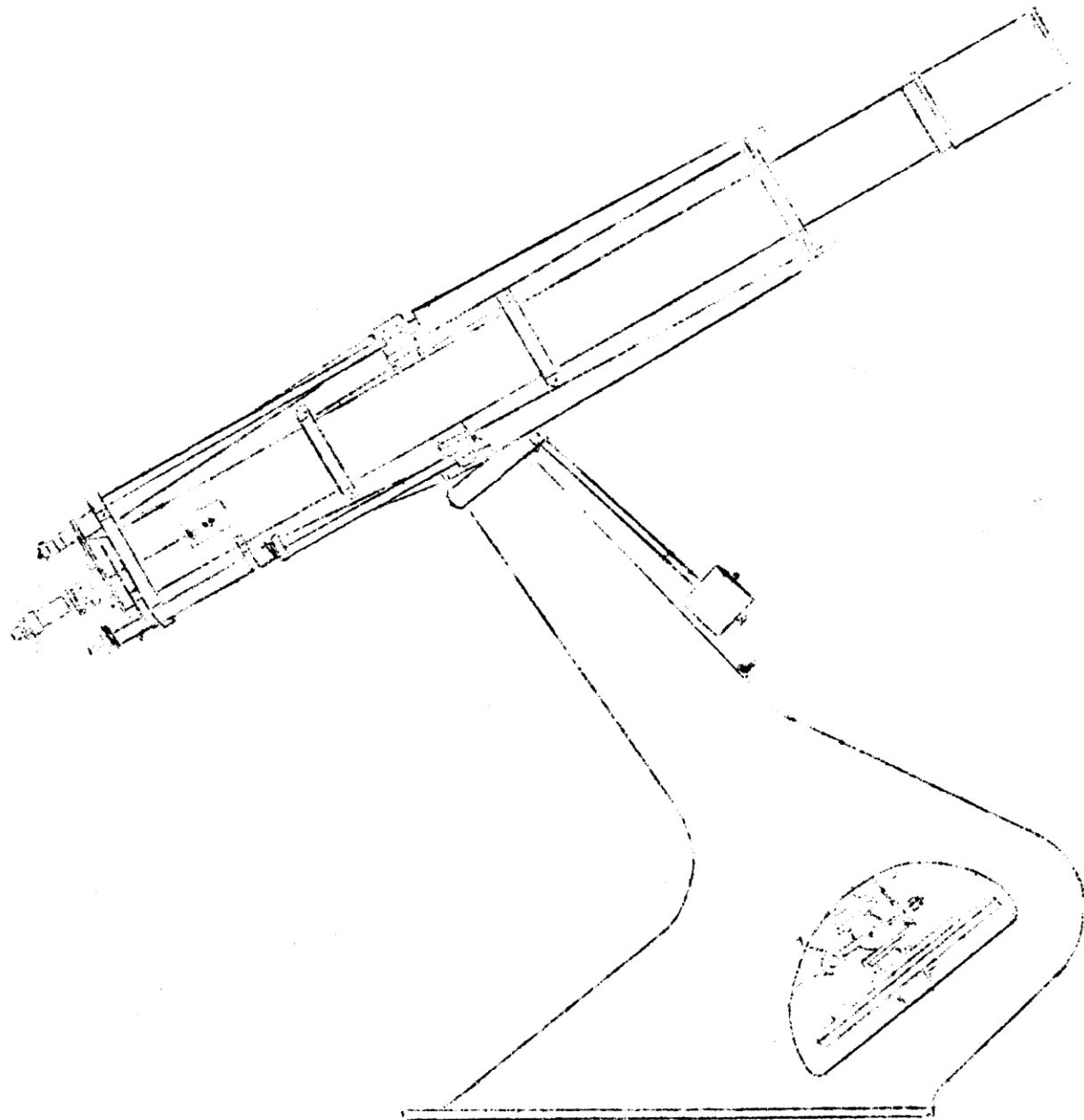


JOURNAL of the
ORWELL ASTRONOMICAL SOCIETY (IPSWICH)

MARCH 1977.



Editor: Mr. M. Howe,
BURY ST. EDMUNDS,
Suffolk.
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THE NIGHT SKY as seen from Suffolk this month.

Leo is the most prominent feature of the late-evening sky at the moment. To the south and west is the head of Hydra, the Serpent. This long, straggling constellation begins just below Cancer and ends some 7 hours of R.A. later, near Libra. Overhead is the head of Ursa Major, which is on the business end of the Plough.

