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LENS

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science**lens**.

PHOTOGRAPHING
SCIENCE, INDUSTRY
AND TECHNOLOGY



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Good day, everybody, and welcome to the final Sciencelens News for 2011.

Thanks to everyone who entered last month's newsletter competition. We had an excellent response, and the lucky winner of a free photo shoot is Miriam Meister. Congratulations, Miriam!

This month we highlight a couple of exciting science events:

- » Looking ahead, we preview the 2012 Conference of the Science Communicators Association of New Zealand (SCANZ). It is packed with exciting topics, not to be missed if you're involved in any aspect of science communication in New Zealand.
- » Looking back, we discuss START, an exciting new art/science collaborative initiative recently launched in Palmerston North.

As promised, we also have a follow-up to last month's macro photography article. This month we focus on equipment - see page 4 for more.

Finally, our News Snippets include an exciting mix of events, awards, exhibitions and competitions - all in their regular spot on the back page.

All that remains for me is to thank you all for your support during 2011. We hope to continue being of service to you in 2012.

May you have a wonderful and refreshing festive break with your loved ones, and return invigorated in the new year.

Gerry



FROM THE EDITOR

SCANZ 2012 CONFERENCE

The theme of the 2012 Science Communicators Association of New Zealand (SCANZ) conference, taking place 22-23 February 2012 at Te Papa in Wellington, is **'21st century communications for 21st century science'**.

The conference promises a mix of high quality presentations, workshops, panel discussions and networking opportunities to an expected 120+ journalists, communicators for science and innovation organisations, scientists, academics and students.

If SCANZ 2011 is anything to go by (see Sciencelens Monthly Vol 2 No 2 on the Sciencelens website for my review), delegates are in for two exciting and invigorating days themed around the roles and responsibilities of science communicators in the 21st century science space.

Highlights of SCANZ 2012 include:

- » Keynote addresses by Steve Maharey, Vice-Chancellor at Massey University, and Andi Horvath, Senior Curator, Science Communication at Victoria Museum.
- » A diverse range of science communication case studies, including the management of the communication of the Kermadec expedition (Melanie Cooper, Auckland Museum), the Animal Health Board and the 1080 debate (John Deal & Alan Dicks), the application of Google Earth to business and IP (Shaun Hendy), science communication at the Wellington Zoo (Lisa Argilla), and communicating Big Science, looking at the Venus transits of 2004 and 2012 (Glenda Lewis).
- » Presentations and workshops on a diverse range of topics, presented by leading science communicators from government, industry and academia.

Registration costs are \$240 for SCANZ members (\$300 for non-members). More details and a draft conference programme is available on the SCANZ website - www.scanz.co.nz.



START

▶ A GREAT START

Last week, I was privileged to attend the launch of the START project.

The aim of the event, hosted at Te Manawa Museum of Art, Science and History, Palmerston North, was to stimulate the conversation about science, technology and art, and to explore the possibility of creating a national centre, based in Palmerston North, where science, technology and art can converge to create new insights into all three these domains, and the wider world.

Similar initiatives are hosted at some of the most forward thinking universities around the world. Examples include the Centre for Advanced Media Studies (CAVS) at MIT, the Arts and Genomics Centre at Leiden, Netherlands, the University of Westminster's Centre for Arts, Research, Technology and Education, the Arts | Sci Centre + Lab at UCLA, the Studio for Creative Enquiry at Carnegie Mellon University, Pittsburgh, the SymbioticA research laboratory at the University of Western Australia, and many more.

A diverse cross section of artists, scientists, academics and representatives from the business sector were entertained by an inspiring and challenging presentation by the guest speaker Ionat Zurr, PhD, artist, curator, researcher and academic coordinator of SymbioticA.

Right: Steve Maharey,
Vice-Chancellor at
Massey University

Below: Ionat Zurr from
SymbioticA, University of
Western Australia



Ms Zurr's presentation was followed by a response from Steve Maharey, Vice-Chancellor at Massey University, who pledged support and commitment to the project on behalf of Massey University.

The evening concluded with a refreshing discussion on the interaction between the respective roles of science, art and technology, touching on interesting and sometimes

difficult topics such as the ethical responsibilities of scientists and artists operating in this space.

