THE

NOTTINGHAM ASTRONOMICAL SOCIETY

BULLETIN

NO. 45 NOVEMBER, 1950

"Formed in 1946 to provide a rallying point for residents of Nottingham and District interested in the night sky"

COMMENT

Last month's Annual general meeting resulted in some important changes of office. Dr. Whitaker has been forced to give up the Treasurership and Mr. Halley also finds he is unable to continue as our Secretary. Both these gentlemen have served the Society well and they merit our gratitude for undertaking their respective offices until the present. When good men go, it is always a difficult task to replace them; but we feel that Mr. G.H.T.BUTLER, the new Secretary, will prove to be an able successor to Mr. Halley.

One of the difficulties in the production of the Bulletin in the past year has been that no less than three members have been involved in its production. As these three volunteers live in opposite parts of the town, it was felt that their efforts could well be combined and undertaken by one man. This has now been effected by the appointment of A.J.Ashmore as Editor and this issue is the first to be produced under the new arrangement.

Attention is drawn to the announcements on another page concerning an outing to OXFORD UNIVERSITY OBSERVATORY and the OPEN-AIR MEETINGS.

THE SKY FOR NOVEMBER

The Julian Date for November 0.0 is 243 3585.5. For other dates add the date.

The Sun

Solar Rotation No. 1299 began on October 16 and Rotation No. 1300 begins on November 12. Spots are now much smaller but remain very frequent, a reminder-even at this late period in the solar cycle-of the extraordinary strength of the recent maximum.

The Moon

Moonlight interference occurs a little after mid-month and both beginning and end are dark. Lunation No. 345 begins with the new moon on November 9.

Two occultations of fairly bright stars occur before midnight.

November 20	Upsilon Piscium (mag. 4.4)	Disappears	$8^h\ 45^m$ GMT
November 26	136 Tauri (mag. 4.5)	Disappears	6 25
November 26	136 Tauri (mag. 4.5)	Reappears	7 09

(Computed by F. Jackson)

The Planets

Only Jupiter and Uranus are on effective view, but Saturn, with rings now widening, and Neptune can be seen in the dawn sky.

Jupiter is still well placed and some excellent views of the planet and satellite system have been seen at the open-air sessions.

Uranus can be followed with the unaided eye and is easy in binoculars. The large scale Handbook chart is desirable in this rather crowded part of the sky, but Upsilon Geminorum is a useful beacon.

Meteors

Quite apart from the well known showers, meteors are more frequent in the Autumn months. The scattered Taurid showers will produce a few meteors in the first part of the month, and there may be a very few Leonids (bright, fast travelling meteors) on the 16th, best seen around or after midnight.

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The Sky for November (continued)

Algol

One minimum has already been observed this year by Mr. W.E. Fox. A November minima before midnight occurs on the 21st at about 8^h GMT. (A.W.L.H.)

(NOTE - By error both the times of Algol's minima above and the occultations on the front page have been stated to be GMT. In both cases, they should read GMAT.)

THE SKY FOR DECEMBER

The Julian Date for December 0.0. is 243 3615.5. For other dates add the date.

The Sun

Solar Rotation No. 1300 began on November 12, and Rotation No. 1301 begins on December 9.

There is little to add to recent notes of spot activity, but at this season of short daylight, two-inch disks, or even notes of what is visible are extremely useful.

The Moon

Lunation No. 346 begins with the new moon on December 9, and moonlight interference before midnight is about mid-month. Lunation numbers (Brown's series, which began with the first new moon in 1923) are becoming increasingly used as a chronological reference system for all kinds of lunar observation.

Two occultations on Thursday, the 21st December, are of interest in taking place in very strong twilight. 27 Tauri (mag. 3.8) disappears at 3^h56^mGMAT and 28 Tauri (mag.5.2) disappears at 4^h05^m. Circumstances for Nottingham computed by B. Emerson.

The Planets

Jupiter is disappearing into the sunlight and is still easily identified as the brightest of the stars in the south west. Uranus, drifting slowly westwards over the Gemini stars is easily visible almost all night with binoculars.

Saturn is coming round again and rises before midnight by the end of the month. It is becoming increasingly badly placed in the sky and is not likely to be seen at open-air meetings until March.

Meteors

The Geminid shower, with its radiant point near Castor, can be relied upon to produce a good crop of meteors on the 11th, 12th and 13th (December) in a completely dark sky. The best vantage point in the early evening is one looking east. The Ursid shower is lost in the full moon.

