



TRANSIT

The Newsletter of



9th September, 2005. Julian Day 2453623



A new series of “identify the object” for you. This time, famous rockets and spacecraft.
Name this one. Neil suggested them, so he is excluded!

Editorial

June meeting. On Friday, June 10th , Barry Hetherington gave his talk, using his remarkable collection of slides on the subject, on the history of the important observatories of the world. No emergencies this time!

September meeting. The first lecture of the 2005/6 season will be held on Friday, 9th September, at Thorpe Thewles. Martin Whipp, FRAS, of the York Astronomy Society, will talk about “Journey to the Farthest Worlds”. Usual time – 7pm for 7.30 start.

June Galaxy. The two images of the spiral were of M81, NGC 3031, in Ursa Major. I’m rather sorry this series has ended – there have been some wonderful pictures, don’t you think?

September’s Picture. A new set of pictures to test your knowledge and/or memory. Neil Haggath has suggested them as being the more important historical rockets and spacecraft. This is where an internet connection comes in handy. All these things should be findable somewhere - using Google?

June Moon picture. On the back page of the June issue, the two craters between the Cs were Theophilus and Cyrillus. The reason for choosing them was they are so prominent and in an easily identifiable position. And, of course, it was a Keith Johnson image!! An article by Neil later in this issue gives some of the background to the names.

Wynyard Woodland Park. We are all aware of the Observatory and Planetarium at Wynyard, near Thorpe Thewles. However, I wonder how many members know of the rapid speed of change and development going on there? With a huge input from CaDAS people – notably John McCue, Ed Restall and Bob Mullen, among others – Stockton Borough Council are putting a big effort into developing the area as a recreational amenity. There will be an article in a later issue about the Celestial Kitchen, which everyone should go and see. You should also see the re-vamped Visitor Centre. As well as a very good café, with home made meals and cakes, you will see the amazing “touch screen” information system. This has been designed and installed by Ed Restall and is truly remarkable. There is lots more to see and enjoy, particularly along the delightful woodland walks. I urge you to go and have a pleasant few hours there.



New Editor for Transit required

The present editor has now produced 39 issues, since December, 2001, and he feels that the time has come for a new approach and new ideas. If anyone would like to take over the editorship, please contact me (see contact telephone and email at the end of Transit). In any event, increasing pressures from other things are making it very difficult to find the time to do a proper job and I will have to resign by Christmas. It has been very enjoyable and I look forward to someone stepping into the post soon. To smooth the transition, I can hand over lots of material, articles and pictures, to ease the first few months and will be pleased to help with any production problems for a while.



4000 years. Surely the Moon, with less than 1/10th of the surface of the Earth gets a one mile crater every 50,000 years, or say 40,000 years for a slightly smaller crater. In fact over the 2,000,000,000 years since the major lunar lava flows cooled, 40,000,000 of these craters (one every 50 years) would be formed, covering the surface four times over with white vapourised dust. The Moon would now be almost white, no dark mare areas at all. Combined with larger impacts, the whole surface would be heavily cratered, like the lunar highlands.

So, unless our lunar samples dating is far too high, Buratti and Lane's cratering rate are much too high! The Apollo seismometers did record a one-ton meteorite impact on 17th July, 1972 on the lunar far side, the largest recorded in 9 years, apart from the spacecraft deliberately crashed. Of course to be absolutely sure of the age of Stuart's Crater and Giono Bruno Crater, a few samples would have to be dated. Unfortunately the human race would have to send spacecraft to these craters to collect the samples, something we have been incapable of for 29 years now.

The cratering statistics were calculated from the NASA book "The Geological History the Moon", probably the best book ever printed about the Moon.

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Neil had some interesting comments on the puzzle craters in the June issue.

The June Transit Moon Craters

The two crater names, Theophilus and Cyrillus, are something of a puzzle. Given that lunar craters are generally named after scientists and philosophers, I'm baffled as to what right those two names have to be there!!! Theophilus was apparently a Greek theologian, who wrote part of the New Testament – not a lot to do with science! As for Cyrillus, I would assume that that is named after the early Christian bishop Cyril – later made a saint, would you believe – who ordered the destruction of the Great Library of Alexandria – not to mention the murder of Hypatia, the last scientist to work there. In other words, he was more responsible for *halting* science and human progress than any other single person who has ever lived!!!!!!!

Of course, Giovanni Riccioli, who invented the system of lunar nomenclature, was himself a Jesuit priest, so I guess that it's not surprising that he honoured Theophilus. But you would have thought that any "respectable" clergyman should have been ashamed of what Cyril did in the church's name!