THE SUN

Sunrise is at 06h50m U.T. at the beginning of the month and 05h40m at the end. Sunset occurs at 17h40m and 18h30m respectively, the Sun moving during the month from Aquarius to Pisces. Synodic Rotation no. 1652 commenced at Feb. 24.52d and finishes Mar. 23.84d.

Heliographic Co-ordinates at Noon UT

	P	Bo	Lo		P	Bo	Lo
Jan. 3	-22.0°	-7.2°	274.6°	/ 18	-24.9°	-7.2°	77.0°
" 8	-23.2°	-7.3°	208.8°	/ 23	-25.5°	-6.9°	11.0°
" 13	-24.1°	-7.2°	142.9°	/ 28	-26.0°	-6.7°	305.1°

THE MOON - Phases

Full Moon	Mar. 5d17h 13m U.T.
Last Quarter	Mar.12d11h35m U.T.
New Moon	Mar.19d18h33m U.T.
First Quarter	Mar.27d22h27m U.T.

Occultations

Star	Phase	Mag.	Time (U.T.)
1183	D	7.2	2d03h15.4m
1886	R	5.7	8d01h46.3m
2159	R	5.3	10d03h13.9m
581	D	6.9	24d19h43.8m
*1106	D	3.6	28d20h39.3m
1237	D	6.4	29d22h07.6m
1359	D	5.1	31d00h09.2m

D=disappearance, R=reappearance. Stars are listed according to Zodiacal Catalog (ZC) numbers and * denotes double star.

THE PLANETS

Mercury is in Superior Conjunction on the 16th. when its geocentric distance will be 1.4 AU.

Venus reaches its greatest brilliancy of mag. -4.4 on the first of the month in Pisces. Its apparent diameter will then be c.40".

Mars is still pretty dim (mag. 1.4) and is not very impressive through a telescope either.

Minor planet Ceres is at opposition on the border of Virgo and Coma B. at mag. 7.4 this month. Until recently this planet was thought to be about 400 miles in diameter but is now thought to be closer 1000.

Jupiter, still in Taurus, is now mag. -1.7 and getting dimmer, setting at midnight.

Saturn is still in Cancer at mag. 0.2-0.3.

Uranus is involved in an appulse on Mar. 10 at 20h55m U.T. It will come within one arc-second of star SAO 158687 (mag. 8.8) and its position at that time will be R.A. 14h38m, Dec, -14.9°. It does not rise, however, till 22h30m.

FIREBALL

A brilliant Quadrantid fireball was recorded photographically by W.E. Pennell between 05h15m and 06h21m U.T. on January 3rd. The fireball reached about mag. -10, and Director of the BAA Meteor Section, Keith Hindley, would like to hear from anyone who witnessed the event visually (contact [redacted], Dringhouses, York, 'phone York [redacted]).

- This quiz has been compiled especially for the OASI Journal by Mr. S.G. Harvey.
- 1) What theory was outlined in the De Revolutionibus Orbium Coelestium?
 - a) The Ptolemaic Theory; b) The Copernican Theory; c) Gravitational Theory.
 - 2) What was the name of the Apollo 15 Lunar module:
 - a) Falcon; b) Aquarius; c) Odyssey?
 - 3) The polar and equatorial diameters of the Earth vary by:
 - a) 12 miles; b) 112 miles; c) 27 miles.
 - 4) Which two heavenly bodies have the most marked effects on the Earth's tides:
 - a) Moon; b) Sun; c) Mars?
 - 5) What is the eccentricity of the Earth's orbit about the Sun:
 - a) 0.2; b) 0.01; c) 0.017?
 - 6) Which two pairs of Angstrom readings correspond to the wavelength of 'visible light':
 - a) 3100-7600 A; b) 2150-7550 A; c) 3900-7600 A?
 - 7) One of the following Solar characteristics is wrong. Which?
 - a) Sunspots; b) Flares; c) Shoots; d) Granulations.
 - 8) Which of the following asteroids was discovered in 1847:
 - a) Flora; b) Ceres; c) Eros; d) Harmonia?
 - 9) Which of the following is a natural satellite of Mars?
 - a) Amalthea; b) Umbriel; c) Hades; d) Phobos.
 - 10) Theta Orionis is ...
 - a) An optical double; b) a rapid binary; c) A multiple star.
 - 11) Using Edwin Hubble's Galaxy classification system, what type of Galaxy is ours:
 - a) Sb; b) E5; c) SBc; d) E0?
 - 12) Rocket fuels which ignite by themselves on meeting each other are termed ...
 - a) Caustic; b) Hypergolic; c) Stygenic.
 - 13) NERVA stands for ...
 - a) Nuclear engine for rocket vehicle application;
 - b) Nuclear engine for retro vector after burn.
 - 14) Who first measured the velocity of light:
 - a) Patrick Moore; b) Aristarchus; c) Ptolemy; d) Ole Romer?
 - 15) The first American astronaut in space was...
 - a) Alan Shepard; b) Neil Armstrong; c) Yuri Gagarin; d) Tsiolkovskii.

