

- [Alan Wallbank](#)
- [DJI Pocket 3](#)
- [Bristol](#)
- [Ian Simpson](#)
- [Dave Jones](#)
- [Reading](#)
- [Teignmouth](#)
- [Robert Paget](#)
- [Dave J A bit more](#)
- [Melvyn Dover](#)
- [Tom Hardwick](#)
- [Gloucester](#)



The genius of DaVinci

Page 3



The Crossing

Page 7



DJI Pocket 3

Page 2



Pip Critten
Writes...

Chairman's Chat & Editorial

I have recently had an accident!

Well, perhaps serendipity. I was looking on the DJI website at the Pocket 3, the latest version of their mini gimbal camera. I coughed, slipped forward and clicked on the Buy Now button by accident! That's my story and I'm sticking to it. Any further questions will get a "No comment" response.

What an amazing piece of kit it is. The Creator Combo (which I accidentally bought) is even better. This bundle includes an additional battery handle, carrying case, mini tripod, protective carrier, wide angle lens adaptor and the latest DJI mic 2 which works seamlessly with the pocket 3.



Contents of the Creator Combo

So, what is it?

It has a f2, 1" CMOS image sensor camera built into a physical gimbal that will easily fit in your pocket tucked into its supplied protective case. It takes HD or 4K video at up to 60fps, including 25 and 50 fps for UK based shooters.

Changing setting is simple with the 2" OLED rotatable screen simply by swiping on the screen with your finger. There are various focus modes to choose from and even has a face recognition setting. You also use your finger to select the focus point.



You can easily switch between horizontal and vertical shooting. The twisting can automatically switch the system on and off.

The gimbal has three setting to choose from: Tilt Locked enabling the horizon to stay level at all times no matter how you hold it; FPV which allows you to direct the lens with the system smoothing out all the movement; and a very clever Follow mode that automatically moves the gimbal to follow the chosen subject. This Follow mode is great and you can film yourself moving in shot and it seems that there is a cameraman operating it.

The built in microphones provide very good sound. When using the DJI Mic 2 (part of the creator combo) you have a linked radio mic which can be clipped on the talent to get even better sound with a audio monitor appearing on the screen.

The Mic 2 also provides you with the opportunity to record a 32bit float safety track and it can also be used as a stand alone 32bit float audio recorder. There is the facility to plug in a lav mic if that is your preference and a low cut filter to remove wind and rumble.

The Pocket 3 can be used on it's own in its smallest form factor, with a small handle that allows for, or with the larger battery handle giving extra run time along with the usb connection and a standard 1/4 inch 20 tripod mount.

It even comes with a mini tripod / handle which comes in very useful for placing on flat surfaces for selfie type shots. A simple tap on the screen swivels the gimbal from forward to backward facing.



The active tracking (ActiveTrack 6.0) is quite remarkable and it will follow any chosen person or the first person it sees in the frame. With this, you can set up a shot then walk into frame when it will automatically start tracking you. You can use the Mic 2 to act as a remote control to start and stop recording.

Not only all this but this too!

It can be used in fully automatic mode, great for playing and getting used to it, but has full pro feature too.

It takes still shots, Slow Mo up to 240fps, Timelapse, Hyperlapse, Panoramic, a rather clever Low Light Mode too. It's a remarkable piece of kit for the money and I can see that self op' news gatherers will be using these as a go to piece of kit.

I'm still in the playing and learning stage but gave it to my son-in-law on boxing day with one minutes "training" to shoot my grandson playing Santa at a family gathering. In edit I was able to zoom and re frame the 4K image on a HD timeline. You can see it here:

https://www.youtube.com/watch?v=Vx_TiH5hosi&t=1s



Keep Smiling, Pip

pipcritten@googlemail.com



The genius of DaVinci

Tom Hardwick

Really? Image stabilisation with no ill effects? And free, with it?



Digitising Standard-8 film – converting 16 FPS to 25FPS and making it look better than we ever thought possible

Real magic: the genius of DaVinci

Digitising 8mm film

Well I've just finished a big **Super-8 transfer** job for one of our IAC stalwarts (meaning: loyal, reliable and hard-working) and he wanted all his films shot in the 1970s run through the **DaVinci stabiliser** after I'd digitised them. I can see from watching his films that being a filmmaker as he is, he understood the importance of keeping his Super 8 camera as steady as possible back in the day. And what did we have back then? Only auto exposure, and if you were lucky, exposure override. These days we have the wonders of optical, IBIS and electronic stabilisation, eye-tracking auto-focus, almost zero cost footage, huge sharp touch-sensitive viewfinder screens, auto white balance, non breathing focus pulls, 8K resolution. You name it, I'll agree with it.

The 8mm film

Generally you'd watch his Super-8 films and not think they'd need stabilising in post, yet when you see the stabilised and original side by side you realise that even if the Super-8 camera had been mounted on a concrete tripod supported on bedrock, perforation pitch tolerance and gate weave (cumulatively combined in camera and projector) all add up to form something of a subconscious, vibrating annoyance.

So if you've time to watch this short comparison film I've put up on YouTube I think you'll sense the 'unease' that watching a typical cine film imparts, vs the calming effect of watching the stabilised version. And to stabilise this footage? I used the industry-leading **DaVinci Resolve**.

<https://youtu.be/r9sVTe241yg>

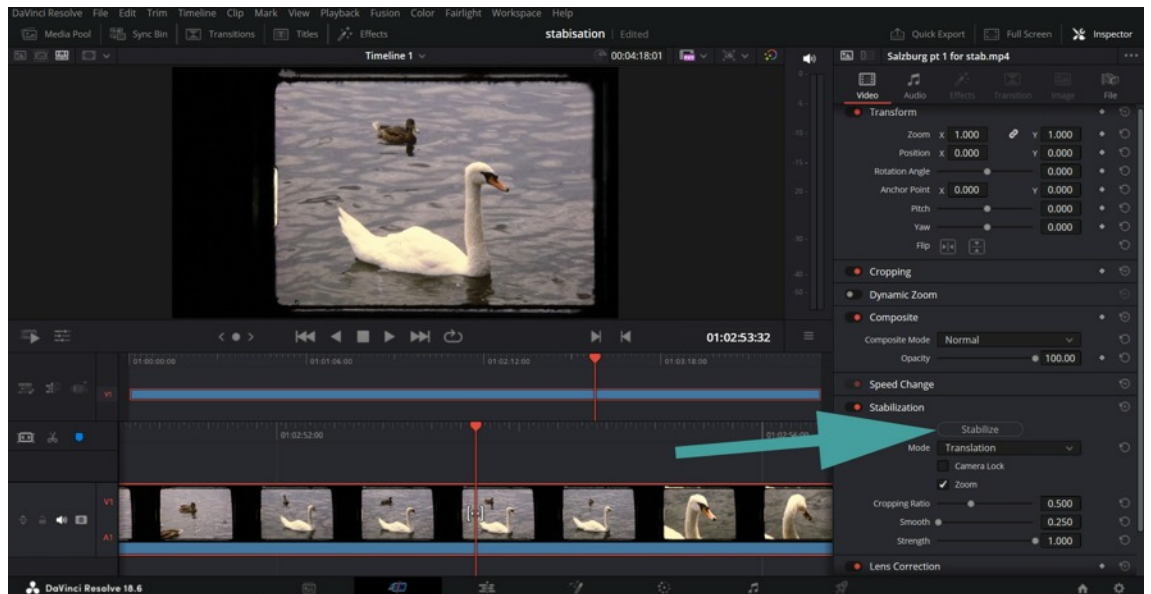
[Ed: Please give it a thumbs up when you've watched.]