I am personally invigorated by the idea of creating a fertile enabling environment at the intersection between art, science and technology. To show support for the START initiative, Sciencelens sponsored the photographic coverage of the launch event.

Watch this space for further updates on START. For more information on the project, visit www.startnewzealand.org.nz, or contact Bette Flagler at bette@flicka.co.nz.



MACRO PHOTOGRAPHY PART 2 - EQUIPMENT

In the previous Sciencelens News, we discussed the enchanting world of macro photography, with techniques and suggestions to help improve your photography in this field. Of course, to pursue macro photography you require specific equipment, and in this issue we briefly discuss some of the options available.

MACRO PHOTOGRAPHY USING YOUR SLR CAMERA

DEDICATED MACRO LENSES

If you are serious about macro photography, getting a proper macro lens is the best option. All major camera manufacturers offer excellent macro lenses, and many high quality third party lenses are also available.

To qualify as “macro”, a lens should offer at least 1:1 reproduction. This means the lens should be able to reproduce the subject being photographed, at life-size or larger on the sensor/film. If you can capture a subject at life-size on the image sensor, it means that it can be reproduced quite large in print. Most standard lenses can only achieve approximately half life-size reproduction.

The main advantages of a good macro lens are excellent sharpness and image quality (necessary to capture fine detail) and very small apertures (allowing deeper depth of field). This does come at a cost, however – a good macro lens is a significant investment.

Luckily, for those who want to dabble in macro photography without breaking the bank, there are other options.



BELLOWS AND EXTENSION TUBES

To create macro effects with a normal lens (for example a standard 50mm prime lens), extension tubes can be used to extend the magnification range of the lens. These tubes are mounted between the lens and the camera, effectively moving the lens further away from the sensor, thus creating a greater magnification effect.

The cheapest, most basic extension tubes are simple metal cylinders with no built in electronics. As such, they disable electronic communication between the camera and lens, effectively changing a fancy automatic lens into a basic manual lens. This means the photographer needs to manually focus (mostly a good thing in macro photography anyway), as well as set the aperture on the lens, as this can no longer be done via the camera controls. **Note:** *to manually change aperture you need a lens that has a manual aperture ring – a feature that many modern electronic lenses do not offer.*

At the other end of the scale, lens manufacturers offer highly sophisticated, electronically enabled extension rings that communicate all electronic controls between camera and lens. This means you can still operate the camera and lens in fully automatic mode. Of course this added functionality comes at an added cost, but it does render your macro setup much more user-friendly.

For precision work, especially in studio setups, extension bellows are a useful option. These concertina-like bellows allow you to move your lens further or closer to the camera body, offering more precise control over the amount of magnification achieved.

Using extension tubes or bellows do result in some loss of light reaching the camera, which implies slower shutter speeds. Also, if you

MACRO PHOTOGRAPHY PART 2 (CONT.)



www.bhphotovideo.com

www.bhphotovideo.com

www.photographyreview.blogspot.com

www.bhphotovideo.com

From l-r: Extension tubes, extension bellows, reversing rings, macro ring flash

are using a normal lens with extension tubes, you will not have the extremely small apertures of dedicated macro lenses, thus limiting the depth of field that can be achieved.

MACRO/MAGNIFYING FILTERS

One of the cheapest and most practical macro options, especially for amateur enthusiasts, is using macro filters in front of your normal lens. These filters are effectively magnifying glasses offering various degrees of magnification, and multiple macro filters can be used together to give more magnification.

For serious macro enthusiasts, however, these filters have some limitations. Most importantly, the image quality of macro filters is often not quite on par with the quality offered by a good macro lens. Secondly, as in the case of extension tubes, macro filters reduce the amount of light entering the lens, resulting in slower shutter speeds, and you are obviously limited by the aperture range of your normal lens, which affects depth of field.

REVERSING RINGS

The last option to achieve macro abilities using a non-macro lens, is also the most unconventional - simply turn your lens front-to-back! The logic behind this is that a lens typically takes a large image and reduces it in size to fit onto the (small) sensor of your camera. Thus, when you invert your lens, you also invert the size reduction effect, enabling you to enlarge a very small subject.

