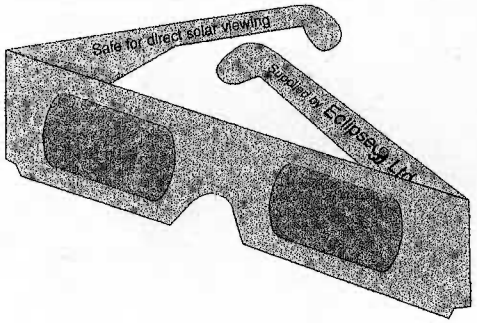
Eclipse viewers now on sale . . .

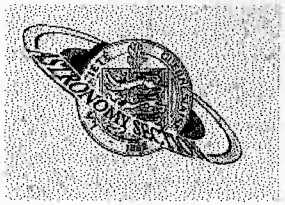
The Astronomy Section has undertaken the sale within Guernsey of safe solar eclipse viewers supplied by David's Company *Eclipse99 Ltd.* The Section receives the profits from these sales, and potentially it could be a substantial fund-raiser. As members will know, we hope to purchase a major new telescope for the Millenium, and this is a good way to raise the necessary fund.

Marketing has been started by Ken Staples, but everyone can do their bit. Please contact Ken with offers of assistance, and spread the word. ☆



. . . and eclipse guides

The definitive book on the eclipse, *The RGO Guide to the 1999 Total Eclipse of the Sun* by Steve Bell, is now available from David, or at the Observatoruy. The Section will benefit by £1.00 for every book purchased by a member. It costs just £5.99, and includes a free eclipse viewer. Eclipse leaflets can also be obtained, free of charge, from David. ☆



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Opinions expressed in Sagittarius are those of the authors, and are not necessarily endorsed by the Astronomy Section or La Société Guernesiaise.

The next newsletter will be published early in January 1999. The deadline for publication copy is the 15th December.

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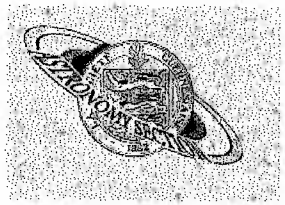
Sagittarius

The Newsletter of the Astronomy Section of La Société Guernesiaise



October – December 1998

Forthcoming events

Meteor Preview – The Orionids and Leonids
Tuesday, 20th October
8.00 pm at the Observatory

Moons of the Solar System
by Frank Dowding
Tuesday, 17th November
8.00 pm at the Observatory,
and, at 10.00 pm:
Leonid Meteor Watch

Quiz and Supper Evening
Quizmaster:
David Le Conte
Tuesday, 15th December
7.30 pm at the Observatory

In this issue

The Leonids
Transits of Venus
Is there anybody there?
NASA shuttle news

Inside

Centre inserts

Star chart
Sunset, twilight, and sunrise times and Moon phases

Meteor preview

On Tuesday, the 20th October, starting at 8.00 pm at the Observatory. we will be previewing the Orionid and Leonid meteor showers.

The Orionids peak around that date, and should be visible for five days before and after it. The typical peak rate is 15 per hour. The meteors originate from Comet Halley. New Moon is on the 20th, so there should be good dark skies.

The Leonids peak on the 17th November, so we will be able to discuss the expectations for this highly cyclical shower, and our plans for observing it.

Moons of the solar system

Frank Dowding has, over the past years, covered all the major, and many of the minor bodies of the solar system. **On Tuesday, the 17th November, at 8.00 pm at the Observatory, Frank will speak about the Solar System's many moons.** His talk, which will be illustrated with colour slides, will highlight the differences between these objects, some of which are considerably more exotic than our own, relatively dull, Moon.

. . . and Leonid watch

Immediately after Frank's talk on the 17th November, we will watch for Leonid meteors. The shower peaks every 33 years, and, while the peak is really expected next year, this year is far better so far as the Moon is concerned, because New Moon is on the 19th, and so we can expect, not just dark skies, but the advance wave of the shower peak. It could just be a spectacular event. Don't miss it!

Quiz and supper evening

Perhaps that should be "super" evening, because that is usually how it turns out. The idea is for everyone to bring something to eat, preferably with fingers, which we all share whilst fielding questions about astronomy. The event is to be held **on Tuesday, the 15th December, starting at 7.30 pm at the Observatory.**

The format is that two teams are established, with individuals from each side being given the opportunity to answer. It is a lot of fun, and David Le Conte, who this year is acting as Quiz-master, promises that it will not be too tough (but challenging, nonetheless). In fact, you will find the answers to many of the questions in these newsletters, so it's time to dig them out for a re-reading! ☆

The Secretary writes . . .

After the Video Evening and Star Night in September, we look forward with eager anticipation to the Meteor Preview in October. Hopefully, the Orionids and Leonids will shower in greater numbers than we experienced with the Perseid shower in August. We remain optimistic.

November brings us a talk from Frank Dowding entitled "Moons of the Solar System", which we look forward to with excitement, especially with the probe to Titan so much in the news, and the first visit back to our Moon for 25 years. I'm sure Frank will have lots to talk about.

