numbers were published during the Session. The meeting on 1933 April 26 was partly arranged for exhibit of instruments, books, photographs and drawings shown by the members. This meeting and the successfully revived function of the Association Dinner are reported in No. 7 of the *Journal*.

Contributors who are specially thanked for Notes, Reviews and other writings in the *Journal* during the Session are:— Mr. F. Addey, Mr. C. O. Bartrum, Dr. A. C. D. Crommelin, the Rev. Dr. M. Davidson, Mrs. M. A. Evershed, Mrs. A. W. Lane Hall, Mr. H. P. Hollis, Mr. T. L. MacDonald, Mr. W. Alfred Parr, Mr. Frank Robbins and (for the monthly Diaries and Objects of Interest) Dr. R. L. Waterfield.

II. The Observing Sections.

SOLAR SECTION.—The work of the Solar Section has been well maintained during the year ended 1933 August 31, and has been favoured with exceptionally fine weather for a great part of the time. Reports have been received from:—

Mr. R. L. T. Clarkson,	Dr. R. L. Robinson,
Mr. F. M. Holborn,	Mr. F. J. Sellers,
Mr. J. C. Maby,	Mr. W. Strachan,
Prof. M. Moye,	Mr. J. E. Tetley,
Mr. H. W. Newton,	Mr. H. Webber,
Mr. W. A. Parr,	Mr. L. Woolven.

One or two regular workers have been unable to contribute during the next few months, so that the beginning of the new cycle may be determined.

On this occasion it is not proposed to deal with the reports individually as they all bear witness, in much the same vein, to the decline in solar activity, especially with regard to sunspots. There is no doubt the sun has entered the minimum phase in the 11-year cycle and in 1933 August there was only one very small spot throughout the month. So far, however, there are no definite signs of high latitude spots, which usually mark the commencement of a new cycle before the termination of the old one. Against this pronounced passivity of the solar

disc it must be mentioned that a period of considerable activity occurred, beginning in 1932 October and lasting until 1933 February, the group of spots being visible to the naked eye in the latter month. Since that activity passed away there has been no disturbance of any magnitude.

Prominences have shared in the decline, but to a less extent. A year ago the mean daily frequency was 7·0, while at the present time it is 5·9. There was a temporary rise of frequency in 1932 December when the daily average was 9·4, but the following month it had fallen again to 6·3. The main point of interest in the decline of activity is the cessation of really large prominences and the dearth of metallic eruptions, but many of the moderate-sized displays have had a length of life often running into a number of days' duration, and in one instance a prominence existed for a complete solar rotation. This latter prominence occurred in 1933 June, a month which was prolific in large prominences, no less than twenty being recorded at Worthing.

Observers would do well to watch for high latitude sunspots during the next few months, so that the beginning of the new cycle may be determined.

It is gratifying to notice the number of papers on solar matters which have been read at the meetings in recent months, and the Director would be very glad if other workers would follow the precedent set.—A. M. NEWBEGIN, *Director*.

LUNAR SECTION.—The number of communications received during the past Session has shown a welcome increase. There is abundant evidence in the pages of the *Journal* of a revived interest in Lunar matters. Attention is still being given to the interesting cleft near Doppelmayer marked R on the Director's map and about which Mr. T. L. MacDonald has given additional information in his note in the *Journal,* **43,** No. 1, 28-9. New subjects have been written upon by Mr. L. F. Ball, in his note on "Obscure Rings," and by Mr. C. F. O. Smith in his reference to craters of the "Wargentin" type. The first part of a valuable piece of research work by Mr. James Young on the Diameters of Lunar Craters deserves special mention.

The note by the Director on some unrecorded objects on the floor of Goldschmidt is causing interest amongst lunar observers, and notes in connection with it have recently been received from Mr. R. Barker and Mr. J. W. Durrad. It is hoped that other members will give their attention to this formation during the coming winter.—WALTER GOODACRE, *Director*.

MERCURY AND VENUS SECTION.—(*Mercury*.)—In West elongation the planet appeared gibbous to Mr. Chandra, Jessore, India, on 1932 December 26. Mr. Heath, Barnstaple, noted a very slight crescentic phase at greatest East elongation on 1933 March 6^{d} 18^{h}. This agrees with 0·497 for the illumination fraction of the disc, deduced from the *Nautical Almanac*, 1933, p. 574. Terminator shading was broad, being darkest midway

between the cusps. In addition to the above, Mr. Heath records on March 7 that the cusps were slightly duller than the rest of the limb.

Messrs. Ball and Barker, the Rev. T. E. R. Phillips and the Director have attempted observations without success.

(*Venus.*)—During 1932 October and November in West elongation Venus was observed by Messrs. Ball, Barker and Burrell. Summarising the results, their records agree in the conspicuousness of the shading or "collar" bordering the bright-area at the south cusp and the faintness of a similar band along a fainter area at the north cusp, as indicated by the three views on the left of plate, p. 143, *ante*. Regarding surface details, the markings appeared streaky to Mr. Barker, Cheshunt, and Mr. Burrell, Doncaster, but to Mr. Ball, Manchester, as misty patches interspersed, especially along the terminator, with light areas.

Venus appeared almost circular at the end of December to Mr. Chandra, India. He remarked the darkness of the terminator side compared to that of the limb. This feature was conspicuous to the Director in 1933 July. In the early days of that month the definition was often perfect, when Venus gave the impression of being covered with a transparent film overlying a pale yellow surface presumably gaseous although looking opaque. A faint oblong marking was visible only on one afternoon. With increasing gibbosity the cusps brightened up, the south being the brighter. Moreover, a shade band steadily developed along the north side of this area. No definite band bordered the south edge of the north cusp's light area up to the last week of 1933 August.—H. McEwen, *Director*.

Mars Section.—The section has been active in observing the planet about the time of its opposition. Despite the great distance of the planet and its small apparent diameter—maximum 13″·9—a large number of observations and drawings were obtained. On the whole it seems that the agreement between the various members of the section is very satisfactory. An interim report has been published in the *Journal*; and several general discussions on the year's observations took place at the Association's meetings.—R. L. Waterfield, *Director*.

