

# LOUTH U3A Photography Group Newsletter

## January Meeting Report

January's meeting cannot go down on the record as one of the greatest, unfortunately. The group has outgrown itself in terms of the amount of equipment available to us and the size of the current venue. There were ten of us there in January with only eight U3A computers and really only enough space at the round table to comfortably seat eight operators. Thanks to two members bringing their own laptops and to everybody for squeezing up, to the point where there was not really enough room to swing a mouse, we just about made it.

The venue is good for the equipment we should be using, 8 laptops. Members bringing their own equipment is far from ideal as they will not be using common software which could cause certain problems.

There were other issues arising from the meeting which will not be aired in this public forum. They have been dealt with by e-mails to all members individually and should result in us being able to continue meeting at the Golf Club with slightly different arrangements.

### Special points of interest:

- Next meeting - see page 4.

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### Group chit-chat

This is not exactly chit-chat I've heard, more just rambling from my keyboard.

On the subject of photo-editing software, there is plenty of it available from the web. I have done a search and got loads of hits to a search for "free photo editing software". I downloaded a couple of programs from what looked like reliable sites, one of them being Hewlett-Packard. Neither of the first two looked very interesting. Then I came across paint.NET.

I have already e-mailed all our regular members about this and given step-by-step instructions on how to acquire this interesting looking program. If we are all going to have the same software on our home machines I have suggested that it be paint.NET.

paint.NET appears to have some connections with Microsoft and was originally meant to be a replacement - or upgrade - for the original Paint program that comes as part of Windows. We opened Paint when we were at First College; has anyone tried it since?

Getting away from the Microsoft connection there is an open-source item on the web called GIMP. This stands for GNU Image Manipulation Program. GNU is a company or organisation and their web site is named gimp.org. Purely for my own pleasure I will be trying it out. This one was recommended to me and if anyone is interested enough to ask me, I will pass on my comments.

Photo Gallery – "Foreign Wildlife" by Margaret Finch



## Playing with light—rainbows and prisms - continued from the January newsletter

In January we concluded that the raindrop itself was acting as a mirror and reflecting the light from behind the viewer back into their field of view. Exactly how this is done is shown in Figure 4. The incoming light, shown as entering the raindrop horizontally at the top, gets bent as it enters the drop, reflects off the back of the drop before being bent again as it exits back into the air and heads downwards towards the viewer's eye. I have only shown one ray of light because of the complexity of creating the drawing with more than one ray leaving the drop. Red light entering the drop will be bent at the two air/water interfaces slightly less than the blue end of the spectrum. Despite being bent less, because of the internal reflection, the red light will exit the drop at a slightly greater angle than the blue. This has the effect of putting the red band of the rainbow on the outside of the rainbow arc in the sky.

The figure was drawn using my CAD program working with the correct angle of deviation of the light ray,  $42^\circ$ , and the correct amount of bending at the two refraction points. However, I do not understand why the correct angle is  $42^\circ$ !

So if the viewer was suspended high in space they would see a complete circular rainbow with a half-angle of  $42^\circ$  at the centre of the cone. Because the viewer is usually standing at ground level the earth gets in the way of viewing the lower half of the circle.

To see the whole of the semicircular rainbow the light would have to enter the raindrop horizontally as I have drawn it in Figure 4. This condition would only occur at the moment the sun sets below the horizon. If we draw the ray coming downwards from its usual elevation in the sky this has the effect of reducing the angle at the centre of the cone by the amount of the elevation of the sun above the horizon. In these cases the rainbow is actually centred below the horizon and from our viewpoint on the ground we will only see the top fraction of the semicircle. Taken to the limit, if the elevation of the sun above the horizon is greater than  $42^\circ$  then we will not see any of the rainbow from ground level. Therefore in the summer months when the sun does climb high in the sky there will be a period either side of mid-day when it will not be possible to see any rainbow that forms. That raises the question of whether the rainbow is actually there if you cannot see it. This is a similar conundrum to the tree in the forest crashing down when there is nobody in hear the noise; did it make a noise at all? Don't let's go into this one.

Light can bounce around inside the raindrop and suffer two internal reflections before it comes back out at a slightly greater angle than the  $42^\circ$  case. Not all the light will come back out after two reflections so this second beam will not be so bright as the first. The second beam will form what is called a secondary rainbow which forms outside the primary one. Because of having two reflections inside the raindrop the colours get reversed in order of appearance and on the secondary rainbow the red band will be on the inside.

