THE

NOTTINGHAM ASTRONOMICAL SOCIETY

BULLETIN

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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

An interesting spectacle was visible in the evening sky of Friday, June 8th, when the crescent moon passed close by the brilliant planet Venus. The sky was not completely clear and patches of cloud interefered at times but five minutes before eight (Summer Time) in full daylight with 1½ hours more to pass before the sun set, Venus could be clearly seen just off the lower horn of the Moon, looking rather like a full stop of a question mark formed by the crescent. This showed how easy it is to see Venus in full daylight, once you know where to look. In this case, the Moon made a most convenient marker; without such an aid, it is not so easy to 'pin Venus down' with a large portion of bright blue sky to explore, but once found, one wonders how one could have possibly missed it, so clear it is. This conjunction of the Moon with Venus also brought home just how fast the Moon moves across the back ground of the sky. Only one hour after the 'question mark' configuation referred to, the Moon had moved almost its own breadth onwards (i.e. eastwards) passing Venus in the space of half an hour.

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THE SKY FOR JULY

The Julian Date for July 0.0 is 243 3827.5 For other dates add the date. For example, the moon rises on July 23 at 22h.00m GMT = July 23.91666 Adding this to the standard date given above = J.D. 243 3851.41666 This universal calendar is easily the most convenient to use for calculations involving intervals of time as it avoids the complications of unequal months and leap years. Extended tables are given in the Nautical Almanac.

THE SUN

Solar Rotation No. 1308 began on June 18 and rotation No. 1309 begins on July 16.

Twilight at midnight lasts until July 28.

Quite remarkable spot activity continues. A considerable group was near the central meridian on the day of the June meeting, and a second large group had appeared over the east limb. Mr. Fox pointed out at the meeting that this second group was of greater interest as it was now making its third journey over the visible side of the sun. It will be central about the 12th June.

THE MOON

Lunation No. 351 begins with the new moon of June 4.

There are no noteworthy occulataions visible at a 'reasonable' hour of the night.

There is another close approach of the Moon to Venus, but the closest point occurs in the early morning when both are below the horizon. The grouping will, nevertheless, be striking on both the 7th and 8th July evenings.

PLANETS

Most of the planets are inconveniently placed.

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The Sky for July (cont'd)

Mercury make a rather fugitive appearance in the evening sky, but may perhaps be seen with binoculars at the extreme end of the month in bright twilight some ten or twelve degrees to the right of Venus and at about the same altitude.

Venus remains prominent until the end of the month but is drawing near the sun and will not be followed far into August. In the telescope it will be well into the crescent phase. There is very close approach to Regulus on the 7th, best seen from Pacific longitudes, but worth looking for on the evenings of the 6th and 7th. They must be looked for in twilight, rememberingthat Venus will be a hundred times brighter than the star.

Mars is visible in the morning twilight, rather faint and a very long way off, of little interest yet to stargazer or astronomer.

Jupiter is coming round again, much better placed in the sky than last year, and rising a little before midnight. It will be found by its brightness in a rather barren part of the sky south following the great square of Pegasus. AS a rough guide, a line drawn from the pole star through Cassiopeia, and continued southwards three times as far again, will pass very near to it.

Saturn remain in the evening sky for a short time, south following the tail of Leo.

Uranus is too close to the sun to be seen until the autumn, and Neptune, near Saturn, is not likely to be followed further on account of the combination of its faintness and failiny altitude.

(A.W.L.H.)

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TELESCOPE MAKING

Part 2 - Mounting the Telescope
(Final instalment)
by
D.K.Northrop

As far as the actual mounting is concerned, this should be rigid; plenty of metal will insure this. For the altazimuth mounting for the 4", the arms (E - Drawing 1) want to be of iron about 1½" by 1" section. The plate to which these are bolted should also be of iron about ½" thick but this can be so designed as to save weight where possible. The axle should be of 2" diameter perhaps tapering to 1" and the bearings should also be of iron with plenty of meet in their construction. The stand, if portable, can be constructed in oak 2½" square.

This will give you an indication of the strength of mounting required, even for s small telescope. It is better to err on the heavy side than on the light. A telescope is of no use if the mounting is not rigid as a light wind will ruin what would otherwise have been a good night.

Patterns for various parts of the telescope can be made from almost any sort of wood and can be made without the aid of lathe. The point to remember is that the pattern must be capable of being withdrawn from the mould so it is best not to have any awkward projections which would make this an impossibility. To take a simple ring, the finished job to be 5" inside diameter and 7" outside diameter, and 1" thick. A piece of wood should be obtained from which such a pattern can be shaped. In actual practise, several pieces of wood would be glued and jointed together in a crafty way to stop warping. But as we shall only require the pattern once, - the next telescope would probably be larger - we need not worry about this aspect too much. The proposed ring should be marked on the wood with compasses so that the inner circle is 4½" in diameter and the outer circle is 7½". When this ring has been cout out, the edges should be tapered slightly, cleaned up with sand paper so that the surface is very smooth. The pattern can then be given a coat of flat paint to help fill the grain and then rubbed down smooth again with sand paper. The making of the pattern a little larger than required allows for shrinkage when the metal cools; it also allows for machining. The taper facilitates easy removal of the