Jupiter Section.—During the last presentation of the planet, which was in oppositon on 1933 March 9, the unusual prevalence of clear sky, despite the generally poor definition till towards the close of the apparition, provided a favourable opportunity for the further study of the anomalous circulating motion detected in 1931-32 in the planet's S. Tropical region. Observation had already shown the *f* end of this motion to be situated at the *p* end of the S. Tropical Disturbance, but the other end of the drift had not been located when that apparition terminated. A preliminary study of the exceptionally large amount of observational material accumulated in 1932-33 apparently indicates that the rapidly flowing current (in the *f* direction) at the S. edge of the S. Equatorial belt begins at

or close to the *f* shoulder of the Red Spot Hollow, becomes accelerated, crosses the zone at the *p* end of the Disturbance ($\omega_2 = 70° \pm$ at opposition) travels back in the *p* direction along the N. edge of the S. Temperate belt, and is finally arrested or dies out at about longitude 330°, where some hazy streaks and shadings on the zone remain approximately stationary or show irregular and uncertain motion.

The Red Spot was an easy object except towards the close of the apparition, and for some time it seemed almost to shine with a delicate pinkish glow. Its longitude at opposition was 205° (System II). The S. Tropical Disturbance was well defined at its *p* end, but the position of its *f* end was very uncertain.

As during recent years there was much detail along the S. edge of the N. Equatorial belt, but the N. component of the S. Equatorial belt remained quiescent. Some objects situated in the N. Temperate belt again showed the unusual rotation period of $9^h\ 53^m \pm$.

It is hoped that the 1928-29 *Memoir* will be ready for publication before the end of the year.—THEODORE E. R. PHILLIPS, *Director*.

SATURN SECTION.—Little work has been possible by members in England owing to the considerable South declination of the planet; but Mr. R. Barker has done useful and interesting work on the satellites, and his observations have revived interest in the question of possible excentricity of the globe in the ring. A very full and valuable report of the apparition of 1932 has been received from Mr. M. S. Butterton, of Kelburn, Wellington, New Zealand. Using the 9½-inch photo-visual refractor of the Dominion Observatory, under almost perfect conditions, and with powers up to 500, he has obtained a long series of records of the appearance of the belts; and from numerous observations of transits of black patches in the N. Equatorial Belt he has deduced a rotation period of $10^h\ 20^m$ for this belt. This is a most welcome addition to the scanty results previously obtained for rotation period.

The white spot on the equator which was detected by Mr. W. Hay* has been seen by the Director or two occasions with the 18-inch refractor of the Royal Observatory, Cape Town; but the seeing conditions generally have been too poor to allow of any results of value being obtained. The spot has also been seen by members of the Royal Observatory Staff (Cape), and more recently by Mr. H. E. Wood, Union Astronomer, at Johannesburg, who reports considerable extension in longitude —this agrees with the Director's observation of August 18. The Director would like to place on record his gratitude to Dr. J. Jackson, H.M. Astronomer at the Cape, for allowing him the use of this beautiful instrument for observation of Jupiter and Saturn.—M. A. AINSLIE, *Director*.

COMET SECTION.—The comet Dodwell-Forbes, which was independently discovered last December at Adelaide and the

* See page 426.

Cape, became an easy telescopic object, and was well observed by our members. Two other comets, those of Geddes and Peltier, were well placed for northern observers. Dr. W. H. Steavenson obtained numerous observations of both of them; a few other observations were also sent to me. There are now positions of Geddes extending over two years, thanks to the detection of prediscovery images, so it will be possible to derive the departure from parabolic motion, which appears to be in the hyperbolic direction.

The Rev. M. Davidson and the Director derived preliminary orbits of comets Dodwell-Forbes and Peltier; the Director also welcomes some orbit work from other members of the Section. The comets for which ephemerides were given in the *Handbook* for 1933 were all detected except Tempel (1866 I) and Finlay. The predicted values of T for comets Pons-Winnecke, Giacobini-Zinner and Wolf (1) were correct within about a day. The Director desires once more to express his great indebtedness to the Computing Section for their help in computing cometary perturbations. In addition to the well-known periodic comets, they have studied the comet Tuttle-Giacobini from 1858 to 1907. —A. C. D. CROMMELIN, *Director*.

METEOR SECTION.—This report covers the months 1932 August to 1933 July. The Perseids were well observed in 1932 August, several observers taking part in a programme of combined watching to ascertain by duplicate observations the positions of the sub-centres lying near the track of the main Perseid radiant. In the autumn of 1932 moonlight conditions prevented work on the major showers, and accordingly combined work was carried on by Mr. G. E. D. Alcock and the Director for the purpose of investigating the supposed stationary radiants in the Pisces-Aries-Taurus region. Both these investigations will be renewed at an early date, as the programmes will probably require several years of work.

Favourable conditions were experienced on the night of 1933 January 3, normally Quadrantid maximum, and most observers carried out watch; but the Quadrantids were extremely scarce and little effective work was done. Conditions were also favourable in the early stages of the Lyrid shower in 1933 April, but the stream was very feeble and very few Lyrids were seen. Conditions were unfavourable at maximum.

The main observational work has been carried on by Messrs. G. E. D. Alcock, R. E. Diggles, H. P. Folkard, A. W. Lane Hall, A. King and the Director; and in addition more occasional work has been contributed by Messrs. H. Holland, A. M. D. Pender and E. G. T. Roberts. The work of the Section is, however, very considerably handicapped by lack of observers. Some meteors have been photographed at the times of the Perseids and Quadrantids by Messrs. E. H. Collinson, R. F. J. Vogel and H. H. Waters, and three of these were seen by other observers, allowing their true paths to be calculated. Mr. King has again undertaken the calculation of the true paths and orbits and the discussion of the fireball data received, and has also continued his Meteor Notes in *The Observatory*. During

the session the Director has completed the reduction of his Orionid observations 1928-32, and these have been published in the *Journal*. The Director is grateful to members who have from time to time forwarded observations of fireballs and bright meteors, particularly to the observers of the great fireball of 1932 August 6. The true path of this fireball is published by Mr. King in current *B.S.A.F.*, p. 280.—J. P. M. PRENTICE, *Director*.

AURORA AND ZODIACAL LIGHT SECTION.—Reports on Zodiacal Light observations have been received from Adelaide, Stanthorpe and Broken Hill in Australia; Jessore, India; Dnéprostroi (Ukraine). Reports and observations in the British Isles are from Bideford, Bangor, Yaxley (Suffolk), Diss (Norfolk), and Seaton (Cumberland). The above reports cover all features of the Zodiacal Light, Band and Counter-glow.

