



TRANSIT

The Newsletter of



14th October, 2005. Julian Day 2453658



Second in the series of “identify the rocket”. If you have been watching the TV series on “The Space Race”, you may have seen an earlier version of this famous launcher.

Editorial

September meeting. The first lecture of the 2005/6 season was held on Friday, 9th September, at Thorpe Thewles. Martin Whipp, FRAS, of the York Astronomy Society, talked about “Journey to the Farthest Worlds”.

October meeting. The annual quiz contest between local astronomy societies will be held at Thorpe Thewles this year on Friday , 14th October. Come along to be amazed by the knowledge of the contestants and to support the CaDAS team.

September’s Picture was an Atlas rocket, launching a Mercury spacecraft (the first US manned series). Can anyone recommend a good book on the development of the rockets used for the Russian and American space programmes? The current TV series on the Space Race has been very good on the early ones, used for putting Sputnik and small satellites into orbit.

October front page picture. This huge rocket was used to launch the Apollo missions which didn’t go to the Moon. The illustration here is of an unused one, on display in the “Rocket Park” at Kennedy Space Centre. (Neil took the picture himself.)

New Planetarium Director. Congratulations to Ed Restall, who has been appointed to the post. I can’t think of a better man to run the Planetarium and we wish him well. He is, of course, a long standing member of CaDAS. John McCue left to return to his teaching career.



New Editor for Transit

Barry tells me that there was some interest from prospective new editors for Transit. I will be at the next CaDAS meeting (the Thomas Wright Trophy meeting), so anyone wishing to take over the editorship can discuss it then.



Exotic Observing

By Bob Mullen

As a youngster I was always interested in the night sky. Not fanatically so, but enough to work my way through the constellations on night-out camping trips. Even in the 1950’s light pollution was rearing it’s ugly head, the skies of the North York moors were suffering the nuisance of a growing Teesside sprawl. The Milky Way was becoming a rare sight.

All this changed with my first overseas posting in the 1960’s to Northern Nigeria, to a town on the edge of the Sahara desert. My first night outside at this strange low latitude was overwhelming, so much so I was hard put to identify the constellations in the welter of stars. Over the years even my hometown of Kano started to contribute its own pollution as street lights were eventually introduced and large organisations, fearful of growing crime, heavily illuminated their premises. Luckily my job entailed lots of desert travel hundreds of miles from the main towns. After a while the night sky and its dense contents had become pleasantly familiar but still breath-taking in its clarity and content of visible stars. One shock to my system was the total lack of interest the locals showed in

the sky. Having learnt their language I tried to catalogue their names for the stars but gave up when I found they just used a generic name for stars i.e. every star was just called - "Star". Also they never used the stars for navigation and were often as lost as I was in the desert. This is a little unfair as they got their travel directions from the sand flow in the dunes, never apparently looking up into the sky unless it was to pray for rain.

After five years in the rural heaven of the Sahara I was posted to the hell of urban Central and Southern Africa. Light pollution was rife but it was still possible as part of my job to travel out into the bush and spend nights under the stars. Again the locals never used the stars for navigation and also couldn't put native names to even the brightest of the stars. With the novelty of new southern constellations I wasn't in any position to help them out for quite a while. Unfortunately the advent of growing terrorist incursions and the random placement of landmines soon discouraged my viewing nights in the bush and the increase in security lighting in the city soon caused my interest in observing to wane. Even after another five years I never really came to grips with the contents of the southern night skies, those French Revolutionary constellation names were no help either.

My next posting was to the deserts of the Middle East. I was lucky to get there just before the benefit of oil money was converted into the volts and amps of horrendous town lighting schemes. Again the dark night skies overwhelmed me and at last I had a local population who had their own names for all visible stars. Although they spoke Arabic I was surprised to find not everyone used the older Arabic derivations for the stars as we Europeans do, although their star names started with the usual "Al" they attached different appellations and sometimes this varied from region to region. They had the same skill of reading sand-dunes when travelling but coupled this navigation with use of the stars. I spent the next twenty five years in the Arab countries of the Middle East and North Africa and was often disappointed in the lack of interest in these countries of amateur astronomy as we know it.

