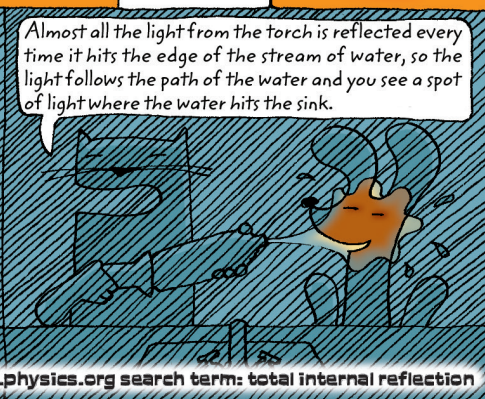
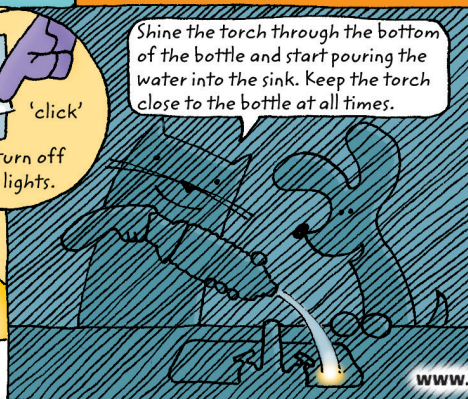
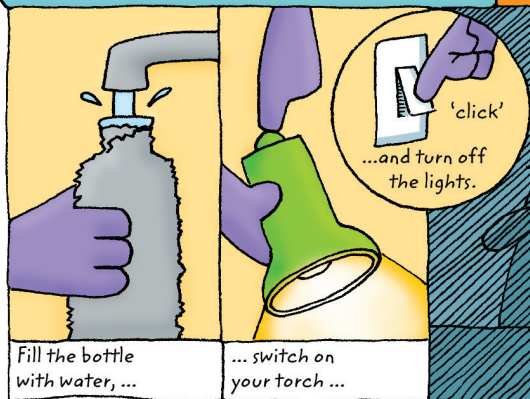
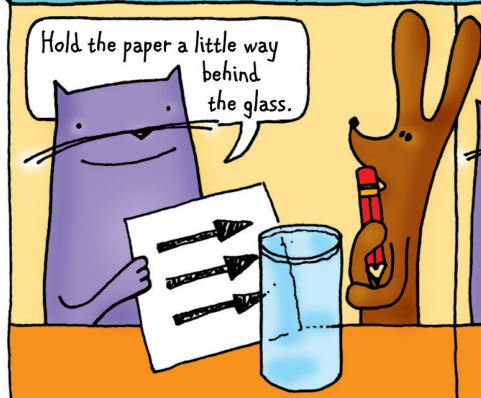
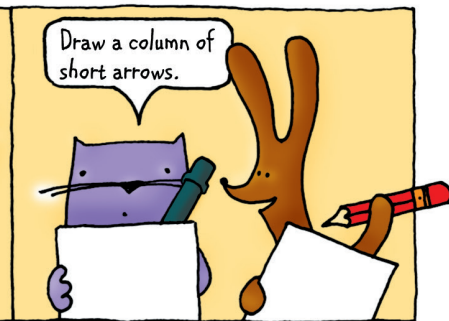
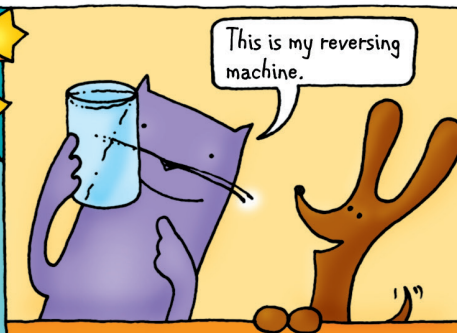








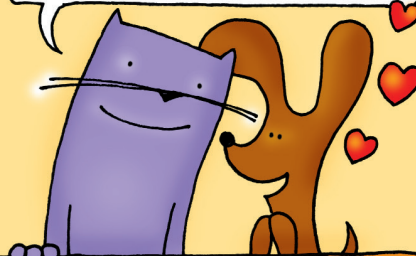
# DO TRY THIS AT HOME

The  
Light  
Collection



**What you need:** • a large clear, straight-sided glass  
• water • milk • teaspoon • torch • darkened room

Do you want to see my homemade sunset?