Neil Haggath

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An article about caving in an astronomy magazine? The editor has lost his marbles, I hear you say. There are several reasons for including this piece. One is to introduce those of you who haven't read much about speleology to a fascinating subject of eccentric human exploration. Another is to point out once again the wide range of interests there are in CaDAS. Mike tells me there are several members interested in the subject but I don't know who they are. The whole subject arose when I was giving a talk

on a walking holiday on the Spanish side of the Pyrenees. We visited the “Bulls Roar”, where a large river disappears into the ground, discovered by the famous Norbert Casteret and a story well worth reading about. I was more than a little surprised to find that Mike knew all about Casteret and Norbert’s discovery that the River Garonne actually rises in Spain.

Norbert Casteret and Caving

By Mike Gregory

Norbert Casteret was born at St-Martory in 1897, a small village situated on the banks of the Upper Garonne about 85 miles east of the abyss of Pierre St.-Martin, where later he was to become so involved. From an early age he was interested in rock climbing, geology and, more particularly, speleology (caving and potholing). However, his main claim to fame, despite his caving discoveries, was that he became a populariser of such pastimes. His articles in local papers and his own publications made the hidden world beneath the Pyrenees common knowledge to those who yearned for adventure.

Additionally to all this, he was a patriotic Frenchman. He fought in the French army during the 1st World War and joined the Resistance during the 2nd World War. At the end of hostilities, thoughts once more returned to adventures deep beneath the ground, and one thing that the war had left behind were the parts to make powerful winch systems to plumb the depths of the dolines. Previous to this, most descents had been made by the laborious rope ladder. Abysses such as Pierre St.-Martin, which was already reckoned to be 320 metres deep, were really beyond rope laddering.

By 1950 Norbert Casteret was urging the next generation to continue his work and thus thoughts turned to the doline known as Pierre St.-Martin. The Arette of Pierre St.-Martin is situated at 42° 58' north and 00° 44' west, and not far from route D 132 which crosses the Pyrenees at this point. I am not sure whether that road was in place in 1952 though early photos did show motor vehicles in the vicinity of the abyss. Also at that time, the boundary between France and Spain was not clearly marked. The French thought the hole was in France but the Spanish thought it was on their territory despite its French name.

The first major assault on Pierre St-Martin took place in 1952, though there had been attempts since 1948. A new winch had been designed by Max Cosyns and this was fixed in place over the doline. The pitch itself, thought to be 320 metres deep, was not really a vertical pitch. For much of its fall it was more a convoluted fissure. Therefore the cable would not hang vertically all the way down. During the descents the winch gave constant trouble but, otherwise, the expedition went well to that point.

After some five days below ground, the members prepared to come to the surface. Those present were Haroun Tazieff (a Vulcanologist); Jacques Labeyrie (later to become a famous Physicist); Beppo Occhialini; and Marcel Loubens. Norbert Casteret and the winch designer, Max Cosyns, might have been present too. The first to ascend was Marcel Loubens. Marcel had been born at Mazares-on-the-Salat in 1923 and had first met Casteret in 1940 (their home villages were only two miles apart). Together with Joseph Delteil, Loubens and Casteret made the first tentative explorations of the Henne Mort pothole. However, Marcel was seriously injured by a rockfall. From 1943 he worked as a guide for the Resistance Movement and finished the war with the rank of 2nd

Lieutenant. At the end of hostilities he rejoined Casteret and Marcel was the first person ever to reach the bottom of Henne Mort.

Marcel Louben's ascent was problematic from the very start as the winch gave trouble far above. After a while he had to find a narrow ledge so that the load could be taken off the winch for repairs. When the ascent recommenced the problems reached a disastrous level. The bolt which secured the wire to the cradle fractured, and Marcel and the cradle plummeted thirty metres onto a floor of huge boulders, then a further ten metres down a steep boulder slope. Those nearby could only watch helplessly. For all Marcel survived the fall with only a small cut to his face, he remained in a coma, and those present were unable to help him. It was to be many hours before the winch, cable and cradle could be repaired and the expedition doctor, Dr. Mairey, able to descend. The descent was a terrifying experience for him. There were several others prepared to go first but they all knew that a doctor was the only slight hope for Loubens.