When first travelling the deserts with my telescope and binoculars I looked forward to the total personal isolation as described by Lawrence in his "Seven Pillars of Wisdom" – no such luck, in the desert you appear to be never alone. As a youngster I suffered from what TV announcers described as "a nervous disposition". I was hoping my isolation as an adult in the darkness of the desert might go someway to removing this condition. I almost always observed alone and usually at considerable distances from home. Unfortunately the number of times I have literally jumped out of my skin in pitch darkness is without number. I often turned from the eyepiece to find a curious Bedouin family perched on my shoulder, they arrived totally silent, probably unaware that the "ground-to-air missile launcher" – with which they were totally familiar - was in fact a Meade telescope with which they were totally unfamiliar. When invited to view through the telescope they were often flummoxed with its upside down world of stars, they preferred the more intuitive binoculars and showed a tremendous knowledge of the night sky. Stray camels have a similar ability to approach silently, only making their presence known behind you as their drool drips onto your neck – cripes!!

Andrian Nikolayev, one of the very earliest space travellers, died from a heart attack on 4 July, 2004, at the age of 74. While his career as a cosmonaut didn't include any achievements of exceptional note, he deserves to be remembered as one of the brave pioneers of the era when spaceflight was in its infancy – and very risky.

Andrian Grigoryevich Nikolayev was born on 5 September 1929, in the Chuvash Republic in central Russia. His first job was as a lumberjack. He was drafted into the Soviet Army in 1950, transferred to the Air Force, and gained his pilot's wings in 1954. In 1959, as an Air Force Major, he was selected to join a very elite group – Russia's first six trainee cosmonauts.

During training, he proved to be a tough guy, both physically and mentally. Not only was he physically strong, with an exceptional ability to withstand G-forces and other physical tortures; he also gained a reputation for being totally unflappable, and staying calm under pressure. Both were rather useful attributes for a cosmonaut in those days!

On 11 August 1962, Nikolayev flew into space aboard the one-man spacecraft Vostok 3, becoming the Soviet Union's third spaceman, and the fifth person overall to go into orbit. His flight lasted just under four days. The day after his launch, his colleague Pavel Popovich was launched in Vostok 4 – the first time that two manned spacecraft had flown simultaneously. At one point, they passed within four miles of each other – close enough for the two cosmonauts to see each other's craft.

Alarmist reports in the western media assigned an importance to this "joint mission", which it didn't really merit, with such headlines as "Nik and Pop meet in space." It was claimed that the two spacecraft had achieved "the first rendezvous in space". In fact, they had done nothing of the sort; the Vostoks had no maneuvering capability, and had merely been launched into orbits which briefly brought them close together.

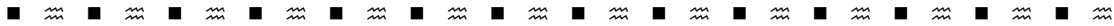
Nikolayev did, however, claim one minor "first"; he was the subject of the first live television broadcast from space, as pictures of him floating weightless in his capsule were transmitted to Earth.

Ten months later, the sixth and last Vostok flight carried Valentina Tereshkova, the first woman to go into space; in those politically incorrect days, that was seen as something sensational, and was a major propaganda coup for the Soviet Union. The fact that she wasn't followed by another female cosmonaut for 19 years clearly showed that her flight was nothing more than a political gimmick! In 1964, Nikolayev and Valentina were married in Moscow; it was a "celebrity wedding", followed by a reception attended by the Soviet Premier, Nikita Khrushchev. The following year, their daughter Yelena Andrianovna was born, heralded as the world's first "space baby". She was born normal and healthy, thereby disproving the fears of some doctors that exposure to cosmic rays in space would inevitably cause genetic damage. Yelena is now a doctor.

As Nikolayev was the only bachelor among the initial group of cosmonauts, a romance between him and Valentina during their training, as claimed by the Russian media, may have seemed quite natural – but it was probably a myth. It's believed that they were in fact pressured into marrying by the Government, for the sake of another bit of propaganda value. It has even been claimed that their marriage was ordered by the Kremlin, specifically to test whether their children would suffer any defects. Whatever the truth, it wasn't the happiest of marriages; the couple drifted apart, as the pressures of work and endless public appearances took their toll. In 1982, by which time their celebrity status had long since faded, they were divorced.

In 1966, Colonel Nikolayev, as he was by then, became Commander of the Cosmonaut Corps. He went into space a second time in June 1970, as Commander of the two-man Soyuz 9 mission. He and his colleague Vitali Sevastyanov spent over 17 days in orbit – an endurance record at the time - on a mission intended to study the effects of long-term weightlessness on the human body. As well as carrying out numerous scientific experiments, they tested new methods of exercising to counter the effects of weightlessness. The latter were not very successful; on returning to Earth, the cosmonauts were barely able to walk for several days, and suffered breathing difficulties. But it was a step in the right direction, and showed that a lot of medical research needed to be done, before attempting the long-duration missions which would characterise the future of Soviet spaceflight.