DaVinci Resolve – is it really free?

Yes, DaVinci Resolve is available as a completely free download, and I notice it has constant (and free) updates. Blimey, I remember when this programme cost £35000 for a licence, and you can see why. What's interesting is that the paid-for version – a one time payment of \$295 - has no better image stabilisation, though it does delve deeper into AI and colour grading.

DaVinci Resolve has the answer

The Resolve timeline lets you choose one of three stabilisation alternatives, do a quick pre-stabilise, then if you're happy, render the output file





Tom continues...

DaVinci Resolve is so clever. How does it know that I need it to stabilise the individual successive images themselves rather than the film-frame border, or even the repeating perforations? And look at the pans. The stabilised version can look smother than the original (but this isn't always so I admit).

And another plus is that it appears from my comparison film that the stabilised version doesn't lose any picture information in comparison to the original. That's because I stabilise over-scanned Super-8 frames, giving the stabilisation room to crop in and manoeuvre without intruding into the picture area.

In fact I've cropped the edges of the frame in the original transfer to remove any camera gate debris, and to be fair this should also be done on the stabilised version.



The Super-8 footage is overscanned, giving the stabilisation program wriggle room



The red line indicates what must've been shown in the viewfinder – and what was projected onto a cine screen. Much of the Super-8's real-estate was effectively wasted

The red rectangle must be what was shown in the camera's viewfinder, otherwise the filmmaker would have seen his lens hood vignetting the picture when shooting at the wideangle end of the zoom.

Is it difficult to stabilise footage?

It's a bit of a convoluted process you have to go through to end up with a stabilised video file, but I learnt it by watching (you guessed it) YouTube videos. Basically you open your file in Resolve, and it accepts the 50 Mbps/50p I feed it easily. You pull it to the timeline and then have to choose which of three stabilisation programs you want to apply, and having decided (by trial and error) you do a pre-stabilise. It zips through your film at about 130 FPS.

You then have to render this, a slower process, and you can choose to output in a variety of formats including MOV, MP4 etc. I set 'highest' quality which often doubles the file size, but keeps it at 50p/50 Mbps.

There. Done.

Conclusions

I've proved this with my own films that I'm seeing my films looking considerably better than when I projected them 50 years ago.

50 years ago the film stuttered through my projector. It was unevenly lit (all projectors pumped more light through the centre of the image to make it look brighter) and it was projected through a fast, relatively cheap zoom lens. The projector's gate masked lots of the image, producing an image that was never sharp all over. I focused 'on the run' as we all did. Splices did their very best to disrupt the focus.

I could go on, but the point is that now we can remove the disruptive splices, make colour and exposure corrections, stabilise the images, banish projector noise, endure no more lost loops and magnetic stripe drop-outs.

And although there's a certain charm in the fact that the splices show the technology of the age, that also applies to the frame jitter, the indecisive frame edges, the light falloff towards the corners and the not-so-sharp projection lenses that were deemed 'acceptable' 50 or 60 years ago.

But I'm a believer in removing the splices, in making the film as clean as possible, in black-masking the edges, in having it sharp corner to corner, and crucially (as camera lenses of the day vignettted nastily) having the frame evenly lit.

So I rest my case. My case being that (apart from the colours, which have often faded with time in the loft) what you're seeing now is in actual fact quite a bit better than you ever saw it back in the day. And you're seeing the entire frame, something projectors never allowed.

Tom Hardwick FACI



Tom's Transfers

High quality digital transfers of all kinds:

- Super-8 • Standard-8 • Camcorder Tapes
- Slides • DVDs • and much more

For info and Prices: 07890 872534

Tomhardwick@gmail.com



Dave Jones

Shares his thoughts

Why Our Clubs Suffer So

The impact

Nobody knows for sure how the economy has impacted clubs and societies when it comes to film production, but we may be up against one of the biggest slow-downs ever experienced. The price of fuel has impacted travel and to assume that you can carry on making films within the club's premises for ever and a day, is doubtless a bridge too far. As always, the larger clubs will survive, almost untouched, but much depends upon the club and its members' territory.

Living out on a limb, such as on an island, is apparently the most difficult scenario and the lack of youngsters within the clubs tends to extract its vibrant energy belonging to youth alone. However, when endeavouring to analyse the cause, it is very difficult to escape politics, simply because they are able to affect our life's environment throughout society, albeit rich, middle class or poor.

For the last fifty years, we have been influenced by "elsewhere" in a bid to dominate, and one of the rules of control comes from education, which means influencing the youngsters. Having been a parent of a pigeon pair, whilst maintaining and managing an area spanning Lands End to Dover, including off shore ships that remain on station for purposes of navigation, my children had a tendency to call me "uncle" and the dog bared its teeth on occasion, so did I really know what was going on with my children's education? In a word ... "No".

Classes

When dealing with the British in terms of comparison, we had a reputation of being "Warriors", and this rather austere upbringing amongst the ruling classes, with boarding schools and universities taking over the parenthood, tended to harden their children. Within the working classes, where children came home every day and were truly brought up by loving parents, it was quite a different matter. However, as time went on the edges seemingly became a little fudged, and the nation's children were treated with an air of indifference ... the gap between rich and poor ever widening.

Here we are, fifty years on and the people and their children are damn nigh anti-social. Humour amongst the people is fractured, but the greatest abyss within societal behaviour is the willingness to share and experience togetherness. This, coupled with the influx of multiple foreign cultures has served to undermine Britishness, which was, of course, the purpose, and it continues today, despite a very strong push-back from the indigenous.

Destructive elements

When coupled with the advancement of science and technology, it is, sorry to say, more of the same. One of the most destructive elements was computer games completely swamping the market place and parents being nagged into acquiescing their child's isolation. I never, ever, bought a computer game for my kids. They sat at the table for meals, were taught manners and learned to converse respectfully. Old fashioned isn't it? However, they are able to mix with consummate ease with all races and creeds. They ran clubs until C19 took them out.

Amongst the workforce over the years, it was noticed how humour subsided, and the feeling of belonging to a team literally died a death. The younger the person, the

worse it got. The youngest were able to work in an office for a year and not know the surname of a colleague or two ... I find that amazing. They could work for a decade together and never visit a colleague's home, despite their ages being similar.