EXO BIOLOGY pt.1

"Biology, n. Science of physical life, dealing with the morphology, physiology, origin and distribution of animals and plants.
 "Exo- in comb. = Gk exo, outside."

Thus the science of exobiology may be defined as that branch of science dealing with the morphology, physiology, origin and distribution of extra-terrestrial life, although of course this assumes as a basic prerequisite that such life does indeed exist. Owing to the nature of the study and Man's limited knowledge of science, it is necessarily a highly speculative one especially when it comes to morphology and physiology'. This article will therefore concentrate on the "origin and distribution" of extra-terrestrial life, these being the more closed (i.e. not wildly speculative) and definable aspects of the subject.

1 - THE ORIGIN OF LIFE

It may be said that we owe our existence to a cataclysmic event which occurred in our own Galaxy at some time before the formation of the Solar System. For, the very elements from which we are made were formed deep inside a supernova where much of the available hydrogen and helium had been used up and a more complex chain of nuclear reactions than the proton-proton chain had been instigated. These involved the fusion of elements such as helium and lithium to form heavier elements like carbon; later on this too was used as a nuclear fuel, and the escalating chain continued

untill all the 92 elements which we know today were formed. In the following cataclysmic explosion which signalled the end of this star much of this material was ejected and found its way, together with matter from other similar supernovae, to a region of the Galaxy on the Orion arm where a nebula, a small cloud of gas 'dust', was condensing, eventually to form a star called the Sun.

As the cloud condensed several smaller condensations, like eddies in a river, started to form at various distances from the Sun. Once this central condensate had reached sufficient density it would start to rotate and then to radiate weakly in the infra-red. The smaller aggregates would also be rotating and 'clearing up' the newly-formed Solar System of its debris from the original cloud, by gravitational attraction. After perhaps a few million years the Sun would have reached the temperature required for thermonuclear (fusion) reactions to begin at its centre.

The large planets such as Jupiter and Saturn would retain much of their original hydrogen from the nebula whereas the smaller 'terrestrial planets' would only be able to hold on to heavier elements such as carbon and oxygen.

Abiogenesis

As the Earth condensed it heated up, but later cooled down once it had reached a stable density. As it did so, simple molecules such as CH_4 , NH_3 , and H_2O formed; the water, first formed as steam, eventually cooled the molten Earth, probably after some millions of years, and the methane (CH_4) and ammonia (NH_3) formed what is known as a reducing atmosphere (one containing hydrogen compounds).

In 1953 S.L. Miller at the Chicago University conducted an experiment in which he passed an electric current through a mixture of methane, ammonia and hydrogen over water. After about a week the mixture was analysed and found to contain several amino acids and fatty acids, thus showing for the first time that abiogenesis (production of complex organic compounds without life) was possible. These compounds are very important since fatty acids are building blocks of fats, and amino acids can form long chains and eventually proteins.

It is known that there was probably much lightning in the atmosphere billions of years ago, as well as plenty of light energy from the Sun and probably some geothermal energy as well. In fact the experiment was originally designed to test the theory of Oparin and others that life could have arisen in such a manner. However, even amino acids are still a long way from life, so what was the next step on the way to living organisms?

FOR SALE

Component parts of 10" reflector including mirror - (flat in cell). Also Italian made $2\frac{1}{2}$ " refractor, seller can bring for viewing + advance approx. offer preferred. Contact Alan Buxton, 56 Macmurdo Rd., Eastwood, Southend, Essex.

ANSWERS TO QUIZ

	Mks		Mks		Mks
1) b	3	6) c	3	11) a	4
2) a	3	7) c	4	12) b	3
3) c	3	8) a	4	13) a	2
4) a&b	3	9) d	4	14) d	4
5) c	3	10) c	3	15) a	4

Total marks possible: 50

You may or may not know about the exhibition at the Art Gallery, High Street, Ipswich, next door to the Ipswich Museum, which opened on 5th February. It is still on there and is on the theme which is of interest to astronomers. It is called "Wave Motion" and is a science exhibition loaned by the London Science Museum. It has eight stands entitled:

1. Mechanical Generation of Wave Motion
2. Sound Waves
3. Electromagnetic radiation wavelengths
4. Visible Spectrum
5. Reflecting and bending light waves
6. Wireless Waves
7. Interference between waves
8. Polarization light waves.