The reports of Aurora continue to grow scarce, which is in keeping with the generally accepted fact of the Auroral activity diminishing with the Sunspot activity. Reports of visible Aurora to be dealt with are from Yaxley, Seaton, and from two at sea (North Atlantic and Irish Sea). Aurora Australis has been seen in Tasmania and New Zealand at various stations; the reports received of the Aurora Australis outnumber considerably those of Aurora Borealis. Luminous sky observations are reported from Stanthorpe (Australia) and Seaton (Cumberland) in the autumn of 1932. An interim report has not been necessary this session; all the observations will be summarised and discussed in one report, which will be presented shortly. —W. B. HOUSMAN, *Director*.

VARIABLE STAR SECTION.—The work of the Section remains concentrated upon the close observation and the discussion of about 60 objects, mostly Long Periods, many of which have now been continuously observed by B.A.A. members for more than thirty years. Some 16,000 observations were received for 1932; quite a fair total. The Section at present comprises 24 regular observers, but it should be remarked that, out of the 13,000 observations of Long Periods made in 1932, about 9000 are the work of Messrs. C. F. Butterworth, Felix de Roy, A. W. Lane Hall, A. N. Brown, R. G. Chandra and Prof. A. A. Nijland. Most of these observations were made with small instruments, and possessors of large telescopes (from 10 in. upwards) could render signal service to the Section if they were willing to follow the minima of certain of our stars with them.

Interim Reports No. 28, dealing with 7087 observations of 31 Long Periods having mean periods over 300 days, made in 1931, and No. 29, dealing with the variation of SS Cygni in 1932, were Periods having mean periods over 300 days, made in 1931, and No. 29, dealing with the variation of SS Cygni in 1932, were published in the *Journal* during the session. Other reports, referring to Long Periods in 1932, as well as to Irregular Variables on our programme, are awaiting publication, or are in preparation.

The MS. of *Memoir* Vol. XXXI, which will contain 59,938 observations of 51 Long Periods, made by 51 contributors during the quinquennium 1925-1929, has been completed by Mr. A. N. Brown, Hon. Secretary to the Section, and checked by the late G. P. B. Hallowes, and Mr. W. M. Lindley, who carried out this somewhat troublesome task with great zeal. It will be published by the " Replika " process at much less expense than ordinary printing. The first proofs have been received from the printers, and the publication of the new *Memoir* may be expected during the coming session. It is thought that it will add useful material to the history of several of the best known *Me* and *Se* Variables.

Much thought has been given to the proposed revision and extension of sequences of comparison stars for the Variables on our working list, with the view of attaining final uniformity by all the existing organisations of co-operative observation of these interesting objects, and to the preparation of a certain number of new charts and lists it will entail. Dr. W. H. Steavenson and Mr. W. M. Lindley have both taken a lively interest in this scheme; Prof. S. A. Mitchell has sent in a first batch of co-ordinates of the stars on his revised sequences; and Mr. D. B. Pickering, chairman of the Chart Committee of the A.A.V.S.O., has made valuable suggestions. This work raises some knotty problems, but it is hoped to solve them in a satisfactory way, without changing the general practice of the Section, which is the result of long experience.—FELIX DE ROY, *Director.*

PHOTOGRAPHIC SECTION.—Dr. R. L. Waterfield has exposed about thirty plates with his 6-inch aperture Cooke anastigmat and this lens has been found to be of excellent quality. He has also put into use an Aldis lens of 2·7 inches aperture and 8-inches focal length which gives very good images. With this smaller lens Dr. Waterfield has made a beginning on a chart of the Galaxy, for which purpose the lens is very suitable owing to its wide field of good definition and relatively even illumination. Several plates were exposed in search of comets, but without success.

Mr. E. H. Collinson has continued his work on meteors and has constructed a satisfactory electric motor drive. This work, with that of Mr. J. P. M. Prentice, is also dealt with in the report of the Meteor Section.

Mr. A. Coleman is continuing in India his attempts (made under great difficulties) to photograph the Zodiacal Light, but no recent reports have been received from him.

Mr. W. T. Hay is a newcomer to photographic work, of whom much is expected.

The Director has attempted repeatedly to obtain with the two 20-inch focus lenses results similar to those obtained in the period 1925-1928, but without success. In spite of careful cleaning of the lenses, avoidance of dewing, and accurate guiding, the plates used successfully in previous years appear to be roughly one magnitude slower. Many new makes of plates with advertised four-figure speed-numbers have been

tried, but no really satisfactory make has been discovered. Either their speed is very much less than is advertised—less even than the former speed of the particular brand previously used—or the graininess is excessive. This is borne out by Dr. Waterfield's experience, as he finds that when the least unsatisfactory make of plates is used he has to expose for as long with his 6-inch *f* 4·5 lens, as the Director did formerly with his 3·6-inch *f* 5·6 lens, to get a similar result. The search for satisfactory plates is proceeding.—F. J. HARGREAVES, *Director*.

METHODS OF OBSERVATION SECTION.—This Section exists for the convenience of members requiring information as to the choice, adjustment and use of astronomical instruments in general.

During the past session the Director has received and dealt with a number of inquiries relating to the testing of objectives, the adjustment of equatorials, and the silvering of mirrors.

Mention may here be made of the interesting practical papers recently communicated to the Association by Messrs. Braithwaite, Butler, Gale, Hargreaves, Hay, Sellers and Waters. It is hoped that the supply of such papers will be maintained and that the Section may continue to be of use to any members who find themselves in need of its assistance.—W. H. STEAVENSON, *Director*.

COMPUTING SECTION.—The Section has been engaged on work for the *Handbook* for 1934. It is hoped to effect publication about a month earlier than in previous years, so as to ensure its reception by our most distant members by the beginning of the year. The small number of periodic comets due to return next year has reduced the amount of work to be done. On the other hand, the Section has done a good deal of work in connection with Dr. Crommelin's investigation of the possible identity of the Comets 1858 III (Tuttle) and 1907 III (Giacobini) of which he has given an account in the *Journal*, p. 374. The prediction of lunar occultations has, as before, been under the control of Mr. W. A. Forster, and the reduction of observed occultations under that of Mr. J. D. McNeile. Full particulars of the observations and reductions will be reported in the *Journal*.—A. E. LEVIN, *Director*.

