Southern Stars

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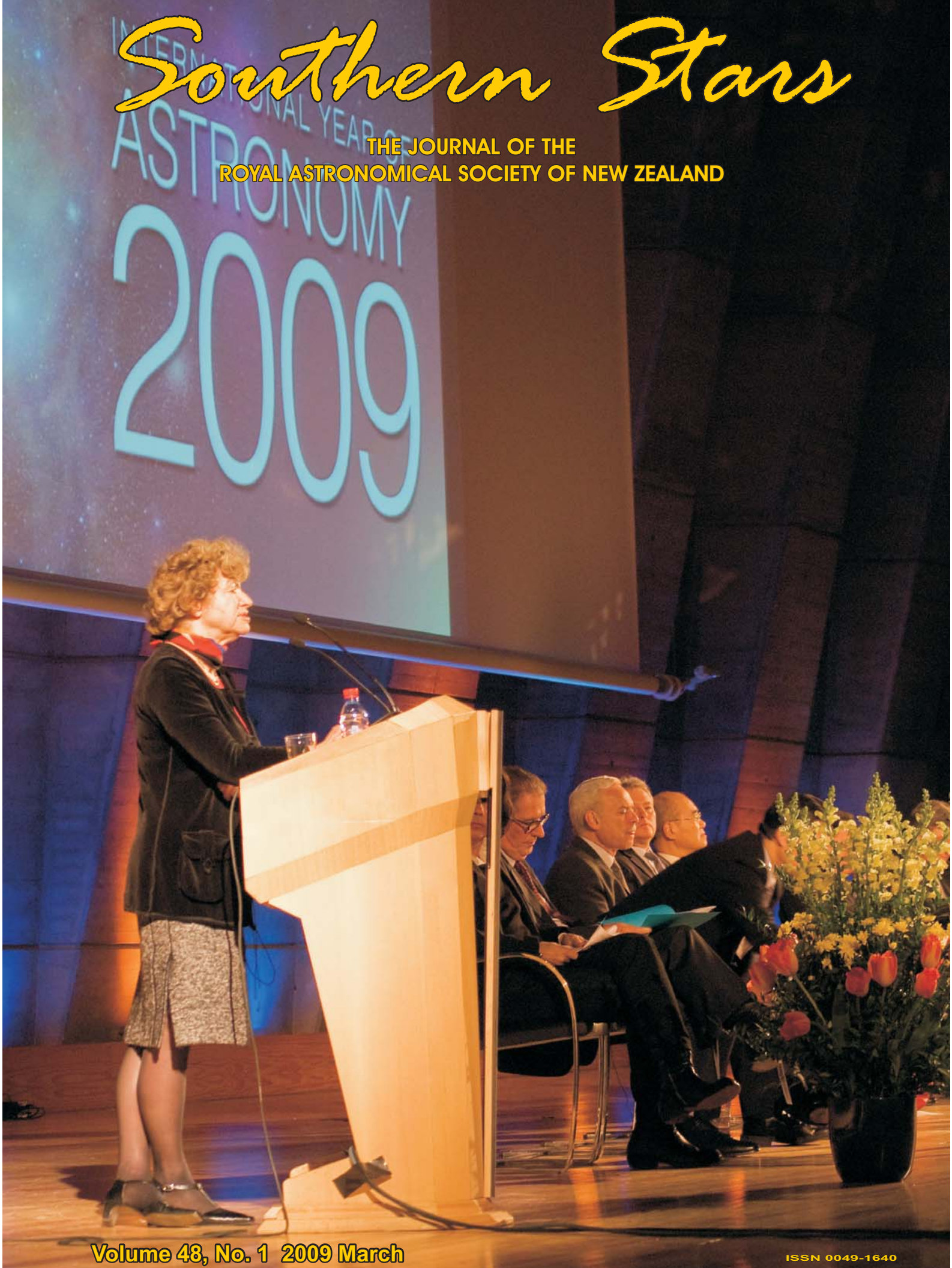

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IYA2009 Opening Ceremonies in Paris

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IYA2009

An account of the International Year of Astronomy Opening Ceremonies held at UNESCO headquarters, Paris, January 15 & 16, 2009

The International Year

Perhaps we were beaten by Kiribati or Tonga, but the public solar viewing in the North Island on New Year's Day must have been among the first events of the International Year of Astronomy. The official opening, however, took place in Paris a fortnight later. We were members of the Kiwi delegation to these two days of ceremonies. Here, we report light-heartedly on some of the highlights in words, pictures and URLs.