Our festive month of December brings our annual Quiz and Supper Evening. With Quiz-master David Le Conte, I'm sure we will be kept thinking, even in our usual festive mood.

In general, our Section continues to gain in popularity, with our regular spot on Radio Guernsey, and David and myself giving talks to many of our local societies and clubs, keeping astronomy interesting and available, and adding to the awareness, island-wide.

We are looking forward to a visit from St Matthew's Church Ladies Group very shortly, and I have been requested to set up a number of privately owned telescopes, so that their owners can enjoy the night sky, and also swell our membership numbers.

It is now the start of *Eclipse Mania*, and we have special eclipse viewers on sale. Proceeds go to the Astronomy Section, so please make everyone aware. Of course, we also have our usual items on sale to swell the funds.

Our enthusiasm remains high, and I look forward to seeing many members at our programme meetings. ☆

Ken Staples

Barbecue and Perseid meteor watch

This year the 11th August – Perseid meteor night – coincided with our usual Observatory evening on a tuesday. The early evening barbecue was well attended, and helped along by plenty of food and drink, enjoyed by all.

We were especially pleased to see David and Helen Williams, and their daughter Ruth, back in the Island on a short visit, and Barbara Waldron, another Section member, living on the South coast of England just a few miles from Patrick Moore's home at Selsey.

The weather for the barbecue and following meteor watch was very kind to us – calm and clear – unusual in what has been a very changeable and unsettled summer.

Although the sky was clear, the Perseid meteor watch did not come up to expectations, compared with previous years. Only around a dozen meteors were seen, compared with over a hundred in little more than an hour a few years ago. This was probably due to the peak of activity being a bit outside our viewing time and location on this occasion. The Moon was rising towards the end of the evening, but the moonlight would ave obscured only perhaps some of the fainter meteors.

Next year, of course, it will all be happening on the 11th August, the best and most reliable meteor shower of the year and the all-important eclipse of the Sun. Perhaps one or two bright meteors during the eclipse might seem a possibility? ☆

GF

More visitors

We were very pleased to see John Taylor again. John is now living in the Isle of Wight, and was back in guernsey on a short visit. His technical knowledge has always been of much assistance to the Section.

Another visitor at the end of July was David Flack, a keen astronomer from Romford, Essex. His own night skies suffer considerable light pollution, so while enjoying a couple of weeks holiday in the Island he made several visits to the Observatory, and was very pleased to see some of the night sky objects that he is unable to view from his own home area. ☆

The Leonids – by Debby Quertier

If you asked anyone with even a modest knowledge of astronomy, to name any two meteor showers, the reply may well be the *Perseids* and the *Leonids*.

The Perseids because they are generally the most reliable shower, and the Leonids because we've probably all hear about the great meteor storms of the past, when thousands and thousands fell, no doubt both terrifying and fascinating those lucky enough to witness them. The Leonid storms have occurred approximately every 33 years (although there have been two gaps), and as the last storm was in 1966, expectation is growing as to whether they will storm again before the end of the millenium.

The Leonids are a November shower, peaking on the 17th, the period of activity being from the 14th to the 20th, and a normal *ZHR* (Zenith Hourly Rate) of about 10. The meteors can be bright, often leaving trains which last a few seconds. The parent comet is *P/Tempel-Tuttle* (the P prefix denotes that the comet is a short period one, ie less than 200 year orbit), which has an orbital period of around 33 years.

The shower is different from many of the others for two reasons:-

1. The orbit of Temple-Tuttle is retrograde, so when the Earth encounters the swarm of meteoroids they meet head-on, making the Leonids the fastest annual shower, with meteors travelling at speeds of 70 km (44 miles) per second.
2. Secondly, the trail of meteoroids left by the comet is not spread uniformly along its orbit. Instead, the meteoroids tend to clump together around the comet (referred to as the *Ortho-Leonids*). The storms occur when the Earth crosses the path of these dense clumps around the time of the comet's perihelion. The storms have occurred both before and after perihelion.

Looking back over the last 200 years, the Leonids have provided some spectacular activity as follows:-

(a) 12 November 1799 – A storm was seen in South America and the British Isles. Storms have occurred before this time, but I have not been able to find much information on them.

(b) November 1832 – A storm in europe and the Middle East.

(c) 13 November 1833 – A brief storm before dawn in the Eastern USA. Watchers were able to see the radiant in the sickle of Leo, and realised that the meteors came from space. It had been thought that meteors were caused by the atmosphere.

(d) 1866 – The now expected storm did not disappoint, and astronomers made the connection between the showers and the comet Temple-Tuttle, discovered independently by Wilhelm Tempel and Horace Tuttle in December 1865 and January 1866.

(e) There was greater than normal activity in the years 1898 to 1901, but the expected storm did not reappear.

(f) 1932 – Again, there was greater activity (about 100 meteors per hour), but no storm. Nor was there any storm in 1933. ➠

(g) The 19402 and 19502 rate was pretty much the normal for the shower, but by the early 1960s the rate had started to increase, and in 1966 (around 4 in the morning on 17 November), the south-west USA was treated to a storm, with an estimated 140,000 meteors falling in a period of about one hour.