Soyuz 9 was Nikolayev’s last flight, but he didn’t retire from the Cosmonaut Corps until 1982. For each of his flights, he received his country’s highest award - that of Hero of the Soviet Union.

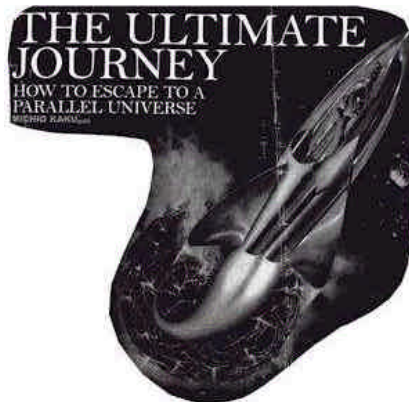


A Possible Future Journey From John Crowther

In contrast to the 1949 idea of a space rocket on its way to the Moon(see June 2005 Transit), here is an even more fantastic vehicle coming out of a “wormhole”. The picture is from a magazine called “Prospect”, which is sub-titled “Politics, Essays, Argument”. It was new to me until a friend gave me a copy.

The article mentions a satellite called WMAP, the Wilkinson Microwave Anisotropy Probe. This satellite contains two telescopes capable of detecting the faint microwave radiation, which bathes the Universe. It is so sensitive that it is able to photograph in exquisite detail the afterglow of the radiation left over from the Big Bang, which is still circulating the Universe. The WMAP satellite in effect gives us “baby pictures” of the Universe when it was a mere 380,000 years old.

WMAP orbits the Earth-Moon system at a distance of one million miles. I wonder how long its period is and how eccentric is its orbit? The article doesn’t mention these facts.



NASA Releases Stunning Images of our Infant Universe

from Ray Worthy

NASA has released the best "baby picture" of the Universe ever taken. The image contains such stunning detail that it may be one of the most important scientific results of recent years. Scientists using NASA's Wilkinson Microwave Anisotropy Probe (WMAP), during a sweeping 12-month observation of the entire sky, captured the new cosmic portrait, capturing the afterglow of the big bang, called the cosmic microwave background. WMAP is named in honour of David Wilkinson of Princeton University, a world-renown cosmologist and WMAP team member who died in September 2002. Launched on June 30, 2001, WMAP maintains a distant orbit about the second Lagrange Point, or "L2," a million miles from Earth.

"We've captured the infant universe in sharp focus and from this portrait we can now describe the universe with unprecedented accuracy" said Dr. Charles L. Bennett of the Goddard Space Flight Center (GSFC). "The data are solid, a real gold mine," he said.

One of the biggest surprises revealed in the data is that the first generation of stars to shine in the universe first ignited only 200 million years after the big bang, much earlier than many scientists had expected. In addition, the new portrait precisely puts the age of the universe at 13.7 billion years old, with a remarkably small one percent margin of error. The WMAP team found that the Big Bang and Inflation theories continue to ring true. The contents of the universe include 4 percent atoms (ordinary matter), 23 percent of an unknown type of dark matter, and 73 percent of a mysterious dark energy. The new measurements even shed light on the nature of the dark energy, which acts as a sort of an anti-gravity.

"These numbers represent a milestone in how we view our universe," said Dr. Anne Kinney, NASA director for astronomy and physics. "This is a true turning point for cosmology". The light we see today, as the cosmic microwave background, has traveled over 13 billion years to reach us. Within this light are infinitesimal patterns that mark the seeds of what later grew into clusters of galaxies and the vast structure we see all around us. Patterns in the big bang afterglow were frozen in place only 380,000 years after the big bang, a number confirmed by this latest observation. These patterns are tiny temperature differences within extraordinarily evenly dispersed microwave light bathing the universe, which now averages 2.73 degrees above absolute zero temperature. WMAP resolves slight temperature fluctuations, which vary by only millionths of a degree.

Theories about the evolution of the universe make specific predictions about the extent of these temperature patterns. Like a detective, the WMAP team compared the unique "fingerprint" of patterns imprinted on this ancient light with predictions by various cosmic theories and found a match. WMAP will continue to observe the cosmic microwave background for an additional three years and its data will reveal new insights into the theory of Inflation and the nature of the dark energy. "This is a beginning of a

I remember during the passage of Hale Bopp in 1997, many of us were taking pretty, wide field images of the comet's graceful tails. David, on the other hand, was using the 24 inch Calver to take some stunning close up images of the comet's inner coma.