Following a campaign by the International Astronomical Union (IAU), the General Assembly of the United Nations chose 2009 as the International Year of Astronomy (IYA2009) because it is the 400th anniversary of Galileo having turned his telescope on the sky. UNESCO, the Educational, Scientific and Cultural Organisation, was declared lead UN agency for the Year, so the official opening was held in UNESCO's triple-winged headquarters not far from the Eiffel Tower.

The delegations

Some 800 astronomers attended representing almost a hundred countries from Afghanistan to Zambia. Hardly surprisingly, the French predominated, with more than 350 delegates, followed by the United States, with over sixty. The Germans and Dutch were also present in force. The most-photographed delegate was unquestionably Johannes Kepler. IYA2009 also commemorates the publication of Kepler's first two laws of planetary motion in his *Astronomia Nova* in 1609. Visit his web site for a catchy theme song 'Shoulders of Giants'.

An 'allSky' clamshell dome and telescope exhibited in the UNESCO grounds by Germany's Baader Planetarium.

Yvette at the Paris Observatory. She is in the void beneath the observing floor of the historic east-tower equatorial refractor.

A touching feature that looked to the future was that each country could send two students whose expenses in Paris were covered by the IYA2009 organisers. Yvette and Stacey were New Zealand's students. Yvette is just about to begin her Physics Honours year at Auckland University. She has worked with the MOA project analysing event MOA-2007-BLG-192 where the lens object is possibly a substellar-mass star orbited by a ~3 M_{Earth} planet. Stacey has just finished at Tawa College (where she was student coordinator of the Astronomy Club), and is about to enrol for a B.Sc. at Massey University. (See back cover.)

The student representatives were all accommodated together in a youth hostel, which was great as it gave the opportunity for everybody to get to know each other and spend time together. Stacey and Yvette found it a definite highlight to meet so many different people with common interests and passions, and expect to keep in touch and perhaps visit some of them. For Stacey, it was also instructive to find out about the types of astronomy courses offered at universities around the world. Talking to the other students really opened her eyes to how many different options there actually are.

Most of the IYA2009 Opening Ceremonies were held in UNESCO HQ's cavernous 'Salle 1'.

The two other Kiwi delegates were William, former Director of Mt John University Observatory, and Margaret Austin, one time Minister of Research, Science & Technology, and former Chair of the NZ Commission for UNESCO. The week following the opening, Margaret put the case for a Mackenzie-basin StarLight Reserve to the joint IAU-UNESCO *Astronomy and World Heritage* initiative.

Absent Ministers

After we had all passed through the metal detectors, we were surprised to find that the chair of the first session was a pop singer and impressario, Jean Michel Jarre, perhaps best-known in Aotearoa as composer of part of the soundtrack for the popular videogame *Grand Theft Auto*. In fact, UNESCO appoints 'Goodwill Ambassadors' who use their celebrity to spread UNESCO ideals, and Jarre, who has asteroid 4422 named after him, is a Goodwill Ambassador for Astronomy. There were some welcoming remarks by Mr Koïchiro Matsuura, the UNESCO Director-General. Then Dr Catherine Cesarsky, President of the IAU, outlined the programme for IYA2009. Almost 140 nations are participating, each with a national programme. There is also a variety of global projects: eleven 'cornerstone' and nine 'special' ones. The French-Italian company Thales Alenia Space has been a contractor for many European satellites and space probes and is an official and presumably generous sponsor of IYA2009, so the CEO of Thales Alenia was next on the podium. He reiterated several times that though astronomy formed only a tenth of his company's activities, it was hugely motivating and inspiring for the whole work force. Herschel and Planck are two astronomy satellites due for launch this year designed and built by Thales Alenia Space, and the company is also supplying 25 of the antennas for ALMA, the Atacama Large Millimetre Array.