BRITISH ASTRONOMICAL ASSOCIATION CIRCULARS.—Thirteen Circulars, Nos. 126 to 138, were issued during the year. They dealt with the search for the Reinmuth planet 1932 HA and for Tempel's comet, also with the Leonid meteors, comets Dodwell-Forbes, Peltier, Pons-Winnecke, Giacobini-Zinner, Wolf (1), the planet 1933 HH (which proved to be 192 Nausicaa), the white spot on Saturn, and the unusual brightness of RS Ophiuchi in 1933 August. The Council and members are much indebted to Dr. A. C. D. Crommelin for the preparation and issue of these Circulars.

HISTORICAL SECTION.—Five papers have been published in the *Journal* during this Session:—

(1) To commemorate the bicentenary of Maskelyne's birth in October, 1732, Mrs. Lane Hall read her paper "Nevil Maskelyne" at the meeting of November, 1932, and it was published in **43**, 67-77.

(2) "The Sothic Cycle or the Nakshatras," by Mrs. Maunder (**43**, 96-7 and 121-5). A Note on this by Mr. D. Macnaughton, and the author's reply, appeared in **43**, 340-1.

(3) "The Story of Hi and Ho," by Dr. J. K. Fotheringham (**43**, 248-257).

(4) In "Dr. Mingana's 12th Century Map of the Heavens," Mrs. Maunder showed that the "Map" was in reality a horoscope, but of considerable historical interest. (**43**, 317 and 331-340).

(5) "The Phaenomena of Aratus," by Mr. G. J. Burns (**43**, 427-429).

Shorter communications:

Mr. Gaythorpe's "When does a Century Begin?" in **42**, 384, was replied to by the Rev. D. R. Fotheringham (**43**, 27-8), and by Prof. Pio Emanuelli in "The Question of the Beginning of the Century" (**43**, 168-9).

"The Date of Huygens' Announcement of the Discovery of the Rings of Saturn," by Mr. J. Stokley, is followed by a Note from Dr. de Sitter, containing further evidence in confirmation and relevant information of much interest (**43**, 223-4).

"Bayer's Uranometria," by Mr. Gavin J. Burns, and a comment by the Director (**43**, 285-6); and further notes by Mr. Burns and Mr. W. Alfred Parr (**43**, 384-5).

"Don Cosmo Damien de Churruca," by Dr. Campariole of Trinidad (**43**, 286-7).

Thanks are due once more to Miss Grace Cook for valuable help in typing.

At the April meeting this year the Section showed some interesting exhibits, including a Nocturnal (for finding the time at night by the stars) lent by Mr. Robbins; a copy of a cuneiform inscription from Nineveh relating to the divisions of the Babylonian day and night, lent by Dr. Fotheringham; and a posthumous work of Huygens, translated from Latin into English and published in 1689: "The Celestial Worlds Discovered, or Conjectures concerning the Inhabitants, Plants and Productions of the Worlds in the Planets." This was lent by Mr. Basil Brown; a later edition is in the Library (published 1722).

A small book on the history of astronomy in Japan was presented by the author, Mr. Yasuaki Iba, and was comprehensively reviewed by Mrs. Lane Hall (**43**, 266-8). Reprints and pamphlets have been received from Mr. Prabochandra Sengupta of Calcutta on early Indian astronomy and mathematics, and from Dr. Fotheringham (**43**, 316). These have all been placed in the Library.

It will be seen that we have been in communication with Japan, India, Italy, Holland, the United States of America and the West Indies; and that our interest has ranged down the centuries from an English Astronomer Royal and a Spanish missionary of the 18th century, the discoverer of Saturn's rings in the 17th, some map-makers of the 16th, and an astrologer of the 12th, to the foundations of astronomy in ancient China, India, Egypt and Babylonia.—MRS. JOHN EVERSHED, *Director*.

III. Library Report.

Interest in the Library has been well maintained during the past session, and the Librarian is glad to be able to report a still further increase in the number of books borrowed. Thus, 95 readers borrowed 367 books, and 31 new readers have taken out Library cards. The total number of catalogues sold was 15.

The use of the department as a reading and reference room has been much appreciated by members, the attendances throughout the session showing a grand total of 539, a very satisfactory figure compared with the 419, 464 and 486, respectively, of the previous three sessions.

The Librarian takes this opportunity of gratefully acknowledging several gifts of books during the past session, and desires to record his thanks to his able assistant, Miss Lydia Brown, for the efficient and very helpful way in which she has discharged her duties. The Librarian and readers as a whole are also indebted to our President for the great interest he has continued to take in all work connected with the Library.

As before, the Library will be open throughout the session from 3 to 6 p.m. on every Wednesday that is not also a meeting day. On the latter occasions it will close at 4.30 p.m., to re-open after the meeting for purposes of book exchange only. A new Library Catalogue is in course of preparation by the late honorary librarian.—H. P. FOLKARD, *Hon. Librarian*.

IV. The Lantern Slide Department.

97 dozen slides to 25 borrowers				£7	5	6
Sale of catalogues				0	5	0
Refund from a member for breakage				0	1	6
Cash retained from previous year for replacements, etc.				1	0	0
				£8	12	0
Replacements and new slides to make up collection to new catalogue ..	£2	2	0			
Paper, string, etc.	0	2	6			
Postages	0	3	6			
Retained for replacements, etc. ..	1	0	0			
				3	8	0
				£5	4	0

PETER DOIG, *Hon. Curator*.

THE BRITISH ASTRONOMICAL ASSOCIATION.

CASH ACCOUNT OF MR. A. F. BENNETT AS TREASURER

RECEIPTS.