(h) After the wonderful 1966 display the shower again returned to its modest annual rate, but as we go through the 1990s the rate is picking up. Does this herald the approach of another storm?

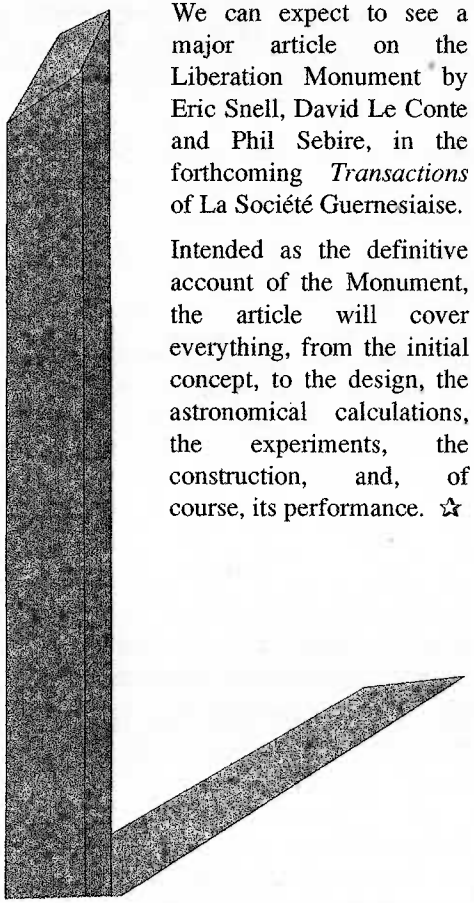
The more I read on this subject the more I feel that the Leonids are unpredictable, but if they are going to storm again then this year, next year or the year 2000 are the likely candidates. The comet was recovered on 4 March 1997, and reached its perihelion on 28 February 1998. It is worth noting that the comet was not recovered in 1898 and 1933, but was in 1966. Tempel-Tuttle is not a bright comet, reaching only about 9th magnitude around its perihelion, but it has a very elongated orbit, taking it out as far as Uranus and not less than one AU from the Sun at perihelion. The orbit is inclined to the plane at 18 degrees, so as the comet nears aphelion the orbit can be affected by the gravity of the giant planets. It was suggested that this could be the reason for the absence of the 1899 and 1933 storms.

Because the comet's orbit is retrograde it shifts slightly in space, and as a result the shower appears later each year. The peak is currently on 17 November, but in notes a) and c) you will see that the storms were in 12 and 13 November. The storms also only last for a short period of time, around an hour or so, which is why not everywhere sees it. many predictions are being made as to where the best place on the planet will be to see the expected storm, and some scientists are concerned about the possible damage to satellites if they were bombarded by thousands of meteors.

Whatever does happen, many eyes will be looking skywards very hopefully. We may see a storm producing thousands of meteors, or there may be nothing out of the ordinary. Should nothing at all happen we can at least say – maybe next year? ☆

Debby Quertier

Liberation Monument article



We can expect to see a major article on the Liberation Monument by Eric Snell, David Le Conte and Phil Sebire, in the forthcoming *Transactions* of La Société Guernesiaise.

Intended as the definitive account of the Monument, the article will cover everything, from the initial concept, to the design, the astronomical calculations, the experiments, the construction, and, of course, its performance. ☆

Transits of Venus – by Peter M Langford

A transit of Venus is like a solar eclipse but instead of the Moon being in line between the Earth and Sun it is the planet Venus that is directly in line. You can hardly fail to notice a solar eclipse because the Moon, being about the same apparent size as the Sun, blocks it out. Venus, on the other hand looks very much smaller from Earth and so you would have to be especially observing the Sun to see the small disc of Venus passing across it. You would also have to wait a long time. Whereas a solar eclipse occurs every year or so somewhere on Earth you could have been observing the Sun for the last century and still not have seen a transit of Venus.

In fact there is a rather curious pattern to transits of Venus and the purpose of this article is to explore why.

Here is a list of the transit dates from the 17th to the 21st century.

June	December
	1631
	1639
1761	
1769	
	1874
	1882
2004	
2012	

There is a curious 243 year repeating pattern with two transits in December (around the 8th), eight years apart, then a wait of 121 and a half years, then two June transits (around the 7th), again eight years apart, then a wait of 105 and a half years and then the pattern repeats again.

To start to understand what is going imagine a circular race track and two runners, Eartha and Vera. Eartha can do a lap of the track in one minute. Vera is quite a bit faster, and also has the advantage of the inside track, and she can do a lap in just under 37 seconds. The question is, if they start off together how long is it before Vera catches up with Eartha so they are together again?

To work out the answer it is convenient if the runners' speeds are in a whole number ratio, so let us assume Vera can lap the track in 8/13 minutes (36.92 seconds). That means Vera is going 13/8 times faster than Eartha so Vera is catching Eartha up at 5/8 laps per minute (13/8 minus 1). Vera will therefore catch up Eartha after 8/5 minutes, ie 1.6 minutes or 1 minute 36 seconds. Check it out and you will see that in 1.6 minutes Eartha has gone round the track once plus 3/5 of the track while Vera has gone round the track twice and 3/5 of the track, so they meet up.

