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The observatory will be closed for the summer for some weeks to carry out various essential repairs. It will be closed from about May 20th, until about August.

Planned Spaceflight

The USA will launch Skylab A on May 14th, to be followed by three men in an Apollo capsule on May 15th to dock with the vehicle. They will stay on Skylab for about 28 days. The spacecraft is crammed with scientific equipment. Full details of the onboard equipment are outlined in the October 1970 edition of the BAA Journal, and Analog magazine, both of which can be borrowed from me. The USSR launched Salyut-2 on April 3rd. They have not yet sent up any men to man this station. What is going on? The Salyut space stations are similar to but smaller than the American skylab space station.

Interesting Venus Investigation

Venus seems to "breathe" regularly. There is a four day cycle in the strength of the Carbon Dioxide line of its spectrum. Throughout Venus' apparition in Autumn 1972 nightly spectra were obtained by two investigators which revealed a definite oscillation in this atmospheric spectrum line. It is not quite periodic, but relaxes then builds up on successive cycle then decreases. This could be explained by the altitude of Venus' cloud deck changing by 1km over the entire surface of the planet. This mystery is still not fully explained.

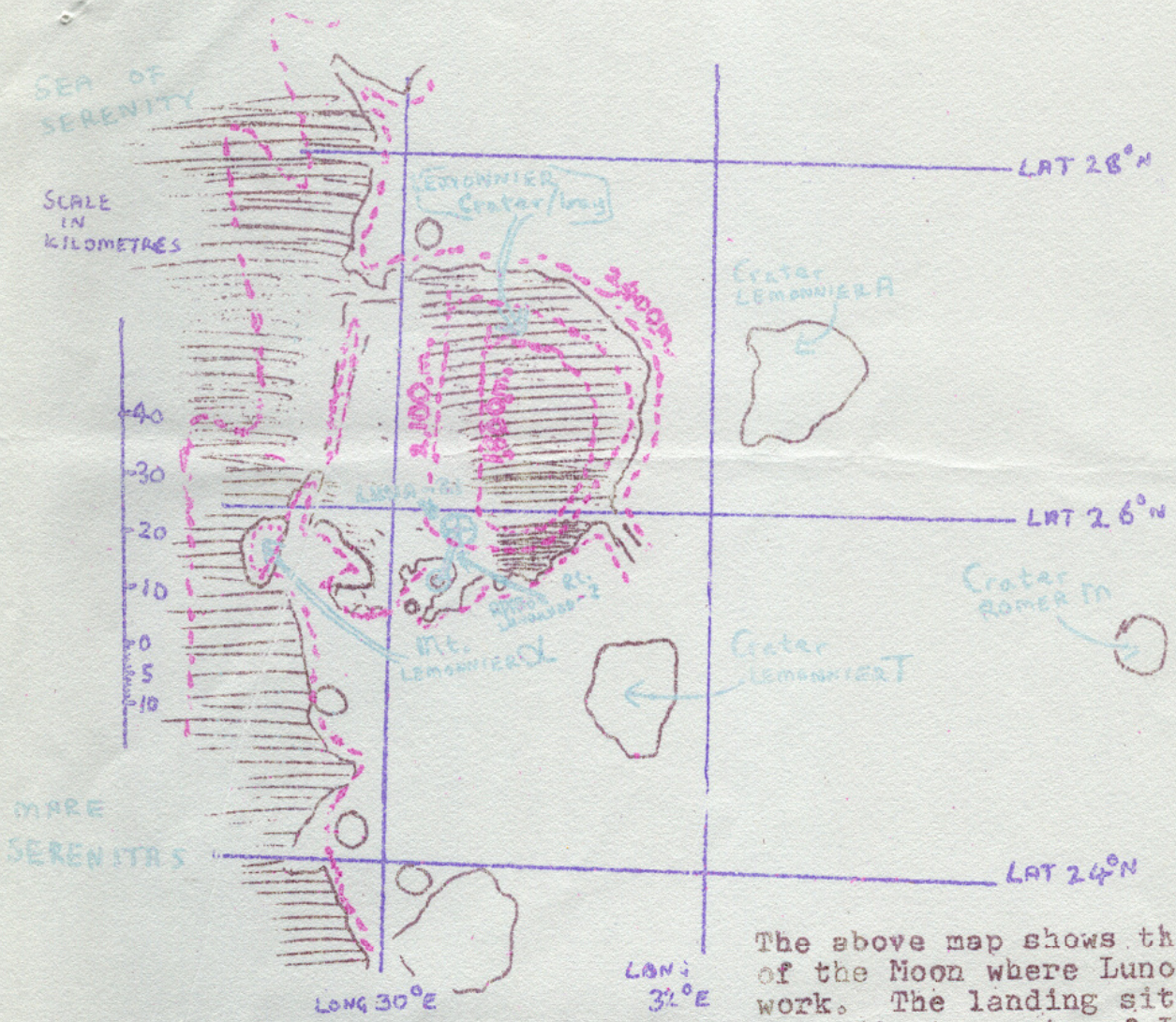
SINCE THE OPEN DAY IN APRIL SEVERAL NEW MEMBERS HAVE JOINED. THEREFORE I WOULD LIKE TO SAY AGAIN COULD ALL MEMBERS, ESPECIALLY THOSE OUTSIDE THE IPSWICH AND PELLISSOWE, PLEASE SEND ME SEVERAL STAMPED ADDRESSED ENVELOPES. IT IS NOT MUCH TO ASK, IT WILL ENABLE YOU TO RECEIVE NEWSLETTERS PROMPTLY WITH A MINIMUM OF FUSS, AND WILL SAVE THE SOCIETY POSTAGE ENABLING OUR FUNDS TO BE DIVERTED TO MORE WORTHWHILE NEEDS.

