PHOTOS OF GLOBES (ORBs) – AN ANALYSIS

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Since photographic cameras with electronic sensors (including mobile phones) became common worldwide, more photos than ever have been taken: gone are the days of choosing a roll of film and then getting it developed – now we can see them immediately displayed on the little screen of what we call a "digital camera". The photos can also easily and quickly be transferred to a computer, viewed on a monitor, sorted, edited if required, and then stored, all at trivial expense. Added to this the fact that all digital cameras, being powered by batteries, contain a small built-in flash, as well as many automatic functions aimed at simplifying their use even in difficult ambient conditions, and we see why there are so many night photos taken with a flash.

In some photos, not rarely, there are light round "spots", previously noted and studied on the traditional rolls of film and popularly labelled "ORBs" (globes) because the objects had a globoid shape.

Below is an example (***Fig. 01***): the red and green arrows point to the two largest globes. The photo was taken on a clear but humid evening with a light fog.

Fig. 01 *- S. Maria Maddalena (Rovigo), 30/10/2005 – 9.00 pm (Luciano Pederzoli).*

Fig. 02 (that is ***Fig. 01*** after enhancement) shows the presence of many other globes of ostensibly varying diameters, albeit less striking than those indicated by the arrows.

Fig. 02 *- Enhanced Fig 01 (brightness and contrast enhanced).*

Fig. 03 *- Enlargement of globe indicated by green arrow (brightness and contrast enhanced).*

Fig. 04 *- Enlargement of globe indicated by red arrow (brightness and contrast enhanced).*

Table showing technical data relative to the photo in ***Fig 01***:

Width	2304 pixels
Height	1728 pixels
Colour depth	24 bit
Number of frames	1
Colour representation	sRGB
Camera type	Sony DSC-P73
Exposure	1/40 s
F-stop	F/2.8
Flash mode	Automatic
Focal length	6 mm
ISO speed	ISO 250
Metering mode	Pattern
Exposure bias	None

Users of digital cameras often ascribe the presence of globes to dirt or defects of the lens or sensor, or even a fault in the software that resizes frames to make them more compact, but it has already been shown that none of these is the cause, because globes were already being photographed with mechanical cameras that used chemical film that was constantly changed after each use, and spherical lenses were used. However, these globes were exactly the same as those seen now on digital photos, which usually use CCD sensors (Charge-Coupled Device) and unspherical lenses (these days sensors are CMOS, but results are the same). Dirt and reflections will be discussed later.

Having established that these are real phenomena that appear the same whether traditional film rolls or electronic sensors are used, I will examine a series of photos taken with digital cameras under controlled conditions.

Fig. 05 *- Ostia, 23rd January 2007, 08.10 am (Giuliano Bestiaco).*

Fig. 06 *- Enlargement of globe indicated by white arrow in* ***Fig 05****.*

Fig. 07 *- Enlargement of globe indicated by yellow arrow in* ***Fig 05.***

Fig. 08 *- Enlargement of globe indicated by red arrow in* ***Fig 05*** *(contrast enhanced).*

The photo in ***Fig 05*** and its relative enlargements (***Figures 06***, ***07***, and ***08***) confirm without a doubt that the globes are transparent, and the enhanced negative (shown in ***Fig 09***) clearly shows that they are present in significant numbers.

