

JOURNAL OF THE ORWELL ASTRONOMICAL SOCIETY (IPSWICH).

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An Extraordinary General Meeting of the Society was held on the Wednesday May 24th. There was some confusion over the exact meeting place; At 8p.m. Mr. P. Lucas, C. Radley, G. Fussel & C. Hartery were waiting at the main entrance with Mr. Martin Topple, THE SECRETARY, and J. Coolley. Eventually Messrs Fussel, Coolley and Hartery left. Shortly afterwards Mr. D. Bearcroft arrived to tell us that the meeting was being held in the Club Room, not the main hall. The meeting therefore began, chaired by the CHAIRMAN Mr. J. Easty, with the SECRETARY Mr. Martin Topple, the TREASURER Mr. Vernon Wilkes, Mr. David Bearcroft, Mr. P. Lucas and Mr. C. Radley present. This made six persons, the minimum necessary at a general meeting to pass a motion, according to Rule 7c of the Orwell Astronomical Society (Ipswich). The CHAIRMAN read out the rules of the Society clause by clause. After a few suggested amendments the Rules were approved and shall be adopted by the Society.

The attendance for the General Meeting was poor, although notification was given in this Journal. Another Extraordinary General Meeting will be held soon to discuss various matters. Hope for a rather better attendance.

Felixstowe High School has donated a spectrograph, which will be useful mainly for educational purposes.

The following have not paid their subscriptions for the 1972 session of the Orwell Astronomical Society (Ipswich). :-

[redacted] Would they please send the appropriate sum* to the TREASURER Mr. Vernon T. Wilkes at [redacted] Ipswich, tel Ips: [redacted] as soon as possible or, unfortunately the facilities of the Society (including this Journal) will not be available to them, in accordance with clause 4 of the Rules of the O.A.S.I. (IP1 GDU.)

This Journal is for the benefit of ALL members of the Society, not only for reading, but for contributing articles to. All members are invited to submit articles of any sort connected with the Society or Astronomy etc.. Any interesting correspondence could be published for example. Just write it up, and send it to me (ED^v, C.F.R.).

Our thanks are very much due to Mrs. Bell of the Orwell Park School who has very efficiently duplicated the past four issues of the Journal and has helped me a great deal. She has duplicated them at short notice, and on one occasion had the Journals ready 1/2 hour after being handed the stansils.

My attempt to photograph the telescope failed because the flash did not work. However, Mr. Wilkes has some slides of the telescope, and I will see if I can make prints from them somehow.

Many of these Journals are delivered by hand. This consequently causes a certain amount of delay in their distribution since the spare time of the committee members is very much limited. Anybody who wants to receive their Journals promptly (including those to whom Journals have to be posted anyway) could help a great deal by sending half a dozen 2 1/2p or 3p stamps or some Stamped Addressed envelopes to me as soon as possible. The cost for the postage is, at present, being paid out of the pockets of the committee members, since it would otherwise put to much of a drain on the Society's funds. If you can, please send me some stamps, with your name and address. It would help a great deal. (C.F.R.)

* Subscription rates are £0.50p for Members under 18 years of age. £1.00 for adult Members, and £1.50p for family groups. All these are the subscription rates per annum.

Some back-dated copies of this Journal (Feb, March, April, May, June 1972) are available.

It has been brought to my notice that there are a large number of spelling mistakes in this Journal. They are of course (!!!) not accidental at all, they are merely to make sure you are awake. The stensils are, at present, typed by myself, and I do not check them thoroughly. However, I hope that the words seem sufficiently coherent to be understood.

PLANET "X":-

In the last couple of months or so since early May, attention has been focused on the possibility of a 10th planet, or "Planet X"; the "Y" stands for the "unknown" factor and the Roman numeral for 10. It is probably worth going into the background of this. The possibility of a tenth planet has been suspected for many years. Basically there were three possible places for a planet other than asteroids: firstly, closer to the Sun than Mercury (though this is now thought to be unlikely) the ancients theorised a planet which they named "Vulcan", although all searches for it at solar eclipses etc have been fruitless. Secondly, a planet was thought possible exactly over the other side of the Sun from the Earth, which we would never be able to see. However, irregularities in Earth's orbit and the other planet's orbit would have made the planet visible from Earth, so it cannot exist. Finally, a planet could be in an orbit further from the Sun than tiny Pluto.