Translate runners into planets and minutes into years and the picture is close to that for Earth and Venus. It is not quite as simple as that because the tracks are a bit elliptical rather than circular and the runners do not go at quite a constant speed. Also Venus orbits the Sun just a bit faster than 8 thirteenths of a year, more like 7.997. As we shall see this is a small but crucial difference.

The time of 1.6 years between Sun, Venus and Earth lining up is called the synodic period (synod = meeting). Figure 1 shows the lined-up positions from 1996 to 2002. You can see that there is a five spoke pattern. (Ignore for the moment the dotted line). The planets travel anti-clockwise and each lined-up position is 3/5 of the circle on from the previous one.

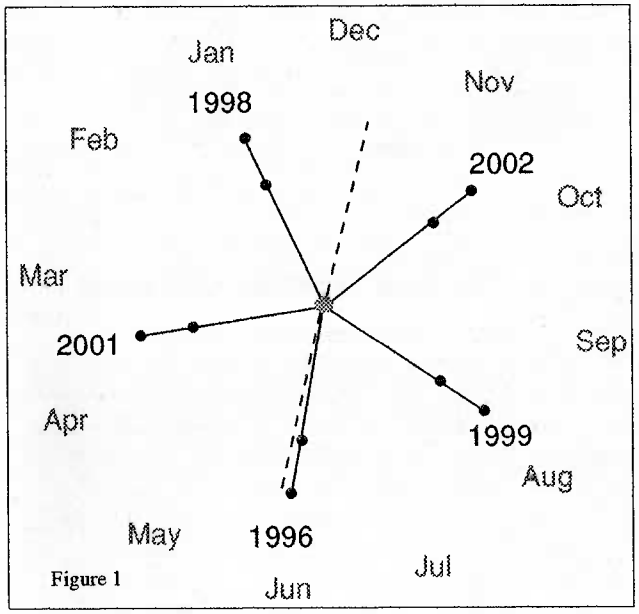


Figure 1

If we continue the pattern we can see that the next lining-up after 2002 will be in June 2004 in the same place as June 1996, 8 years previously. Almost but not quite. Since Venus travels a little bit faster than one orbit in 8/13 of a year it catches up with the Earth a little bit before the meeting place 8 years previous. Consequently, if you draw the five spoke pattern 8 years on from Figure 1 it will look like Figure 1, but with the spokes rotated slightly clockwise.

We can start to see that 8 years might be a significant interval but it is still not clear how it relates to transits. For a start we have said that Earth, Venus and the Sun are lined up every 1.6 years so why is there not a transit of Venus every 1.6 years? The answer is there would be if the orbit planes were exactly aligned.

However, the orbit of Venus is at a small angle (3.4 degrees) to that of Earth. The result is that, although the planets appear lined up when looking down on the orbit planes, most of the time Venus viewed from the Earth will be either above or below the Sun. For a transit to occur the planets not only have to line up as in Figure 1 but they have to do it just in the place where the orbit planes cross, which makes it a much rarer event.

The same thing happens with a solar eclipse. Every month the Earth, Moon and Sun are lined up at New Moon. However the Moon/Earth orbit plane is at an angle to the Sun/Earth orbit plane and it is only when New Moon occurs at the orbit plane crossing that there is a solar eclipse. Otherwise, seen from Earth, the New Moon is either above or below the Sun.

Referring back to Figure 1, the dotted line shows where the orbit planes of Earth and Venus cross. The crossing line corresponds to about 7 June and 8 December. We can see that the lining-up in 1996 was very close to the orbit-crossing line but was not quite there. Venus was near to the Sun but passed just south of it. On 8 June 2004 the lining-up will be even closer to the orbit-crossing line, in fact so close that Venus will transit the south side of the Sun for some 6 hours from about 5h 15m to 11h 15m UT. Eight years later in 2012 the lining-up will occur just the other side of the orbit-crossing line and there will be another transit, this time with Venus transiting the north of the Sun.

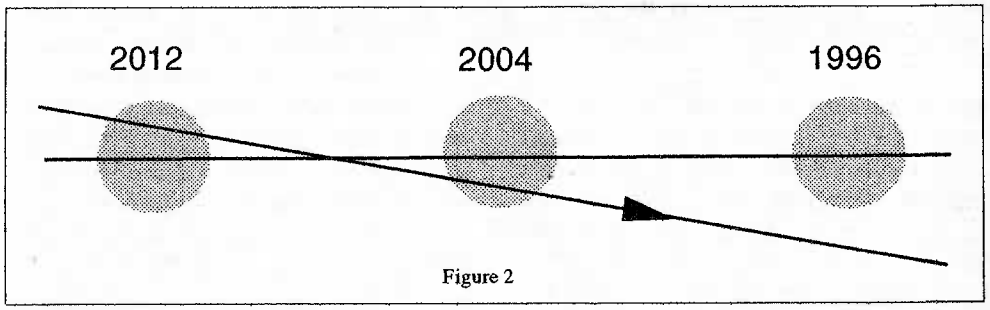


Figure 2

Figure 2 illustrates the position of the Sun seen from Earth relative to the orbit path of Venus on the three occasions. (The orbit angle has been exaggerated so Figure 2 is an illustration rather than a precise picture).