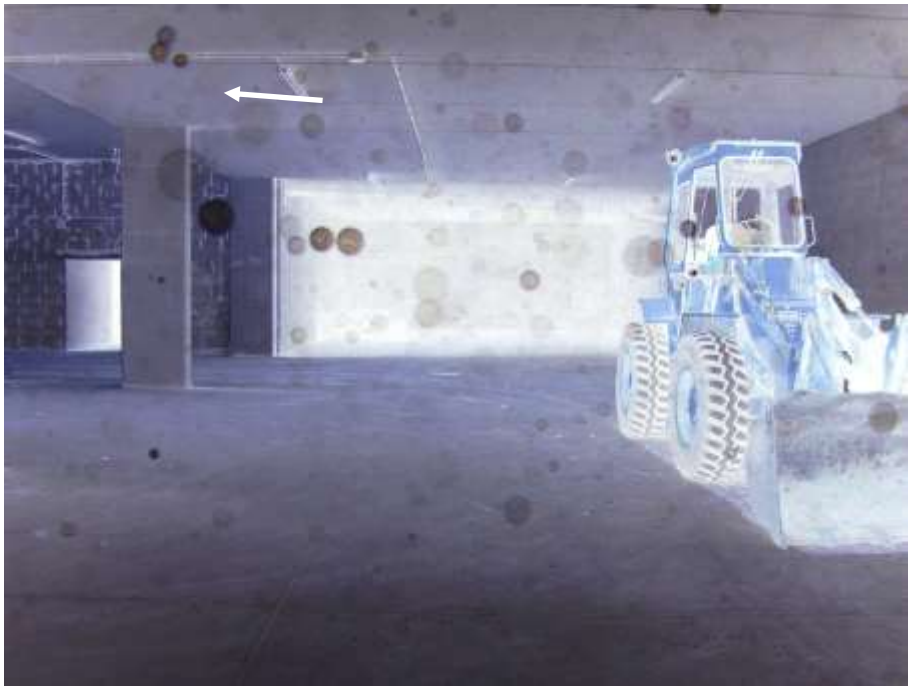

Fig. 09 *- Negative of* ***Fig 05*** *(varied brightness and contrast).*

Table showing technical data relative to the photo in ***Fig 05***:

Width	2048 pixel
Height	1536 pixel
Colour depth	24 bit
Number of frames	1
Colour representation	sRGB
Camera type	Olympus X450
Exposure	1/30 s
F-stop	F/2.9
Flash mode	Automatic
Focal length	6 mm
ISO speed	ISO 166
Metering mode	Central weighted average
Exposure bias	None

In the two preceding cases we can exclude the presence of reflections on the lens caused by intense light sources. Furthermore the globes cannot be products of sensor defects or dirt on the lens, if for no other reason than the fact that their location, and even their presence, varies from one photo to another (both are part of a sequence of shots).
A typical case of a dirty lens is shown in ***Fig 10*** (shot against a uniformly clear sky with diaphragm narrowed to the maximum to better highlight the dirt on front lens). Technical data are unnecessary because it is an example of a normal situation.

Fig. 10 *- Image shot against a clear sky.*

Fig. 11 *- Image enhancement of* ***Fig 10*** *highlighting the dirt.*

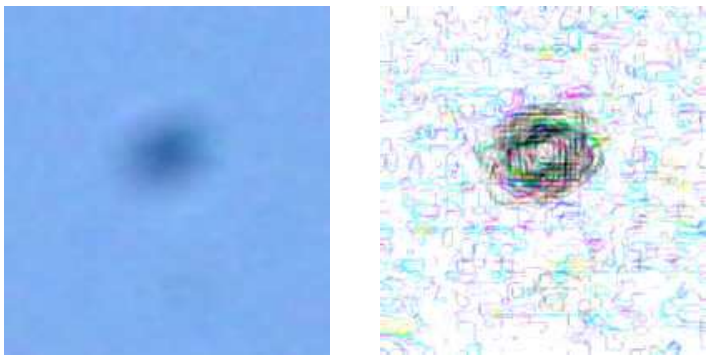

Fig. 12 e 13 *- Enlargement and enhancement of a spot of dirt.*

Enlargement and enhancement of a spot of dirt shows its structure – very different to that of the globes, so much so that it's impossible to mistake one for the other.
By shooting many photos in very different environments it has been possible to verify how easily one or more globes can be found, especially in those shot with compact (pocket-size) cameras under conditions requiring a flash. It was also apparent that atmospheric humidity is very favourable to their appearance. Even the apparently insignificant ***Fig 14***, once enhanced (***Fig 15***), shows a clear example of how numerous globes can be in the presence of atmospheric humidity.