I had a look round and found it very interesting. There are some good optical gadgets to play around with and some unusual optical effects are set up for you. Something different is visible through each of the eyepieces dotted around the hall. I found exhibits 4, 5, 7 and 8 the most fascinating, I think you will too, but do not listen to my opinion, go and look around yourself. It's FREE.

The exhibition will be open until April 11th, the hours are 10a.m. to 4.45p.m. Monday to Saturday.

METEOR SECTION. by Mr. D. Barnard.

The Sporadic Meteor Count held on Saturday 19th February was attended by only three members although the sky was perfectly clear all evening.

There are no major meteor showers this month but we hope to have a SPORADIC METEOR COUNT on SATURDAY 26th MARCH starting at 9p.m. Please come along and meet outside the Golf Hotel, Foxhall Road at 9p.m.

On Monday 21st February I was round Roy Cheesman looking through his reflector when we saw a fireball at 9.35p.m. It started in Orion and finished after about 7 seconds near Arcturus. If anybody s w this please contact me.

NEW SECTION DIRECTORS.

We have a new section starting at the observatory under the title of 'Variable Stars' This section will be under the directorship of Mr. Robert Manning [redacted], Ipswich, Telephone Ipswich [redacted] and his assistant will be Mr. M. Siggers, [redacted], Ipswich. As the O.G. of the telescope will be out of the telescope for a couple of weeks during March they will start on Friday 1st April and run their nights every other Friday. They are, however, having a variable star night at the observatory on WEDNESDAY 23rd March which normally is the Solar, Lunar and Planetary Section night but on that day the director Mr. R.M. Cheesman is otherwise engaged. The Variable Stars Section' will start at 8p.m.

ARTICLES FOR THE JOURNAL.

If you have any articles, comments or views and would like them published in our monthly Journal please send them direct to the Editor, Mr. Mark Howes, as soon as you can towards the beginning of the month. If anything important comes up which you would like published in the Journal and it is after the 18th day of the month send it direct to Mr. R.M. Cheesman, [redacted], Ipswich.

On Thursday 3rd March after a visit to the Observatory by 5th Rushmere Scout Pack we are taking the Object Glass out of the 10" refractor at Orwell Park. It will then be transported to Mr. H. Dall of Luton by Mr. D. Bearcroft for refiguring and cleaning on the two inside surfaces of the lens. The O.G. will be collected by Mr. Bearcroft on the 18th March and put back into the telescope most probably on Saturday 19th March.

As many members remember we sent the O.G. to Mr. Dall a couple of years ago who cleaned up the two outside surfaces of the O.G. but did not touch the two inner surfaces of the O.G. Between these two surfaces a slight film of dust and water vapour which has settled over the last 100 years has left a slight misty patch, which Mr. Dall will clean out. We hope that on the O.G.'s return to the telescope we will be able to see much further right down to 14.2 magnitude with much clear images.

If you would like to come along and see, or even help, to get the object glass out of the telescope and put back in again please come along. We will start getting the O.G. out at about 9p.m. on March 3rd and be putting it back about 7.30p.m. on the 19th.

Society's Bank.

For the records the committee will be transferring our Bank Accounts from Lloyds Bank, 132 Bramford Road, Ipswich to Lloyds Bank Cornhill Ipswich with effect from 1st March, 1977.

LECTURES:

In spite of the heavy title 'The Mythology of Quasar Redshifts' the lecture by Dr. Simon Mitton of the Institute of Astronomy, Cambridge was very well attended by not only our members but also by the general public on Friday 18th February.

OUR NEXT LECTURE, which is the last one of the 1976/1977 programme is by one of our members Mr. Robert Markham, B.Sc. of the Ipswich Museum. This lecture is a continuing part of the lecture he gave to us last year on 'The Geology of the Solar System' and again it is held in conjunction with the Ipswich Geology Group. This lecture is on Friday 25th March starting at 8.p.m. at the Friends Meeting House, Fonnereau Road, Ipswich. Again all members, friends, in fact everybody is welcome to this illustrated talk to which admission is FREE.

B.A.A. Meteor Section Meeting at Imperial College London on April 2nd.

If you would like to come along to this meeting on Saturday 2nd April, 1977 please contact either Mr. D. Barnard [redacted], Ipswich 'Phone Ipswich [redacted] or Mr. A. Smith [redacted], Ipswich 'phone Ipswich [redacted] who are arranging transport. All it will cost you is a donation towards petrol and your food.