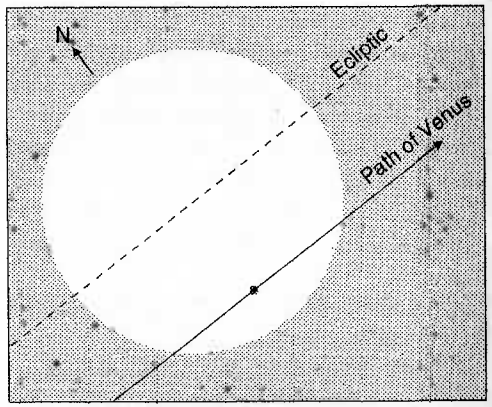
After that there is a long wait until until the January 1998 "spoke" in Figure 1 slowly makes its way round clockwise in eight year ticks until it gets close to the December orbit-crossing line in 2117. Eight years later in 2125 there will be another transit when the "spoke" ticks through to the other side of the orbit-crossing line. This time the orbit path rises from south to north so the first transit will be north of the ecliptic and the second transit south. There is then a long wait while the "spokes" tick round until the lower one arrives close to the June orbit-crossing line again. And so the process continues.

On a final note we saw that because the orbit time of Venus (measured in units of Earth-orbit time, ie one year) was close to 8/13 it led to 8 year cycles. A closer approximation to the orbit time of Venus is 243/395 years, which by similar logic leads to a longer run 243 year cycle. ☆

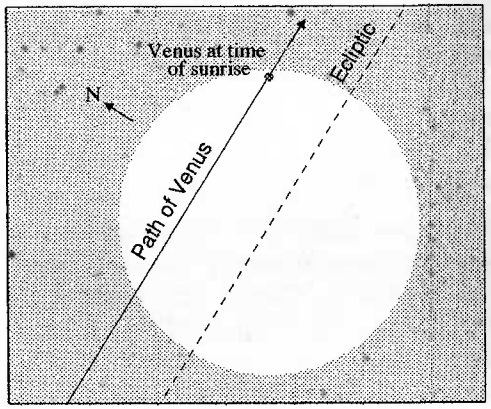
Peter Langford

The next transits of Venus

Shown below are the next transits.



8 June 2004, at mid-transit time.
This event will be visible from Guernsey.



6 June 2012, at Sunrise in Guernsey.

For more information, ee:

http://ds.dial.pipex.com/eclipse99page/venus.htm

IS THERE ANYBODY THERE?
(Green men, God or both)
by David Williams

An article in *The Sunday Times* of 23 August began by stating "Astronomers may have found evidence for the existence of solar systems similar to our own that could contain planets capable of sustaining life". It went on to make fascinating reading.

As the search for planetary systems and extra-terrestrial life continues, it raises some fundamental questions about humanity and its relationship with God. Indeed, the very basis of belief in a supreme deity may be challenged, and we may well find ourselves facing some very difficult answers. So, let's explore the issue, albeit briefly.

The Church teaches of mankind's unique relationship with God, and how He has, at various times, intervened in the course of human affairs. The most important occasion to Christians is to be found in the life of Jesus Christ. As St John writes:

"God so loved the world that he gave his only begotten son . . . "

The Church also teaches that God is the Creator not only of the Earth and of all life therein, but also the Creator of the universe: "In the beginning, God created the Heaven and the Earth." Please note that the writers of Genesis were not referring to Heaven in the context of an eternal paradise, but as the starry heavens above.

However, I wonder if the writers of Genesis ever imagined that the Supreme and Almighty God of whom they wrote was also responsible for creating life on other planets, and was enjoying an equally intimate relationship with the other planetary races? I doubt it somehow – but then I could be wrong.

It is argued that Science asks the question *How?* and that Theology asks the question *Why?* So, when a scientist asks how the universe came into existence, the answer may well be the Big Bang, whereas when the theologian would ask why the universe came into existence, the answer would be that God caused it to happen. The theologian may even go on to say that God achieved this end by means of the Big Bang.

It is quite possible for Science and Theology to live in harmony, but is it possible in relationship to the question of extra-terrestrial life? I think the answer could be "yes", provided we remember not to apply human constraints to God and do not confine God in a wrap of humanity, as we are apt to do.

If people believe in a Supreme Universal Creator then it should be quite possible for that Creator to have any number of worlds at his or her command, and enter into any number of relationships all of which would be unique and special to that world.

Those who believe in a God should not be afraid of what future discoveries in space may bring. All the great religions of the world describe gods who are creators, loving, caring, sustaining, and who only want the best for their followers. ➠

The next big challenge, of course, is that First Contact and it may well come about in the following way:-

- Project Darwin identifies planetary systems capable of sustaining life.
- First Contact is made with an extra-terrestrial life form.
- They tell of their belief in a Supreme Being who created all life. As a result of the confirmation of the existence of God all humanity is brought closer together, and even differences between the great religions are put aside as people enter into a dialogue with the aliens. There is greater understanding and co-operation between nations, and the Biblical prophecy in Isaiah appears to be fulfilled: *"And they shall beat their swords into plowshares and their spears into pruning-hooks: nation shall not lift up their sword against nation, neither shall they learn war any more."*
- They tell us they've never heard such nonsense, and that such belief is foolish. If this happens then look out, because the following may well occur.