Fig. 14 *- Livorno, 24th August 2004, midnight (Paolo Acconci).*

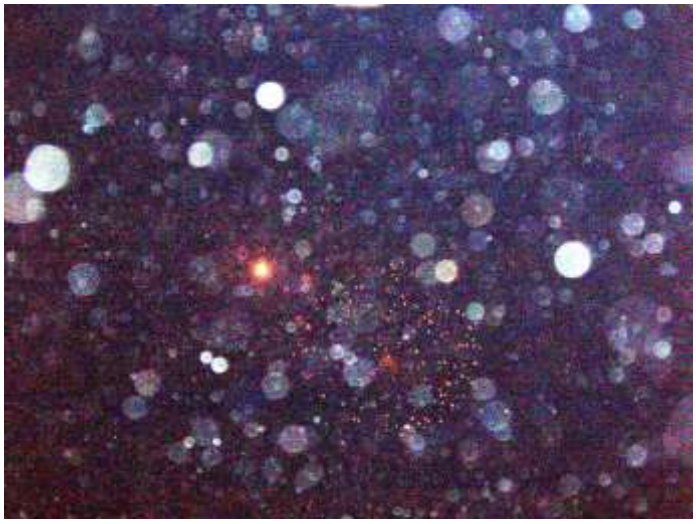

Fig. 15 *- Image of* ***Fig 14*** *with enhanced brightness and contrast.*

Technical data of photo in Fig 14.

Width	2816 pixel
Height	2112 pixel
Colour depth	24 bit
Number of frames	1
Colour representation	sRGB
Camera type	OLYMPUS X-3
Exposure	1/30 s
F-stop	F/2.8
Flash mode	400
Focal length	Automatic
ISO speed	8 mm
Metering mode	Pattern
Exposure bias	none

The photos examined so far were shot in the open, in different locations and with different cameras: the only common element was the light produced by the flash.
Nonetheless globes can be photographed just as easily inside buildings and photos of ***Figures 16*** to ***19*** are proof of this.

Figg. 16 & ***17*** *- Cappadocia, 28th December 2007, 07.39 am.*

Figg. 18 & ***19*** *- Cappadocia, 31st December 2007, 9.21 pm.*

Technical data of photos in ***Figures 16*** & ***18***.

Width	1200 pixel
Height	900 pixel
Colour depth	24 bit
Number of frames	1
Colour representation	sRGB
Camera type	KODAK CX7430 ZOOM DIGIT.
Exposure	1/64 s
F-stop	F/2.7
Flash mode	Automatic
Focal length	6 mm
Metering mode	Pattern
Exposure mode	Normal
Exposure bias	none

Images of ***Figures 20*** to ***39*** show a collection of globes taken from previous photos plus many others and allow an analysis of the shapes of globes themselves, and thus to draw some conclusions from them.