WHAT'S UP? Supplement by Charles Radley.

You've seen the planet Venus haven't you? - you cannot miss it really! But have you seen Mercury?.....neither have I! But you have an excellent opportunity for catching the elusive little planet. On the week-end of March 27th is a conjunction where Mercury is 8° south (below) of Venus. Hence having found Venus it should be relatively easy to find Mercury. It is worth opening up the dome for a few evenings to have a go. Here is a diary of the weekend's events:-

- Friday 25th March: Lecture Geology of the Solar System by Mr. R. Markham
- Saturday 26th " A convenient evening to view the conjunction
- Sunday 27th " THE BEST evening to view the conjunction
- Monday 28th " A very good " " " "

On March 27th at 19hrs U.T. Mercury will be 8° south of Venus, below are the essential predictions (taken from the B.A.A. Handbook)

<u>PLANET</u>	<u>R.A.</u>	<u>DEC.</u>	<u>ELONGATION</u>	<u>MAG.</u>	<u>EVENING SETTING TIME (U.T.)</u>
Venus	1h08m	+16°	18°	-4	20hrs 25m
Mercury	1h08m	+8°	10°	-1.2	19hrs 20m
Sun	0h26m	+3°	-	-	18hrs 25m

<u>PLANET</u>	<u>PHASE</u>	<u>DIAMETER</u>
Venus	0.1 (Crescent)	55"
Mercury	0.9 (Gibbous)	5"
Sun	FULL!!	32' 07"

Let's hope the weather is good - see you up the dome that weekend.

programme for March, 1977.

AT ORWELL PARK OBSERVATORY, NACTON.

MONDAYS from 7.30p.m. General Observations Section.
 Director Mr. N. Gage, [REDACTED] Felixstowe, tel Felixstowe [REDACTED]
 and Mr. S. Flory, [REDACTED], Ipswich, 'tel Ipswich [REDACTED]

28th February
 21st March
 28th "

WEDNESDAYS from 7p.m. Solar Lunar & Planetary Section
 Director Mr. R.M. Cheesman, [REDACTED], Ipswich

2nd March
 16th " (although the O.G. will be out of the telescope
 we will open up this night for repairs)
 30th "

WEDNESDAY Vairable Stars Section. from 8p.m.
 Director Mr. R. Manning [REDACTED], Ipswich 'Tel Ipswich [REDACTED]
 and Mr. M. Siggers, [REDACTED], Ipswich

23rd March

THURSDAYS from 8p.m. Double Stars Section
 Director Mr. D. Bearcroft, [REDACTED], Ipswich 'tel [REDACTED]

31st March

VISITS TO THE OBSERVATORY arranged by Mr. R.M. Cheesman.

THURSDAY 3rd March, visit to observatory by 5th Rushmere Scouts at 6.45p.m.

*** After this meeting which will end at approx 8.45p.m. we are taking the Object Glass out of the telescope to send it to Mr. H. Dall of Luton. The O.G. will be cleaned on the inner two surfaces and will be returned to Ipswich on March 18th. It will be put back into the telescope on Saturday 19th March at about 7.30p.m. Come along and help on these two occasions if you want to.

METEOR SECTION. Director Mr. D. Barnard, [REDACTED], Ipswich, tel. [REDACTED]

SATURDAY 26th MARCH SPORADIC METEOR COUNT

Meet outside the Golf Hotel, Foxhall Road, Ipswich at 9p.m.

LECTURE at the Friends Meeting House, Fonnereau Road, Ipswich.

A lecture entitled 'The Geology of the Solar System' by Mr. R. Markham, B.Sc. will start at 8p.m. at the Friends Meeting House on FRIDAY 25th MARCH.

EVERYBODY WELCOME ---- ADMISSION FREE.

Note; there are not so many nights at the Observatory this month because of the O.G. being taken out of the telescope so please attend those nights which are scheduled. We hope when the O.G. is returned to the telescope we will be able to get down to stars at mag. 14.2!

ORWELL ASTRONOMICAL SOCIETY (IPSWICH)
in conjunction with the Ipswich Geological Group

presents

an illustrated talk by Mr. R. Markham B.Sc.

entitled

THE GEOLOGY OF THE SOLAR SYSTEM

on

Friday 25th March, 1977

at

The Friends Meeting House
Fonnereau Road,
IPSWICH

AT 8 p.m.

ADMISSION FREE - ALL WELCOME

Secretary: Mr. N. Stow,
13 Ladywood Road,
IPSWICH,
Suffolk.