  As a result of the confirmation of the non-existence of any god there is the complete collapse of all moral, legal and accepted civilized codes of conduct and behaviour. This comes about as all three depend upon belief in a god and the teachings of religion. Global chaos results, and the aliens decide it's best to leave us to our own ends until we sort ourselves out.

If the former occurs then the implications for the world are great, and perhaps Churchill's 'sunlit uplands' will become a reality. However, if the latter occurs then it is quite possible for a global breakdown in society to take place as the fabric of socially accepted norms is swept away.

There is another scenario that could well take place of course. Suppose their belief system is totally at odds to anything on Earth? We could then find ourselves as a planet in the same situation as indigenous peoples of other countries found themselves when the Spanish invaded South America, or the British in invading most of the known world while in the process of establishing the British Empire.

Just think of all the religious bigotry that exists in the world today, and recall the terrifying photographs of the bombings in Nairobi, Dar es Salaam and only today in Cape Town. Multiply all this a thousand times and you would probably still be short of all the horrors that would result from such a conflict of beliefs.

So finally, where has our exploration of this fascinating question taken us?

We have looked at three different scenarios of what might happen upon making first contact with an alien life form, but more importantly I hope we all begin to question what it is we believe. It is only by questioning what we read, what we see and what we hear that we are able to progress and to increase in knowledge. In this way we learn the answers to all our questions and come to a greater understanding of the universe we live in, however or whoever made it.

Amen to that say I! ☆

David Williams

N.B

You may be interested to know that, according to *Time* magazine, 72.2% of all members of the National Academy of Sciences do not believe in God. The figure in 1914 was 52.7%.

NASA shuttle news – by Frank Dowding

The next shuttle launch date is scheduled for the 29th October 1998, at 2.00 pm. This will feature the shuttle *Discovery*, its 25th flight. It will leave from pad 39A, with a launch window of 2 hrs 30 mins. The flight duration will be 8 days, 22 hours and 4 minutes.

The following flight crew members will be on board:-

Mission Commander	– Curt Brown
Pilot	– Steven Lindsay
Mission Specialists	– Scott Parazynski
	– Stephen Robinson
	– Pedro Duque
Payload Specialists	– Chiaki Mukai
	– John H Glenn

John Glenn is a familiar name. he last entered space in February 1962 as the first American to be launched into orbit. It is perhaps no coincidence that one objective of this flight is to further research into the ageing process in humans.

The following are the primary objectives of this mission:-

Spacehab

Spacehab is a single module in the forward part part of Discovry's payload bay. Access is gained through an airlock tunnel, and once inside a variety of experiments will be carried out, focusing on the life sciences, micro-gravity sciences, and advanced technology.

Spacehab, on this occasion, is sponsored by the Japanese Space Agency and the European Space Agency.

Spartan 201

Spartan 201 is a small satellite, only 90 inches long. It wil be deployed by the shuttle personnel and retrieved again 40 hours later. During these 40 hours Spartan will be studying the Sun. It will be gathering information on the Sun's corona, and in particular the solar wind. It has been known for some time that the solar wind has directly affected satellites and weather conditions on Earth, which in turn has an impact on television and communications.

Hubble Telescope tests

The shuttle will be carrying experiments to validate components planned for installing in the Hubble Space Telescope during its third mission. The components include a new cooling system for use in zero gravity, and a method of identifying any parts that are suffering from radiation.

Ultraviolet experiment

A number of experiments are planned, including a study of the Earth's upper atmosphere: an ultraviolet spectrograph telescope to form images of plasma sources, and a Navy satellite managed by the Department of Defense.

Ageing process

A series of experiments, sponsored by NASA and the National Institute of Ageing, will be conducted during this mission. Information will be gathered to provide a model system to help scientists interested in studying ageing. Space biomedical researchers believe that a comparison of muscle use, balance and sleeping on Earth and in zero gravity could help long-term medical care.

Discovery is due to re-enter on 7th ➠

November at 12.04 pm, Kennedy Space Centre time.

This will be NASA's 92nd shuttle flight. The 93rd flight will be on 3 December 1998. It will feature the shuttle *Endeavour*, which will be carrying the first United States built module for the new Space Station.

But that is another story. ☆

Frank Dowding

Astronomy and Space – References for further reading

European Space Observatory

The first telescope unit of four units to form the VLT has been completed at the observatory site at Cerro Paranal mountain in Chile, and the first images obtained. (*Astronomy Now*, July 1998.)

New photographs of the Sun

New images from spacecraft reveal solar tornadoes and ripple effects from solar flares. (*Astronomy Now*, July 1998.)