A FULL REPORT ON THE OPEN DAY WILL BE PUBLISHED LATER, BUT I WOULD JUST LIKE TO SAY HERE: MANY HELPED, THANKS TO ALL CONCERNED, BUT I AM SURE YOU AGREE THAT WITHOUT A SHADOW OF DOUBT THE EVENT WOULD NEVER HAVE MATERIALIZED WITHOUT THE RELENTLESS HARD WORK OF ROY CHEESMAN THE CHAIRMAN. I WOULD LIKE TO THANK ROY ON BEHALF OF THE WHOLE SOCIETY FOR HIS DEVOTION, WORK & DETERMINATION IN MAKING THE OPEN DAY THE GREAT SUCCESS WHICH IT WAS.

IMPORTANT: SATURDAY MAY 5th BAA LUNAR SECTION MEETING IN NORWICH. ANYBODY WHO WANTS TO GO, TELEPHONE ME FOR FULL DETAILS, I SHALL TRY TO GO. WE INTEND TO INVITE THE BAALS TO IPSWICH IN AUTUMN. PATRICK MOORE WILL BE THERE !!

Convention at Carleton Hall, London, all day May 12th.

OPEN DAY
ATribute to:- Nigel Gage & John Easby who guided visitors out in the pouring rain. Dr. Craig out to receive a medal for sticking it out the whole afternoon collecting admission fees in the freezing entrance of the school. Also thanks to the members who cleaned the place up on the Sunday morning after a long hard day, D. Bearcroft, John & Janet Haywood, Michael Hadden, Barry Home & Roy Cheesman. Also thanks to Michael Stone, David Brown (their winner), Jairoy McIntern, Mark Rogers & our projectionist Phil Lucas. Thanks to the mothers & wives of members who helped at the refreshments - Thanks to Geoffrey Collins who made an excellent video show. Hope I have mentioned everybody.



The above map shows the region of the Moon where Lunokhod-2 is at work. The landing site of Luna-21

the mother craft, is marked, and the approximate route of Lunokhod-2. The flat basalt plain or Mare (Sea) is indicated by black shading. The mountainous region of the Taurus mountains is left plain. North is at the top. This map is to exactly the same scale as the map of the Lunas-16, 18 & 20 landing sites on the eastern edge of the Sea of Fertility included in the March 1971 (Vol:1, No:2) edition of this Newsletter. At the end of the L-2 traverse marked is the crater which the vehicle probably explored on its 2nd & 3rd lunar days. The red dotted lines are contours showing altitude in metres above mean lunar datum level. There is no water & therefore no mean sea level on the Moon.