Fig. 20

Fig. 21

Fig. 22

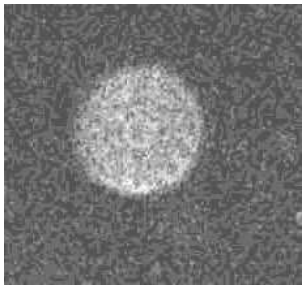

Fig. 23

Fig. 24

Fig. 25

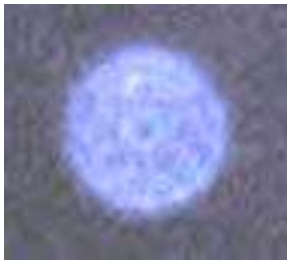

Fig. 26

Fig. 27

Fig. 28

Fig. 29

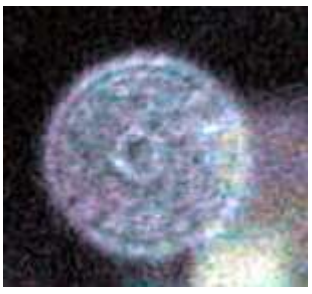

Fig. 30

Fig. 31

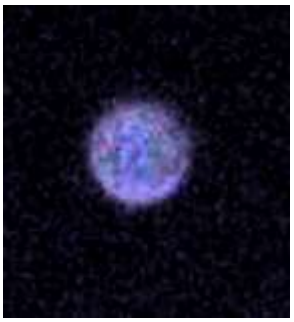

Fig. 32

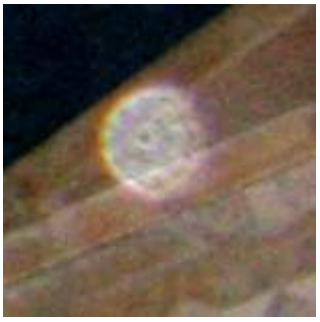

Fig. 33

Fig. 34

Fig. 35

Generally there is a thicker outer ring, a small internal ring, and between these a grainy area made of small round regularly placed shapes, often forming a series of concentric rings. Images of globes are not always perfectly round.

There are also examples of 'deformed' globes (***Figures 36*** to ***39***), which also show, however, that both the outer ring and the internal graininess are made of small globes.

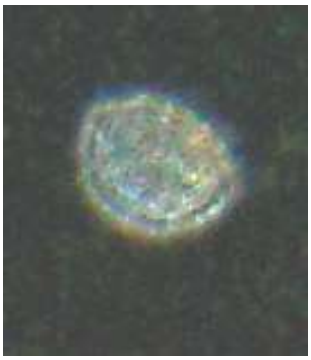

Fig. 36

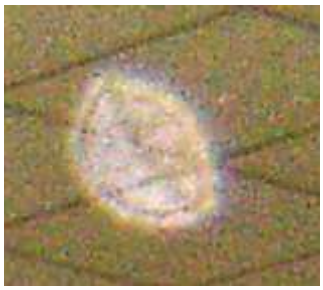

Fig. 37

Fig. 38

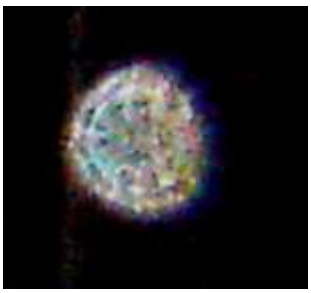

Fig. 39

Also worthy of attention are ***Figures 40*** to ***43***, taken from a series of photos I shot at Santa Maria Maddalena (Rovigo) on 30th October 2005 at 9.47 pm.

Fig. 40

Fig. 41

Fig. 42

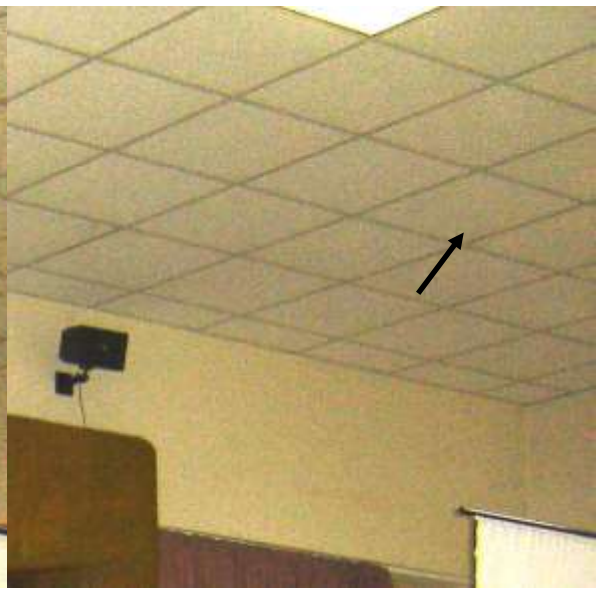

Fig. 43

Technical data of the sequence of photos from which ***Figures 40*** to ***43*** have been taken.