Various government ministers should have followed. The French Minister, Valérie Pécresse, has a reputation for not turning up, and true to form had been called to more pressing duties. Her speech was given by an elderly advisor. "I'm sure you were all expecting an attractive woman," he said, "and instead you get me." Nor was the lady minister from Japan present. The men ministers did only slightly better. The Czech Republic's minister was represented by the bow-tied president of the Czech National Committee on Astronomy. Though Czech politicians spurned their association with Kepler, the Italians were faithful to Galileo, and Mr Giuseppe Pizza, Vice-Minister of Education, Universities and Scientific Research, was present in person. "Don't let us forget," he said, "that Galileo himself, before observing the sky, used his telescope to show the rulers of Venice the distant sails of ships approaching the Lagoon, for which reason his salary was doubled."

"Today," Signor Pizza continued, "Ministers no longer have the power to double professorial salaries" ... and a great sigh of regret echoed around the auditorium.

Shabbier suits

The snappy tailoring of the corridors of power gave way to the shabbier suits of the astronomers. In a few pages we cannot present all that was said in a very full programme, so we limit ourselves to some memorable remarks. For complete details, the talks are available as streaming video though the Opening Ceremonies web site.

Delegates from the Old and New Worlds.
Left: Johannes Kepler (in reality, John McFarland of Charleston, South Carolina).
Right: Norberto González of the University of Puerto Rico. Norberto has a NASAIYA2009 Student Ambassador grant to develop an 'Astrobiology Café' in Aricebo. He plans to use tambourine music as well as the smell of coffee to draw in the crowds.

Left: Student delegates from around the world. (From left) Otilio Garcia Munguia (Mexico), Miftachul Hasana (Indonesia), Nikki Pekeur (South Africa), Melody Mwewa (Zambia) Lucky Puspitarini (Indonesia).
Right: International 'Twister' tournament in the student hostel.

George Salibar from Columbia University contested the widespread belief that Islamic astronomy was merely a rehash of Graeco-Roman astronomy, though it certainly took account of it. Islamic astronomers had more accurate values for many astronomical parameters than the ancients. Further, some of Copernicus's ideas derived from Islamic scholars. For example, Ibn al-Shatir (died 1375) produced a double-equant explanation of lunar motion which was given later by Copernicus (died 1543). That Copernicus knew of Islamic sources seems certain: one of his diagrams copies one given by Nasir al-Din al-Tusi (died 1274), *including a mistake*. Another speaker, Françoise Balibar of the Université de Paris-Diderot, hoped that globalisation would lead to a less euro-centric view of history and the history of science, and we can only concur.

Unusually for a French person, Madame Balibar also advocated preserving the purity of the English language. Modern science is dying, she asserted, because it is being spoken and written by scientists with a vocabulary of only a hundred words. "Scientists should not use pig English," she said.

But it is unrealistic to expect English native-speaker fluency at international meetings. Jocelyn Bell Burnell, from Oxford University, was the sole native English-speaker who took this to heart and spoke slowly and deliberately. However she couldn't resist a swipe at the yanks. Noting that the most stable pulsars are better time-keepers than atomic clocks, she added "The Americans are working on that because they don't like being beaten by nature." She speculated that one day pulsars might be used as navigational beacons for interstellar voyages.

Another French person, planetary scientist André Brahic, also from Paris-Diderot, continued the English theme. Using a vocabulary that far exceeded a hundred words, and talking at machine-gun rate, he said that it was odd to be speaking in English in France, "but I will keep my strong French accent to remind you that we're in Paris." Professor Brahic also noted that in the 16th century 5% of the Danish national finances went to supporting Tycho Brahé and that with typically a total of only 1-2% of modern GNP for *all* scientific research, modern scientists and astronomers lack ambition. (We doubt that Signor Pizza would agree.) After showing us a slide of a gravestone inscribed 'In Memory of Man, 2,000,000 BC -- 2030 AD', he noted the importance of the atmospheres of Mars and Venus for understanding terrestrial global warming because of the former's mild and humid climate, now lost, and the latter's overwhelming greenhouse effect, towards which the Earth is perhaps heading. Concerning the numerous discs found in astronomy --- protoplanetary, accretion, etc. --- he likened them to a woman's perfume: "very little mass, but a lot of information".

Robert Wilson, from Harvard, wore a nice suit. Perhaps this was a consequence of having won a Nobel Prize. He outlined the story of his discovery of the cosmic microwave background with Arno Penzias. He noted that the launch of Sputnik in 1957 had had a big effect on his career, both in inspiring him and in causing a massive increase in government spending on science. He thought that today global warming ought to provide a similar stimulus for young physicists.