PATRICK MOORE & BAA in NORWICH ON MAY 5th, see front page.

Convention, Caxton Hall, London, all day May 12th.

MERCURY is not particularly well seen this month. Superior conjunction (Mercury being the other side of the Sun from us, and extremely close to the Sun in the sky) is on May 20th. You may glimpse Mercury on the first couple of days of May with binoculars as a Morning Star if you are lucky. However, now is the time to ready yourself for next month, when Mercury will be visible as an Evening Star. Because of B.S.T. and because of the Sun's Northerly declination, sunset does not occur until around nine o'clock B.S.T., and it is not really dark until an hour or so after that. This means that only planets can be observed in the early evening.

Mercury has an extreme Northerly declination next month also (about $+20^{\circ}$) which means that it does not set until quite a while after the Sun. Therefore, if you go to the Observatory next month and it is clear, you may not be able to see much, but you will be able to see Mercury through the telescope, with luck. Extreme elongation from the Sun and therefore the most favourable date for observation, will be June 22nd, but the planet should be observed throughout June, and the start of July. On the evenings of May 31st and June 1st, Mercury will be quite close to Venus in the sky, being some way to the North of it. The declination and right ascension of Mercury at the start of June will be about 5h. 40m. $+25^{\circ}$. By the end of June this will have changed to Ra. 8h. 10m., Dec $+19\frac{1}{2}^{\circ}$.

More details will be in the next Journal.

VENUS is not well seen this month, but you might glimpse it to the East of the Sun with a telescope. Venus and Mercury will be quite close together on the last day of this month, and the first day of June in the evening around Sunset or slightly before. After the end of June, Venus will be better placed. However, this year Venus will not be a conspicuous object from Northerly Latitudes because now it is too close to the Sun and later in the year it will have an extreme Southerly declination, making it best seen from the Tropics and the Southern Hemisphere.

MARS is moving extremely quickly across the sky. It is becoming better and better placed all the time, and will become well visible in the Autumn and the end of the year. It is growing larger, brighter, nearer, more Northerly in declination, and visible earlier and earlier each night. It is still a Morning Star, visible in the South-East early in the morning before Sunrise.

JUPITER is also a Morning Star, in the same general region of the sky as Mars. Unfortunately, Jupiter also has a Southerly declination and will not be at all well visible this month, from Britain anyway. Jupiter reaches a maximum North declination this month, a Southerly declination of $-17^{\circ} 40'$, before and after May 28th the planet will be even further South in declination. So on and around May 28th, it is well worthwhile looking in the South East sky near the horizon before Sunset.

Jupiter rises at around 1.30 a.m. B.S.T., the Sun rises at about 4.30 a.m. to 5.00 a.m. B.S.T.

This year a number of very interesting phenomena of Jupiters' Moons occur. As well as the usual passes of the planets in front and behind the planet itself, and passing in and out of Jupiters' shadow, a number of mutual phenomena occur. These mutual phenomena will only occur between June 6th and October 30th. Unfortunately one of these events will be well seen, and a telescope such as the Orwell Park refractor will probably be necessary to see them, although a home made 6" refractor may show these phenomena. Three of these phenomena can be seen at the end of June, predictions for them will be in the next Journal.

SATURN moves closer to the Sun all the time, and becomes less well placed as time goes on. It cannot be seen after the start of May at all. Conjunction will be on June 15th. Saturn will be visible as a Morning Star between August and the end of the year.

URANUS Usually I do not comment on the three outermost planets of our Solar System because they are so dim, distant and uninteresting to the observer, although they are of course interesting to other researchers. In the last Journal there was a brief article concerning this planet.

A 36 inch reflecting telescope was sent up to an extremely high altitude in a balloon, and photographed Uranus, as well as many other objects. Absolutely no detail could be seen on the disk of the planet at all !!!!! A large telescope at extremely high altitude, above the 'Muck' of the ground level air, even with computer processing to increase the contrast of the pictures, showed absolutely nothing at all. But it is interesting to look at the object, if nothing else.