While we think of David primarily as a telescope maker, he was also an observer and knowledgeable astronomer. For example, back in the 1950s and 60s he was involved in meteor astronomy. In addition to all of this, he was a highly entertaining and much sought after speaker. He lectured extensively on the great days of Grubb Parsons and I'm pleased to say that I heard him speak on occasions at Newcastle A.S meetings.

I will remember David with fondness, with great respect for his abilities and achievements, and enormous gratitude for the enjoyment his telescopes have given me over the years.

This message from the BAA was sent to Dave Graham, who forwarded it to Transit.

David Sinden

From R.A. Marriott

It is with great sadness that I convey the news that David Sinden died on Monday, 29 August. David was Chief Optician at Grubb Parsons for many years, and was responsible for some of the world's largest optics, including the 4.2-metre (165-inch) mirror for the William Herschel Telescope, the 3.9-metre (153-inch) mirror for the Anglo-Australian Telescope, and the new corrector plate for the 48-inch Oschin Schmidt at Mount Palomar.

Although embittered by the dismantling of Grubb Parsons in 1983 – a company to which he had devoted so much of his life - it did not deter him. He immediately set up his own company, Sinden Optics, and continued to produce high-quality optics ranging from standard-aperture mirrors for amateurs to a 40-inch mirror for a Japanese observatory, besides more specialist items such as a 16-inch Schmidt corrector plate and batches of 2-inch mirrors for industrial use. He also accepted commissions for a camera obscura for a Spanish institution and another for the Cuban government in Havana.

David always emphasised that his work was not a particularly exotic occupation, and delighted in such words as 'dirty', 'grubby', 'grimy', 'filthy' and 'gritty'; and yet the results were superlative. He was self-demeaning in his acknowledgement of others, and often referred to

the old hands who originally taught him, some of whom had learned their craft from others who had been taught by Howard Grubb - the Geordies whom he said knew far more about optics than he would ever know.

Although optics was David's profession, he was an amateur astronomer (he joined the Association in 1949), and would take advantage of any opportunity to talk about telescopes and to help those who consulted him. His favourite telescope was his 6-inch Calver reflector on an altazimuth mount, and at times he took the opportunity to pursue other lines of research, such as his experiments in meteor spectroscopy in the 1950s and 1960s.

David could talk for England. Telephone conversations averaged about an hour, and his lecture presented in Northampton in September 1999 lasted almost three hours, while his

e-mails rarely contained less than a thousand words. But every word he uttered and wrote was worthy of attention. He was passionate about not only modern optics but also the work of his predecessors - particularly Calver and Cooke - and was master of his art.

R.A. Marriott
Curator of Instruments
Director, Instruments and Imaging Section
British Astronomical Association



Book Review
Quintessence

By Lawrence M. Krauss

My advice is “Don’t get involved in Cosmology, it will change your life”. Reading about the theory of the Big Bang, the various universes which may or may not exist and the cosmic microwave background radiation is the ultimate way of producing the “I don’t believe it” syndrome. Poking around in the Astronomy section of Durham University library, I came across this book by Lawrence Krauss. Besides being a particle physics theorist, he also wrote “The Physics of Star Trek” and other popular books. ‘Quintessence’ is like no other book I have ever read. It is a survey of the current ideas about the universe, its formation, development and ultimate fate as seen at the year 2000.

Krauss writes in a racy, interesting and provocative style and yet takes no prisoners when taking the reader through a mind-shredding argument in cosmology or particle physics. At the end of one chapter he says “so, here we go. Hang on to your hats” and, believe me, you have to! He is a physicist at the cutting edge of particle physics theory and drops all the big names freely. Like Steven Weinberg in “The First Three Minutes” (to be reviewed one day) he can take the reader through very complex physics without resort to pages of equations and make it immediate and gripping. His descriptions of the difficult bits of cosmology are just as lucid and interesting.

I hope you ignore my advice and get to grips with cosmology, in particular I hope you will read this book. It takes effort, application and an open – but definitely not a blank – mind. The ideas and explanations it contains are worth every moment spent in battle. The universe and its theorists is far more imaginative than any novelist could possibly be.