	£ s. d.	£ s. d.
To 604 Annual Subscriptions, 1932–33, *less* £4 13s. 1d. Deficiencies	629 10 11	
„ 65 Entrance Fees, 1932–33	16 5 0	
„ 21 Affiliation Fees, 1932–33	22 1 0	
		667 16 11
„ 57 Subscriptions in Arrear, 1931–32 *plus* 3s.	60 0 0	
„ 15 „ „ 1930–31	15 15 0	
„ 1 „ „ 1929–30	1 1 0	
„ 3 „ „ 1928–29	3 3 0	
„ 1 Entrance Fee, 1931–32	5 0	
„ 11 Affiliation Fees, 1931–32 and 1 1930–31	12 12 0	
		92 16 0
„ 13 Subscriptions in Advance, 1933–34 *plus* 2 Entrance Fees	14 3 0	
„ 1 Subscription in Advance, 1934–35	1 1 0	
		15 4 0
„ 4 Compounders' Fees	—	55 0 0
„ 155 Circulars	—	19 7 6
„ Dividends on Investments *less* tax	88 0 0	
„ Income Tax Recovered	13 15 0	
„ Special Donations	1 7 0	
„ Sales of Publications—*Journal*, etc. :—		
£ s. d.		
Advertisements 44 7 7		
Dr. L. J. Comrie 90 13 6		
	135 1 1	
„ Handbooks, etc.	17 9	
„ Hire of Lantern Slides	5 6 1	
„ Teas	10 1 0	
„ Deposit Interest	11 0 7	
		265 8 6
„ Walter Goodacre Gift–War Stock Dividends		12 15 0
„ Donations to next Variable Star Memoirs—		
A. N. Brown 60 0 0		
W. Strachan 10 10 0		
W. M. Lindley 10 0 0		
	80 10 0	
		80 10 0
Total Receipts	—	1208 17 11
„ Balance, 1932 October 1 : —		
Current Account	138 14 6	
Deposit Account	311 17 5	
In Hand—Treasurer	18 3	
Dr. Comrie	5 13 5	
		457 3 7
	£	1666 1 6

THE BRITISH ASTRONOMICAL ASSOCIATION.

FOR THE YEAR ENDED 30TH SEPTEMBER, 1933.

PAYMENTS.

	£ s. d.	£ s. d.
By Cost of *Journal*, Vol. **42**, No. 10	52 7 4	
,, ,, ,, Vol. **43**, Nos. 1–9	396 2 10	
		448 10 2
,, ,, ,, Jupiter Memoir	—	30 13 2
,, Handbook, 1933	50 0 3	
,, Sundry Printing and Stationery	12 5 2	
,, Voting Papers	9 19 2	
,, Circulars	25 6 0	
,, Catalogue—Lantern Slides	12 19 6	
,, List of Members	30 0 3	
		140 10 4
,, Salary (Editor)	50 0 0	
,, ,, (Assistant Secretary)	71 10 0	
,, ,, (Assistant to Curator of Publications)	25 0 0	
,, Stationery and Postages—Curator of Publications	10 15 5	
,, Library, Rent, Binding, etc.	33 0 8	
,, Expenses of Meetings (including Rent)	54 12 0	
,, Expenses of Assistant Secretary, Telephone, etc.	6 17 9	
,, Postage other than *Journal*	28 11 10	
,, Insurance	1 0 0	
,, Audit Fee	5 5 0	
,, Bank Charges and Stamps	8 4	
,, Carriage of Books, etc., and Fares	2 3 6	
,, Sundries	2 17 7	
,, Deficit on Dinner	2 17 5	
		294 19 6
		914 13 2
,, Walter Goodacre Gift—		
Cost of Medal	7 10 0	
Award to Medallist	20 0 0	
		27 10 0
Total Payments	—	942 3 2
,, Balance, 1933 September 30:—		
At Bank on Current Account	197 5 3	
,, Deposit Account	522 18 0	
In Hand—Assistant Secretary	3 9 10	
Curator of Publications	5 3	
		723 18 4
	£	1666 1 6

THE BRITISH ASTRONOMICAL ASSOCIATION.

REVENUE ACCOUNT FOR THE YEAR

	£ s. d.	£ s. d.
To Expenses, as per Cash Account		914 13 2
,, Subscriptions in Arrear plus 1 Entrance Fee written off in respect of Members who have died, resigned or been struck off, including Reserve for outstanding Subscriptions considered doubtful	53 16 0	
,, Subscriptions written off in respect of Members who have died, resigned or been struck off during 1932–33 as *per contra*	43 1 0	
		96 17 0
,, Balance, being Excess of Income over Expenditure for the year carried to General Fund		171 3 9
		£1182 13 11

BALANCE SHEET,

LIABILITIES.

	£ s. d.	£ s. d.
Sundry Creditors :—		
Subscriptions paid in Advance—		
16 for 1933–34, 2 for 1934–35 and towards 1935–36, *plus* 2 Entrance Fees :	19 19 0	
Compounders' Subscriptions in Reserve—	£ s. d.	
As last Session	99 4 0	
Received this Session	55 0 0	
	154 4 0	
Less Transferred to Revenue Account	3 3 0	
	151 1 0	
Reserve for Outstanding Accounts, as last Session	140 0 0	
Balance of Deposit for Cables	1 2 0	
Donation to next Variable Star Memoir—		
As last Session	190 0 0	
Received this Session	80 10 0	
	270 10 0	
		582 12 0
Instrument Fund		50 0 0
Walter Goodacre Gift	306 2 3	
Add Cash in Hand as last Session	22 16 2	
Dividends on War Stock	12 15 0	
	341 13 5	
Less Expended	27 10 0	
		314 3 5
General Fund :—		
Balance at September 30th, 1932	2116 1 1	
Add Excess of Income over Expenditure for the Session as per Revenue Account	171 3 9	
		2287 4 10
		£3234 0 3

REPORT OF THE AUDITOR TO THE MEMBERS

I have examined the Balance Sheet of the British Astronomical books and vouchers of the Association, and report that I have obtained such Balance Sheet is properly drawn up so as to exhibit a true and best of the information and explanations given to me, and as shown

Kennan's House, Crown Court,
Cheapside, London E.C.2.
1st October, 1933.

THE BRITISH ASTRONOMICAL ASSOCIATION.

ENDED 30TH SEPTEMBER, 1933.