Other planetary systems

Techniques used to find other planetary systems, a summary of the discoveries to date, and details of future missions and projects to extend the search. (*Astronomy Now*, July 1998.)

Leonid and Draconid meteors, 1998

Prospects look promising for the Draconid meteor shower (8 - 9 October), and for the Leonids (17-18 November). (*Popular Astronomy*, July 1998.)

The Pistol star

The largest and brightest star in the Galaxy? Photograph and description of a massive star near the centre of our Galaxy. (*Astronomy Now*, July 1998.)

International Space Station

History of the International Space Station development. Launch of the first module, now scheduled for the end of the year. (*Astronomy and Space*, July 1998.)

Radio telescopes

The world's largest radio telescopes, including the Lovell Telescope at Jodrell Bank, Cheshire. Interferometer techniques of orbiting spacecraft. (*Astronomy and Space*, July 1998.)

First image of planet around a star?

HST photograph of what may be the first direct look at a planet around the Solar System, located near a double star in the constellation Taurus. Earlier Hubble image of an object near Proxima Centauri proved to be a flaw in the computer-processed image. (*Astronomy and Space*, July 1998.)

Mars Global Surveyor

Latest pictures of surface features. (*The Planetary Report*, July/August 1998.)

Lunar ice

The story of the search and discovery of ice at the Moon's poles. (*The Planetary Report*, July/August 1998.)

The future of the Universe

The history of the Universe as presently understood, and its future course. (*Sky and Telescope*, August 1998.)

Countdown to totality – Eclipse 1999

First of a series of articles leading up to the solar eclipse on 11 August 1999. Path of the eclipse and arrangements being made for the expected influx of visitors to Cornwall. (*Astronomy Now*, August 1998.)

Mars – Evidence of a past atmosphere

Current evidence of water flows on the surface of Mars. Linked with a necessary atmosphere, and heating effects of carbon dioxide and other gases. (*Astronomy Now*, August 1998.)

Jupiter's moons

From Galileo's discovery of the four major moons in 1610, information obtained by the Voyager and more recent Galileo missions, and a summary of current knowledge about these very different moons. (*Astronomy Now*, August 1998.)

Observatories around the world

Survey, including maps of geographical distribution of observatories around the world, including Guernsey, and astronomy organisations. (*Astronomy Now*, August 1998.)

Preserving the darkness of the night sky

Tenth anniversary of the International Dark Sky Association of Tucson, Arizona. Progress in combatting light pollution problems. (*Sky and Telescope*, September 1998.)

Expansion of the Universe

Measuring the expansion of the Universe. Is the rate of expansion decelerating, or accelerating as some evidence suggests? (*Sky and Telescope*, September 1998.)

The myths of Mars

Myth and reality. The Martian 'canals' and the moons of Mars. (*Astronomy and Space*, September 1998.)

A short history of the Moon

From an apparent cataclysmic formation 4½ billion years ago to recent explorations (*Astronomy and Space*, September 1998.)

GF

Radio Guernsey – UFO report

Geoff was invited to BBC Radio Guernsey on the 31st July, following a reported 'UFO' sighting on the previous evening. Several people had seen a white object which had travelled in a westerly direction over Pleinmont between 10.00 pm and 10.30 pm, before it climbed rapidly out of a sight. They were interviewed by Radio Guernsey, and the Airport had been checked to confirm that no aicraft were in the area, and that nothing had been recorded on radar.

Having heard the radio interviews, Geoff commented that this did not seem to be a satellite or any kind of conventional meteor sighting, but could perhaps be one of about ten percent of UFO reports at present unexplained. Asked whether astronomers sometimes see UFOs, Geoff confirmed that this was the case (as revealed by at least one major survey), but that astronomers did not usually report the sightings. It was also mentioned that a recent study of sightings by a scientific panel (headed by Dr Peter Sturrock of Stanford Research Institute) had concluded that the subject was worthy of proper scientific study, so it now looked as if the subject was perhaps to be taken seriously by scientists. ☆

GF

Sunspot observations

Several opportunities have been taken recently to observe sunspot activity. The solar telescope system at the Observatory has been used to project the Sun's image onto the screen within the main building, producing very sharp images. The cycle of activity is increasing steadily now, and ➠

it is indicated that the peak of the sunspot activity will arrive rather earlier than previously expected, and probably before the end of next year. We hope to continue sunspot observations on a fairly regular basis over the coming months, weather conditions permitting. ☆

GF

That solar eclipse

Planning for the total solar eclipse next August is proceeding apace. In fact, it is accelerating. There was much publicity at the time of the pre-anniversary (if there is such a phrase!) on 11 August 1998, virtually all of the national newspapers, and many local ones around the country, carrying major articles.

