

T H E
NOTTINGHAM ASTRONOMICAL SOCIETY
B U L L E T I N

NO. 62

Price: 2½d

JUNE, 1952

The Nottingham Astronomical Society was formed in 1946 to provide a rallying point for residents of Nottingham and district interested in the night sky.

COMMENT

Progress

We are now beginning our seventh year although our official session does not begin until October 1st. Since the inaugural meeting which took place on Friday, May 24th (not 23rd - as stated in last month's Bulletin), 1946, we have become firmly established and we should remain so in the foreseeable future. During our six years of existence we have met at the Mechanics Institution every month with the exception of August in the years 1949 and onwards: the excuse being that meeting as we do on the first Thursday in the month, we usually clash with the Bank Holiday period. So far then, we have enjoyed just 70 meetings.

During the last four years, we have also held a Dinner in February and already include among our distinguished guests, Dr. J.G. Porter of H.M. Nautical Almanac Office, Fred Hoyle, the noted cosmologist, and Mr. H.P. Wilkins, the leading amateur lunar observer.

The projected visit to Cambridge University Observatory in November, 1952 will be our fourth visit of this nature as we went to Rugby School Observatory in May, 1947, to Cambridge in October, 1947 and to Oxford University Observatory in November, 1950.

Less successful were our social excursions to the country although we tried Derbyshire in 1949 and 1950 and Stratford-on-Avon in 1951: the weather or the choice of date proved to be inconvenient.

Not many similar Societies can boast of a Bulletin which numbers 62 within the space of six years as we can. Our Bulletin first appeared in August, 1946 - three months after the Society's inauguration and has been published every month since that time with the only exceptions of August 1949, 1950 & 1951 when no meetings were held and one or two occasions in the difficult period 1948 and 1949 when the Society's officers were hard-pressed.

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THE SKY FOR JULY

The Julian Date for July 0.0 is 2434193.5 For other dates add the date.

THE SUN

Solar Rotation No. 1322 begins on July 4 and No. 1323 begins on July 31. The Sun's axis of rotation is coincident with the north-south line i.e. the Position Angle of the North End of the axis of rotation is zero on July 7.

THE MOON

Lunation No. 365 begins on June 22 and No. 366 on June 21. Phases for the period are:

365	(New Moon: June 22	Full Moon: July 7
	(First Quarter: June 30	Last Quarter: July 14
366	(New Moon: July 21	Full Moon: August 5
	(First Quarter: July 30	Last Quarter: August 12

There are no occultations of note during July.
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THE SKY FOR JULY (continued)THE PLANETS

Mercury is at greatest elongation east (i.e. is an evening star) on July 15 when it is 27° following the sun. At this time it sets about an hour later than the sun but is not likely to be seen casually because of the very strong twilight of mid-summer.

Venus, having been at superior conjunction on June 24 will make its welcome re-appearance in the evening sky but is not likely to be seen casually just yet as it is even more involved in the very strong twilight than Mercury.

Mars after its early summer display is on the wane and fades to magnitude 0.0 in July when it becomes an evening star following Saturn and then Spica into the western horizon.

Jupiter is a morning star in July rising at midnight GMT. Early risers (2 am!) will have no difficulty in finding and identifying Jupiter in the eastern sky now that Venus has left the morning skies for those of the evening.

Saturn is an evening star in July preceding Spica and Mars. As mentioned by Mr. Lane Hall at the May meeting, Saturn makes a close approach to the star Gamma Virginis on July 22 as it proceeds eastwards across the background of the sky.

Uranus is in conjunction in July and will not be seen in the night sky.

Neptune is in the same part of the sky as Mars and Saturn, being a little north of Spica but needs, of course, a telescope and a special star chart such as given in the BAA Handbook, for sure identification.

THE STARS

With astronomical twilight extending through the short nights of July, only the brightest summer stars will be noticed. In the late evening Vega will be the first star to be seen almost directly overhead with the constellation Cygnus, the Swan, a little to the east of it. Arcturus will be seen in the same direction as the planets Mars and Saturn but higher in the sky.

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THE SUN

by

J. Richards

Take a mass of hydrogen from about 100,000 to 10,000,000 times the mass of the earth according to the quantity required, add metals to taste, mix in a little helium and season with carbon and nitrogen. The thing will probably get hot on its own account but if it does not blow up or collapse, will settle down and become a perfectly good star with a diameter of from 100,000 to 100,000,000 miles and will emit radiation accordingly. Such could be a recipe for any of the millions of stars known and seen in the firmament and as such could also be applied to our own Sun, which is by far the nearest and best observed of the stars.

Astronomers in their efforts to gather facts about the constitution and evolution of the stars, have turned to the Sun, the only star whose surface they can observe, and which has provided many important facts as a result of observation as to its constitution and physical structure. That is why solar physics plays such an important part on the agenda of the professional astronomer, and to a no less important extent on the part of the amateur.

The point to be borne foremost in respect to the study of the sun is that we are observing the nearest star to the earth at a mean distance of 93,005,000 miles and facts and figures arising from these observations greatly assist in elucidating problems in the nature of the stars, which would be very difficult otherwise.

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THE SUN (continued)

The conditions of solar observation are vastly different from stellar observation. A star gives far too little light, and our telescopes are constructed with large apertures and short foci, in an endeavour to catch as much light as possible. On the other hand, the Sun gives as much light as we can wish for. Quite a small telescope gives abundant light, so that the tendency is towards rather small apertures and long foci, giving high magnification, with corresponding large images of the Sun. Indeed a 5 inch or a 6 inch telescope is all that is required in order to carry out a series of prolonged observations of the Sun, in which original work can be done. The telescopes used by professional astronomers seldom exceed this size for this purpose, and so Solar Study is well within the scope of amateur equipment.