Us and them

From a business aspect, analyses proved that, if a company grew to the size of 500 employees or more, its communications would implode. My son has a BSc in business studies, amongst other things, and one of the most frequent problems he was called into solve were due to the "us & them" syndrome. An office in Hull, would develop its own system to break away from the rest of the company and then an office in Manchester would follow suit. By the time you got to the South Coast, the bottom couldn't communicate, nor did it want to, with an office up North. That's when the company as a whole imploded.

The cure is that of producing and forcing into the whole company a computer programme that reboots the original software, despite any and every attempt to alter it, the personnel are thus compelled to comply ... Big Brother, brought upon themselves.

When looking around at our clubs and societies, we encounter people from an untainted generation, who had loving parents, a clean education intent on the 3 R's and it is this generation that is holding the remnants of our clubs together today. The saddest thing of all is that the younger generation neither care nor know how this is done. What is more, they can't identify with it.

For those of our chairman, both past and present, who try, and have tried, every trick in the book, sat for hours heading up committees and discussed the problem of "no youngsters" over and over again, it has proven very illusive, but, you see, the nub of the issue is far greater than its components part, it is endemic, installed by others who seek dominance and control.

We are thus left with a dying race of people who know how to love, mix, enjoy the company of fellow men and create together as a team. All qualities that escape our grandchildren.

Unteachable

Admittedly, clubs located in the midst of MSM and filmmaking, will fair well, as it is an off-shoot containing thousands of people who are with a desire to create films and plots, practise their skills and meet others with similar interests. Despite this concentration of individuals who revel in this creative medium, elsewhere, are the me-me's and the indifferent who will most certainly do it their way. These are the unteachable, unapproachable self-isolating individuals who know not where they belong ... politically ... job done.

I cannot close without advising that this is untenable in that it flies in the face of humanity, and within a very short time, you will find a "U"-turn is about to be experienced. Within a year or two, radical changes will impact the globe and a new generation of people like "us", the elderly, with love in their hearts, will spring from new beginnings.

Dave Jones



Ivan Andrews

Teign Film Makers
Chairman



My last report ended by looking forward to a Zoom meeting in which Vice Chairman and Webmaster, Peter was to share some thoughts on "What to Film?" For us amateurs, this is often a difficult question and Peter gave us some help by outlining some of the thought processes he goes through before turning his camera on – particularly when on holiday.

The following week, again on Zoom, we welcomed Ian Morris who shared his journey into film making and showed us some excellent examples. This was a great evening and we were all impressed by Ian's skill.

The next week, on Zoom, by a presentation about "Optics" given by Neil Mander and Pip Critten about what is going on in our cameras with the lenses and how they are set up. This was a very interesting evening and one that helped many of us understand concepts such as Focal Length, Depth of Field, and how the zoom lens works etc. For those of us, myself included, who have relied for far too long on our camera's automatic settings this session was invaluable and I am sure there will be requests for it to be repeated.

At our next Zoom meeting we explored the topic of basic Colour Correction. This session was led by Chairman Ivan who was ably assisted by videos on YouTube. This seemed to me to be a topic rarely explored by our club and so it was important to start the discussion. As always with our group this session generated a lot of discussion.

On Monday 13th November we were at Bitton House in Teignmouth again and this time entertained by travelogues made by Mike Perrem. Mike and his wife Penny have travelled the world extensively and the documentaries Mike makes from the footage collected are always very well shot and interesting. Mike has become an annual visitor to our programme and we are always pleased to see his films.

The following week saw us back on Zoom and this time our guest speaker was Stewart Emm who shared very interesting insights into making films using his mobile phone and demonstrated specialised equipment to help the filming process.

The final meeting of this season started with an Extraordinary General Meeting. As has been reported before, as a club we have decided that our meetings will now happen between March and November (instead of September to June) with us now taking a break during the winter months of December to February. This has meant a change in our financial year and so our club constitution needed updating and agreeing at an Extraordinary General Meeting. Fortunately this important meeting was not long and we ended our last formal meeting of the year with a quiz devised by club member, Tony, which was thoroughly enjoyed by all.

Despite there being no formal programme during December, January and February, meetings will still happen. Many of us (with spouses, partners or friends) will be meeting for a Christmas social lunch early in January at a hotel in Torquay, and of course work on our club projects goes on. We may even have one or two unscheduled get-togethers over Zoom in the early New Year so things have not all stopped. Members have also been set a number of challenges to work on over the Christmas period. One is to make a short film (up to 5 mins only) which must include the picture of a potted plant somewhere in it, and another set by Ivan challenged members to find (or film) some clips to colour correct, showing us 'before' and 'after' clips at a future meeting.

Please look at our website for information about our upcoming programme and contact us through the contacts page if you would like to just visit for a couple of meetings or join. We always offer prospective new members the opportunity to meet with us once or twice (on Zoom or at Bitton House) without being asked to join so you can see if what we offer is for you. We are a very friendly bunch and will readily welcome new members.

Ivan Andrews: Chair; Teign Film Makers

<http://www.teignfilmmakersclub.org>



Directing The Crossing



Laurie Tallack

Takes us behind the camera

Our actor was ill, we were losing the light and the tide was going out, at the same time we were trying to do a panic re-write as the phone went and we all breathed a sigh of relief – the actor could make it after all. Such were the decisions and activity on set at the Lamplighters’ pub down in a riverside village on the banks of the Avon.

It was my first go at directing a short film, and at the age of sixty-one I didn’t expect to waltz in like Ridley Scott or Hitchcock and start ordering people about, but I did have definite ideas and was wondering as to how autocratic I could be given this was a team event. I needn’t have worried.



The club had met for a location walk in the spring to try and come up with an idea for a fifteen-minute film at an interesting location; a small Shirehampton pub down by a river. This wasn’t the way I would normally come up with a script and I went along out of curiosity more than anything else. But ideas were coming thick and fast; someone tried Chat GPT and came up with an idea for a band playing a gig at the Lamplighters; someone else mentioned the river being symbolic of the river Styx, and others would talk about the stories of hauntings and the existence of a ferry that used to run from the pub over to the village of Pill across the river.

We sat around a large table in the pub and discussed ideas, noted the different plot lines and eventually came up with a story that combined a band, a crash, hauntings and the river Styx all in fifteen minutes!

‘But where do we get the actors?’ came the question, but with that a lecturer at a nearby university joined us and offered to put a note up in the drama department. As one of our members suggested; lead with ideas not logistics - and fate will intervene. I went home and started writing a script.

Steve became the producer, the lynchpin that energised everyone and suggested possible roles, including me as a possible director, and we met to discuss several re-writes, and this then drifted into smaller meetings between myself and an eminently experienced Director of Photography (DOP) in the form of Dave James.