Opposition of this planet occurred on April 11th, the planet should now be visible when the sky is dark in the late evening. It is quite close to the bright star in Virgo called Spica. It is about five degrees South-East of Spica. Uranus will appear in a small telescope as a small green disk.

THE MOON Phases: Lunation 623 commences on May 2nd at 20h. 55m. U.T. when New Moon occurs. After that the Moon will become visible on the next few evenings as a slim crescent in the Western sky around sunset. First quarter is on May 9th. Full Moon on the night May 16th/17th, Last Quarter will be on May 25th at 08h. 40m. U.T. The Lunation ends with a New Moon on June 1st, and at that New Moon, Lunation 624 commences.

Perigee (When the Moon comes closest to the Earth) will be on May 4th. Apogee will be on May 19th.

OCCULTATIONS. Every month there are many occultations. I do not attempt to give data for all of them (the enthusiastic Astronomer can look that up himself in Nautical Almanac, B.A.A. Handbook, Astronomical Ephemeris, Whittackers Almanack, etc.,) but I will describe a couple of interesting occultations this month.

May 6th - 21h. 09.1m. U.T. time corrected to Orwell Park, (difference will be negligible elsewhere in the Ipswich area) 36 Geminorum (Mag. 5.2) will be occulted. It is a double star and will therefore disappear in two stages, and not instantaneously. This may be pleasing to watch.

May 6th - 22h. 26.4m. U.T. (time corrected to Orwell Park....) A dim star, also a double, will be occulted, it is mag. 6.8. This may also be pleasing to watch.

Both the above events should be visible in binoculars or any telescope.

May 11th - 22h. 09.6m. U.T. (Corrected to Orwell Park.....) 123H Leonis will be occulted. It is a double star, and may be interesting to watch.

Timing of Occultations to an accuracy of half a second or better is useful. A useful method is to use a mains tape recorder (or battery machine with BRAND NEW BATTERIES) record time signals, leave it running and observe the event through a telescope, use a sound making device to make a loud, sharp sound at the instant of the event, leave the machine running, record the time signal again. With the aid of this tape recording the observer can use a stop-watch to "time" the occultation in the warmth of his house after making the tape recording.

An alternative similar method, and more accurate, can be employed if you have a short-wave receiver. Tune in one of the stations mentioned below, and leave the tape recorder and the station broadcasting the time signal on continuously. Make a loud and distinct noise at the moment of occultation, and go indoors to time the event as before.

These short-wave radio stations broadcast continuous time signals:

| <u>Station</u> | <u>Frequencies (MHz)</u> | <u>Wavelength(m)</u> | <u>Transmission Times</u> |
|----------------|--------------------------|----------------------|---------------------------|
| MSF Rugby | 2.5, 5.0, 10.0 | 7.5m, 15m, 30m | 00-05m. 20-25m 30-35m |

| <u>Station</u> | <u>Frequencies(MHz)</u> | <u>Wavelength(m)</u> | <u>Transmission Times</u> |
|-----------------|-------------------------|----------------------|---|
| HBN Switzerland | 5.0 | 15m | /// Alternate to overleaf |
| DIZ E. Germany | 4.525 | 6.961m | /// Continuous except between 08h 15m - 09h 45m. U.T. |

Note that HBN broadcast on the alternate five minute periods to MSF. MSF and HBN broadcast all day every day on alternate five minute periods. To my experience, by far the easiest station to pick up is DIZ. The other two are often faint and sometimes lost in interference. I have included both wavelength and frequency because some short-wave radio receivers only have their scales graduated in one or the other.

If you time an occultation, let me know the time, and probably error.

METEORS Meteor observation and occultation observations are two fields where the amateur can perform observations of use in his back garden. I hope that I will see that they are sent to the B.A.A. for analysis.

Some members have been giving me meteor observations, keep them coming in please!!

There is one substantial meteor shower this month.

The Eta Aquarids are a favourable shower this month. The meteors have persistent trains. They last from May 1st until May 8th, a maximum rate of around twenty four meteors per hour will be on May 4th and 5th.

There will be two meteor showers in June, and seven in the period July 10th to August 25th!!!