Algol

Minima before midnight can be observed on the 11th at about 10^hGMAT, and on the 14th at about 6^h30 GMAT. (A.W.L.H.)

THE PRESIDENTIAL ADDRESS 1950

"Astronomy and Religion"

by

A. J. Ashpole, F.R.A.S.

Considerable popular interest has been aroused by Mr. Fred. Hoyle's recent broadcast lectures on astronomy - or, to be more precise - the nature of the Universe.

I feel this may be an opportune time to utilise my Presidential Address in surveying the general astronomical picture and its relationship to religion.

For the benefit of those who have little or no knowledge of astronomy, it is necessary to begin with a brief account of the structure of the Universe as we know it at present.

The Universe

We live on a planet spinning on its axis and revolving round the Sun along with eight other major planets, over a thousand minor planets - which are considerable smaller than the Earth -, sundry comets and an immense number of small particles of stone and iron which occasionally appear to our sight as meteors.

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Astronomy and Religion (continued).

This miscellaneous collection of objects form the retinue, as we may call it, of our parent Sun - itself an intensely hot gaseous globe in space with a thousand times the bulk of the whole of its retinue together.

The Sun, a giant generator of light and heat, is but a medium-sized star among a hundred, thousand million stars which form a kind of colossal catherine wheel, known as the Galaxy. This Galaxy is so immense that a rocket travelling at the speed of light ($7\frac{1}{2}$ times round the Earth in 1 second!) would take 20,000 years to reach the hub from our position a third of the way from the hub to the edge of this 'catherine wheel'. To cover the whole diameter would take around 100,000 years.

This Galaxy, of which our Sun is a humble member star and in which the Earth is totally insignificant, is but one of another great system - a super-galaxy consisting of thousands of galaxies like our own. The world's great telescopes have only managed to penetrate a small corner of this super-galaxy or Universe as it should be called, and so far, in whatever direction in space the giant telescopes point more and more galaxies are found.

In the last fifty years, the remarkable suggestion has been put forward that the whole immense structure is expanding and at such a rate as to be really exploding.

The Bible

How does biblical history accord with modern scientific beliefs? Of course, the Bible is not a book on Astronomy but in so far as it refers to the Earth's beginnings it implies that the Earth was created in the year 4004 BC. This is quite at variance with geological as well as astronomical knowledge, which puts the Earth's age as some 2,000 million years, but I dont think many members of the public will worry about it. The most devout churchman will concede that the Bible is not intended to be an accurate historical record. My personal view is that the Bible is a collection of statements compiled by the wise men of the day to explain hitherto unexplained happenings to their uneducated fellows and passed on, orally at first and eventually in writing, from generation to generation.

I have no time to discuss this aspect of the subject fully but it does seem that, while the factual basis of certain events described in the Bible is difficult to accept, the meaning of those statements concerning the origin of the Earth can be made to agree with modern scientific knowledge without much distortion.

GOD

With even a slight knowledge of the almost inconceivable vastness of space and the grand scale on which the Universe is built, it is difficult to believe that even our all-powerful God can watch over us with quite the same detail as is implied in our chosen religion. It seems to be stretching our conceptions to the limit to accept that God chooses this paltry planet out of a total of nine in our Solar System as the only one for mankind to inhabit. Furthermore, although astronomers are not unanimous on this point, most agree that the planets were born out of the Sun or a former companion of the Sun as a result of an unusual event which must happen so rarely that, in the entire super-universe, planets must be far and far between and inhabited planets almost as rare as stars in space itself. So far as knowledge goes, life or, intelligent life, appears to have a minor role in the Universe which is populated almost entirely by giant, intensely hot balls of fire, the clouds of gas yet to be formed into stars, and little else but space of unthinkable extent. In all this great ocean of space, can God look down on us on our little single drop of water, as to speak? It is hard to believe so.

It would be quite wrong to imply that astronomers are heathens or that all share these views but the questions that the most devout of us are tempted to ask are "If life is the supreme purpose of creation, why is it so scarce?" and "How does God, with His great powers, attend to we few believers on a totally insignificant planet?"

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Astronomy and Religion (continued)

No-one with education would attempt to decry the general teachings of the Bible. We all must accept that the ten commandments are the firm basis for a decent, good and true way of life. If all the peoples of the world would accept that view there could be no strife.

The Supreme Being

The doubts against total acceptance of God's abilities which some people (as well as I) have, can be removed if we consider God as the Supreme Being and creator of the Universe and not so much the guardian of mankind. For some Supreme Being there must be to have set in motion the primeval matter many millions of years ago which resulted in the successive formation of galaxies and individual stars which in some cases led to the significant , accidental birth of planets.