Five months later and there we are, stood about on a cold October dawn, high tide and a pub at our disposal thanks to the tireless efforts of our producer; we have actors, cameras and a terrific bunch of willing individuals

ready to take on roles. Handy advice and guidance was on hand from the assistant director (Jane), producer and DOP; and it was clear I was surrounded by a wealth of experience that had taken on various roles in previous films; but everyone was supportive of the novice in the role of director – me – and ultimately nodded and accepted whatever mad decision I decided on. The club has excellent kit and members, I was truly involved with a film that would probably have cost several thousand to make, given the kit and experience, and here it all was – all ready to create. We were also lucky with an excellent quality of actor, from extras to key roles, and this was where I was able to use my drama experience in theatre to adjust performances in line with the style I wanted; needless to say, the actors and extras were highly professional in their ability to adapt, improvise and come up with a fluent, finished product.

All of us had meltdowns in the course of the two-day shoot, usually around creative decisions being discussed (“we’re losing the tide” “we’re losing the light”, “we need to move on”, no, “let’s shoot it again” – that’s not the way I want it!’) They’re all critical at the time, but ultimately – and amazingly - the whole thing was shot in a weekend, much to the pinpoint organisation of Steve Andrews, the production schedule of Jane Andrews and the fast camera work of Dave James.

We finished with the key final shot of our key character – Lara – lying on a freezing cold road whilst Dave organised a crane shot designed to fade in from a previous shot. We felt triumphant on having managed it in a weekend and retired to the Lamplighters, where we had a final drink, said our goodbyes - and I arrived home after dropping off some of the actors with a genuine sense of a weekend well spent; we had come together, created, worked as a team – and made a film.



Here we are in December, and this brings us up to date – we’re now into the second/third edit meeting between me and the editor and hopefully we should have the film ready in the new year.

I knew that everything the producer warned me about would probably happen. He was right of course, and time is always a factor. Expect to be wrong-footed and be ready to adapt; but working with people who do this for the love of it is a wonderful thing. No one is watching the clock, demanding a lunch break, or phoning their agent; they’re all in it for the love of it – and that’s one thing we have over the big budget productions.

Thank you to BFVS for a unique opportunity.
Laurie Tallack



Sight

Melvyn Dover

Asks "Do we appreciate sight enough?"

In Britain in November 1888, a motion picture camera was patented by French-born Louis Aime Augustin Le Prince. Two sequences survive today, including one of traffic crossing a bridge in Leeds. People mingle with the horse-drawn carriages and early motor vehicles. It was shown on a projector with a Maltese cross arrangement for picture shift.



Louis Aime Augustin Le Prince

The story is not without mystery. A more commercial projector was built that was to be demonstrated to the Secretary Of the Paris Opera in 1890. Le Prince boarded a train at Dijon, and soon after disappeared. He never arrived in Paris, and no trace of his body has ever been found. No rational explanation has been made.

Persistence of Vision

For a long time movie-makers have realised that turning a sequence of stills into a movie relies on Persistence of Vision - that phenomenon whereby a flashed image stays on the retina for a certain time afterwards. If the flashed images take place at around fifty times a second motion appears smooth and we can't discern the individual frames.

Flicker Fusion

Now, researchers have taken it further. It's now called Flicker Fusion, to reflect the many parameters that influence the outcome.

According to Wiki, 'flicker can be detected for many waveforms representing time-variant fluctuations of intensity, it is conventionally, and most easily, studied in terms of sinusoidal modulation of intensity and there are several parameters that determine the ability to detect the flicker:

- the frequency of the modulation;
- the amplitude or depth of the modulation (i.e., what is the maximum percent decrease in the illumination intensity from its peak value);
- the average illumination intensity;
- the wavelength (or wavelength range) of the illumination (this parameter and the illumination intensity can be combined into a single parameter for humans or other animals for which the sensitivities of rods and cones are known as a function of wavelength using the luminous flux function);
- the position on the retina at which the stimulation occurs (due to the different distribution of photoreceptor types at different positions);

- the degree of light or dark adaptation, i.e., the duration and intensity of previous exposure to background light, which affects both the intensity sensitivity and the time resolution of vision;
- physiological factors such as age and fatigue.'

Thank you, Wiki. There's obviously more to it than meets the eye!



Recent analysis of Flicker Fusion aside, it goes without saying: We wouldn't get far with our movie-making if we couldn't see. Sight is one of those things that's only fully appreciated when it starts going absent. And when that happens of course it's frightening.

A few years ago I had to have laser treatment on one of my eyes - not the cosmetic sort where they correct vision optically to save wearing glasses - this was to stave off Macular Retinopathy. That's where some of the fine blood vessels in the back of the eye start bursting, and if this happens too near the optic nerve sight can be restricted.

I ended up having three sessions. Not knowing what to expect, the first was uncomfortable and I didn't do very well in tolerating the treatment. I'd imagined a constant laser beam being directed by the operator to zap the leaks like aliens in a game.

Poked in the eye

But it's not like that at all. The laser is pulsed. I seem to remember for my second treatment I took something like 16,000 pulses ('hits'). And they get stronger towards the end, as the operator judges. The final ones were like a finger being poked into the eye. This time I knew what to expect. I coped because I remembered those boxing matches between Henry Cooper and (the then) Cassius Clay, back in the 1960s. Every time Our Henry hurt him, Cassius Clay would shake his head in an arrogant 'No' gesture as if to say 'that didn't hurt'. So I mentally shook my head, fought the laser, and won. The third session was mopping up and I was finally told the treatment had worked and much to my joy Macular Retinopathy has been staved off.

Even when the back of the retina is very damaged, there is hope. Thanks to biological and technological discoveries, scientific knowledge is progressing steadily: In one avenue of research, scientists are experimenting with sensors - like thin versions of the ones used in our cameras - to restore sight: With some success. One of the problems is getting the brain to learn how to interpret the results. Time will tell.

There are days when we enjoy Movie-Making - going out with the camera and filming almost anything can be satisfying - even if it's just filming traffic crossing a bridge. But there are days when it's too much effort. Any excuse will suffice. The secret is to minimise the latter - and maximise those satisfying days.

Happy Filming,
Melvyn Dover



Ian Simpson

Wollongong
Camera Club Movie
Makers,
Australia

Noise, Grain & Film Scanning

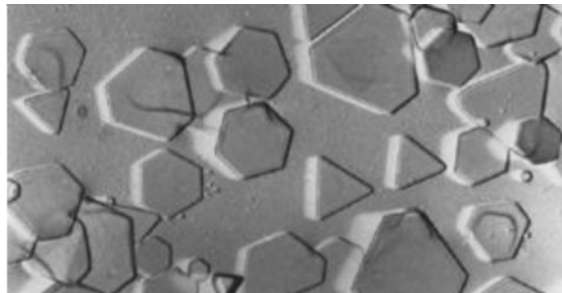
In this digital age there is an unwanted image defect that we either have to live with or take steps to minimise. That defect is “noise” in the image, which Richard Butler expressed as “unexpected brightness or color, most easily seen in areas where you might otherwise expect a smooth result.” (Richard Butler, What’s that noise? Shedding some light on the sources of noise, 2015, see link below). We often see this defect in our low light shots or footage, as in image on the right.