Martin Rees, the English Astronomer Royal, introduced 2009's other big scientific celebration---the 150th anniversary of publication of Darwin's *The origin of species*.

Various web sites

IYA2009 main site, including links to national nodes, all special and cornerstone projects, and much else:
`www.astronomy2009.org`

Opening Ceremonies, including webcasts, photos and blog:
`ama09.obspm.fr/ama09/open.php`

New Zealand national node:
`www.astronomy2009.org.nz`

Astrobiology Café:
`www.prsgc.upr.edu/d2/20081023_niya.html`

Astronomers pour out their hearts:
`www.cosmicdiary.org`

Astronomy and World Heritage initiative:
`whc.unesco.org/en/activities/19`

Baader Planetarium:
`www.baader-planetarium.com`

DVDs:
`www.BlastTheMovie.com`
`www.cfht.hawaii.edu/HawaiianStarlight`
`canalc2.u-strasbg.fr/video.asp?idvideo=8337`

Galileoscope:
`astronomy2009.org/globalprojects/cornerstones/galileoscope`
`galileoscope.org`
`www-irc.mtk.nao.ac.jp/~webadm/Galileo-E`
`www.orbys.co.jp/kolkit`
`business3.plala.or.jp/starbook`

Johannes Kepler:
`www.JohannesKepler.org`

Magic Planet:
`www.youtube.com/watch?v=dROMJfAEp4k`
`www.globalimagination.com`

Romanian astropoetry:
`www.cosmopoetry.ro`

StarLight Reserves:
`www.starlight2007.net`

STEREO lunar transit:
`apod.nasa.gov/apod/ap070303.html`

`Sun Rings' extract:
`www.kronosquartet.org`

Gesticulations: Jocelyn Burnell's staider British gesture (*left*) contrasts with the Gallic exuberance of Françoise Coombes, chair of the ceremonies' local organising committee (*centre*) and André Brahic (*right*).

At the podium: Catherine Cesarsky, President of the IAU; Robert Wilson, Nobel Prizewinner; Lord Rees, English Astronomer Royal; Hubert Reeves, nuclear astrophysicist.

Relating to this theme, exoplanet-discoverer Michel Mayor, of Geneva, said that the search for external life was a challenge for the next generation, while André Brack, from the Centre de biophysique moléculaire in Orléans, contrasted Epicurus's belief in an infinity of worlds with Jacques Monod's claim in his book *Chance and necessity* that the probability of life's appearance is quasi-zero. "Who is right?" Professor Brahic wondered. Lord Rees believes that if it comes, the discovery of life around other stars will influence our view of our place in nature as much as Galileo and Darwin.

Professor Rees also used the ouroboros (a snake swallowing its own tail) as an illustration of the possible intimate cosmological link between the very small (represented by the serpent's tail) and the very large (the head)---especially the fact that galaxies may be held together by the gravity of subnuclear particles. He noted that science has arrived at the frontiers of the very small and the very big, more or less, but that the frontier of the very complicated is still before us. Finally, he noted that though we have assimilated the idea of the deep past, we still have to come to terms, philosophically, with the deep future before the Sun's fuel runs out. Four billion years hence, he said, terrestrials "will be as different from us now as we are from a bug." But he wondered if any extraterrestrials who might have been watching us from the beginning would not be amazed by the present "unprecedented fever" half-way through the Earth's allotted span. Echoing Professor Brahic's 'In memory of Man', the Astronomer Royal wondered whether the 21st century is a defining moment. One species, us, has the planet's future in its hands; and in this context to be unaware of the history of the universe is a cultural deprivation (and, we would add, politically negligent).

Amongst other talks, the Canadian-born nuclear astrophysicst Hubert Reeves, who sidelines as a well-known astronomy populariser in France, gave a very clear and simple talk about the philosophical attraction of parallel universes. It seems that the fundamental constants of physics are finely-tuned to permit the development of life. For example, galaxies and stars would not condense if gravity was a little weaker and would not live long enough for life to form if gravity were a little stronger. Since this seems extraordinary, perhaps ours is just the life-friendly one out of many parallel universes with different values of the fundamental constants. Or perhaps there are no other universes and ours is special. Neither option is particularly palatable. Reeves' view is that it is better to leave a question open than to accept an unsatisfactory answer which may block what could be a fertile source of discoveries. We would add that we know nothing about why the fundamental constants have the values they have---perhaps other values are forbidden for some reason.