	£ s. d.	£ s. d.
By Members' Subscriptions, 1932–33, viz. :—		
604 Received in Session, *less* £4 13s. 1d. Deficiencies	629 10 11	
26 Paid in Advance previously now matured	27 6 0	
41 Due but unpaid in respect of Members who have died, resigned or been struck off as *per contra*	43 1 0	
133 Outstanding (*plus* 14s.)	140 7 0	
804		840 4 11
,, Compounders' Subscriptions :— Proportion matured in respect of 11 Compounders	3 3 0	
,, Subscriptions in Arrear prior to 1930–31 written off and now recovered	4 4 0	
,, Entrance Fees—66 received *plus* 1 in Advance now matured, and 4 outstanding	17 15 0	
,, Affiliation Fees—21 received for 1932–33 *plus* 7 outstanding and 3 recoveries	32 11 0	
,, Circulars	19 7 6	
,, Dividends and Sundry Receipts, including Sale of Publications, as per Cash Account	265 8 6	
		342 9 0
		£1182 13 11

30TH SEPTEMBER, 1933.

ASSETS.

	£ s. d.	£ s. d.
Sundry Debtors for Subscriptions in Arrear:—		
94 for 1932–33 only *plus* 14s.	99 8 0	
39 for 1932–33 and 1931–32	81 18 0	
4 Entrance Fees, including 1 for 1931–32	1 0 0	
5 Affiliation Fees, 1932–33 only and 2 1931–32, and 1932–33	9 9 0	
	191 15 0	
Less Reserve for Doubtful Subscriptions	86 7 0	
		105 8 0
Investments :—		
£500 Great Western Railway 5 per cent. Debenture Stock	455 0 0	
£750 London, Midland and Scottish Railway 4 per cent. Debenture Stock	540 0 0	
£1,100 War Stock, 3½ per cent.	1103 11 8	
		2098 11 8
Walter Goodacre Gift—Investment Account :—		
£300 War Stock, 3½ per cent.		306 2 3
Cash at Bank and in Hand :—		
On Current Account— £ s. d.		
General Account 189 4 1		
Walter Goodacre Gift Fund 8 1 2		
	197 5 3	
On Deposit Account	522 18 0	
In Hand—Assistant Secretary	3 9 10	
Curator of Publications	5 3	
		723 18 4
		£3234 0 3

OF THE BRITISH ASTRONOMICAL ASSOCIATION.

Association, dated 30th September, 1933, as above set forth, with the all the information and explanations I have required. In my opinion correct view of the state of the Association's affairs according to the by the books of the Association.

ROY SUTTILL,
Chartered Accountant.

V. The Branches.

WEST OF SCOTLAND BRANCH.

It is very difficult to say anything new about the Branch in the Annual Report for the 39th Session as the work proceeds on much the same lines yearly. With the difficulties of the times and many counter-attractions canvassing people's time, the support given to the Branch, and to Astronomy, is very satisfactory, and even encouraging.

Branch membership has remained steady, and there were ten new Associates elected during the sessional year, but as on former occasions those resigning, cut off for arrears, or having died, more than balance the incoming members by their numbers, which totalled fifteen.

The total for all classes is now two hundred and twenty-eight.

The number of visits arranged for this session was slightly reduced, it being thought profitable thus to restrict the visits from time to time, as with only a limited field to explore, it can easily be covered, and in consequence, lose something of its appeal. The outstanding visit was to Blackford Hill, Edinburgh, where Prof. Sampson personally conducted the party over the Observatory.

As an extra, the authorities of the Natural Philosophy Department of Glasgow University opened their department to the Branch in November and arranged experimental displays and a lecture by Dr. R. A. Houston, who spoke on "Newton and the Colour Spectrum."

It was not found possible to give the usual Branch facilities in the matter of the Library this session, but opportunity was taken in the interim to re-catalogue the books completely, so that, when the Library is opened next session, additional facilities should therefore be available.

The usual eight meetings were held, but, as reports of same have already appeared in the *Journal*, only a brief notice is sufficient here. The session opened in September, with Dr. James Knight, who spoke on "Scriptural Astronomy," followed in October by Dr. Andrew Kent, who addressed the Branch on "Astronomy and Science."

For November, the General Electric Company, through their Research Laboratories at Wembley, arranged for Mr. J. B. Kramer to visit the Branch and both lecture and demonstrate "The Photo Electric Cell." A large audience attended, probably 300, and the Branch opened their meeting to Engineering interests in Glasgow.

The Branch was also greatly assisted by the Royal Technical College Electrical Engineering Laboratory staff, and especially Professor Parker Smith, who lent his Lecture Theatre, and thus facilitated the experiments undertaken.

Mr. James Young explained his work at Birmingham University before the Branch in December, and the fifth meeting in

January welcomed Mr. G. Aimer Russell, who presented his paper on "Time the Fourth Dimension."

For February, Mr. W. H. Inverarity dealt with "Recent Solar Research," followed in March by Mr. C. Cochrane's lecture entitled "The Ether."

The closing address was given by the retiring President, Mr. D. B. Duncanson, wherein he described his visit to Canada and the United States of America as a member of the Eclipse party of 1932 under the title of "Things Seen in the Pursuit of a Shadow."

In conclusion, the Branch may be said to have enjoyed a successful session.

List of Officers and Committee elected at Annual General Meeting, held 1933 April 20, in the Royal Technical College, Glasgow, C.1.

Officers and Committee for Session 40, 1933-34.

President: William M. Inverarity, M.A., B.Sc., F.R.A.S.

Vice-Presidents: G. Douglas Buchanan, F.R.A.S.; John J. Ross, M.A., B.A., F.R.A.S.; Bailie James S. Lewis, F.R.A.S.

Hon. Secretary and Treasurer: John W. Smith.

Hon. Assistant Secretary: Donald M. Wright.

Other Members of Committee.

David B. Duncanson, B.Sc.
David Kerr.
Thomas L. MacDonald, M.A., B.Sc., F.R.A.S., F.R.S.E.
Henry McEwen.
W. Hill McClelland.
James R. McNair.
Richard A. Robb, M.A., B.Sc., M.Sc., F.R.A.S.
John Smellie.
John Woodrow, F.R.Met.S.

JOHN W. SMITH, *Hon. Secretary.*

NEW SOUTH WALES BRANCH.

During the thirty-ninth session, from 1932 July 1 to 1933 June 30, the New South Wales Branch of the British Astronomical Association held ten General Meetings.

At the Annual General Meeting, held on 1932 July 27, the following officers and committeemen were elected for the coming session 1932-33:—

President: W. F. Gale, F.R.A.S.

