

A Training Course with a Difference - FOCUS on FILM PROJECTION

This year's David Lean Foundation sponsored training courses for projectionists took place at The Odeon, Edinburgh, at Cineworld in Birmingham, and at the Vue Cinema in Reading's Oracle centre, and the BKSTS is grateful to the managements of these cinemas for providing the venues and the facilities free of charge - a very positive contribution towards improving the training of projection staff. I was pleased to be invited to the Reading event, where Vue's Screen 9 had been reserved for the day to provide a very appropriate lecture and demonstration venue for the 15 projectionists who turned up for what turned out to be a day packed with information and a rare chance to ask questions of some of the top people in the cinema industry. The only real disappointment had to be that only half of those who had originally requested places on the course actually turned up, giving rise to questions as to whether the fact that the courses were free to projectionists perhaps devalued their worth in the eyes of some who should have attended and whether more people might have turned up if they had previously committed themselves to paying a few pounds upfront. Nevertheless, it was apparent that Alan McCann's article entitled 'A Fairy Tale' in the September issue of *Cinema Technology*, in which he had explained how projectionist training used to be in 'the good old days' and how modern day projectionists needed to make the most of any training on offer, had had the desired effect of getting people along, since a show of hands in the audience indicated that virtually everyone had come because they had seen this piece in *CT*. The Cinema Technology Committee is already looking at potentially more effective ways of getting information about these important courses into projection rooms across the land, and next year projectionists can expect to receive fliers packed in film boxes and with new lamps and spare parts.



Dion Hanson, Chairman of the BKSTS Cinema Technology Committee, welcomed everyone, and began with a tribute to the David Lean Foundation which

uses royalties from four of the major films directed by Sir David Lean to provide grants to enable people to attend film-related educational courses. Dion explained that it was only because of a generous grant from the foundation that projectionists were able to attend these important courses without charge.

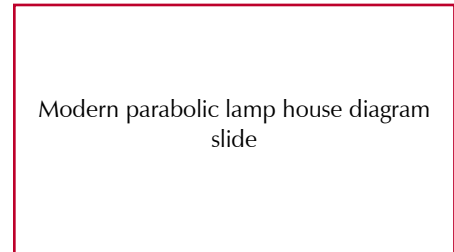
Dion said that there are now lots of new people coming into the cinema industry in projection roles, and that a need has been identified for more training, both in the basics of projection for the newcomers, and for those who have been in the industry for a few years, refresher courses to endorse the importance of what they should have already learned, and to keep them up to date with new techniques. He outlined the programme for the day, promising lectures in the morning and a panel session in the afternoon, during which everyone would be encouraged to ask the panel members anything at all to do with the industry.

Picture Quality was the topic of the first lecture, in which Dion proceeded at high speed to pack as much valuable information into three quarters of an hour as some courses include in a whole day!

Beginning with light sources, Dion explained how many 'modern' lamphouses are effectively just Xenon conversions of the old carbon arc layout, and he compared such



designs, which have relatively shallow mirrors, with the more modern parabolic mirror designs which are able to collect more of the light and focus it onto the gate area.



Modern parabolic lamp house diagram slide

Explaining that the key task is to get a nice even light all over the projection screen, he demonstrated how to use the 'black-balling' technique, (the black-ball is the shadow image of the end cap of the Xenon) to check that the alignment is correct - the black-ball should be in the centre of the screen. Reflecting advice that would be given by



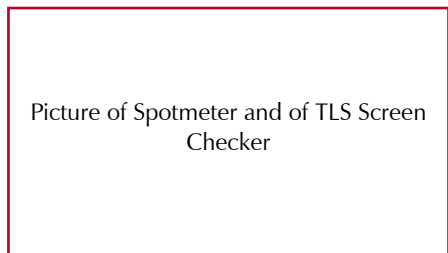
Black-Ball centered Slide

several of the speakers, Dion stressed that if the tests indicated that alignment might be required the projectionist shouldn't try to



adjust things, but should call in an engineer. Dion's talk was packed with useful hints and tips such as 'if the pattern of the flicker blade isn't circular, it might be worth taking the lens out and doing alignment checks'. He emphasised that it is important to focus the light spot accurately onto the aperture plate, and showed the differences in light losses when using widescreen and 'scope apertures. He explained that the 'scope aperture should always be used when focusing a Xenon, since it ensures that you are illuminating the largest area, but it was important not to focus the light too much, resulting in possible vignetting at the screen corners. He showed why widescreen images can sometimes look dim, simply because the projector is trying to illuminate a very large area. Some US projectors can automatically change the focus of the Xenon when the aspect ratio is changed.

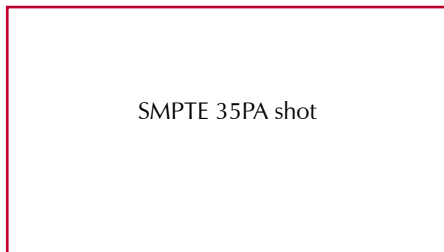
This fast-moving fact-filled presentation continued with descriptions of different methods of measuring screen brightness and the evenness of screen illumination. A system using a camera in the auditorium focused on the screen, with a computer analysing the results, is probably ideal, since measurements are taken from where the audience is sitting - you can't usually get a correct view from the 'box'. Since such equipment may cost around £3,000 it is only likely to be used by those who are setting up new and refurbished cinemas, but much cheaper solutions include a spotmeter (around £1000) and even a useful little 'Screen



Checker' from TLS which costs around £100 and provides a simple pass/fail indication using LEDs. It is important to check screen illumination when sitting in the auditorium, but Dion warned against leaving the dowser open for too long when using pure white light, since the heat generated could damage the lens.