<https://www.dpreview.com/articles/8189925268/what-s-that-noise-shedding-some-light-on-the-sources-of-noise>

In the film era, 30 or more years ago, there also was an image defect, a “flaw that should be minimised, never a feature” according to Roland Denning. This flaw was the observed “graininess” of film. This “graininess” was defined as the “speckled appearance of an image caused by its origination in clusters of the silver particles.”

Back then the image making material was film with grains of silver halide, packed and randomly distributed in an emulsion. These silver halide grains were sensitive to light and so were able to capture the light and shade in a scene. Then a chemical process was used to lock-in this variability. Colour films required the use of dyes to report the colour shades.



Silver Halide

Data from Kodak indicated that the sizes of the silver halide grains varied from 0.2 to 2 microns. However, when viewing a film, we are looking through the film thickness, and so are viewing superimposed layers of silver halide grains, grain clusters and in colour films, dye cloud clusters. So, the visual perception of “film grain” is generally not of individual silver halide grains, but of clusters of these grains in black and white films and dye cloud clusters in colour films. This observation is supported by a statement in a Kodak publication,

“Although the viewer sees a granular pattern, the eye is not necessarily seeing the individual silver particles, which range from about 0.002 mm down to about a tenth of that size.”

In the film era if you wanted to record fine details, you would select a film with a low film speed (low ISO) as these films had the finest silver halide grain distribution.

However, on magnified viewing “graininess” could still be seen. This difference between the film’s fine grain and its grain pattern was appreciated in the film era, as a statement in Modern Photography’s colour film comparison in 1985 indicates, “...differences in graininess, grain pattern and fine detail recording ability do not always correlate to film speed.”

When you watch a movie that originated on film at a sufficient magnification then this “graininess” appears as unintended movement in areas of the image, especially in uniform areas of the image. Some writers have described this movement as “boiling” or “crawling” whilst others have referred to it as the “film’s texture”. The perceived movement is a result of the random differences in the clusters from frame to frame which is more obvious in static scenes in the movie.

Another aspect of this “graininess” of film is that it diminishes the ability to resolve fine detail coming from the size distribution of the silver halide grains and the dye clouds. The dye clouds range in size from 3 to 10 microns, but the dye cloud clusters can be 15 microns in size. (Tim Vitale, Film Grain, Resolution and Fundamentals Film Particles, 2007)

Remembering that viewing the projected footage results in an accumulation effect of these clusters as you view through the thickness of the film.

Effect of Film Scanning on Graininess



Enlargement of a frame with sharpening during the scanning process



04 Enlargement of a frame with no sharpening during the scanning process. Note the less defined graininess in the face

Although it is generally recognised that noise in digital images is a defect that should be avoided or at least minimised, the same is not true for the “graininess” in



Ian continues ...

scanned films, which is very problematic. The major consensus is that “graininess” is part of the film and so should not be totally removed and can be minimised only to the extent that it does not destroy the fine detail recorded in the film. This latter allowance also depends on the scanning resolution and the degree of fine detail in the film.

The film scanning process can also affect the visibility of “graininess”. Image sharpening in the scanning software can enhance the “graininess” by sharpening (increased micro-contrast) the edges of the clusters and hence make them more visible, as can be seen in the top left image compared to lower left image. These frames are from two scans on a Super 8 film, which was scanned at 720p resolution on a Moviestuff Retro 8 film scanner. The first scan used the sharpening in the software, whilst the second scan switched off this option.

Noise Reduction Software on Film Grain Minimisation

Noise reduction software which are very successful in reducing the noise in digital images, also have been applied to scanned film footage. Opinions vary on how far to go with this software in reducing the “graininess” and the use of its other tools which can remove dust spots and some scratches in individual frames. The software also allows the sharpening of the image after processing. The following images show how Neat Video can “clean-up” the scanned footage and remove the “graininess” in the footage, but sometimes at the cost of some fine detail.

There has been much debate on the web forums as to whether the scanning of Super 8 film at 720p resolution reveals all the available fine detail in the footage. Some investigators suggest 1080p is sufficient whilst others recommend scanning at 4K resolution. Whilst other comments suggest 4K scanning only enhances the “graininess”. It has also been reported that Kodak considered Super 8 film to have a resolution of up to 1120 scan lines, which would make scanning at HD or 2K resolutions the more compatible.

What to do about the “graininess” of scanned films seems to depend on whether one makes a rational or artistic decision. The rational decision-making process depends on whether you regard the “graininess” as a flaw in the image that needs to be removed, or whether you reduce its visibility whilst retaining all the very fine detail in the image, or just accept it as part of the film’s texture. Alternatively, you can make an artistic decision, and use the “graininess” as part of a nostalgic or film “look,” or to present a past era.

Ian



On as scanned Super 8 film frame



Enlargement of the frame to show the graininess



Enlarged area of frame to show the processed result by Neat Video to remove the graininess. Note the absence of diagonal wire in window above the birds

Watch this space

In a few years time, may ten or eleven, I might make a film about procrastination.

Keep Smiling
Pip



Dave Jones

Dave shares a an extra tongue in cheek piece with us as a festive bonus.

Island Life and Wedding Jobs

Island Life

Living on an island is different. They have funny ways, talk to flowers and hug trees. There are witches' covens and you can easily get lost, if you aren't careful. They play tricks on you. The other day, it started raining for a month and a number 11 bus arrived at the bus station. I boarded the bus, because I know number 11's go past my door. It went the right way for about a quarter mile, then changed its mind and went the wrong way. I looked about me for signs of panic, but there was none, because all number 11 buses go to the same destination, but they go different ways. I got off the bus after a couple of stops and walked back the way I came, then thought it best to walk into my road, which is quite long.

Waiting at a bus stop, a number 11 bus came along, and knowing there was no room for it to turn round, as it would mean a 15 point turn in a 'A' road and the driver would get nicked, I boarded it. The bus was being driven by a woman I know, who drives buses past my door. I then knew I was going home. I couldn't see where we were going, but knew it was in the right direction. The bus stopped and she turned in the driving seat and said, "This is your stop ... you live here." They all assumed I had dementia, but most people I know have dementia, we none of us know each other's names, although there is a couple a few doors down from me and they are both called 'Norm'.

It was pitch black and the street lights were on. I looked at my watch and it read 4:30 p.m., so it must have stopped. Getting home, I asked Alexa the time, whilst looking at my watch. It was correct. I asked what time sunset was and she said, "Nineteen hundred hours'. With two and half hours to go, there was no sign of it, so that too had got lost.

It's the Island, nothing works right on the Island.

Wedding Job

You can't film a wedding easily. On my first wedding job, I attended rehearsals to get to grips with the lighting and there was 500W on the couple practising getting married. I remember thinking that the same vicar married them four times, so at the wedding they got married bigamously. I remember telling them that they were the only couple I knew who married each other five times in three days ... they were as puzzled as me.