The original five planets, Mercury, Venus, Mars, Saturn, Jupiter and of course the Earth, have been known since the dawn of Man. Since they are all 1st magnitude or brighter, they are unmistakeable to the unaided eye. They were thought to be the only planets, until 1781.

These six planets all orbit the Sun in the same plane, and direction. They also all rotate about their axes in the same way (excepting Venus, whose day is longer than its year anyway) and the axial tilts of the planets do not exceed 30° from the perpendicular to the ecliptic (the Ecliptic is the plane of the Earth's orbit about the Sun). The Earth's axial tilt, for example, is $23\frac{1}{2}^\circ$.

In 1781 a man called Herschel, William Herschel, discovered a seventh planet. Herschel was a person just like you and me, i.e. a relatively unknown amateur astronomer of British nationality. He saw a greenish disk through his home made telescope one night. At first he thought it was a comet, but after observing it on subsequent nights, and calculating its orbit it was realised to be a planet. It is now called Uranus, and is almost twice as far from the Sun as Saturn. Although it orbits the Sun in the same plane and direction as the rest of the planets, its axial rotation is retrograde, and at times in its orbit its North pole or South pole sometimes points almost directly at the Sun because of its very high axial tilt.

At this point it is worth explaining the term "perturbation". The gravitational pulls of all the planets affect each other to a greater or lesser extent so that the planets are pulled out of their normal near circular orbits round the Sun by a small amount. This effect is known as perturbation. Uranus was observed to be subject to perturbations, just like the other planets. However, even taking the gravitational pulls of the other planets into account, Uranus still wandered from his predicted orbit. This effect was attributed to an eighth planet beyond Uranus.

J. Couch Adams of Cambridge, and J.J. Leverrier of France both, independently calculated the probable position of the planet which is known as Neptune. Due to a misunderstanding with Britain's Astronomer Royal, Adams' results were not used at first, and it was Berlin Observatory, using Leverrier's results, that discovered Neptune, not far from Leverrier's predicted position.

Neptune and Uranus are both very dim, which explains why the ancients did not see them. Uranus reached a maximum brightness of 5.5 so can be seen with binoculars. Neptune is never brighter than mag 8.3, so needs at least a 2" telescope to be seen well.

The orbit of Neptune was observed to suffer from inexplicable perturbations. This led Percival Lowell (of Martian Canal fame) and W.H. Pickering to calculate the position of a ninth planet which could be the culprit. But they never found it. This was because it is much dimmer than they thought. It was eventually found in 1930 with the Lowell Observatory's 13" photographic refractor by Clyde W. Tombaugh, and was seen to be mag 15, very dim.

Pluto is an enigma. It is much smaller than Lowell believed. Its orbit is inclined a great deal from the ecliptic, and its orbit is distinctly oval or elliptic, whereas the other planets have roughly circular orbits. In fact its orbit is so eccentric that in a few years it will have moved closer to the Sun than Neptune; since the two planets orbit in different planes, however, there is no risk of a collision. Pluto never approaches as close to the Sun as Uranus. Pluto can not be massive enough to have caused the perturbations in Neptune's orbit. It could well be that there is another planet bigger than Pluto waiting to be discovered.

Recently an American astronomer has made some calculations to find Planet-X using the perturbations in the orbit of Halley's comet. Comets have a very low mass indeed, consisting almost entirely of luminous gas and dust. So they are affected a great deal by the pulls of planets. He has worked out that Planet X should be at Right Ascension 07 hours, 04 mins, Declination 70° 16' North. This is in the constellation of Cassiopea, a most unusual place for a planet to be. In fact, this Planet seems to have an orbit inclined even more steeply to the ecliptic than Pluto. Coupled with that, it orbits the Sun in the wrong direction i.e. retrograde.

Planet-X is theorised to be three times as massive as Saturn, being slightly smaller than Jupiter. Assuming a size and albedo slightly less than Jupiter's, Planet-X should be about magnitude 14. This would make it visible easily by photographic means, through the society's 10"-refractor if its drive and shutter were working properly. The search is under way by some Observatories for Planet-X, let us hope it is a success.