Vice-Presidents: J. Nangle, O.B.E., F.R.A.S.; E. Wunderlich, F.R.A.S.; Rev. W. O'Leary, S.J.; Prof. O. U. Vonwiller.

Hon. Secretary-Treasurer: A. P. Mackerras.

Hon. Assistant Secretary: P. F. Rheinberger.

Hon. Librarian: H. Brown.

Hon. Editor: J. J. Richardson.

Hon. Assistant Editor: E. M. Mitchell.
Hon. Custodian of Lantern Slides: A. N. Crane.
Hon. Auditors: C. Barr, A. W. W. Gale.

Members of Committee:
C. Walton, E. C. Sayers, J. Macarthur (Associate), T. Brindley, E. C. Bender.

Directors of Sections:
Computing: J. Nangle, O.B.E., F.R.A.S.
Mars: W. F. Gale, F.R.A.S.
Variable Stars: J. J. Richardson, F.R.A.S.
Jupiter and Saturn: T. Brindley.
Instruments: E. Esdaile.

The President, Mr. W. F. Gale, in his Presidential Address, discussed the orbit which had been computed for Geddes's Comet from his observations. The orbit was computed by Mr. T. H. Close.

The President then referred to the suggestion to close several of the State Observatories, and advanced numerous arguments against the proposal.

The General Meeting on August 24 was held at the Observatory. After a general discussion on stellar evolution by Messrs. J. J. Richardson, W. F. Gale and J. Nangle, the meeting adjourned to the South Dome to make observations of Saturn with the 11½-inch refractor.

At the General Meeting on September 28, Mr. Gale read a paper pointing out that the lines of the solar spectrum could be well seen by a simple spectroscope consisting of a diffraction grating used without a slit or lens. Prof. Vonwiller said that he had worked out a mathematical treatment of the problem which fitted the observations.

The President then delivered a lantern lecture on "Star Clusters and Nebulæ," in which he specially referred to the apparent enormous velocities of recession of the spiral nebulæ.

At the meeting held on 1932 October 26, Mr. H. E. G. Rayner discussed methods of determining and calculating sidereal time. Mr. Macarthur then gave a lantern lecture on "Astronomical Instrument Construction," in which he traced the evolution of the modern telescope.

A social meeting of the Branch was held at the Observatory on 1932 November 30. The President explained how he had used two diffraction gratings as a binocular spectroscope to view the lines of the solar spectrum, and said that this was the first occasion within his knowledge that a binocular arrangement had been employed. Through the courtesy of the Government Astronomer, Mr. J. Nangle, members and their friends had an opportunity of inspecting the observatory and its equipment, and the many exhibits which had been arranged.

The first meeting of 1933 was held on February 22. The President exhibited the binocular spectroscope which he had described at the previous meeting and showed its method of use

with an ordinary incandescent and a Neon lamp. Mr. J. J. Richardson then gave a lantern lecture on "Astronomical Observatories and their Work."

At the meeting held on 1933 March 29, the President announced the formation of an Auroræ and Zodiacal Light Section of the Branch with the Rev. W. Walters of Tasmania as its Director. The Rev. W. O'Leary, S.J., gave a lecture on "Precision Time-Keeping." Mr. Nangle, in proposing the vote of thanks, emphasised the value of the contributions made by Father O'Leary in this work. Mr. Esdaile explained the principle and use of the Slide Rule and Mr. Mackerras exhibited and explained the use of a barrel-type calculating machine.

The meeting of 1933 April 26 was held under the auspices of the Donovan Trust. The Chief Justice of New South Wales, the Hon. Sir Philip Street, as senior trustee, presented Donovan Medals to the President, Mr. W. F. Gale, for the discovery of a comet in 1927, and to Mr. J. J. Richardson, for work on Variable Stars and Stellar Evolution. The remaining medals were presented *in absentia* to Messrs. Skjellerup, Knox, Geddes and Dodwell, all for discoveries of comets.

Prof. A. D. Ross then delivered a Donovan Lecture on "Astronomy and Recent Advances in Physical Science." The lecture was open to the public and was well illustrated with lantern slides. Prof. Ross traced the development of the ideas of the sources of stellar energy, and indicated the bearing of Einstein's Relativity Theory on the problem. He then discussed cosmic radiations, atomic theory, giant and dwarf theory of stellar evolution and the subsequent modifications of this theory by Sir A. Eddington and others. The lecturer discussed the structure of the Galactic System and showed how the Theory of Relativity coupled with observations had given rise to the Theory of the Expanding Universe. In conclusion, Prof. Ross expressed the hope that a more longsighted policy would prevail in future with regard to the observatories of Australia, and stressed the educational value of the State Observatories.

On 1933 May 31, a General Meeting was held at the Sydney Observatory. After a short meeting, members adjourned to the two domes, and made observations of Jupiter and Mars and other objects through the 11½-inch and 6-inch refractors.

At the General Meeting of June 28 Mr. E. M. Mitchell gave an account of the orbit of Pluto and discussed the extreme thinness of Saturn's Rings. Mr. P. F. Rheinberger discussed the present state of thought on the Habitability of the Planets. Mr. A. P. Mackerras then described the conditions which govern the appearance of Saturn's Rings, with special reference to the sequence of events at the time of the Earth's passage through the plane of the Rings.—A. D. MACKERRAS, *Hon. Secretary and Treasurer.*

VI. Instruments belonging to the Association.

The following instruments have been presented to, or acquired by, the Association:—