On the day of the wedding they turned the lights out and used the sunlight through the stained glass windows, so the couple were wearing clothes of many colours, none of them black or white, just ... many colours. Her mother said, "Remove the colours and make it black and white." The bride's dress looked like she had been run over by a lorry on a wet day. When she turned away to sign the register, on her backside was projected the word 'SAL', the 'P' and the 'M' being on the floor either side of her.

During the hymns, the organist started bouncing in her seat, she was a very nice lady who spoke very good English for an Islander and when I asked her why she was bouncing in the seat, she leaned forward and whispered, "I couldn't reach the pedals."

When it came to the outside pictures, a relative just kept pressing the button, and I believe he was trying to keep up with my camera's 24 fps. After the photo session, the bride and groom got into the car and as the door

closed, it started raining ... and I just knew, she was a witch. Travelling three miles, we arrived in bright sunshine. That proved it.

They asked me if I wanted a Punch. I didn't like fighting. They gave me a glass of warm Blackcurrent juice and I fell asleep in my soup. My wife arrived and drove me home. I was put to bed by half the street, and I woke up two days later.

The doctor said, "It was alcoholic poisoning."

So they had poisoned my drink?

"How much did you drink?"

"Just half-a-pint of Blackcurrent juice."

My wife told the doctor that it was Punch.

The doctor said, "You could have run your car on it."

"Why didn't the others fall over?" I asked.

"Several did, " said my wife, "Apparently, you were the first."

I stopped filming weddings, because you can run into some very bad alcohol and it can do your liver in. You receive letters after you've distributed the film, demanding you remove certain scenes where a couple has landed up on the floor, and he has planted his hand awkwardly when getting to his feet, then trodden on her dress when helping her up ripping its rear seam open. Upon walking away, dress gaping open, she tread on her dress and they both fell over again, this made the dress gape some more.

I was told during my wedding training, never to film people eating ... good advice, because that's when the caveman visits. You must keep in mind that you are not wanted, unknown and a gate-crasher. Many people hate being filmed, especially when they shouldn't be there or weren't invited.

Never walk backwards, it's fatal, always walk like a crab, so that you know where you are going with one eye and where you have been with the other. Set the camera to WA and run a stabiliser in the edit. Don't go near the water, but be ready to film those that do, as gravity is much stronger near water.

Always keep the wedding cake in the picture, they throw them on the floor, at each other, do face plants in them, collapse the cake table ... cakes roll quite well and some people bite the plastic pillars. If they're wearing dentures, that can make a good shot. When they pull a denture out of their mouth, using a cake pillar, it normally catapults their teeth right across the dance floor.

My Wedding

My wedding reception was in a very small house and we'd had a lifetime of dodging each other, no drink was spilt, my alcoholic grandmother was carried to bed, and even the dog behaved itself. However, neither my wife nor I knew the date we got married, so twenty years later, our daughter gave my wife a silver bracelet with our wedding date engraved on the back. My wife was the only woman I knew who could quote her National Insurance number but not the date of our marriage. It ran in the family. When my father died and I obtained all his paperwork, I discovered that his birth date was the 22nd September 1907 and he always celebrated his birthday on



Continues

the 23rd. We were married on his birthday, but couldn't remember whether it was the 22nd or the 23rd.

Grooms are very weak on their wedding day, and if they pick up their bride, they are bound to drop her off somewhere, before they get there. My wife was an athlete ... you don't mess with them. When she picked a up 10 ft wide curtain pole carrying heavy drapes, that I could barely lift, and sprang onto a chair, the muscle definition across her shoulders was frightening. Five minutes after we were married and they were taking picture, she said, "If ever you have an affair and I find out, I'll stab you in your sleep, break a window and tell them we were burgled." She'd obviously planned for any event and that was my introduction to married life. She was something of a comedienne.

One day, when running for a bus, she streaked past me, boarded the bus and in desperation I dived onto the platform at the rear. The conductor said, "You're out o' salts mate."

I said, "She's an athlete."

"Oh ... don't tell me ... and you were stupid enough to try an' escape?"

You can get in trouble if you film a bridesmaid on her own, I don't know why, but don't do it. The bride is filmed on her own, the groom isn't and the bridesmaids are filmed together ... you can do what you like with the rest.

All I know is, if you mess up their wedding film, they will hang you from the nearest lamppost ... so it's best not to do them.

Dave Jones.



On October 31st, we had an excellent talk by Jake Day on the role of the Location Manager. Jake talked about some of his experiences as a Location manager, including for the films "The Great Escaper" and "Treason". It was clear that the Location Manager is one of those unsung roles that can make or break a film and can also be very demanding. Jake set some exercises in advance of the meeting, and some members did them, and discussion of their efforts concluded the evening.



"Cut!" – end of a "take" for "He's Got a Tell"

The next meeting (Nov 14th) was "Show and Tell", a chance for those who filmed a scene at the end of our introductory course (reported in the last SOCO News) to show their result and talk about their experience. One film was lost (irreparably damaged SD card), but the others ranged from a window cleaner who witnesses a murder to biscuits that rebel against Artificial Intelligence to a take on the Grim Reaper.

This was not a competition, but, if there was a winner, it was, perhaps, the teddy bear in Nepal, for this was made by a group with NO previous filming experience. This told the story entirely with stills taken with phones and edited with very basic software.

It was very well received, and if the editing of the finished result was, shall we say, a little "rough", that only

emphasizes the potential that the club can expect from these members in the future.



The group working on "Pranks for Elves"

Another "Practical" evening on Nov 28th saw three groups. Firstly, a script by Oli Seaman "He's got a Tell" concerning a poker game. Second, an interview, to form part of a biopic about Flt. Lt. Norman Stent, a WW2 bomber pilot, and a relation of one of our members. Finally, a film by Nick Elsworth. The details of this film are understood to be secret. Speculation that this secrecy is because the planners did not know what they were going to film cannot be corroborated. I can, however, reveal that the provisional title is "Pranks for Elves".



Filming for biopic on Flt. Lt. Norman Stent

The next meeting will be a Christmas social. Charles Elsdon, [FVM](#)



Alan's Ramblings

Alan Wallbank

Shares his thoughts

This month I am writing about a subject that fewer of us are connected with these days, but please don't look for the next article when I mention cine. This is a present day story that has left me wondering if I have done the right thing?

It all began about several weeks ago when I had a phone call from a friend to say that an ex train driver that I have known for over 60 years had passed away and his sister wanted to know if I was interested in any of his films items. With so many things of value being thrown away these days, I agreed to have a look the items in question.

I duly arrived at the house where everything was stored in one of the bedrooms. There were several screens all in boxes, a video and two 8mm cine projectors and quite a lot of 16mm film in cans of various lengths from 1200 to 200 feet. On closer inspection nearly all of them were British Transport Films with titles similar to the ones I collected on 8mm many years ago, including some which I considered 'rare'.



I asked the sister if she had considered taking them to an auction house and she said she had, but they wanted her to photograph each can and make a note of the film titles. This was something she didn't want to do as the house had to be cleared out asap. With the council tip looking to be the films destination, I decided to take them home along with the two 8mm cine projectors.