From Kevin Govender's talk.

Butterflies: *Left*: Butterflies in love - a Chinese constellation from Franco Pacini's talk 'The skies of the world'. *Centre*: Julieta Fierro, from Mexico, who ended her presentation on Mayan astronomy by letting off a flight of paper butterflies. *Right*: The butterfly nebula, M2-9, imaged by the Hubble Space Telescope, from Sylvia Torres-Peimbert's talk on planetary nebulae.

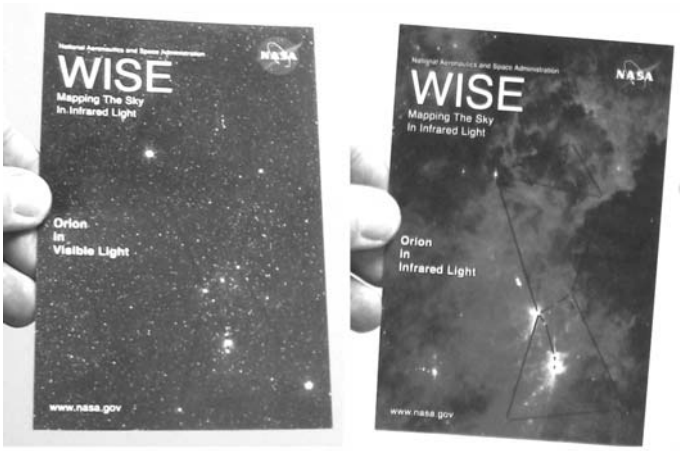
Think!

A heartfelt speech was made by Kevin Govender of the Southern African Telescope Collateral Benefits Programme. His one-word summary of his message was 'Think!' "Have you ever wanted to change the world?" he asked. "Gandhi, Mandela, Mother Theresa---their great influence is because they capture people's minds." For Kevin, IYA2009 is about inspiring people to think. The French Revolution praised astronomy for its rôle in banishing superstition, but lest anyone think this is work accomplished, Kevin told us of his childhood on a remote sugar-cane farm, with a glorious southern sky above. He was forbidden to look at the stars for fear of the warts they would bring! Eclipses, he finds, are a good way to start discussion in communities still affected by superstition. Amongst the IYA2009 cornerstone projects, he highlighted Developing Astronomy Globally with an emphasis on astronomy *for* development (e.g. through dark-sky tourism), and the Galileo Teacher Training Programme because in developing countries (and no doubt elsewhere!) there are still many teachers who won't allow children to ask questions for fear of not knowing the answers. The only way to change the future is to inspire the young. "IYA2009 won't mean much," Kevin concluded, "if we don't use this, our opportunity to change the world."

An unexpected theme

When the UN General Assembly declared the International Year it hoped to 'raise public consciousness of the importance of astronomy and basic sciences for sustainable development' (no less!) 'through the excitement generated by the subject of astronomy.' It also hoped to promote 'widespread access' to new astronomical knowledge and observations. However, many of the IYA2009 speakers expressed an additional aspiration, one that ties in with the fact that 2009 is also the UN International Year of Reconciliation.

Although almost every speaker was a professional scientist, the Opening Ceremonies were most unlike a normal scientific meeting, where talks are invariably focused on science and science alone. Many speakers felt free to express their hopes and motivations. And many saw astronomy as a vector for peace. "The night sky displays its wonders equally above all nations," said Catherine Cesarsky, "making astronomy, by essence, a peace

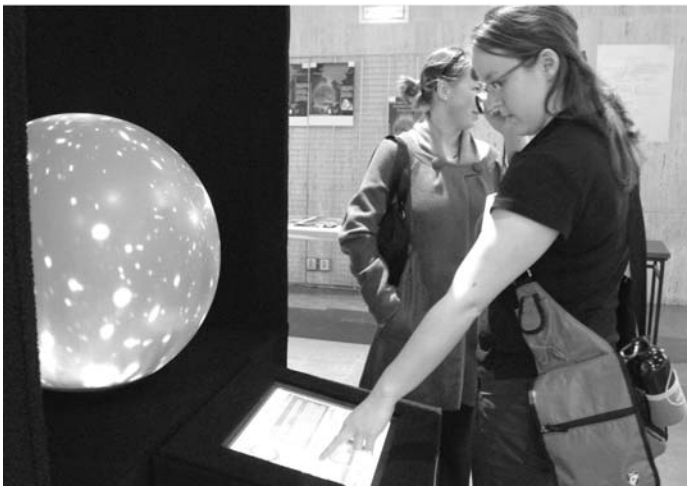


A two-view postcard that, depending on orientation, flips between visible and infra-red images of the Orion star-forming region.