Width	2304 pixel
Height	1728 pixel
Colour depth	24 bit
Number of frames	1
Colour representation	sRGB
Camera type	SONY DSC-P73
Exposure	1/40 s
F-stop	F/2.8
Flash mode	Automatic
Focal length	6 mm
ISO speed	ISO 200
Metering mode	Pattern
Exposure bias	None

The four photos comprising the sequence were shot approximately 9 seconds apart, the minimum time required for the camera's flash to recharge itself. Apart from some poorly contrasting globes, in the area indicated by the black arrows there was nothing at first, then a blurred one appeared, followed by a visible but deformed globe, finally followed by nothing again. The location was at a conference and the air was still, apart from a weak convectional circulation due to the presence of people.

This behaviour of globes is a constant, in that, although it is very easy to detect their presence in photos where the flash is used and under weak light conditions, it is almost impossible to find exactly the same globes in two photos taken a few seconds apart, even though the air appears to be still.

We conclude that globes called ORBs are a very common phenomenon and also either move quickly (even in still air) or their appearance changes suddenly. Moreover they range in visibility from completely transparent to almost completely opaque. Confirmation of their rapid movement may be taken from photos of ***Figures 43***, ***44*** & ***45***, all shot by Claudia Cinquemani in her living room while music was playing at high volume from the hi-fi system.

Fig. 44 *- Blurred and stationary globes in the living room (Claudia Cinquemani Dragoni).*

Fig. 45 *- Enlargement of globes indicated by yellow arrow in* ***Fig 44****.*

Fig. 46 *- Double globes in the living room (Claudia Cinquemani Dragoni).*

Fig. 47 *- Enlargement of element indicated by yellow arrow in* ***Fig 46****.*

Fig. 48 *- Another blurred globe in the living room (Claudia Cinquemani Dragoni)*

Fig. 49 *- Enlargement of globe indicated by yellow arrow in* ***Fig 48****.*

Technical details of photos in ***Figures 44***, ***46*** & ***48***.

Width	2048 pixel
Height	1536 pixel
Colour depth	24 bit
Number of frames	1
Colour representation	sRGB
Camera type	OLYMPUS S300D
Software used	22-1014
Exposure	1/30 s
F-stop	F/3,1
Flash mode	Automatic
ISO speed	125
Focal length	6 mm
Metering mode	Pattern
Exposure bias	None

Specfically, globes in ***Figures 45*** and ***49*** appear undoubtedly blurred (although unlikely, those in ***Fig 47*** could be two overlapping rather than a single blurry one), while those taken from other photos appear stationary. Exposure times are slow (1/30 sec), and the hi-fi system – theoretically able to reproduce frequencies from 20 to 20,000 Hz (cycles per second) – played music that rarely fell below 100 Hz and almost never below 50. When music is playing, standing waves are produced in the air, in that there are areas where the motion of air molecules induced by the sound waves is larger (antinodes) and other areas where it is almost non-existent (nodes). If globes were found to correspond to an antinode, they could be moving back and forth during exposure; others, being outside antinode areas, would appear to be still.

The flash time is extremely brief, however the brightness decreases approximately exponentially, therefore the light remains strong for long enough (several thousandths of a second) to allow the blurred capture of an apparently rapidly moving object (for example, because it is close to the lens); it is therefore very likely that the 'blurred' effect is due to the decrease in flash intensity over time that lights up the moving globe.
The ever-increasing spread of mobile phones with photo/video capabilities after 2010 transformed the theory of rapid motion of globes into fact, as documented by many videos.

As much as light from a flash seems to be essential for photographing globes, there are rarer cases of globes shot without a flash. Here are two examples, in which the globe looks similar and its shape is definitely spherical.