For those who are not conversant with 16mm film, they are 'heavy', with even 200 foot cans weighing I faced just one hurdle, getting them into my house without my wife knowing what I had brought home! I managed to sneak them in and stored them on and in my already full wardrobe, all 42 of them!!! A few days later I sorted them out and found some didn't have titles, so that meant finding someone with a 16mm projector to view the films which was proving difficult.

I then remembered a gentleman who came to the Portsdown Video Club to demonstrate and show films on his 16mm projector, so I emailed him straight away. His wife replied to say that he had passed away last year, but she had one of his projectors and would be happy for me to have it, so that projector is also in my bedroom and no its not in the wardrobe!

I haven't looked at any of the films yet, as shortly afterwards I was given all of Stuarts Egbeares 8mm cine film to sort out. Stuart loved railways all his life so its was not surprising to find that 50% was of steam and diesel trains. The rest was a record of everything that went on in and around Southsea between 1969 and about 1980 and other film further afield.

We have the Southsea Carnival from 1969 to the ships coming home from the Falklands. Also the Southsea

funfair, the skate park where we see skate boarders, 40th D-Day event on the Common etc, etc. What really surprised me were the vivid colours from super 8, as opposed to my experience of the gauge from about 1986. I wonder if the film produced better colour before the sound cartridges were introduced.

I then had a problem, as both of my 8mm cine projectors failed to work, so I took a look at the Eumigs that came with the 16mm film. They were both dual gauge machines, meaning that I could project Standard or super eight films. The S 802D sound machine requires gate and sprocket changes to alter the format being shown, a surprisingly simple, bit annoying task when showing different film types. Unfortunately, the film would not load beyond the first sprocket, no doubt due to the machine being out of use for many years.

I then turned my attention to to the other Eumig a 502D silent machine. It seemed to work in forward and reverse while changing formats is just a case of moving a switch up or down then pushing the film into an aperture until it engages onto a sprocket which in turn feeds the film to the take up spool. Thankfully, this all worked okay allowing me to view all of Stuarts films. Nearly forty 50 spools, with the rest on 200 and 400 foot reels. What surprised me most was how good Stuart was from this early footage when it came to editing in the camera with different angles and clever composition that is a gift rather than something gained from other film makers.

You can imagine it was quite a task to sort out all the films, so I put aside the local ones which will be going to the Winchester Film and Sound Archive, with the railway ones being offered on Ebay along with the commercial ones as its a good way to encourage interest which has already had bids. I will list more after Christmas and once they have gone I will turn my attention to the 16mm.

If anyone is interested any of the films please phone me on 07889154853. These film collections also came with commercial film shorts that no one wants these days, but they will be free to anyone who phones me.



Stuart glued all his films together with splicing cement whereas I always used tape and although several breakages occurred, it is remarkable how well the cement splices have lasted for over 40 years. I must admit that one of my projectors was coaxed back into life allowing me to view the large reels.

Overall, its a good job that I still have the ability to deal with cine film, so if I can help with yours please get in touch.

Alan



Robert Paget

Tips, advice and
chit chat.

This and That

Beneath the simple, there often lies complexity

When you watch a well-crafted film, you will follow the “story” which all films contain, whether in Drama of some form, Documentary or even a simple and informative Vlog. When you see the closing titles of a Hollywood film, the vast number involved from tea boy to editing teams, and catering suppliers to art consultants, often runs on screen longer than many amateur films, and certainly the “one minute” challenges.

Watching the “BBC Young Chorister of the Year” competition, it was impressive how the professional judges spoke carefully and positively to the brave young contestants. Fortunately, only “winners” are announced, and nobody announces “Sorry Johnny, thanks for entering, but you have been awarded just one star.”

Just like those young choristers, we riskily put ourselves out for various forms of criticism and comparison when we screen our films.

I try to use the positive approach of looking for what is good in any film. It may be near perfect, and you can often identify just where the skills of the film maker are, in the same way that the written word can often disclose deeper information about the author. Imagining a scenario where you watch a very poorly shot film by a raw beginner (aged between five and ninety), and you are face to face with them, do you have the skills to immediately find what was good in their film?

Making the recent film “Exploiting your Camera” had the object of stimulating the ideas of an audience for filming techniques. It made me question myself as to how much I was fully exploiting my cameras, or whether my abilities had reached a plateau. As a personal challenge I decided to attempt more films just using my phone.

Film making continues to move on in terms of technology, techniques and equipment. Competition evenings for “made on a phone” almost telegraph the question “is it really a camera? Surely it must be rubbish?”

None of us live in the world of bemoaning the loss of 405 line TV or the early amateur video formats, but is the smartphone some strange threat?

If a prospective new member turns up at a film making club, the chances are that they will be filming on a phone. When a film is completed, who knows or cares what device filmed it?

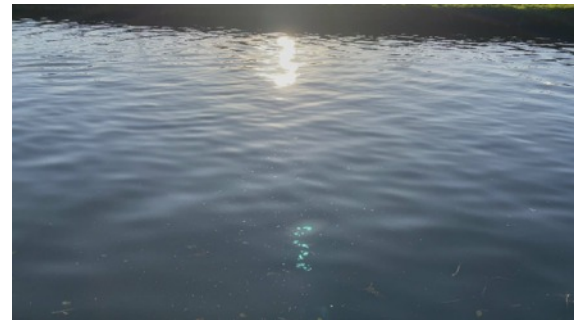
It had been a year since I replaced my mobile phone, and the only reason at the time had been my concerns about battery life. The previous phone could film in 4K if required, but I never had. I invariably film with two cameras with far more advanced features, why would I ever need to use a phone?

As the modern day “Box camera” or bottom rung “Instamatic” that may even incorporate inbuilt editing, I realized that whatever I normally relied on to get good footage from modern 4K cameras, the phone had limited control settings, and that could pose a challenge, although the “view screen” was excellent.

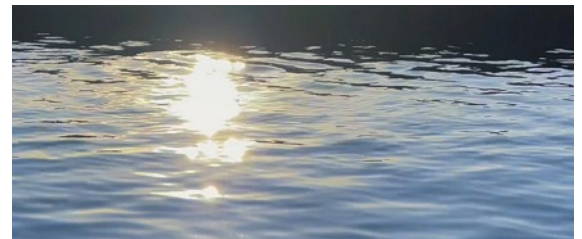
Four months later I have made eight short films, three of which I am reasonably pleased with. This year’s family Video Christmas card, featuring cobwebs thick with frost was shot in less than an hour. With one hand wearing a splint following a minor operation a couple of days before, all handheld shots were filmed in 4K. I used 60fps to

enable slowing down the play rate when editing to improve image stability. Having filmed only in 4K for the last three years, has taught me some editing techniques which I would not have done when using FHD 1080p.