Special reversing rings are available commercially, which allow you to fix a lens "the wrong way around" to the camera. On the positive side, this has no effect on the light that the lens allows through, so there's no need for

increased shutter speeds. However, by turning your lens around, you are exposing the back element of your lens to possible scratching and damage, and as in the case of basic extension tubes, you lose all ability to automatically control your lens. You therefore have to ensure that you use a lens with a manual aperture ring, otherwise the aperture will automatically be fixed at its widest open, resulting in an extremely shallow depth of field.

COMBINING MACRO EFFECTS

As mentioned before, the best quality and control of depth of field can be achieved by a good quality dedicated macro lens, but with most macro lenses you cannot exceed 1:1 magnification. Of course, even when using a macro lens, there is no reason for not adding extension tubes, bellows or macro filters to increase the macro effect that you can achieve. While using these options do result in some loss of light and subsequent slower shutter speeds, using them with a macro lens at least means that you still have access to the very small apertures, and deeper depth of field, offered by your macro lens. Extension bellows, in particular, are often used in conjunction with macro lenses to increase magnification for very small subjects.

PERIPHERAL EQUIPMENT

While the above equipment options will enable you to achieve macro magnification, they may not be sufficient to ensure good macro images - some additional peripheral equipment is necessary to achieve that striking, pin-sharp macro shot.

Due to the very small apertures, and correspondingly slow shutter speeds regularly encountered in this type of photography, a sturdy tripod is a must. A good quality

tripod that is flexible enough to enable you to get close to the ground and into difficult angles, is well worth spending extra dollars on.

Good lighting is another critical element in macro photography, and if you are serious about this genre, investing in a dedicated macro lighting system will prove worthwhile. Various manufacturers offer flash solutions that mount onto the macro lens and provide close-up, surround lighting on the subject, resulting in good, evenly lit images. These can range from basic LED ring-flashes to sophisticated, fully adjustable macro flash sets.

EXPERIMENT, LEARN, ENJOY

Whether using a highly sophisticated macro setup with dedicated macro lenses, extension bellows and macro flash sets, or a basic point-and-shoot in macro mode, the key is to go out and experiment, learn, and enjoy yourself. With the festive break and summer holidays around the corner, I can think of no better way to spend

CLOSE-UP PHOTOGRAPHY USING A COMPACT DIGITAL

The discussion so far has assumed access to an SLR camera and removable lenses. Luckily some level of macro photography is still available even if you only have access to a compact point-and-shoot digital camera. In this case, it is perhaps more accurate to refer to "close-up photography" rather than "macro-photography", as 1:1 or greater magnification may not be possible.

Most compact digital cameras have a "macro/close-up" function, usually a button illustrated by a picture of a flower. This function allows slightly closer focussing and increased magnification, and it will also change other



your idle hours than with camera in hand, looking for interesting subjects to photograph.

Have fun!

camera settings such as aperture (the camera will be set to the smallest possible aperture to achieve deeper depth of field). If the camera does not offer macro mode, landscape mode can also be used, as this will also force the camera to use smaller apertures.

When doing close-up photography with a digital compact, the use of on-camera flash often ruins the shot, so its best to rely on natural light. As this may result in slower shutter speeds, a small but sturdy tripod is critical to avoid camera shake. It is also a good idea to use the self-timer on your camera to further eliminate any camera shake when the photo is taken.

NEWS SNIPPETS

UPCOMING CONFERENCES

- **6th Biennial Conference of the New Zealand Association for Environmental Education**, 17-20 January 2012, Hamilton
- **13th Annual NZ Early Childhood Research Conference**, 26-28 January 2012, Wellington
- **2012 International Symposium on Macrocyclic and Supramolecular Chemistry**, 29 January - 2 February 2012, Dunedin
- **IV International Giardia and Cryptosporidium Conference 2012**, 31 January - 3 February 2012, Wellington
- **New Zealand Institute of Architects 2012 Conference**, 16-18 February 2012, Auckland

2012 TRANSIT OF VENUS FORUM – LIFTING OUR HORIZON

Professor Sir Paul Callaghan and partners are staging a forum in Gisborne to inspire thinking about New Zealand's future prospects, based on a realistic, science-based appraisal of our current situation.