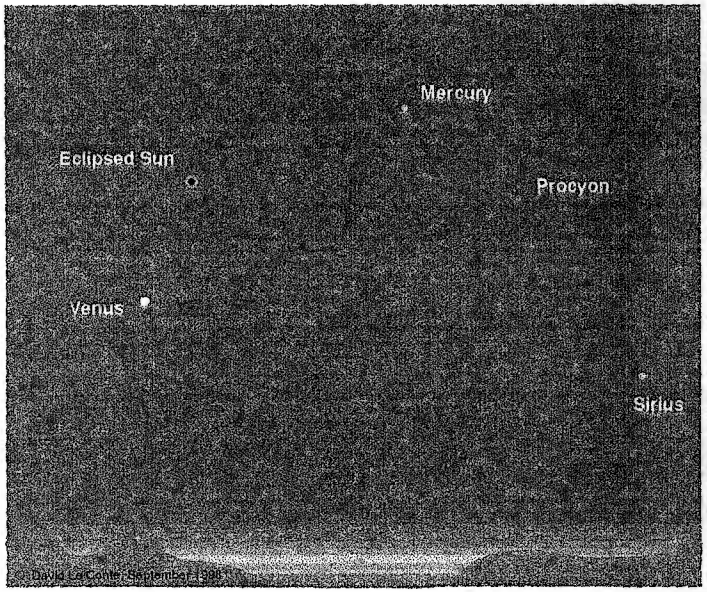
David Le Conte attended a National Eclipse Coordinating Group meeting in September at the British Association's Festival of Science in Cardiff. Most of the discussion centred on education and safety. David has been deeply involved within the Group in the drafting of an *Eclipse Safety Code* for national use. David has also collected almost 200 quotations about eclipses, from Chinese, Greek, Arabic and other sources. Many are now on a web site, and are being added to as copyright clearances are obtained.

An official national eclipse web site has been established:

http://www.eclipse.org.uk

Locally, David was invited to speak about the eclipse to the Chamber of Commerce lunch club in July. He concentrated on the challenges and opportunities facing the business community because of the eclipse.

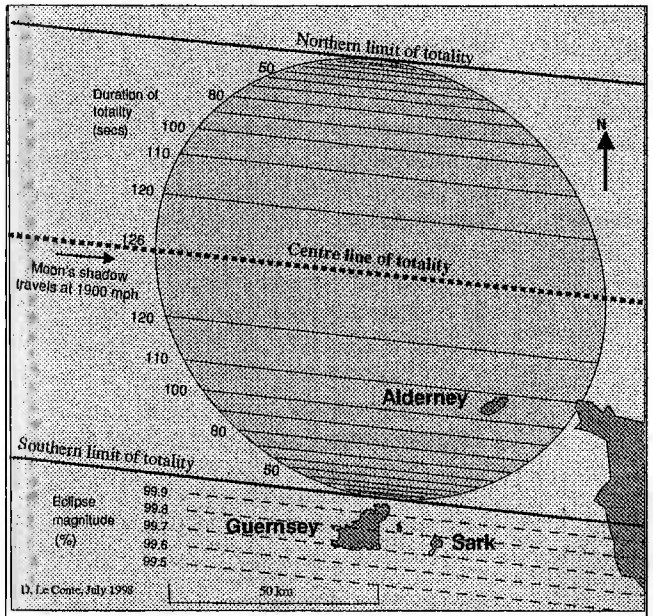
There is now a comprehensive web site, prepared by David, about the eclipse ➠



The sky during the total solar eclipse on Wednesday, 11th August 1999.
The planets Mercury and Venus should be clearly visible
and some bright stars may also be seen.

for the Bailiwick, including maps, places to watch it, local circumstances (times, durations, etc) for a number of places in Guernsey, Alderney, Sark, Herm and the English Channel), what to look for, what the sky will look like, and the weather prospects. The opening page is at:-

http://ds.dial.pipex.com/eclipse99page/bail.htm



The umbra of the Moon's shadow at 11h 15m 30s BST on 11 August 1999

Watch out for an article by David about the eclipse in the forthcoming newsletter of La Société Guernesiaise, *Communiqué*.

An article entitled *Weather prospects for the 1999 solar eclipse*, by Tim Lillington (Senior Meteorological Observer at the Guernsey Airport) and David Le Conte, appeared in the August 1998 issue of *Astronomy and Geophysics*, the journal of the Royal Astronomical Society. (We concluded that Guernsey and Alderney have a 60% probability of sunshine at the time of the eclipse – rather better than Cornwall or France.

Planning for the RAS National Astronomy Meeting (NAM99) is also gathering pace. David attended a NAM98 wash-up meeting at RAS headquarters in London on the 4th August. He has now been appointed Chairman of the Local Organising Committee (LOC).

There has been a further planning meeting for the Eclipse Exhibition to be held at Candie Museum next year, and another is to be held shortly. Gareth Coleman and David carried out successful experiments in August to determine the best place and method of projecting a live image of the Sun for the Exhibition. These experiments utilised the Section's solar telescope, but it has not been decided whether the telescope will be used for the Exhibition, or whether a new one will be made for the purpose.

Anyone prepared to help with the various events surrounding the eclipse, especially assisting with public observations on the day (either in Guernsey or in Alderney), NAM99, and the Exhibition, please let David or Ken know.

An article about the eclipse by Mike Maunder appeared in *BBC Tomorrow's World* magazine for September 1998. Letters by David have been published in the New Scientist, about the weather prospects, and warning against the use of CDs for viewing the eclipse. ☆

DLC