1. Speculum metal grating, ruled on Rowland's engine, 14,438 lines to the inch. Presented by Mr. J. A. Brashear. On loan to Mr. C. P. Butler.
2. Photographic telescope, 4-in. aperture. Presented by Mr. G. E. Niblett. Available for loan.
3. Silver-on-glass reflector, 18-in. aperture. Presented by the late Mr. N. E. Green. On loan to the Rev. T. E. R. Phillips.
4. Portable transit instrument, 2-in. aperture, by Dollond. Presented by Mr. Tyson Crawford.
5. Achromatic telescope, 3-in. aperture, with small tripod table stand and wooden garden tripod stand. Presented by Mr. G. T. Davis. Available for loan.
6. Equatorially-mounted achromatic telescope, $3\frac{1}{2}$-in. aperture, with driving clock. Bequeathed by Miss E. Brown. On loan to Mr. C. J. Mont Smith.
7. Portable refractor, $2\frac{2}{3}$-in. aperture, with brass pillar and claw stand. Presented by the Executrix of the late Mr. F. E. Edmonds. Available for loan.
8. Grating spectroscope for attachment to No. 6. Bequeathed by Miss E. Brown. On loan to Mr. F. Sargent.
9. Solar microscope. Presented by Mr. F. J. Wardale. Of historic interest.
10. Achromatic telescope, with Merz O.G., $3\frac{1}{2}$-in. aperture, with portable equatorial tripod stand. Presented by the Rev. Canon Edmund Carr. On loan to Mr. B. Perrott.
12. A 12-in. cœlostat mirror, made and presented by the late Rev. C. D. P. Davies (*unmounted*). On loan to Mr. C. C. L. Gregory.
15. Browning's Miniature Spectroscope, with comparison prism, photographed scale, and brass rising stand. Presented by the late Miss M. Ashley. On loan to Mr. H. P. Folkard.
17. Student's achromatic telescope, $2\frac{7}{8}$-in. aperture, with brass pillar and claw stand. Presented by the Executrix of the late Mr. F. E. Edmonds. Available for loan.
18. Tripod garden stand, with clip for No. 17. Presented by the Executrix of the late Mr. F. E. Edmonds. Available for loan.
19. Equatorially-mounted achromatic telescope, by A. Ross, $4\frac{1}{8}$-in. aperture, with driving clock and iron stand. micrometer, etc. Bequeathed by Capt. W. Noble. On loan to the Rev. Dr. M. Davidson.
20. Achromatic telescope, by Wray, 3-in. aperture, and tripod garden stand. Bequeathed by Capt. W. Noble. On loan to Mr. J. Potter.

21. Student's achromatic telescope, by Bateman, 3-in. aperture. Bequeathed by Capt. W. Noble. Available for loan.

22. 6-in. transit theodolite, by Negretti and Zambra, with case and stand. Bequeathed by Capt. Noble. On loan to Mr. A. F. Bennett.

23. 2¼-in. Gregorian reflector, by James Short. No stand. Presented by Mr. H. R. Hanbidge. Of historic interest.

24. 2-in. transit instrument by Troughton and Simms. Presented by the late Mr. W. Heath. Available for loan.

25. Incomplete telescope, 1·6-in. O.G., by Steinheil, corrected for photography. Presented by Mr. A. E. Mitchell. On loan to Mr. C. P. Butler.

26. Thorp prism-grating in circular mount. Presented by Dr. Downing. On loan to the Rev. F. J. Wright.

27. Equatorially-mounted achromatic telescope, by Newton, 5-in. aperture, with driving clock. Presented by Miss Pennington. On loan to Mr. F. J. Sellers.

28. Gregorian reflector, by Hurt. Presented by the late Mr. Henry Ellis. Of historic interest. Exhibited in the Library.

29. 4-in. equatorial refractor, with driving clock. Presented by Mrs. E. Walter Maunder. On loan to Mr. J. H. J. Burtt.

31. Drawing board and curves. Presented by the late Mr. William Ellis. On loan to Mr. P. J. Melotte.

32. Equatorial refractor, by Steward, with tripod stand, aperture 2·8 in. Presented by Mr. J. Bullock. On loan to Mr. Peter Doig.

33. 8½-in. silvered glass reflector, by Calver, on iron pillar stand with rotating tube, circles and slow motions in R.A. and Decl. No clock. On loan to Mr. C. S. Saxton.

34. 3-in. refractor, on tripod stand. Presented to the Association by Mrs. J. A. Hardcastle. Available for loan.

35. 3½-in. refractor. Presented by Mrs. Thorpe. On loan to Mr. A. J. Wilsden.

36. 2½-in. refractor. Presented by Mrs. Thorpe. On loan to Mrs. G. K. Murchie.

37. 5-in. Zeiss refractor. Presented. On loan to Mr. H. H. Waters.

38. Brass equatorial head, suitable for 4-in. refractor. Bequeathed by Dr. Michie Smyth. On loan to Mr. E. H. Collinson.

39. 3¾-in. refractor, with equatorial head, circles and case of eyepieces. Bequeathed by Dr. Michie Smyth. No stand. Of historic interest. Not available for loan.

40. Direct-vision grating spectroscope. Presented by Mr. R. H. Hodge. On loan to the Rev. F. J. Wright.

41. 4-in. refractor, on altazimuth stand. Bequeathed by Mr. W. J. Thorrowgood. On loan to Mr. W. J. Blyth Crotch.

42. 4-in. refractor, equatorially mounted, on tripod stand. Presented by Miss M. E. Maxwell. On loan to Dr. Rowdon M. Fry.

43. Dipleidoscope. Presented by Mr. W. E. Hartley. On loan to Mr. Frank Robbins.

44. Portrait lens and camera. Presented by Mr. J. Milton Offord. Available for loan.

45. 3-in. refractor on tripod stand. Bequeathed by the Rev. J. Turnbull Bird. In the care of the West of Scotland Branch.

46. 8½-in. reflector by With, equatorially mounted, clock-driven, with Decl. but no R.A. circle. Presented by Mr. H. G. Tomkins. On loan to Mr. A. W. Lane Hall.

47. Odhner Calculating Machine. Presented by Dr. G. Merton. On loan to Mr. J. D. McNeile.

No. 11. Quadrant made by Troughton about 1790, has been offered to, and accepted by, the Science Museum, South Kensington.

Nos. 13 and 14. Telescope tripods of no value, have been removed from the list

No. 16. Sidereal watch, broken beyond repair, has been removed from the list.

No. 30. Sextant by Messer, has been offered to, and accepted by, the Science Museum, South Kensington.

Applications for loan of Instruments should be addressed to the Secretary, Mr. C. O. Bartrum, 32 Willoughby Road, Hampstead, London, N.W.3.

Report of Section.

Variable Star Section.

Report No. 29.

SS Cygni in 1932.

The Director last year suggested that the period of unusual behaviour which SS Cygni had passed through in 1931 seemed not to be closed, and that the star deserved the most careful attention. This has in fact been the case, and, though the variation in 1932 was somewhat more regular, with three anomalous maxima only (against four), one short maximum (which failed entirely in 1931), and one very long interval of 89 days between two successive rises (the second longest known), the star amply repaid observation.