The Supreme Being has caused an enormous number of suns (stars) to emit vast quantities of energy in the form of light and heat for countless years. Since it seems quite likely that few stars have attendant planets and even fewer stars have planets on which life is theoretically possible, I cannot help wondering to what purpose this energy is being radiated away into space.

Perhaps the biggest question we can ask is one which will never be answered. It is "When one reaches the farthest depths of space, there is a barrier of some kind. What is beyond?" There must be an end somewhere. And yet what can be beyond that end? It is questions like this which make me appreciate more than anything else how limited human intelligence and our powers of conception are. It makes most astronomers appreciate a little of the power and extent of the Supreme Being - the master mind behind the whole Universe. That we humans are playing any part at all in it seems almost absurd.

Summary

To summarise the position, the two - Astronomy and Religion - are not irreconcilable and a slight modification of our views of God's nature allows us to own to our completely insignificant place in the scheme of things and to marvel at the greatness of the Supreme Being who has designed and executed an awe-inspiring panorama of grandeur. Even to contemplate a tiny fragment of our own galaxy of stars from our vantage point on this Earth gives us an impression of such beauty and splendour that we must bow our heads in acknowledgement of the privilege of seeing part of the greatest creation of all - the Universe.

(Note: Most of the opinions given are my own since I cannot presume to know the private views of all astronomers. I have merely expressed what many must have thought at some time or other. Of course, astronomers are human and just as firm, or otherwise, in their religious beliefs as anyone else.)

REPORT OF AN
OBSERVATION OF THE OCCULTATION OF THE PLEIADES BY THE MOON ON
SATURDAY, 28TH OCTOBER, 1950
by J. RIGWARDS

Telescope: 4" Refractor Powers: 58x and 116x
Commencement of Observations: 4^h C^m U.T.
Finish of Observations: C C U.T.
State of Atmosphere: Frosty, temp. 30°F, wind, nil. Visibility good and appearance of the images moderately good.

General Description: The Moon, aged 17 days, as observed at 4^h0 am. was well placed at a high altitude, and had already occulted some stars of the Pleiades. The first star to disappear, as seen by self, was 20 Tauri, mag. 4.0, this occurred at approximately 4^h U.T. All the disappearances of stars behind the disc of the Moon, took place at the bright limb. At $4^h15^m.5$, 17 Tauri, mag. 3.8, re-appeared at the opposite limb. Then at 4^h32^m, Eta Tauri, or Alcyone, the principal and brightest star in the Pleiades, mag. 3.0, disappeared

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The Occultation of the Pleiades (continued)

at the bright limb. The outstanding feature of this particular occultation, viz. Sun Spots, and the absolute steadiness of the atmosphere, when it was possible to see the diffraction rings practically right up to the limb of the Moon's edge, in spite of the brilliance of the lunar disc. After the lapse of an hour, though some fainter stars of the group had been occulted and others had re-appeared, the Tauri re-appeared at $5^h38.5$ and the striking feature of the re-appearance at the dark limb was that the stars popped into sight instantaneously, at a small distance from the terminator, due to the fact that the Moon was about 3 days past full. Attention was drawn to the terminator, as a result of the re-appearances, where a magnificent row of craters was in view. They included Longomontanus, Vendelinus, Irotteslep, Fumerius and Petarius. The first two and the last two are walled plains of 80 to 100 miles in diameter, and the sight and the excellent definition tempted me, after the most important members of the Pleiades had been observed, to view the terminator with higher-powered eyepieces than had been used to observe the occultation. Occultations are best observed with a low power, so that the whole disc of the Moon can be seen at once in addition to a portion of the surrounding sky. In the present observations, this was found to be the best since the Moon could be seen placed amongst the familiar group of the Pleiades and the rate of progress of the Moon through the sky is quite noticeable and apparently enhanced than when usually seen.

(Submitted by the Director of the Observing Section)

ASTRONOMICAL NEWS AND NOTES

Radcliffe Observatory

Members of the Society who visited the Cambridge University Observatory in October, 1947, will be interested that the then Assistant Director of that Observatory, who was our guide for the afternoon, has been appointed Director of the Radcliffe Observatory at Pretoria, South Africa, in succession to Dr. L. Knox-Shaw.