Fig. 50 *- Single globe shot at dusk (Roberto Segamiglia).*

Fig. 51 *- Fig. 51 – Enhancement of previous photo.*

Fig. 52 *- Close-up of enlarged and highlighted globe.*

Technical data of photo in ***Fig 50*****.**

Width	3008 pixel
Height	2000 pixel
Colour depth	24 bit
Number of frames	1
Colour representation	sRGB
Camera type	NIKON D70
Software used	Versione 1.02
Exposure	10 s
F-stop	F/2.8
Flash mode	Automatic
ISO speed	250
Focal length	18 mm
Metering mode	Pattern
Exposure bias	None
Date taken	27/03/2004

Fig. 53 *- A photo taken in Nevada in 2000 using black & white film without flash (Paolo Acconci)*

‘ANOMALOUS’ GLOBES

There are also globes that can be defined as “anomalous”, such as that in ***Fig 53*** (the people’s faces have been removed for privacy reasons).

Fig. 54 - *“Anomalous” globe photographed by Marzio Matteoli on 22.02.2006 at 3.59 pm.*

Figg. 55 e ***56*** - Two enhancements of the previous photo that clearly show the unusual structure of the globe.

Technical data of photo in ***Fig 54***

Width	2304 pixel
Height	3072 pixel
Colour depth	24 bit
Number of frames	1
Colour representation	sRGB
Camera type	Canon DIGITAL IXUS 700
Exposure	1/60 s
Flash mode	Automatic
F-stop	F/2.8
ISO speed	ISO 125
Focal length	8 mm
Metering mode	Pattern
Exposure bias	None

There are also rare but very interesting cases of globes that may imply the presence of psychic influence on reality. One is shown in ***Fig 56***: this is a photo shot and enhanced by a friend who wishes to remain anonymous.
The original photo is unimportant, but the enlargement and enhancement show that seems to be a face inside the globe. The face does not resemble any of the people present at the time the photo was taken (the photographer and subject, not shown here) and besides, neither of them could have been reflected by the globe in that position.

Fig. 57 *- Globe with "face".*

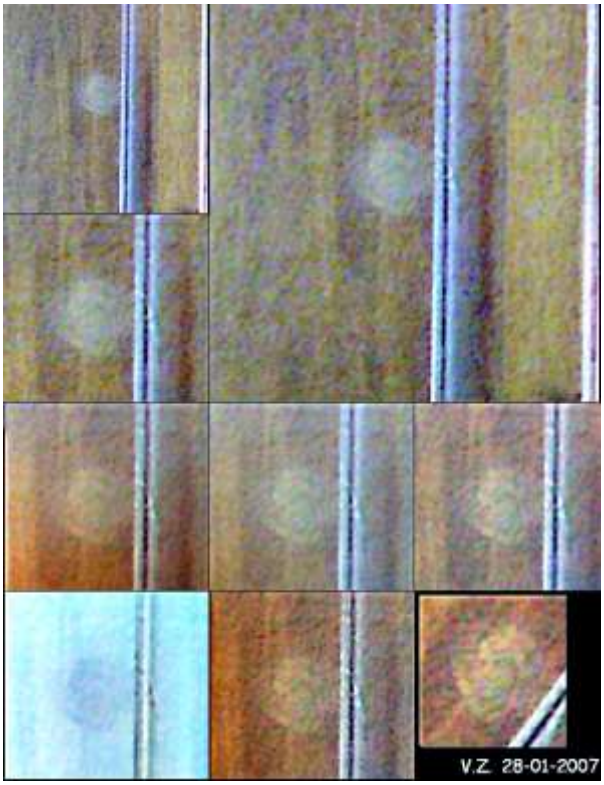

Fig. 58 *- Enhancements that better show what seems to be a face.*

I also have different examples of globes shot during meditation sessions but, although I'm sure there is some correlation, I do not as yet have absolute proof.

"FALSE" GLOBES

Finally, there are also 'false' globes – those produced, for example, by reflections or water drops. Here are some examples.