promoting science." Kevin Govender showed us blank rectangles and asked us to imagine war pictures. "Let's hope that the light of the stars will soon be back to occult the flash of the bombs," said Franco Pacini, from Italy. Referring to the repeated riots which blight the bleak housing estates surrounding many French cities, André Brahic advised "If there's trouble in the suburbs, send in the astronomers first. The police can come later."

Even the absent ministers agreed. "I strongly believe that the Universe is the best place to realize UNESCO's mission," said the Japanese minister, Ms Tomoko Ukishima, through her representative, going on to quote the UNESCO constitution: "Since wars begin in the minds of men, it is in the minds of men that the defences of peace must be constructed."

The '100 hours of astronomy' cornerstone project is perhaps the most inspiring for world harmony. Starting at local sunset on April 4, a giant continuous wave of star parties will sweep around the globe for 24 hours, indifferent to national borders.



Annemarie Pickersgill (IYA2009 student delegate from Canada) selects a menu option for this unusual computer display. The globe displays spherical data sets such as planetarium topology or weather, or (here) the distribution of nearby galaxies.

Side shows

There were numerous activities outside the auditorium. Two receptions, of course, but also the stands of manufacturers, publishers, observatories, space agencies and the like. Unexpected items included (astro)tipuritura, the shortest Romanian poetic form:

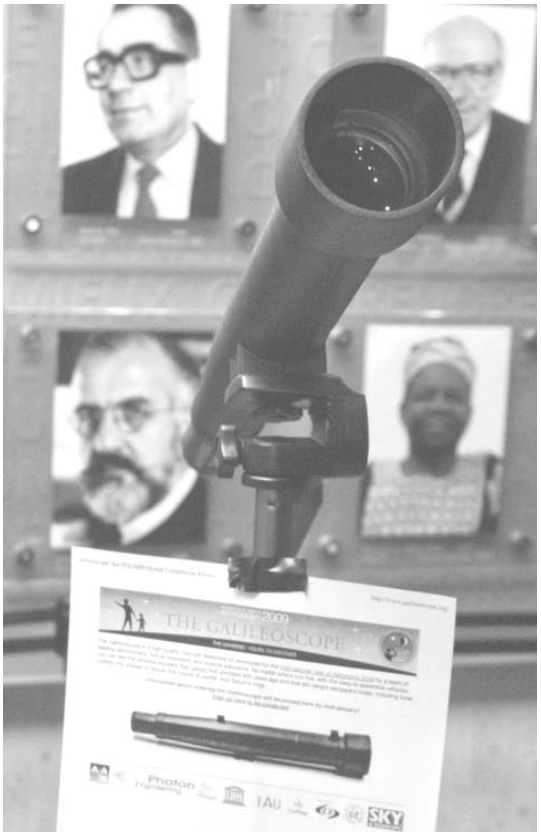
I live in the Milky Way,
But some Wine would be O.K.!

NASA had some snappy technology on display. At a simple level, there were postcards faced with grooved plastic lenses. Depending on angle, the view on one card flipped between the Orion star-forming region in visible and infrared light. Another card compared the COBE and WMAP maps of the cosmic background radiation. More complex was a 'Magic Planet' computer display with a spherical screen for the visualisation of sphere-surface data sets, such as planetary topology or weather patterns. We all wanted one, but unfortunately the device costs €22,000.

Various IYA2009 projects were also represented. The 'Galileoscope' cornerstone project aims to give 10 million people their first look through a telescope in 2009. In the U.K., for instance, the Society for Popular Astronomy is offering to give schools one thousand 70 mm refracting telescopes each complete with three different eyepieces. Elsewhere, groups are producing inexpensive, easy-to-assemble telescope kits of which two were on show in Paris.