Dr. Mairey found Marcel beyond earthly help. His injuries were thus that it would be impossible to bring him up to the surface on a stretcher. Neither the medical or engineering knowledge was available in 1952 for such a task. Though Loubens was little known at that time outside of caving circles, his name became very well known over the next few hours and countless thousands listened to the saga on their radios. Marcel Loubens died thirty six hours after the fall and instantly became a hero in France and the countries on the Iberian Peninsula. French speleology's first martyr.

Building materials were then lowered into the pitch and Marcel was buried near to where he fell in a concrete tomb. The reason for this was because his friends planned to bring his mortal remains to the surface for interment near his home. The entrance to the doline was soon after covered with a padlocked grill.

The following year (1953) friends of Marcel hoped to have been able to bring up his mortal remains but a winch capable of the task and yet being portable enough to be carried there just did not exist. However, plans were afoot for such a machine! By 1954 a new winch had been built by an engineer cum caver called Corentin Queffelec. This was diesel powered like earlier versions, but drove a generator which in turn powered an electric winch. Not only was this system more powerful and with a smoother power delivery, but by reversing the polarity of the electric motor, the winch could be braked without putting an enormous loading on lesser mechanical parts.

To make the ascent a little easier, the Lyons scout troop (truck drivers apparently), who had acted as porters on the ill-fated 1952 expedition, rope laddered the upper parts of the pitch so that help would be on hand to manoeuvre the casket through the confined parts. Nevertheless, the actual ascent took many hours. Jose Bidegan, a close friend of Marcel, took it upon himself to be attached by a short line to the casket, and he guided it on its ascent for many hours. At one stage a narrow ledge was found on which to pause awhile to rest both Jose and the hard worked winch system.

Finally, after many long, hard hours the casket reached the surface and the mortal remains of Marcel Loubens were taken to be interred near to his home. In more recent years easier entrances have been found to enter the Pierre St.-Martin system and the total depth is now some 2,000 metres. But after half a century, the memory of Marcel Loubens and his brave friends lives on. Through all this, that Grand Old Man of French caving, Norbert Casteret, lived on. He died at Toulouse in 1987.

mirrors by hand. My parents didn't think I should spend a lot of money on a big telescope.

Did your parents encourage you? Was there a Jack Youdale to show you how to go about grinding mirrors?

My parents gave me books on astronomy and science in general. I quickly discovered that physics was for me – biology was far too messy! My religion teacher at school, Priest Ernst Moll, was an enthusiastic astronomer and out of school he was a really nice man, when he started talking about astronomy. He had big telescopes and invited me to have a look at them. Over the years he gave me a lot of optical things and books. Someone else, Georg Neumann, was also very encouraging and helpful and in fact it was at his observatory I had my first night with a real astronomical telescope – not my toy grade scope of these days. He was amazed when I recognised his telescope as a Cassegrain and realised I knew quite a bit about the subject.

You mentioned school. Where were you brought up?

I was born in Rheine, on the River Ems in northeast Germany. I spent my whole life there, until I was 21. My brother is older than me and works in telecomms. My parents are still in Rheine and I visit them once or twice a year. It is difficult for them to visit here, since I don't have a car and my mother is not very mobile.

Where did you go to University?

For my master's degree in Physics, I went to Bonn. In Germany there is no pre-doctorate degree in astronomy. You must have a degree in physics first and then go on to astronomy. The logic of that is that astronomy is so specialised and is very largely physics, anyway, so, if you want a job in Industry, physics is more useful. For my doctorate, I went to The Astrophysical Institute of Potsdam, which is a historic centre of astronomy. We build PMAS, a spectrograph for the 3.5 metre telescope at Calar Alto Observatory (Spain), and I was researching optical fibres for instrumental use. During my research, I went to work on the 6 metre Russian telescope at Zelenchukskaja. It has a solid mirror made of 42 tonnes of glass and this makes temperature control essential and very difficult; the first mirror cracked some years after installation! By the time I had finished my PhD in 2000 I was 30 years old.

I certainly noticed my ageing because shortly before I got my first heart pacemaker installed...

You have a pacemaker at such a young age? One would never suspect.

My heart was going very slowly – 40 beats a minute in the day and going down below 30 at night. This was considered too low, so the pacemaker keeps it at about 60 beats per minute. I requested that particular rate so that when I was timing exposures and things at the telescope I could use my pulse rate – I didn't tell the doctors that! The pacemaker causes problems at times when I go through the security at airports.

How do you come to be in Durham? Why Durham?