The association between the forum and the rare occurrence of the Transit of Venus is symbolic. The objectives for the forum are:

- » To inspire younger people to play a role in our future.
- » To give people across all sectors a scientific, and therefore apolitical, evidence-based summary of New Zealand's current realities, risks and opportunities.
- » To introduce iwi investors and leaders to the science community and broaden their thinking about investment opportunities.
- » To inspire thinking about what we could do to make a living that is not asset-depleting or harmful to our environment or people.

- » To support small communities and provincial centres with sustainable development plans.

Attendance at the forum is by invitation, or you can register directly for the open places (these are limited so don't delay).

Date: 5-8 June 2012

For more information on the event, contact project coordinator Glenda Lewis, glendajanelewis@gmail.com.

2011 PRIME MINISTER'S SCIENCE PRIZES

The winners of the 2011 Prime Minister's Science Prizes have been announced in Auckland last Friday, 16 December.

- » The Prime Minister's Science Prize is awarded to an individual or team who has made a transformative discovery or achievement that has had a significant impact on New Zealand or internationally:
NIWA – Otago University Chemical and Physical Oceanography team led by Professor Philip Boyd.
- » The Prime Minister's MacDiarmid Emerging Scientist Prize is awarded to an emerging scientist who is carrying out leading edge science:
Dr Rob McKay, Victoria University of Wellington
- » The Prime Minister's Science Teacher Prize goes to a science teacher for outstanding achievement in teaching Science:
Dr Angela Sharples, Rotorua Boys' High School
- » The Prime Minister's Future Scientist Prize is awarded to a secondary school student for outstanding achievement in carrying out a practical and innovative research or technology project:
Nuan-Ting Huang, Diocesan School for Girls
- » The Prime Minister's Science Media Communication Prize is awarded to a practising scientist who is an

effective communicator, to further develop their knowledge of science media communication:
Dr Mark Quigley, University of Canterbury

Congratulations to all the winners on this achievement!

More information can be found at www.pmscienceprizes.org.nz.

'THE POWER OF OPEN' – CREATIVE COMMONS ANNUAL CAMPAIGN

The 2011 Creative Commons Annual Campaign is officially on. This campaign is important for Creative Commons as a global network (and ultimately for CC in NZ) and Aotearoa supporters are encouraged to get involved.

This year, Creative Commons are offering a limited teal edition of the CC *"I love to share"* t-shirt to everyone who donates \$50 or more (until supplies run out). Those who donate \$300 or more, in addition to the t-shirt, will also receive beautiful hard copy editions of *The Power of Open*, stories of creators sharing knowledge, art, and data using Creative Commons.

Creative Commons is a project of the Royal Society of New Zealand. Read more about how you can make a difference, at http://www.creativecommons.org.nz/news_and_events/news/you_are_the_power_of_open

SONY WORLD PHOTOGRAPHY AWARDS 2012

The Sony World Photography Awards, one of the largest and most prestigious international photographic competitions, is currently fast approaching its cut-off date. There are two main categories - for professional and amateur photographers respectively - and entries are accepted in a wide range of sub-categories:

Open competition

Architecture
Arts & Culture
Enhanced
Split Second
Low Light
Nature and Wildlife
Panoramic
People
Smile
Travel

Professional competition

Commercial
Fine Art
Photojournalism &
Documentary

Entries close: 4th January 2012.

Visit <http://www.worldphoto.org/competitions/> for more information.

WILDLIFE PHOTOGRAPHER OF THE YEAR EXHIBITION @ TE MANAWA

The Wildlife Photographer of the Year is a prestigious annual photography competition and exhibition created by the Natural History Museum, London, and BBC Wildlife Magazine. The competition attracts tens of thousands of entries; this blockbuster show presents the winning images from the 2011 competition, taken by both professional and amateur photographers. These stunning images celebrate the richness of our planet and encourage us to appreciate and preserve it. Each picture is accompanied by the story of its creation, sometimes under quite incredible conditions.

Wildlife Photographer of the Year is co-owned by the Natural History Museum and BBC Wildlife Magazine.

For more information about the exhibition please visit www.nhm.ac.uk/wildphoto

The exhibition is currently showing at Te Manawa Museum of Art, Science and History, Palmerston North, and runs until 26 February 2012.

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