The Japanese have produced two 'You are Galileo!' refracting telescopes, both with 40 mm glass achromatic objectives. The cheaper one is made by Hoshi-no-Techo Inc., and sells for ¥1,580 (~NZ$35) per kit (plus shipping), reducing to ¥1,050 (~NZ$23) for orders of twenty or more. The fixed magnification of ×15 is insufficient to resolve Saturn's rings. Japan will be gifting a lot of these scopes to developing countries, especially in Asia. The more expensive kit, from Orbys Inc., is made largely of 'environmentally aware' materials, i.e. wood and cardboard. Its fixed magnification of ×35 is sufficient for the rings of Saturn. It sells for ¥2,625 (~NZ$60), with a discount for bulk and a tripod option.

Mr Kichei Maekawa of the Japanese Ministry of Education presents the Hoshi-no-Techno telescope kit in its box and made up.



The American Galileoscope.

A U.S. group, coordinated from the National Optical Astronomy Observatory, has produced a Saturn-rings resolving telescope kit with a 51 mm glass achromatic objective and ×28 eyepiece, though any 1¼ inch eyepiece can be used. The hope is to sell a million of these 'Galileoscopes' for about US$10 (~NZ$20) apiece.

Motion pictures

On the Friday there was a lunch-time screening of *BLAST!*, a movie made by filmmaker Paul Devlin. It documents his brother Mark's Principal Investigatorship of BLAST, the Ballon-borne Large Aperture Submillimeter Telescope. An initial instrument was flown from Sweden to Canada, but proved to be out of focus. Fifteen months later improved apparatus was launched from McMurdo Base in Antarctica. (The film includes a brief shot of the U.S. Antarctic Program hangars at Christchurch airport.) The parachute failed to disengage after landing, and the instrument was dragged some 150 km across the ice, shedding metal as it went. One of the lost parts was the white cannister containing the hard discs on which the observations were recorded. Finding a white cannister along a 150 km track of Antarctic snow seemed hopeless, but fate smiled on Dr Devlin. No wonder *BLAST!* was being advertised as 'Welcome to Astronomy... Indiana Jones Style!' "Rather, dreadful project management," commented a delegate. Certainly it seems that the data cannister could usefully have been equipped with a radio beacon and painted orange, like an aircraft black box. *BLAST!* is an IYA2009 special project and is available for IYA2009 events. Arrange a screening and make up your own mind.

The Friday afternoon rounded off with remote observing. This worked fine for real-time VLBI through the internet, but there was no remote observing with the Canada-France-Hawaii Telecope (CFHT) because of strong winds atop Mauna Kea. Instead, Jean-Charles Cuillandre of the CFHT showed us some spectacular time-lapse photography he has made from Mauna Kea of clouds, setting stars, tracking telescopes, and the like. These clips should soon be available on DVD.

We can't end without mentioning another striking movie clip, which was shown during a talk by NASA's Jonathan Gardner. It's a transit of the Moon across the Sun imaged from one of the two STEREO spacecraft (Solar-Terrestrial RElations Observatories) which are orbiting the Sun ahead and behind the Earth. The different viewpoint yields very different conditions from an eclipse, with the angular extent of the Moon only about a fifth that of the Sun.

Conclusion

The ceremonies ended on the Friday evening with minimalist composer Terry Riley's 'Sun Rings' performed by San Francisco's Kronos Quartet and the UNESCO choir. This surprisingly melodic work was commissioned by the NASA Art Program amongst others, and is inspired by the wide variety of natural audio-frequency plasma oscillations recorded by satellites in space. For the student delegates there was also a tour of the Paris Observatory on the Saturday morning.

These were exhilarating days, packed full of interesting speakers on an amazingly varied set of subjects. We were proud to be New Zealand's representatives in Paris. We share the ambition that astronomy may help the cause of world peace, and can declare that the International Year of Astronomy has well and truly begun!

The ceremonies ended with Terry Riley's 'Sun Rings' performed by the Kronos Quartet and the UNESCO choir.

Acknowledgments

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Yvette thanks Auckland's North Harbour Club for an Emerging Talent Award which enabled her to attend the IYA2009 Opening and also to present a paper on the analysis of triple-lens microlensing events at the 13th Microlensing Workshop at the Institut d'Astrophysique de Paris on January 19-21.

Many thanks also to Lee Pullen of the IYA2009 Secretariat for several of the photographs illustrating this article (generally the better-exposed ones!).

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