If you ever see a meteor, note down how bright it was in comparison to the other stars in the sky (if it was brighter than any of the stars or planets, say so) and the exact time you saw it. If you saw any unusual features, such as trails, fragmentations, detonations, etc., note them down also.

MEMBERS PLEASE NOTE:

For some of this month the observatory will probably be out of action. The objective lens is going to be taken away to be cleaned, repolished and generally tuned up by an expert Optician and Astronomer who has agreed to take on the task.

We hope to have the observatory back to normal next month.

MEETINGS OF OTHER SOCIETIES.

The Clacton Astronomical Association hold meetings on the first Thursday of each month at 7.30 p.m. in the Quaker Hall in Granville Road, Clacton-On-Sea. Meetings will be held there on May 3rd and June 7th.

The Norwich Astronomical Society hold meetings on the third Saturday of each month at the Spinney Community Centre, Earlham Five Ways, Norwich, at 7.30 p.m. A meeting will be held on May 19th, when there will be either an Astronomical Forum or else a lecture by Dr. Gerald Hawkins (Stonehenge Decoded). They will not be holding a meeting in June.

Meeting of our Society is held several times a fortnight in the observatory where there is observation, and discussion.

The British Astronomical Association hold meetings on the last Wednesday of each month from October to June inclusive at 17.00 hours in the Scientific Societies Lecture Theatre of the Civil Service Commission Building at 23, Saville Row, London, W.1. There will be a B.A.A. meeting on May 30th. This will not however be as usual. This is the Annual Exhibition Meeting of the B.A.A., where Astronomers and Astronomical Societies exhibit their work and

a variety of other extremely interesting exhibits. We propose to exhibit some photographs of our observatory at this meeting.

The B.A.A. Exhibition Meeting will be held in the rooms of the Royal Commonwealth Society, in Craven Street, London, W.C.2. The nearest tube station is Charing Cross. This exhibition meeting will start at around 4.00 p.m. If you can get along to it, it will surely be rewarding. Tea will be available.

OBSERVATORY LOG BOOK

Wednesday March 28th Throughout the evening some fifteen people were up at the observatory. Towards the end of the evening Uranus was found. It was a disappointing object even in the 10" O.G., being a tiny blue-green disk.

Saturday 7th April Very early in the morning, about 04.00 h. U.T. five members arrived at the observatory. We opened up the dome and saw Mars and Jupiter together very close in the South. They were very prominent in the South-East after about 03 hr. 45m. U.T. However, because of exceptionally unstable air (unusual, the air is usually very stable and cold before dawn) and their low altitude above the horizon, the two could not be seen at all well.. a hint of green detail on Mars, a couple of belts on Jupiter occasionally glimpsed, but mostly they were boiling disks, and changing colour. The four Gallilean Satellites of Jupiter could be seen in both the finder and the main telescope.

Cloud came across at about 04h. 30m., and the observatory was closed some time afterwards.

PLEA FROM THE STARS

At the end of March, Duncan Lunan, a young Scottish Graduate, delivered an address to the British Interplanetary Society entitled "Space Probe from Epsilon Bootis". He claims to have unearthed evidence that there is a space probe orbiting the Moon, which was sent there by a civilization from Epsilon Bootis, a prominent star in Bootes. He suggests that the vehicle is unmanned, and probably 13,000 years old.

He came across the results of some early experiments in radio carried out in 1927/29, in which radio signals were sent into space, and were curiously sent back and received by the experimentors as some kind of echo. These early experimentors did not ponder upon their findings, attributing them to some effects which they knew nothing about. These echoes were not a simple repeat of their original signal, but several repeats of different durations, and separated by different intervals.

The intervals were apparently random, ranging from about three to twenty seconds. Duncan Lunan plotted on a graph the time of the transmission against the duration of the transmission. Immediately it could be seen that these points were arranged in exactly the same shape as the constellation of Bootes as seen from Earth. Further analysis of the results indicated one particular star, Epsilon Bootes or Izar to be the most important one.

This suggested that whatever was retransmitting the signals, came from Epsilon Bootis.