Useful work can be done with 2 and 3 inch telescopes. Since the instrumental requirements of solar observations are so different from stellar observations, it is not surprising that special solar instruments have been constructed. These will be referred to later, but first we must consider what has been done with the telescope by ordinary visual means. Of course, the brilliant glare of the Sun must be reduced by using a special solar diagonal and a dark glass. By the way, the apparent magnitude of the Sun is -26.7, whilst the absolute magnitude is 4.85, i.e. its brightness is we could see the Sun from a distance of 10 parsecs. Its diameter is 864,000 miles or 109 x the Earth's diameter.

The sun presents a disc $\frac{1}{2}$ in diameter or about the same as the moon and when observed in the telescope, changes are seen from time to time. The most obvious of these is the appearance from time to time of sunspots. These are areas of the Sun's disc which are at a lower temperature than their surroundings and which appear dark by contrast. The typical sunspot, which may be as much as thousands of miles across, consists of a dark, central area or 'umbra' surrounded by a ring of intermediate brightness between the umbra and the solar surface. This is the penumbra. Sunspots are not permanent and may disappear after a few days or a few weeks. During their life they are carried across the sun's disc as it rotates, from east to west. We see the same point of the sun's equator at the centre of the solar disc at intervals of 27 days, so that if a group of spots is very long lived, it may re-appear several times at intervals of 27 days, undergoing changes of form and of position on the sun's surface during its lifetime.

These motions of spots are comparatively small, but they are certain systematic feature about them. For example, in a spot pair, the following spot will tend to catch up and overtake the leader. The spots give a fairly accurate indication of the solar rotation, which, as in the case of Jupiter and Saturn, is not that of a solid body. The period of rotation at the equator is 24.7 days - since the earth is going round the sun, the sun has to turn rather more than revolution before the same part of its surface comes opposite the earth, which explains the 27 day interval already mentioned. The rotation period near the poles may be as much as 34 days. The figures derived from the sunspot movements are rather less accurate than measures of the velocity of the edges of the sun's disc towards or away from the earth, which may be made using the Doppler effect - blue or red shift of the spectrum lines when the light source is approaching or receding.

The sun spots do not appear in regular numbers, but vary over a period of just over 11 years. This is the solar cycle, which begins with the appearance of a few small spots in comparatively high latitudes. As time passes, more and more spots are seen, occurring nearer and nearer to the equator until, about $5\frac{1}{2}$ years after the beginning of the cycle, the sunspots are seen in greatest numbers and the cycle is at its maximum. In the later half of the cycle, spots become less and less frequent, and those which do appear are in lower latitudes. At the end of the cycle, a few spots of the old cycle are appearing near the equator at the same time as those of the new cycle are showing their first appearance in high latitudes.

(Another instalment will appear in the July Bulletin)

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ANNOUNCEMENTSNext Meeting

The next meeting will be held in the Mechanics Institution, Nottingham, on Thursday, July 3rd, 1952, at 7.30 pm. when Dr. P.C. Jocelyn will speak about "RELATIVITY AND THE COSMOS". Dr. Jocelyn, who holds the B.A. and D.Phil. degrees of Oxford University, is a new member of the Society having joined us last Autumn. on his arrival in Nottingham to take up a post as research chemist. Both Dr. Jocelyn and his wife have attended every meeting since then and members are sure to find much to interest them in this talk. It is NOT designed to interest the intellectuals only!

The meeting will be preceded by a Committee Meeting at 7 pm.

Talks Programme

There is a marked reluctance among our members to commit themselves for the latter half of the 1952/53 Session Talks Programme. Any members, even those who have never given a talk, are urged to volunteer to address the Society on any topic allied with astronomy. The dates are April 2, May 7, June 4, July 2, and September 3, all 1953. and Mr. Ashmore is anxious to complete the programme in order that the new fixture list can be printed and distributed in October next.

Personal

The Editor regrets that Mr. F. Pooler, a member for some years and a serving member of the Committee, has been admitted to the Devonshire Royal Hospital, Buxton, for an indefinite period and will not be able to attend any of the Society's meetings for some time.

The Society's sixth birthday did not pass unmarked after all. On the 24th May, the Editor received a birthday card from Miss Mott bearing this message: "Upon this Anniversary accept this wish since that it bring enough of gladness to last you through the year of many happy meetings and nights when skies are clear."

Change of Address - Editor of the Bulletin

The Editor has now left 3, Maitland Road, Woodthorpe Drive, and lives at the following address:

Flat 5, Lamcote House,
RADCLIFFE-on-TRENT.
Notts.

Telephone: Radcliffe-on-Trent 223.

All correspondence should be sent to the new address.

Telescope for Sale

The following equipment is for sale:-

- 1-3" refractor with 1 terrestrial and 3 astronomical eye-pieces, the latter being fitted with filters for solar observation.
- 1- Ground and 1-Bench Stand.

Price complete: £9.

Can be seen by appointment at the following address.

Apply: Mr. S. Gunn, 1, Bonington Road, Mapperley, Nottingham.
Telephone: 64967.

Addresses

Hon. Secretary:	Hon. Treasurer:	Editor/Bulletin:
G. T. Butler,	C. L. Swift,	A. J. Ashmore,
Little Orchards,	18 Naseby Close,	Flat 5, Lamcote House,
ORSTON. Notts.	Heathfield,	RADCLIFFE-on-TRENT, Notts.
Phone: Whetton 282	NOTTINGHAM.	Phone: Radcliffe-on-Trent 223
Director/Observing Section:		A. W. Lane Hall,
19, Hartington Road, Sherwood, Nottingham.		
Phone: 66587		