Fig. 59 *- Example of globes produced from sunlight reflecting on the camera lens (no flash was used).*

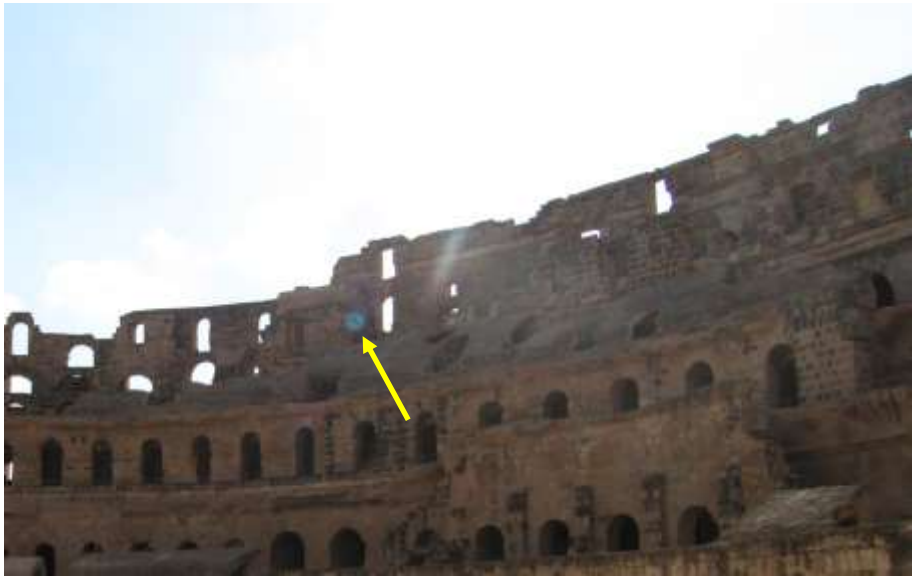

Fig. 60 *- Another example of a globe produced from sunlight reflecting off the lens (no flash used).*

Fig. 61 *- Enlargement of globe in* ***Fig 60*** *(brightness and contrast increased and colour balance varied).*

Fig. 62 *- Globes produced by reflection of flash on water drops lined up along a spiderweb (Luciano Pederzoli).*

Fig. 63 *- Blurred and stationary globes from home balcony – 25th December 2005 at 6.01 pm (Luciano Pederzoli).*

Fig. 64 *- Enlargement of water droplet indicated by yellow arrow.*

Fig. 65 *- Enlargement of another water droplet.*

Fig. 66 *- Enlargement of a third water droplet.*

Technical data of photo in ***Fig 63***.

Width	2304 pixel
Height	1728 pixel
Colour depth	24 bit
Number of frames	1
Colour representation	sRGB
Camera type	SONY DSC-P73
Exposure	1/40 s
F-stop	F/2.8
ISO speed	250
Flash mode	Automatic
Focal length	6 mm
Metering mode	Pattern
Exposure bias	None

Fig 63 is a photo taken in heavy rain with a flash and slow exposure time (1/40 sec). The photo shows a globe apparently moving upward (yellow arrow), while another globe (red arrow) appears still: this is certainly not a light source (a bulb or other), because at the time there wasn't one and nothing out of the ordinary could be seen with the naked eye.

An in-depth study of the subsequent photos (a sequence of six photographs shot about 10 seconds apart), and enhancement of other images (***Figures 65*** & ***66***) has finally confirmed the cause as being a visual effect produced by water drops falling in front of and around the lens.

Water does not fluoresce, not even briefly, therefore the 'smudge' that is less bright at the bottom is produced by the fading intensity of the flash that illuminates the falling drop, with the intensity dropping with time at an approximately exponential rate.
In this way the drop is sufficiently illuminated (less so as time passes) so as to produce a visible image long enough to show its motion (which in reality is downward).

A POSSIBLE EXPLANATION

Taking into account the humidity present in the air and other characteristics of the globes, I developed the following theory that I have publicly endorsed since 2006.

A water molecule is, of course, composed of one atom of oxygen and two of hydrogen, that between them form an angle of 104.45 degrees.
The hydrogen atoms are 0.9584 Angstrom (0.9584 x 10^{-10} metres) away from the oxygen atom.