In the same way that I had harshly cropped the frame for “Windswept” and “Exploring Autumn Light” (see images), the various crops in the “Christmas card” film enabled viewing the finer detail of frozen cobwebs. Gentle zooms or offset zooms created on the editing timeline retained pace, and I used about 25 of the 45 clips taken. I excluded those of cobwebs on car wing mirrors and on a metal skip on a driveway which did not portray the message I wanted to achieve.



Before Crop

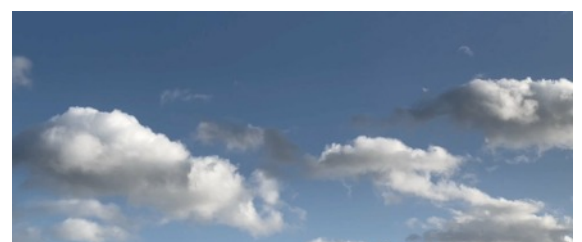


After crop

Saving £25 or £ 30 on printed cards and postage was a side benefit. I felt that I had “exploited” or at least learnt a few lessons using the phone camera.



Before crop



After crop



Robert Paget continues....

I can now avoid displaying any annoying internal reflection from sensor to rear of lens produced when filming very bright objects such as the sun. A bright blue unfocused spot, which can be bouncing around on an otherwise stable image, detracts from the viewing experience. For "phone footage" I look for it on the view screen and try to position to perhaps the lower third. Doing a simple image crop or cropping/masking all shots to a more "cinemascope" format gets rid of it.

...and would I add credits to the completed film saying it was shot on a phone? Definitely not.

In the supermarket car park today it was raining heavily, and I stopped to film the interference patterns in a patch of spilt diesel which was creeping across tarmac. My phone has certainly become one of my "go to" cameras because of its immediate availability.

Film is a language

When I am editing a film, particularly a larger project, I am certain that I sleep better. That mix of the mechanics of shooting the film, planning and thinking about the next shot, followed by the editing process which also requires imagination and the realization of editing options and outcomes, is where science and art meet.

Although my main interest is in forms of documentary and sometimes visual expression edited to music, I keep a keen eye on modern film drama for ideas and techniques. The dramatic opening titles of the Nordic drama series

"The Bridge" gave me the idea for a mirror image sequence in "Arrow of Time". Using a mask over one side of the screen, I overlaid a "negative" version on another video track, so that the moving film had a reflection which was a negative. The intention was to take the viewer away from the world of normality, and to think about some aspects of science which are still not fully explained. My film evolved just from making those mirror images.

I consider that however good the captured moving images are, the "art" really starts with the edit. It will be in your version of that "language", or certainly be in your "film dialect" and current state of understanding of that language. Studies have shown that where humans are bilingual (in spoken tongue), particularly those growing up in a bilingual family, they can be building up cognitive reserve. This may be beneficial to them in later years, and often gives them a greater ability to understand conflicting points of view. A former very respected employer who had become multi-lingual in her twenties, had the ability to rise enthusiastically to any challenge in resolving differences between people.

We possibly each make films for different reasons, for some it will be in the hope of winning a competition, but where the process rewards us with achievement, or the challenges of better understanding the simplicity and underlying complexity of the language of film, our rewards may come in other ways.

Robert



Gloucester Film Makers

Since my last report we have held our AGM and are pleased to welcome Julian Baldwin to our Committee.

Our Chairman, Mike Morris thanked Paula Clare and Kevin Daws, both unable to continue, for their input during their time with us.

Our final competition of the year, "The Ron Turner Trophy", was won by Chris Wheatley with his film, A Tour Of Gloucestershire.

During the year 25 films were entered into the 7 competitions we held.

On December 12th we met for our annual Christmas meal at the local Toby Carvery. Thanks to Chris Wheatley for making all the arrangements for what was a very enjoyable evening.

Looking ahead we start 2024 with Zoom meetings in January and February. In March we return to St. George's Church Centre.

Also in March we shall be entering three films in the Annual Gloucester Inter Club Film Competition which will be hosted by the Worcester club.

Our programme for next year is currently being finalised with some of the usual competitions plus some new ideas for the members to experience.

More details to follow when available.

John Greene. Secretary,

[Gloucester Film Makers](#)



Weymouth's relief road coped easily with the Christmas holiday traffic.

Many thanks to Melvyn Dover for this cartoon

Ed: I wonder if Chris Rea is stick in that traffic?



One To Watch

From Betty Nott

Don't be cruel... Someone had a lot of time or skill!

<https://www.youtube.com/watch?v=sFwIStqZWGs>



Selected
Movies
from
the
World
Wide Web

Send your
contributions to

piperitten@googlemail.com

A few from Pip Critten

Creating Chicken Island in Chicken Run: Dawn of the Nugget. A must see if you are into animation.

<https://www.youtube.com/watch?v=H11a5blbG54>



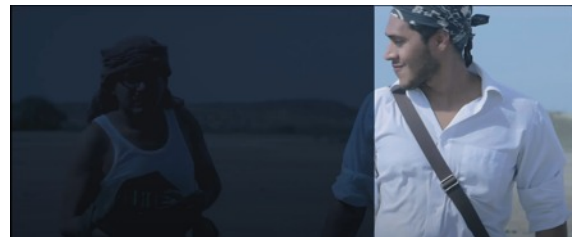
Why Life Looks Better in Movies - Hollywood Lighting Breakdown. Tips and tricks to help you create better lighting for your films.

<https://youtu.be/QCu6GiEWMvY?si=p01YYUZM8sraPDp8>



Turn day into night - Advanced Day for Night Filmmaking Tutorial

https://youtu.be/F6_C3D4lsp?si=f37Mej6Y93z_0os



Top Amazing Work in movies (VFX) (CGI) before and after shot

<https://www.youtube.com/watch?v=kqS3PzWA2w0>



SoCo Regional Council

Chairman: Pip Critten

Email: pipcritten@googlemail.com

Vice Chairman: John Simpson

Email: johnsimpson57@yahoo.co.uk

Secretary: Vacant

Email:

Treasurer: Brian Hibbit

Email: brian@brianhibbitt.com

Competition Officer: Vacant

Email:

Social Media Officer: Paula Clare

Email: paula@newday.tv

SoCo News Editor: Pip Critten

Email: pipcritten@googlemail.com

Council Members

Ivan Andrews – Teignmouth

Changes

New & Rejoined:

Change of address / contact:

Resigned:

MR CHARLES HOCKIN, Reading

Cancelled:

Deceased:

Moved into SoCo Region:

Change of Name

The SoCo News Archive can be found
at either:

[Pip's SoCo News Archive](#)

<http://www.theiac.org.uk/iac/regions/soco/soco.htm>

SoCo Diary Dates

To have your event featured in SoCo News drop an email to
pipcritten@googlemail.com

For a full list of national and international events

[Click here](#)

Please note: Articles and opinions published in this newsletter are not necessarily those of the Editor, SoCo Committee or the IAC. The Institute of Amateur Cinematographers is a Company Limited by Guarantee, incorporated in 1932, registered in England No. 00269085

Copy Deadline for Mar Apr 2024 Issue

To reach Editor by 15th Feb 2024