THE
NOTTINGHAM ASTRONOMICAL SOCIETY.

BULLETIN.

MAY/JUNE, 1950 No.5 New Series.

CONTENTS.

We must again apologise for the lack of a Bulletin for last month. This has been due to the fact that the most important item of the Bulletin, the 'Night Sky' notes, were not available because of Mr. Lane Hall's serious illness. We regret that he is still not well enough to take an active interest in the Society, and although the June 'Night Sky' notes have come forward from Mr. Lane Hall, the July notes are unfortunately not available this month. We can only wish Mr. Lane Hall a very speedy recovery and we hope to see him with us again very shortly.

ANNOUNCEMENTS.

The next general meeting will be held as usual at the Mechanics' Hall on Thursday, 6th July, commencing at seven o' clock. Please note that there will be no general meeting in August.

The meeting for Committee members only will be held on Saturday, 8th July at six o'clock in the Y. .C.A. There will be no Committee meeting in August.

THE SKY FOR JUNE 1950.

The Julian date for June 0.0 is 243 3432.5. For other dates add the date.

THE SUN. Solar rotation No.1293 began on May 5 and rotation No.1294 begins on June 1 and rotation No.1295 on June 29. A satisfactory series of two inch discs have continued and the long summer evenings now give ample scope for regular work, either with a dark eye-cap with very small instruments or by projection. The director hopes to complete reductions and report on results by the end of the summer. The smaller number of spots to deal with now gives more chance for experiments with more precise methods of obtaining spot positions.

THE MOON. Lunation No.340 begins with the new moon on June 15. The moon is full on the 29th, and if the sky is clear its extraordinary lowness in the sky will be apparent. Not only is it in the lowest part of its monthly journey round the sky (as it always is at midsummer) but it is also as far south of its average path as possible which occurs approximately every eighteen years. There are no noteworthy occultations before midnight.

There is a very close approach of the moon to Saturn in the very late evening of the 21st, Saturn being north of the moon. There is actually an occultation to be seen from South America which will bring home to the naked eye observer how much the moon is shifted on the sky when seen from widely separated places. The almanac places of the moon are given as seen from the earth's centre and some tiresome arithmetic is involved in obtaining even a rough position for any observer.

THE PLANETS.

Mars and Saturn remain on view in the evening sky. They are separating again with Mars accelerating eastwards towards Spica and Saturn moving almost imperceptably in the same direction. Mars makes a fine, thin triangle with Spica and Arcturus. The latter star is roughly the same colour and may be compared with Mars in brightness. Mars is the brighter in mid-May and fainter in about the same proportion in late June.

Jupiter is coming round again and can be seen soon after midnight (GMT not BST). His four principal moons are very interesting objects with their constantly changing patterns in small telescopes, and they can be seen with binoculars supported very firmly and steadily. Their differing brightnesses are more obvious in such an instrument than in a telescope.

The Sky for June, contd.

Fixed Stars & Constellations.

The short summer nights bring round some of the finest parts of the Milky Way regions for the small instrument observer and Cygnus, Sagitta, Aquila and Scutum are excellent practise for locating clusters and bright nebulae, almost invisible to the naked eye, which will bring the skill needed to find small objects and provide an ample reward when found. Will not someone give us some notes from time to time of the Messier nebulae seen in really small instruments?

A few identification points may perhaps be given. Arcturus, a deep yellow can be found by continuing the sweep of the Great Bear's tail for about three lengths; Spica is some distance below it - a fine white, with Mars not far to the right of Spica and Saturn further off in the same direction. Antares, another orange-red, is low in the south (as low as the full moon) with two flanking stars something like Orion's belt except that the flanking stars are fainter than the centre and the line is not quite straight.

A.W.L.H.

Mr. W.E. Fox has requested me to give the following correction and I can do no better than to quote his letter:-

"During the discussion following my talk on Mars at the meeting on May 4th, a member asked, 'What is the length of the "canals" on the planet?'
My reply was so much in error that I hasten to correct it. I quoted the length of the "canal" Eumenides-Orcus as being four hundred miles when I should have said, three thousand, four hundred miles. It is one of the longest and extends for one quarter of the planet's circumference.
Incidentally, it has been rather faint during the recent apparition and I have only glimpsed one end of it so it may have faded out as many do from time to time."