From the same Observatory comes news that the 74" reflector is operational although only as a simple Newtonian reflector. The telescope was ordered before the war and eventually will be adaptable for use as a Cassegrain reflector as well. After a lapse of 10 years the main mirror arrived at Pretoria in 1948 but the auxiliary mirrors - which will be used to reflect the light down through the main mirror of the Hale 200" telescope - have still not arrived.

Greenwich Time Signal

In a recent talk, Mr. Ashmore stated that the "Six Pips" were given by contacts made by a master clock at Abingor, where the Royal Observatory Time Department is established. The Astronomer Royal, in a report, reveals that this custom was discontinued in October, 1949. The Time Signals are now transmitted by special phonic motors controlled by the standard quartz clocks.

The Size of Pluto

Although Pluto was discovered in 1930, its distance and very small disc in even a large telescope has prevented any accurate measurement of its angular diameter being made hitherto. This year, however, Dr. J.G.Kuiper, using the Hale 200" telescope at Mount Palomar, has managed to determine an angular diameter of 0".23 which leads to an actual diameter of 0.46 of the Earth's being inferred. In miles, this is 3,626. The interesting point about this measurement is that unless Pluto's mass is fantastically high, Pluto could not have had any appreciable effect on Neptune and Lowell's predictions which are based on Pluto pulling Neptune slightly out 'of line' - so to speak - have only been fulfilled accidentally, or incidentally.

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Astronomical News (continued)

"Destination Moon"

A film with the above title has been shown in Nottingham and it proved to be such as should be seen by all members. The B.A.A. critic speaks very well of it and the Editor endorses the high opinion formed. It is a serious and scientifically accurate film presented in a most convincing way. From the purely astronomical point of view, the scenes of the Earth from a rocket and the lunar landscape (and skyscape) are not only well done but quite authentic. A few minor points can be criticised unfavourably but, on the whole, 'Destination Moon' is a feasible project and by attention to detail and consulting some-one who knows something about the subject an excellent film has been made. Do not confuse this film with another called 'Rocketship XM'!

"The Conquest of Space"

This book, which attracted attention by virtue of the most realistic paintings - some in colour, of astronomical scenes, "Written by Willi Ley and illustrated by Chesley Bonestell, who was concerned with the astronomical backgrounds in the film 'Destination Moon'. It is now published in England by Messrs Sidgwick and Jackson at 18s-, and should be inspected at the first opportunity.

ANNOUNCEMENTS

Visit to Oxford University Observatory

Arrangements have been completed for a visit to Oxford University Observatory on Sunday, November 19th, 1950.

The coach will leave Old Market Square (Queen Victoria Statue) Nottingham, at 9.30 am and is expected to arrive at Oxford at about 1.00 pm. No Lunch arrangements have been made and members may either take a packed lunch with them or have lunch at one of the cafes known to be open on Sundays.

The fare will be 15s/-d and up to 4 seats will be available to Juniors at a charge of 6s/-d each.

The coach is expected to arrive back in Nottingham at 9.30 pm. Mr. Ashmore has names of those members who intend to go. In the event of any withdrawal, please notify him direct. A few seats are still available both for adults and juniors.

Open-Air Meetings

Mr. Ashmore will take Monday and Tuesday and the Director, Wednesday and Thursday, from about 7.30 to 9.00 pm as follows: November 6,7,8,9,13,14,15*,23*, 30. December 5,6,7,11,12,13,14, 21*,28*.

The sky must be clear, or almost clear at 7 pm, except on those dates marked * - the only regular meeting nights when the Director will be there if the sky shows any sign of promise at all.

Barton Bus No. 14(Ruddington) every 20 minutes from 7.00 pm leaving Huntingdon St. Bus Station. Back to Wilford Cross Roads (5d return). Walk back about two hundred yards to the last house before the railway viaduct, No. 281, Wilford Lane.

The four-inch binoculars are permanently mounted and covered at the end of the garden and these may be used by members at any time, if they will just let Mr. Lake Aske know they are there. On the meeting nights, Mr. Ashmore or the Director will have done this and no formalities whatever are needed from members.

With the larger number of opportunities, there is a smaller nightly attendance and there is no reason why interested members could not carry out a programme of work to supplement their own smaller equipment, or occasionally to bring a non-member as visitor.

(A. J. Lane Hall, Director)

Next Meeting

At the next Ordinary Meeting on December 7th at 7.30 pm, Mr. D.K.Northrop will give the second part of his talk on "Making a Telescope". Will Committee Members please note that there will be a Committee Meeting on the same evening, at 6.45 pm. Please be punctual so that the Ordinary Meeting may be likewise begun at 7.30.