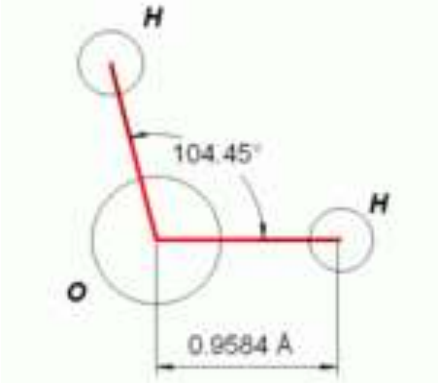

Fig. 64

Consequently, the water molecule is polar – one side has a negative charge (the oxygen atom) and the other is positively charged (the hydrogen atoms). When water molecules come together, they align with the positive sides next to the negative sides.

Heat causes the molecules to separate, and lowering the temperature causes the opposite; in liquid form they stick together and in solid form they become immobile.

In the vapour state they continue to feel a mutual attraction even if, generally, they are moving about randomly.
In the presence of an electrically charged 'core', such as a positive ion, surrounding water molecules will arrange themselves in an organized manner with all the negative sides closest to the core, thus forming a spherical structure with many layers (an ORB), in all likelihood arranged similar to a large three-dimensional snowflake. It is well known that snowflakes usually have a hexagonal structure and each one is unique: globes could possibly be similar.

In practice, there could form around this core an organized spherical agglomeration of molecules of water vapour for a short time before being destroyed by turbulence and/or other external causes.

Such a globe would have an average refraction coefficient slightly above that of the air and therefore be visible, albeit under limited conditions.
Above all, however, the microagglomerates that comprise the globes themselves could sometimes have dimensions comparable to visible light, creating, if subjected to intense light such as a flash, the classic effect of dazzling headlights in fog, making them clearly visible especially in short wavelength light.
The electrical polarity of microagglomerates may also attract dust particles, making the phenomenon even more apparent and sometimes visible even in full daylight.

CONCLUSIONS

For the time being we can state that, probably because of the small distance between the flash and lens that typifies them, globes are more easily photographed with compact (pocket) digital cameras with a small sensor (8 – 9 mm diagonal or less; colour depth 3x8 bits) rather than full-sized SLR cameras (diagonal sensor 28 mm or more; colour depth > 3x10 bits). Furthermore, apart from their causes, globes seem to come in only three types:

1. **Globes that are only observed using a flash.**
   - Especially visible in photos shot in darker environments.
   - Are approximately spherical, but not always, and apparently variable diameter.
   - Are more or less transparent and in contrast with the background.
   - Almost always have a distinct outer edge and usually a small, thick central ring.
   - They are often grainy due to a series of small globes arranged somewhat regularly, forming a series of concentric rings arranged between the outer edge and internal ring.
   - They are more numerous in humid conditions and abundant in rain.
   - They are present indoors and outdoors.
   - Location and/or shape seem to change rapidly even in still air.

2. **Globes visible without flash in full daylight.**
   - These are rarer and therefore less known, although seem similar to type 1.

3. **Globes produced by reflections off the camera lens or objects within photographic range.**
   - Usually noticeable because are generally multiple, aligned in a straight line across the light source and often are shaped like the camera's diaphragm (eg hexagonal).
   - Can also be seen without the flash.
   - The preceding criteria often don't apply (see **Fig 62**) when we are dealing with objects outside the lens, for which an accurate analysis is required.

Requirements for a more in-depth knowledge of the phenomenon are:

1. Make video recordings using a small xenon lamp (same as flash) placed near the lens, in order to analyze globe motion.
2. Make video recordings using a small xenon lamp placed between two adjacent identical video cameras a few centimetres apart (distance accurately measured); if they both record exactly the same scene, superimposing the two images of the same globe allow the trigonometric determination of its distance and dimensions.
3. With the aid of an appropriate computer simulation program, analyze the behaviour of vapour water molecules in the air to see if they can form spheres similar to those of globes.
4. Analyze, again via computer simulation, the behaviour of atmospheric fine dust particles in the presence of possible water vapour molecule agglomerates in conditions similar to those in the previous point.