Finally, here are brief notes of the elementary lectures given in May by Mr. A.J. Ashmore.

MAGNITUDES.

When the ancient astronomers observed the stars it was quite sufficient to compare the brightness (or faintness) of the stars by saying that one star was twice as bright as another star.

In the course of time, all the stars visible were broadly grouped into six ranges of magnitude or brightness; the brightest being of the first magnitude and the faintest of the 6th magnitude. As there were no telescopes in those days, the sixth magnitude marked the limit - fainter stars were invisible and so no-one bothered about them. Like most other sciences, astronomy became much too exact to allow such a loose system to be used 'officially' and in the nineteenth century various advances were made in the field of classifying stars according to magnitude.

In 1850, just a hundred years ago, the present system was introduced by Pogson.

In Pogson's scale of magnitudes the difference of one magnitude is 2.512, that is a star of magnitude one is 2.512 times brighter than a star of magnitude two, and similarly a star of magnitude five is 2.512 times brighter than a star of magnitude six.

This figure appears to be awkward. Surly a round two or 2.5 ($2\frac{1}{2}$) would be better. But the good reason for a figure

of 2.512 is that 2.512 is the fifth root of 100, and this means that a star of magnitude one is just a hundred times brighter than a star of magnitude six (the difference of five magnitudes makes a hundred times the difference in brightness). Another reason which follows from this is that the logarithm of 2.512 is just 0.400 - useful in calculations!

With such preciseness, the modern astronomer naturally goes further by giving magnitudes to two places of decimals. For example, the magnitude of Aldebaran is 1.06, although you and I can safely call it first magnitude! You may have guessed that the brightness or faintness of the stars varies enormously since a difference of five magnitude means a difference of 100 in brightness and a difference of another five magnitudes (that is, ten magnitudes in all) means a difference not of 200 or 500 but of 10,000 in brightness.

The difference in brightness between Venus (mag.4.4 at the best appearance) and the faintest star on the photographic plates at Mount Wilson (mag. 20) is nearly 10,000,000,000. In other words it would take 10,000,000,000 of these faintest stars to shine as brightly as Venus.

You will notice that Venus has a negative magnitude. Practically all the stars are covered by the ordinary scale of magnitude but a few stars and the brightest planets are so bright in comparison that we have to go right down the scale to 0.0 and beyond.

This list will show the idea:-

NAME.	MAGNITUDE.
Polaris	2.12
Spica	1.21
Rigel	0.34
Vega	0.14
Zero point	0.00
Sirius	- 1.58
Jupiter	- 2.25
Venus	- 4.38

Different kinds of Magnitude.

The ordinary magnitudes are called visual or photometric because they are as seen by the eye directly. Magnitudes determined for stars photographed are called photographic magnitudes and are not quite the same as visual magnitudes because the plates used in photography are not equally sensitive to the various star colours. Blue stars seem fainter and red stars brighter.

The difference is called the colour index of the star concerned. For example, for Betelgeuse Visual mag. is 0.92

Photographic " " 2.60

Difference (colour index) + 1.68

Absolute Magnitude.

So far we have discussed the brightness of the stars as seen by us on the Earth, directly or on a photographic plate, and the magnitude so determined (visual or photographic) is called the apparent magnitude because it is only what the brightness of the star appears to be. If we wish to consider how bright the stars really are we use what is called absolute magnitude. This is necessary because, just as a powerful light a long way off may seem fainter than a candle at arm's length, so some stars may be near and actually faint, or far away but actually bright, only appearing faint because of the distance.

The ratio between each degree of absolute magnitude is just the same as that of ordinary magnitude (2.512) but the absolute magnitude of a star is that magnitude it would have as seen by us if it were either brought in or moved back as the case may be, to a standard distance of 10 parsecs (or 32.6 light years). In this

way the stars can be put into place and then 'shown in their true colours'; our own sun would be truly disgraced for it would only just be visible as a fifth magnitude star. 'Oh, what a fall there was -' we should say.

A.J.A.

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