"What's Up?" The Planets in July.

Mercury and Venus are, at present, too close to the Sun for observation. Mercury is at Superior Conjunction (i.e. on the far side of the Sun from Earth) and Venus is at Inferior Conjunction, (i.e. inbetween the Sun and Earth). Mars, similarly, is at Superior conjunction.

Jupiter is fairly well placed for observation, as well placed as it will be this year. It is in Sagittarius, being visible low down above the Southern horizon after sunset, and setting at about 02 hours 00 min G.M.T. or 3 a.m. B.S.T.. It is magnitude -2.2, very bright. Four of its satellites are visible in a small telescope, and it is worth watching their changes in position from night to night.

Saturn is a morning star rising at about ~~mag +0.3~~ 01 hours G.M.T. or 2 a.m. B.S.T. It is in the constellation of Taurus, and is about mag +0.3. It rises, of course, in the east.

Meteor Showers. There are a number of smaller meteor showers and one substantial shower this month, providing something to keep the meteor watcher active.

- 1) Capricornids, July 10th to August 15th, maximum of 10 per hour on July 25th. It is unfavourable.
- 2) Delta Aquids. is the best shower this month. July 15th to Aug 15th reaching maximum of 38 meteors per hour on July 28th. It has a double radiant in ~~XXX~~ Aquarius.
- 3) Pisces Australids from July 15th to Aug 20th. Max of 12 per hour, not well seen from Britain.
- 4) Alpha Capricornids is favourable. From July 15th to Aug 25th, reaching a maximum of 10 per hour on the 1st August. Yellow fireballs, favourable.
- 5) Iota Aquarids, July 15th to Aug 25th, max 12 per hour on 6th August. It also has a double radiant. It is very favourable.
- 6) Perseids is a very famous meteor shower. Starting July 25th, to Aug 18th, maximum of 65 per hour on August 12th. It has many bright fragmenting meteors with fine trains. It is very favourable.

Meteor watchers should keep their eyes open on the last fortnight of July.

A Total Eclipse of The Sun will occur on the 10th July, visible as a partial eclipse in Great Britain. The track of totality starts at Sakhalin crosses Alaska, Quebec, Nova Scotia, ends in mid-Atlantic. A partial eclipse will be seen from Siberia (North-East), all of N. America, Greenland, Iceland, Scandinavia, and the British Isles. Also in the North Atlantic and Arctic Oceans. Maximum duration of totality = 2min 36secs; eclipse occurs at the moon's descendign node. This eclipse is the 45th in a series of eclipses which began in the year 1179, and after four more total & 23 partial eclipses, the series will end in 2459.

This Month's Star Chart:-

The constellations depicted on this month's Star Chart are low down above the southern horizon (even in summer when they are best seen) from the latitudes of the British Isles. However, if you venture to more southerly areas for your summer holidays e.g. S. France, Italy, Spain, the further south the better (the equator is the ideal place) you will see them better. Being low down, they are affected by the haze in the Earth's atmosphere.

Perhaps the most prominent star is Antares, Alpha α Scorpio. It is magnitude 0.92, 400 light years away and is 3,400 times as luminous as the Sun. It is spectral type M0. Antares is a supergiant star, one of the largest known; it was so named by the Greeks from its similarity to rusty Mars (Ares in Greek) in regard to its colour. It has a diameter of ~~xxxx~~ about 370,000,000 miles, more than the diameter of Mars' orbit about the Sun. Antares has a faint green companion mag 6.8, 3.0" apart. It can be seen in the 10" refractor, or even reflectors of more than 6" aperture.

Star Clusters and Nebulae:-

- 1) M-19 in Ophiuchus (an inch to the left of Antares on the chart) is very low down in the British Isles. It is a fine globular cluster 5' in diameter.
- 2) M-23 in Sagittarius (above Jupiter) is an open cluster 47' in diameter with stars of 9th-13th magnitude. Fine sight in a low magnification.
- 3) M-80 in Scorpio is another globular cluster, above and to the right of Antares). It is some 65,000 light years from the solar system. It is bright and much condensed with a mass of faint stars, conspicuous in a small telescope. It contains a faint variable star, T.
- 4) M-4 is an easily resolved loose open cluster of rather faint stars, 13' in diameter. It is in between Omicron \circ and Antares.
- 5) M-11, the Wild-Duck Cluster is worth mentioning again (see last month's notes). It is $\frac{1}{2}$ " to the right of Lambda λ Aquilae on the chart. It is a spectacular sight, an open cluster.