Epsilon Bootis or Izar, is an interesting Star System. When you look at the constellation of Bootes, the most prominent star is of course Alpha Bootis or Arcturus, but with the aid of a star chart, it is quite easy to find Izar. In arabic, Izar means girdle, the star is a triple system, two stars orbit very close together forming a spectroscopic binary, the other star is the primary, a yellow giant of spectral type K. The primary has a visual magnitude of 2.70, the total system is of visual magnitude 2.37, the dimmer star being of the sixth or seventh magnitude. It seems that there are no reliable measurements of the distance of this system. Text books give values ranging from 100 light years to 230 light years. When seen through

a telescope of more than 2 inches, 50 mm aperture, the star appears as a double, a bright yellow primary, and dimmer green companion close by. Physically they are separated by 8,200 million miles (this calculated separation depends on what value you take for the distance of Izar) compared with the diameter of Neptunes' orbit which is about 5,000 million miles.

Through a telescope the system is a pleasing sight, indeed it was called a "pulcherimma" in some catalogues (pulcherimma is a Latin word meaning 'Most Beautiful'). However, to the inhabitants, if they exist, Izar must be a bad place, as the star is dying, and the civilization around the star has its days numbered, unless they can migrate to another star system.

Duncan Lunan suggests that they sent out probes calling for help, and one of them has ended up orbiting the Moon, after a journey of 13,000 years from Izar. This means that the vehicle must have been travelling at speeds of 1/130th or even 1/60th the speed of light, fifteen or thirty times the speeds of our present day technology has managed to accelerate any payloads. A Saturn V rocket without any payload could reach speeds much greater than we have achieved yet, the fastest object sent from Earth is Pioneer 10., moving at some 32,000 miles per hour. However, if we lived near Izar, our present day technology probably could send out interstellar probes such as Lunans object. This is because the object could be launched from the planet orbiting Izar, and could be accelerated to these fantastic speeds by passing close to the other component of the Izar double system. However, our Sun is all alone and to send out interstellar probes, we would need a revolutionary new rocket type, perhaps thermo-nuclear power is the answer if it can ever be controlled, but at present we are limited to our own Solar System.

Duncan Lunan has presented an interesting thesis, but as yet, his case has not been conclusively proved one way or the other. Frankly, most believe that his spacecraft does not exist as it has not sent us any signals since 1929, although there is no reason why such a vehicle could not have been sent. There are several unexplained factors. Why did the space probe come to Earth. Our solar system is not similar at all to Izar, and is a long way away. Arcturus is very similar to Izar, and is still young, and much closer than we are.

Attempts are being made to re-establish contact with this object orbiting the Moon, but so far the result is negative, the object may have crashed on to the Moon, sucked downwards by the mascons, since it was last heard from. But even if Lunan is right, and even if such a vehicle is found, at present Man is unable to help the hapless victims of the dying civilization of Izar. Yet the space probe is supposed to be 13,000 years old. If the civilization expected to last that long, they can last a little longer, and who knows what strides out technology may take in the 21st Century.

OBSERVATORY OPEN NIGHTS, May 1973

As the nights are now 'pulling out' and we propose doing major work to the telescope and observatory the club nights at the observatory will only run until Wed 9th May from that day helpers are required to assist in removing the telescope base and general repairs - no skill needed! This work will done on Sunday mornings from 9AM to 12AM and any volunteers should contact either of the following for more details

R.M. Cheesman

[redacted] Journal.

D. Beacroft

[redacted] Greenwich, Phone 73851

or C. Rodley,

[redacted] Whitehead, Phone (ps. 5523)

Open club nights.

| | | | | |
|-----------|---------|-----------|--------------------|---|
| Tuesday | 8th May | from 8PM. | Contact & Collect, | [redacted] Woolverstone |
| Wednesday | 9th | " | " | [redacted] Phone: chelmsford |
| Thursday | 3rd | " | " | R.M. Cheesman, [redacted] Journal |
| Friday | 4th | " | " | D. Beacroft [redacted] Journal [redacted] |
| | | | " | M. Stow & R. Hargreaves - phone (ps. [redacted]). |

WORK PARTIES

From Sunday 20th May 1973.

VISIT TO THE GREENWICH PLANETARIUM.

On Saturday 1st September 1973 we propose having a day out to see two films and their museum at the old Greenwich observatory - full details in next months journal.