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Telescope Making (cont'd)

pattern from the mold, and the smoother the finish, the smoother the casting. There is an exact scale for the shrinkage of a casting which varies with different metals but if you allow plenty for this and the machining, there is not much to worry about, unless you intend to get the pattern cast professionally, then 1/16" per foot will give sufficient margin. To make the mould, some casting sand will be required together with a sheet of plate glass and two boxes - both the same size - big enough to get the casting in. Label one Cope and the other Drag, place the pattern on the plate glass and over it, place the Drag. Both these boxes, incidentally, have neither top nor bottom. The sand, which is damped slightly with water so that it will bind in the fingers and yet crumble at the slightest pressure, is put into the Drag and stamped down with a flat-ended piece of wood so that it is quite hard. Fill the Drag right to the top. The Drag is then lifted, placed upside down on a piece of board, or some other flat surface. The sand will not fall out if well packed in. The wooden pattern should now be visible and into this, two screws are screwed so that a substantial part of their shanks are visible. These shanks should then be tapped with a small hammer, very gently so as not to damage the sand. The pattern should then be fairly loose and a quick steady movement will remove the pattern. Any repairs to the sand can now be made using a small spatula. The Cope can now be prepared. The plate glass is cleaned and the pattern placed as before; with a wax pencil mark round the ring so that its position will be indicated on the glass, remove the pattern and put the Cope box on the glass so that the position of the ring conforms with the impression of the ring in the Drag. Place two round or square pieces of smooth wood, standing with their ends on the glass over the width of the ring. These will be the risers. This bix is then filled with sand and stamped down tight. The pieces of wood can then be removed and the entrances to the risers smoothed over with the finger. The Cope is then removed and placed on top of the Drag so that the risers come over the impression in the Drag. The mould is then ready for pouring.

A furnace can be made from angle iron and asbestos; a paraffin lamp will supply all the necessary heat. A box should be constructed from the asbestos ½" thick and the lid made to rest on top. A hole in the side to fit the nozzle of the brazing lamp and another smaller hole at the opposite side which will take away the fumes. Ashort length of pipe was fitted to mine so that the fumes could be taken to the chimney. Sufficient aluminium should be placed in a salamander crucible to fill the mould. This should be alloyed with tin or silicon in the proportion 9:1. It will take about half an hour to melt. My own furnace is 8" x 8" x 10" and I have melted suffi cient aluminium to produce a ring 11" inside diameter, 13" outside diamater and 1" thick.

A pair of suitable irons should be purchased for lifting the crucible out of the furnace and pouring into the mould. The pouring should be done as rapidly as possible and should not cease until both rises are full to the top. You will find that as the metal cools the metal in the risers will drop down through shrinkage. Before pouring takes place, however, all the scale which has been formed on the surface of the metal should be removed. Borax powder added to the molten metal will help to stop it forming.

Not everybody will be able to construct a telescope mounting of the type indicated above, though they have produced a very passable mirror. This may be due to lack of tools or insufficient space or many other reasons. However, a mirror is not so fussy as an object glass and will perform quite well in a very modest mounting. Such mountings have been made from odd bits of wood, cardboard, screws, nails and other odd junk. When looking at some of the photographs which appears in astronomical journals which show a home made telescope, it is surprising what ingenuity some amateurs show in getting over mounting difficulties. Pipe joints seem to make good equatorials. Motor car brake drums make mirror cells and I have seen an illustration of an old motor car engine turned upside down

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Telescope Making (cont'd)
to make a steady equatorial mounting.

To finish I should like to give the titles of books dealing with telescope making which should be very helpful to the beginner.

'The Amateur's Telescope' by Rev. Ellsion. I believe this is in the Society's library. 'Amateur Telescope Making' published by Munn and Co. Inc. There is also an advanced copy called 'Amateur Telescope Making - Advanced', publis hed by the same people. An English book called 'Constructingan Astronomical Telescope' by G. Matthewson is also available. Personally, I should obtain a copy of the second book mentioned as it is a real gold mine of information.

(This concludes Mr. Northrops article.)

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ASTRONOMICAL NEWS

AN ATMOSPHERE ON MERCURY

At the Pic-du-Midi Observatory in the Pyrenees, A. Dollfus recently established that Mercury has an atmosphere, although a very tenuous one. Compared with the Earth's atmosphere, it would be only 3/1000 ths of its thickness if of a similar composition and the pressure at Mercury's surface would be about 1 mm. of mercury compared with 760 mm. at the Earth's surface.

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ANNOUNCEMENTS

Next Ordinary Meeting

The next ordinary meeting will take place in the Mechanics Institution, Nottingham, on Thursday, July 5th, 1951, at 7.30 pm. It will be preceded by a Committee meeting at 7 pm.

Social Outing

The Committee wish to inform all members that the Social Outing to STRATFORD-on-AVON, which took place on Saturday, May 26th, 1951 was, although enjoyable and appreciated by those who travelled, a serious financial failure. Twelve adults and one junior took part in the outing - too few to result in the outing paying for itself. At the price charged, this means total receipts of £7.16 against the cost of the coach - ,£17, a loss of £10. Two members have made generous donations and the Treasurer will not be able assess the actual net loss until he has balanced the accounts, but it is feared that the Society's favourable balance of the past two years or so will be seriously affected.

Addresses:

Hon. Secretary:
G.T.H.Butler,
Little Orchards,
ORSTON.
Notts.
'Phone: Thatton 282.

Hon. Treasurer:
C. L. Swift,
18, Naseby Close,
Heathfield,
NOTTINGHAM.

Director, Observing Section:
A.W.Lane Hall,
19, Hartington Road,
Sherwood,
NOTTINGHAM
'Phone 66587

Editor, The Bulletin;
A.J.Ashmore,
3, MaitlandRoad,
Woodthorpe Drive,
NOTTINGHAM.