Fill the glass about  $\frac{2}{3}$  full of water...



... add half a teaspoon of milk...



... and stir.



In a darkened room, shine the torch down onto the top of the water whilst looking through the side of the glass. Can you see the blue colour?



Then try shining the torch through the side of the glass whilst looking through the opposite side. What colours can you see now?



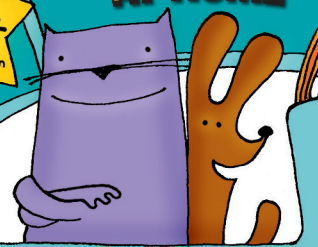
Finally, shine the torch up through the bottom of the glass and peer down through the water. What a lovely sunset!



The milk particles in the water scatter the light from the torch like dust and molecules in the atmosphere scatter light from the sun. The further the light has to travel through the water, the more of the blue light has been scattered, leaving only red light for you to see. Just like at sunset.

**DO NOT TRY THIS AT HOME**

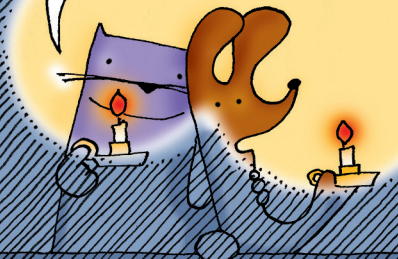
The Light Collection



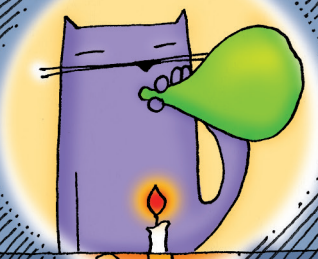
**What you need:**

- Party balloon
- Energy saving light bulb

Don't worry about the power cut Milo, I can produce some light for you!



Blow up the balloon and tie the end.

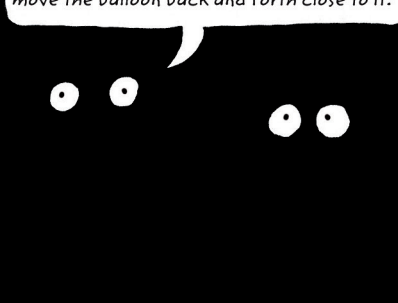


Rub the balloon against your hair or jumper.

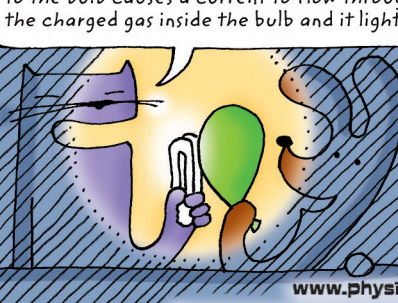


Vic Le Billon

In a dark room, hold the bulb in one hand and move the balloon back and forth close to it.



Waving the electrically charged balloon close to the bulb causes a current to flow through the charged gas inside the bulb and it lights.

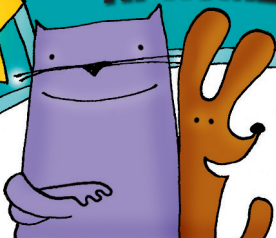


[www.physics.org](http://www.physics.org)  
search term: static electricity



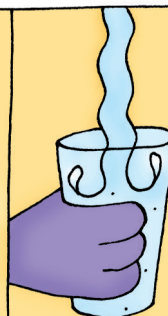
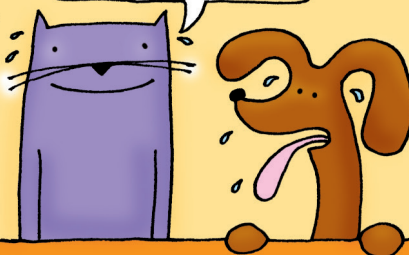
# DO NOT TRY THIS AT HOME

The  
Light  
Collection



**What you need:** •Two clear glasses  
•Tap water •Tonic water • Dark paper

Hey Milo, I've got a cool  
trick for a sunny day!