This month I have included a Greek Alphabet with the star charts. It has been written in two lines, alpha α to Rho ρ , and Sigma σ to Omega ω . Most stars (the major one anyhow) have a Greek letter and a constellation name as an official classification, as well as an arabic derived name often. For example, α Cygni = Alpha of Cygnus (official designation), also has a name :- Deneb. &c.

YOU ARE INVITED TO A SPECIAL GENERAL MEETING OF

THE ORWELL ASTRONOMICAL SOCIETY TO BE HELD ON THE:-

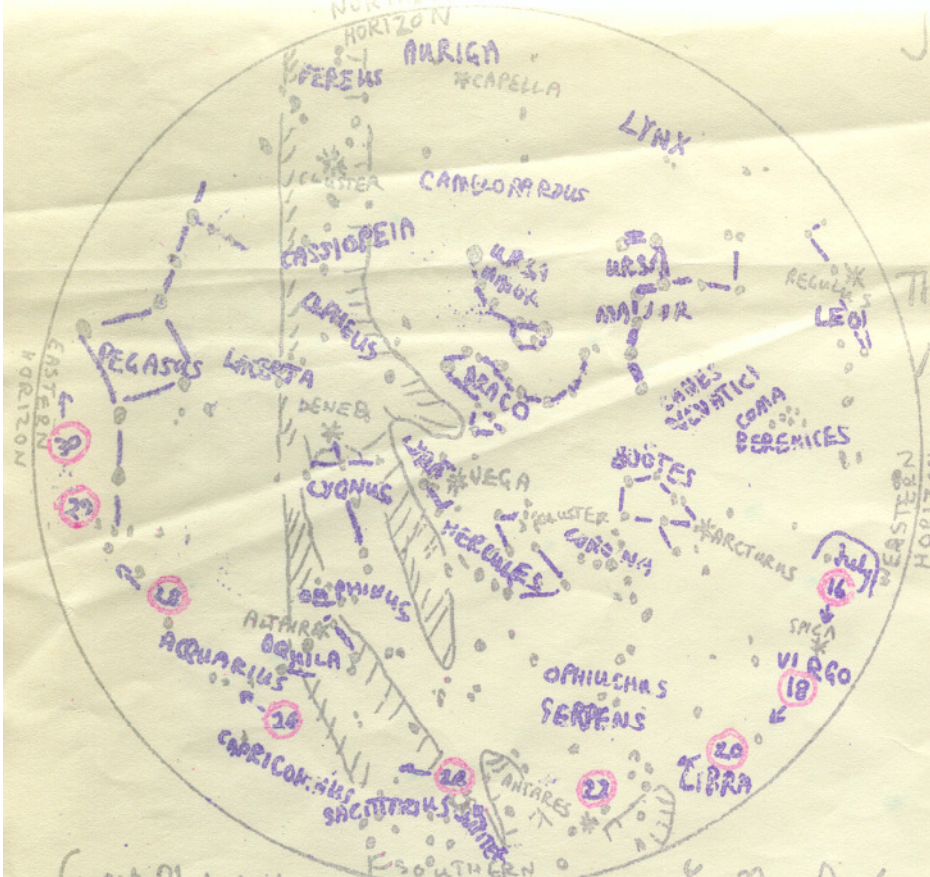
Wednesday July 12th 1972

8 p.m. B.S.T. AT ORWELL PARK SCHOOL
(NACTON)

THE COMMITTEE

July night sky as seen at:-
 2300 GMT at start of July
 2200 GMT in mid July
 2100 GMT in late July
 2000 GMT in mid August