I wanted to stay in astronomy and was still very interested in instrumentation. Posts in Germany are very few and far between. I would have liked to go to ESO but the posts

were not permanent. At a conference I met a Durham researcher called Ray Sharples, head of our group here - I could hardly understand his English accent at the time (I now speak Geordie quite well!). Durham has a very big reputation in the field I am interested in. He encouraged me to apply for a postdoctoral position. The job interview was awful. It was on the telephone and I could hardly understand anything. However, it was really a formality and in 2000 I arrived to work on the IMACS-IFU, a 2000-fiber system for the 6.5m-Magellan-I telescope on Las Campanas, Chile. I lived in Gilesgate in a house one category up from a tent. Then I moved to Esh Winning and now I have a house in West Cornforth. The house has a dark garden with two sheds for an observatory and I can come to work on my bike.

I see you have pictures of two budgies in your office.

I loved budgies when I was a boy in Germany and in September 2003 I decided to have two in my house. The yellow one is Mira and the blue/white one is Sirius, of course, for obvious astronomical reasons. They are very entertaining and easy to keep. I let them fly around when I am in. *Have you taught them to speak German?* No, they only speak Budgie.

Tell me about the amateur part of your astronomy nowadays. How do you mix the professional and the amateur?

The two are totally different activities. As a professional it is all high technology, big computer-controlled installations, lots of absorbing and fascinating science, lots of initials like IMACS and IFU. But professionals don't look at the sky!! It's all done from control rooms by computer. As an amateur one appreciates the grandeur of the skies. You have to find where things are yourself. You can choose what to look at on the spur of the moment. You are in the night environment. It is a totally different experience. The other big advantage and satisfaction is that you can use instruments you have made yourself. My biggest mirror to date is 18 inch, ground by hand and tested at home, now in a Dobsonian mount at a friend's in Berlin. My next project is to make a 24 inch mirror. It takes about 100 hours altogether to grind and test such a mirror.

What are you reading at the moment?

My reading is mostly factual and scientific – optics, astronomy, local history, mining history. And the 'Hitch-hikers Guide to the Galaxy' series, of course.

Do you have time for any other hobbies?

I love DIY around the house. I cycle a lot, touring as much as possible. There is a conducted and supported tour in the Czech republic I want to do, a week of 100 km days, cycling between observatories and historical astronomy sites – Kepler and Tycho Brahe and all that. *That sounds wonderful. Could I go?* You have to apply to the Czechs – the tour is very popular.

Do you enjoy travelling?

Not for holidays or sightseeing. I am not the chap who would go to Majorca for a sun holiday. I am lucky enough to go all over the world with my job and see the exciting observatories. Mostly I like being at home with my telescopes and budgies.

Who has influenced you the most?

That would have to be Ernst Moll. He is now 81 years old and we are still in touch. I recently bought him a new telescope, a Celestron 5. His C8 one became too big for him to set up on the pillar in his garden and the C5 is much easier.

And you use computers all the time.

I hate Windows! Linux is the operating system to use. However, when people ask me to help with their computer problems it has to be Windows, I suppose. I have a reputation among friends as a computer whizz but it is totally accidental. One day a chap had installed a modem but couldn't get it to work. I merely re-started the computer and hey presto!

How did you come to join CaDAS?

I found the local societies on the web and joined Durham at first. I met the Gargett twins there and they asked me to do a talk for CaDAS and I joined after that. I am also associated with the Sunderland Society, helping them to acquire the telescope and other equipment for their new observatory.

To what do you attribute your boundless enthusiasm?

I haven't thought about it in that way. I am confident it will not go away. I look on it as the reality, a consequence, of astronomy. How can one not be enthusiastic about all the things happening in the Universe?

And your most satisfying achievement in astronomy, so far?

Professionally, the IMACS-IFU instrument for the University. As an amateur, the 18 inch mirror.

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Light Relief in New York

From John Crowther

John spotted this news item in the Daily Telegraph of 3.6.05.

Sunlight is now so scarce in skyscraper-packed New York that developers have resorted to importing their own. Heliostats, sun-tracking mirrors beloved of James Bond villains looking for a cost-effective death-ray, have been installed on the roof of a new 23-storey building in Battery Park City, close to the financial district in lower Manhattan.

The three mirrors, 8ft in diameter, will be guided by a computer to track the movements of the sun, capturing the light and redirecting sunbeams into a small park below. The technology will create circles of light and each heliostat could be directed to shine on a particular spot in the park.

The Battery City Park Authority, which has paid more than \$1 million (£550,000) for the heliostats, hopes the extra sunlight will encourage people to use the space. "This is going to change the relationship between New Yorkers and the sun in ways that haven't been tried before" says Davidson Norris, the heliostat plan's designer.