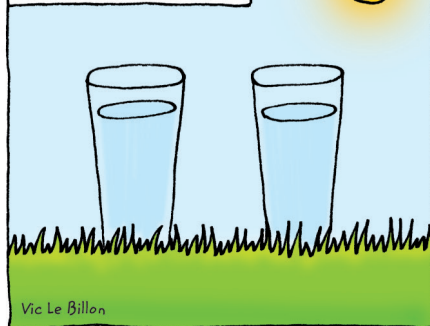


Fill one glass with  
tap water...



... and the other with  
tonic water...

... and put them both  
in direct sunlight.



Vic Le Billon

Holding the dark paper behind them, but not blocking  
the light, look across the surfaces of the water.  
The tonic water will be giving off an eerie blue glow!



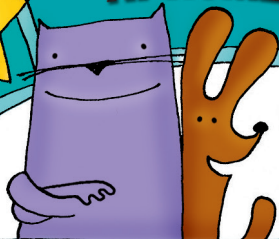
Tonic water contains quinine. The quinine  
absorbs ultraviolet light from the Sun and  
re-emits it as visible blue light.



[www.physics.org](http://www.physics.org) search term: ultraviolet light

# DO ~~NOT~~ TRY THIS AT HOME

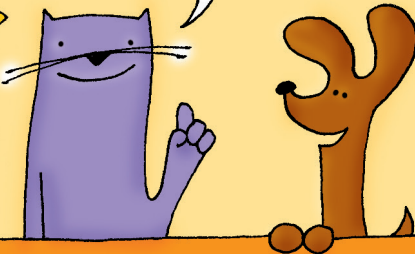
The  
Light  
Collection



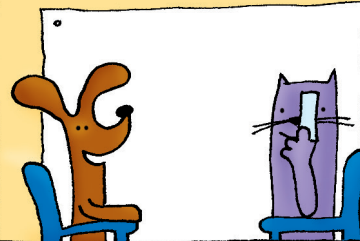
INTERNATIONAL  
YEAR OF LIGHT  
2015

**What you need:** • A small mirror  
• A blank wall • A friend

Hey Milo, I can make you disappear!

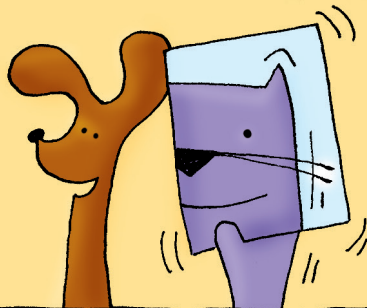


Sit opposite your friend and next to a pale, blank wall.

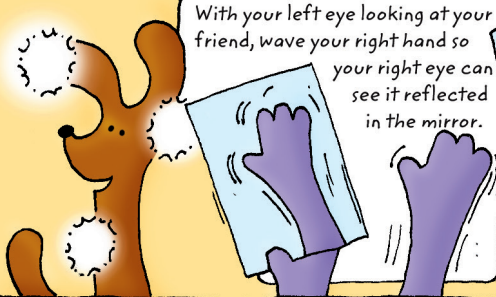


Vic Le Billon

With the wall to your right, hold the mirror in your left hand and put it next to your nose.

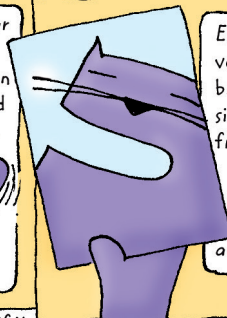


Angle the mirror so that your right eye sees only a reflection of the wall.



With your left eye looking at your friend, wave your right hand so your right eye can see it reflected in the mirror.

Watch bits of your friend's face disappear! Don't give up if it doesn't work straight away – try switching eyes, holding your head very still and making sure your friend doesn't fidget.