The moon (red disk) is shown for 16-30 July

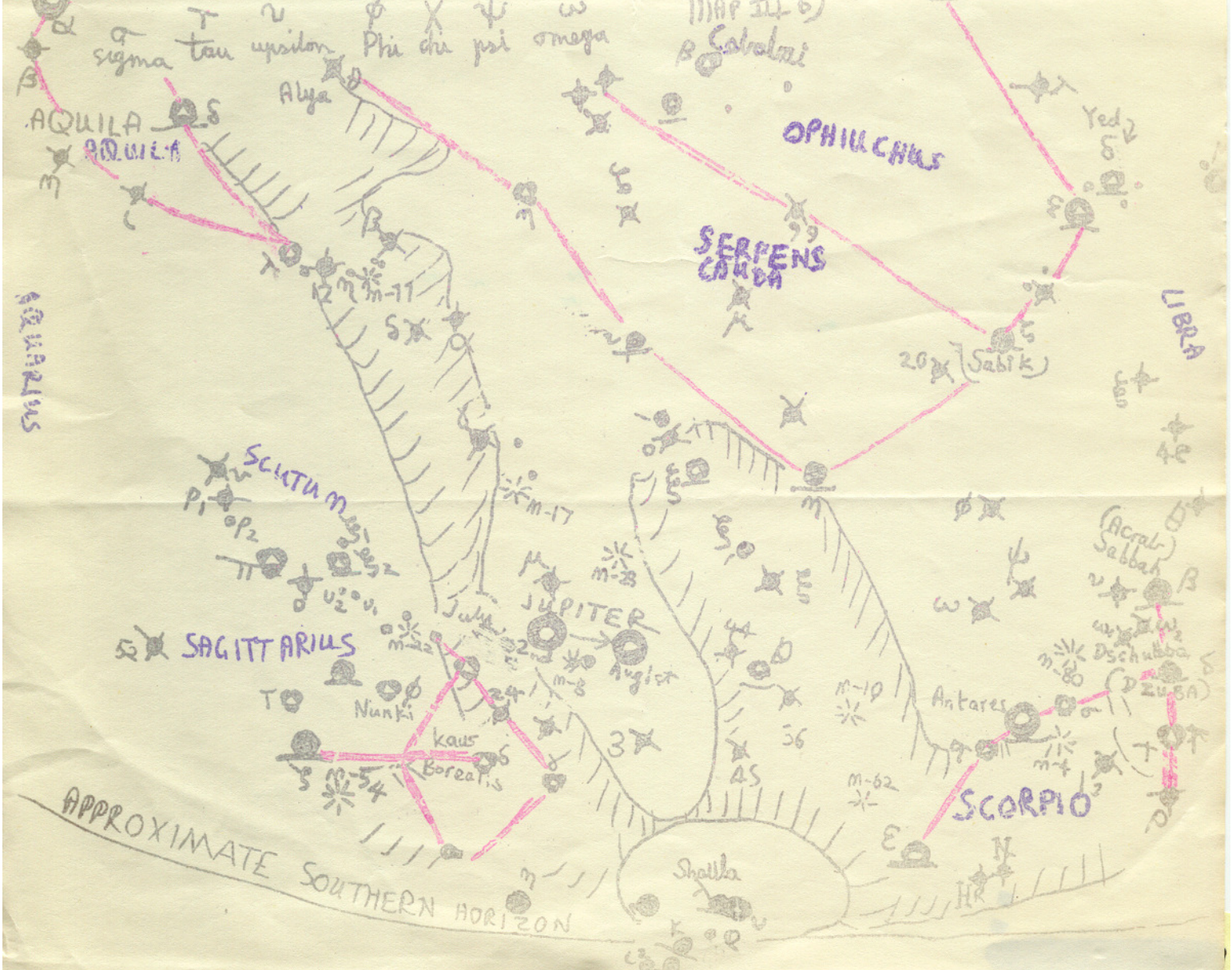


Map III a)

MAGNITUDE SCHEME

1		1 1/2	
2		2 1/2	
3		3 1/2	
4		4 1/2	
5			
& under			

Greek Alphabet: alpha beta gamma delta epsilon zeta eta theta iota kappa lambda mu nu xi omicron pi rho
 alpha beta gamma delta epsilon zeta eta theta iota kappa lambda mu nu xi omicron pi rho



APPROXIMATE SOUTHERN HORIZON

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