(Published by Basic Books, ISBN 0-465-03740-2)



The Celestial Kitchen
By Alex Menarry

In the April, 2005, issue of Transit, the “Astronomical Kitchen” (it should have been The Celestial Kitchen, of course). Since then, the sculptures have been made and erected near the planetarium. If you are at the Planetarium or Observatory any time, it is just a short walk to see these unusual artefacts. A leaflet is available from the Visitor

Centre, at the 400 acre Wynyard Woodland Park, describing The Celestial Kitchen and the other things you can see on the “Sculpture Trail”. Here are some extracts from that leaflet.

A giant table top might not be the first thing you would expect to find in a Country park but look a little closer and you will be amazed by this ingenious sculpture. The unusual and unique design demonstrates the site’s strong links with Wynyard Planetarium and will help you to interpret the important and fascinating astronomical work undertaken there.

The Celestial Kitchen also has links with the history of the local area, with the table hinting at the previous land use as a farming area. Knowing the crucial turning points of the seasons, the Spring Equinox, midsummer, and the autumn equinox, was vital for successful agricultural planning years ago and can be seen by the shadow cast by the Sun by certain points of the sculpture.

The table is located in what has been called “Stoney Field”, a short walk from the Visitor Centre and the Planetarium/Observatory near the A177 at Thorpe Thewles. In 2004, Stockton Borough Council was awarded a grant from the Heritage Lottery Fund for this exciting arts project. The sculptures were created by Sunderland-based artist Colin Wilbourn, who was also responsible for two works at St Peter’s Riverside in Sunderland – “Watching and Waiting” and “The Red House”. Colin was also responsible for the renowned “Upper Room”, a visual perspective sculpture that used to sit on the bow of the river in Durham near Prebends bridge – now sadly removed.

The whole area of the Wynyard Woodland Park has been developing very quickly over the past few years. It is essentially a linear park, centred on the old railway line from Thorpe Thewles north towards Durham. The line is now a pathway for walking and is also part of the Sustrans National Cycle Network. An enormous contribution to the Visitor Centre developments has been made by Ed Restall and Bob Mullen, both members of CaDAS. Ed’s electrical and computer knowledge, project management skills and ideas have been instrumental in making the place an exciting visit for children and adults alike. The amazing improvements in the Planetarium communications and computer installations are Ed and Bob’s work, too.

Anyone who has not seen all this has missed a treat. Go there at the first opportunity and sample all the delights – the sculptures (there are others beside the Celestial Kitchen), the Woodlands, the Visitor Centre. Don’t forget to call up the Centre’s fantastic touch-screen information about the history of the site, and a catalogue with pictures, sounds and videos of the hundreds of plants, animals, birds and insects to be found in the Park. Again, all inspired and brought about by Ed.

At the Kitchen you will see a sighting method for the Pole Star, a very unusual sundial (with Equation of Time corrections, of course), upturned colander and ladle drilled with holes showing the stars of the Northern and Southern constellations - name them if you can. There is also a plate angled to cast specific shadows at the equinoxes and a knife with a pea on the end that casts a shadow which is the exact shape of the blade only on the summer solstice. All of this is explained by a metal plaque attached to the table.



A general view, above, of the Celestial Kitchen Table, complete with implements used for astronomical purposes.



The sighting holes in the two spoons point to the Pole Star. No guessing here! The artist (on the right) lined them up, with help from John and Ed, fixing the spoons in the right places. Check it out if you don't believe me.

Articles Please send contributions for the newsletter to Alex Menarry, 23, Abbey Road, Darlington, DL3 7RD, 01325 482597 (a.menarry@virgin.net) or to John McCue, 01642 892446 (john.mccue@ntlworld.com). Copy deadline date is the 25th of each month.

Stop Press

Bob Mullen will be the new editor of Transi. The October edition is my last effort. I have enjoyed doing the job very much indeed and I hope my intention keeping all our members informed of Society events and feeling a part of the Society has been fulfilled. I am convinced that a regular newsletter is the sign of a thriving Society. The reason for a change is to ensure that new ideas are allowed to come forward and keep the newsletter

fresh and topical. There is always a danger in these matters that one falls into a predictable routine and runs out of good ideas.

Bob and I will be talking about the details of the handover very soon. I trust you will all give him the wonderful support with material for Transit that you gave to me. It was a very pleasant surprise to be able to produce an edition every month, with at least 12 pages. Thanks you everyone.

Yours sincerely,
Alex Menarry