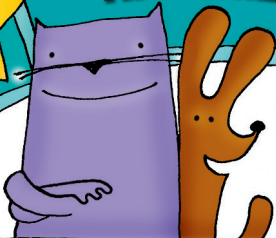
Each eye is seeing something very different and as your brain tries to make a sensible single image, it combines bits from both eyes. But your brain is sensitive to movement so it focuses on your moving hand and your friend disappears.

[www.physics.org](http://www.physics.org)  
search term: binocular vision



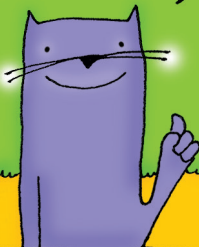
# DO ~~NOT~~ TRY THIS AT HOME

The  
Light  
Collection

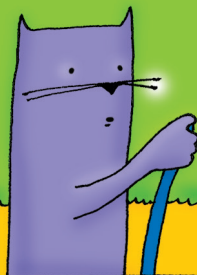


What you need: •A hosepipe •a garden •a sunny day

Hey Milo, don't just lie there, take a look at this!



Stand with your back to the Sun and turn on the hosepipe. Put your thumb over the end of the hose to get a fine spray of water.



Look at the spray against a dark background such as a wall, hedge or grass.

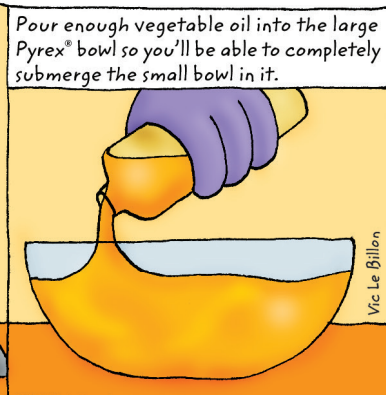
White light from the Sun is made up of light of different wavelengths, or colours. The different wavelengths of light are bent by different amounts as they pass through the water, splitting the white light into all the colours of the rainbow.

Adjust your position and the fineness of the spray until you see a rainbow!

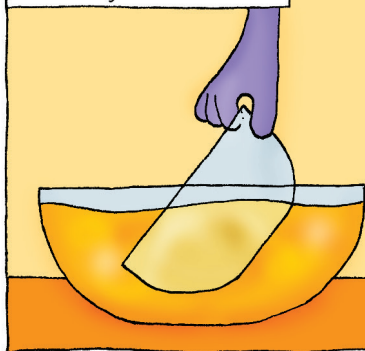


[www.physics.org](http://www.physics.org)  
search term: rainbow

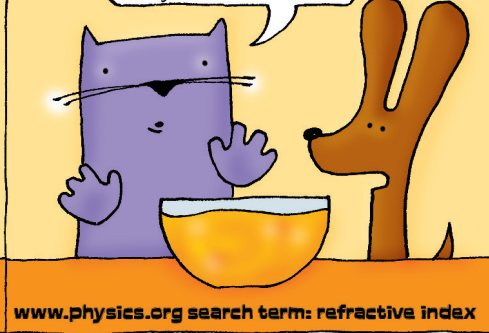




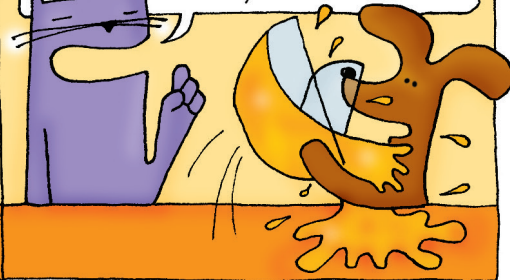
Carefully lower the small bowl into the vegetable oil.



The small bowl disappears as it gets covered in oil!

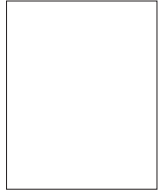


The refractive index of Pyrex® glass is the same as that for vegetable oil, so as light passes through the glass of both bowls and the oil it doesn't bend – refract – at all and you can't see the small bowl.



[www.physics.org](http://www.physics.org) search term: refractive index





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