Spray from waterfalls can produce rain-like conditions and in some circumstances the sun can interact with the spray and a rainbow can be formed. These conditions are more predictable than the conditions that produce naturally occurring rainbows and make for easier photography, as long as you don't get your camera drenched in spray.

Messing around with spectra fascinates me and I shall be doing some experiments in the summer when the sunshine is a little more abundant. My new garden hose nozzle has a very fine mist

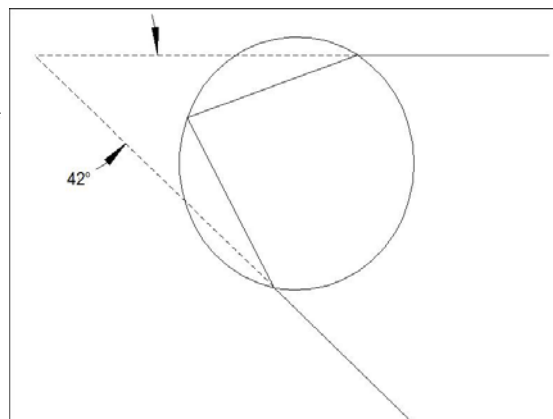


Figure 4

setting and I shall be trying to get some shots of artificial rainbows. I will also be searching out some prisms that I have hidden in the garage somewhere from old optical equipment. If I get any interesting shots I will let you know.

## Letters to the Editor

Bob Syrett has responded to last month's letter with the following:-

### FLIPPING MIRRORS

CR of Saltfleet by le Marsh cannot understand why the image of his cleanly shaven face has been reversed from left to right to right to left but has not stood him on his head (January newsletter). This has puzzled many people for many years and after searching on the internet I found many explanations of this phenomenon. As a result I almost understand the reason. The simple explanation is that mirrors do not flip from left to right they flip from front to back. If you understand this do not continue to read but if you are still mystified by far the best explanation of the dozens I looked at is at: <http://amoebacrunch.blogspot.com/2008/04/fun-with-mirror-images.html> . Before doing battle you will find it helpful to write a word in large letters on a sheet of tracing paper, using a broad felt tip pen, and have it to hand.

*Thanks Bob, but I'm more confused now than I was before. The bit about front to back really blew my mind. I even got my wife to watch me from behind as I shaved one morning. She said she couldn't see my face from behind (not surprisingly) so how could the mirror – good point that?*

*I did get my wife to stand behind me and I looked at her by bending over and looking through my legs. She waved her right hand for me, and low and behold it was on the correct side of her body. Unfortunately, she was upside down herself now. It seems that mirrors can only deal with one direction at a time. I still can't see how the mirror gets behind me though!*

*If anybody has any other ideas I'll keep the correspondence going for another month if necessary. Ed.*

## The February Meeting

The February meeting will be held at the Louth Golf Cub again, 10:00 to 12:00 on Thursday 18th February.

Due to the limited equipment at our disposal, I want to limit the attendees to a maximum of 8 (excluding me of course). I will be there with my own laptop, a clone of the U3A ones, and sit on my own at a separate table, so there will be plenty of room for 8.

Please phone me before the day to book a seat round the table. I will only be bringing enough laptops for those who have booked a seat.

From now on, it is essential that you bring with you the files you wish to work on. The U3A machines will accept USB memory sticks, USB output direct from your camera via your own USB lead, CDs and DVDs in R or RW format and SD memory cards. If you want to take away the results of your editing, make sure you come with a media that will accept the new file(s). You should not write back directly to a camera.

## Newsletter news

A very heartfelt thanks goes to Margaret Finch for volunteering and providing a superb set of files for the Photo Gallery feature. Although I gave the gallery the title of Foreign Wildlife I could not resist including the sky picture. If the camera clock was set to real local time when the shot was taken then this is a sunrise—red sky in the morning—shepherd's warning, and all that stuff. The shooting date doesn't tie up with the Kenyan shots so it's anybody's guess where it was taken.

Unfortunately at the last meeting there were no volunteers for the March gallery so I'll have to get the camera out and shoot something for that edition.

Contributions for the March issue would be most welcome. Any small item would help.

The Newsletter is generated as a colour document and will be distributed in colour by e-mail to those members who have, or admit to having, an e-mail address.

To keep down the cost of printing, I want to try to limit the size of each edition to 4 pages and distribution in hard copy format by snail-mail will be in black and white only.

Notes and questions to the editor will be accepted and will be used as space permits.

**Happy snapping,  
Brian Cooper**

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