Dion repeatedly stressed the importance of health and safety issues, which are real and important in this business - don't ever work on a Xenon without using all the protective kit.

Moving further into testing issues, Dion explained the use of the SMPTE 35PA test film, often incorrectly known as RP40, because this is the number of the 'Recommended Practice' paperwork that accompanies the test film. He spent some time showing exactly which areas of the test image could be used to check for various potential problems, including resolution and focus all over the screen. The SMPTE test films are



expensive, around £4-5 per foot, but each one is effectively a 'camera original' and of the highest quality. Cheaper test films are available from companies like Schneider, and are fine, although less accurate than the SMPTE version. Projectionists should also note that running a loop of test film time after time can lead to inaccuracies. We were given a good explanation of the various projection aspect ratios, with a description of how a film is shot at 'full aperture' and an

explanation of how and why for widescreen projection an open-frame print needs to be projected at 1.85 even though this will not show the top and bottom of the original image.

In a series of interesting slides we were shown different aperture plates, correctly and incorrectly cut, and their effects on the on-screen images. Scribe lines could be seen as the cutting-guides, and it was explained that you should never cut an aperture plate to suit a piece of commercial film material - it is so easy to over-cut so that you would see undesirable material when used with a different film. We were also shown pictures from a 'rogues gallery' where a projector's heat shield had been filed away in a misguided attempt to get more of the image on screen, and once again the projectionist audience was warned - 'leave it to the engineers!' If your theatre has a service contract, make use of it to get advice from the very experienced engineers that the industry is fortunate to have.

It was notable throughout the various talks that the subject material on the slides had been very carefully photographed, with many close-up images revealing points that would otherwise have been difficult to get across to an audience, and I only later found out that many of these images had been taken by Dion.

Moving on to lenses, Dion showed how to download a lens calculation programme from companies like ISCO and Schneider, and how this can be used to check that the correct size lens is being used for your theatre. He showed how to determine the focal length and speed of a lens, and the effects of various lens defects, including chromatic aberrations, and clearly explained why these happen, using diagrams show-

ing how lenses are constructed to minimise colour fringing. The importance of cleaning lenses properly, (put cleaning fluid onto a cloth and not directly onto the lens, since it could get into the mechanism) and of not over-cleaning them, was illustrated with a picture of a lens surface completely covered with 'micro-scratches'. Dion said that many people would be amazed at the effect that a new lens can have on picture quality - modern lens technologies have come on in leaps and bounds. He ended this part of the presentation with the sound advice - you can't do anything by guesswork where optics are concerned.

The last piece of kit to affect picture quality before the images hit the viewers' eyes is the cinema screen, and Dion gave an informative primer on the pros and cons of different screen types, the relative gains of different surfaces, and on perforations, explaining the balance that must be struck between light loss and high-frequency sound losses when choosing perf sizes. He explained why silver screens are needed for 3D systems using passive glasses (the light polarisation is maintained after reflection) and said that these are not used for ordinary projection because of the severe light fall off at screen extremities.

Picture Steadiness was the aspect of picture quality that Nigel Shore from NSS Imagineering addressed, hitting the audience with a series of fascinating facts showing that the original 35mm film frame area is magnified some 228,000 times before it hits the screen, representing a magnification



of over 500 times horizontally and vertically. The effect of this, of course, is that any movement at the projector, no matter how small, will be magnified massively on screen - 1mm of movement at the projector would result in 500mm of movement on screen. Nigel advised that any such movement is more noticeable when using 1.85

ratios than on 'scope, because of the greater magnification, so any steadiness tests should be carried out using 1.85. In practical terms the best steadiness that can be achieved is about 0.25%, and even this represents a movement of up to 13mm on screen.

Nigel then went on to explain the possible causes of vertical movement, with the aid of some of the very good close-up slides of parts of the projector mechanism.

A dirty intermittent sprocket can cause enormous problems with unsteadiness. A deposit of just one-tenth of a millimetre on the sprocket can cause the picture to jump by up to 50mm on screen, so absolute cleanliness is essential. Giving useful

Dirty intermittent sprocket

practical advice, Nigel said that the usual compressed air gun is not enough - you need to carefully brush all around the sprocket to ensure that it is completely clear of foreign matter. He gave an example of where he had found a tiny piece of splicing tape which had stuck to a sprocket, giving a rhythmical bounce six times a second. The tiny piece of transparent tape was difficult to see, and it was eventually found by carefully running a fingernail around the sprocket.

The condition of the **gate plate & pressure pads** is also important. These items can last for millions of feet of film, but it is vital to keep them clean. Nigel warned projection-

Gate plate & pressure pads

ists to take extra care when cleaning these areas, because it is very easy to bend a gate runner when trying to removed 'baked on' debris, and he showed how to check for a bent gate runner against a straight edge. He advised that gate plate runners and pressure pads should always be changed as a set. Nigel showed the amount of dirt that could build up on pressure pads after just one showing, and in best 'Sherlock Holmes'

investigative style showed how to work out from the position of the deposits that the gate tension was uneven. He stressed that scraping off deposits must be done with a fingernail or a piece of plastic - never with metal tools. He showed how the build up of a deposit on a backplate can damage the digital sound track, and said that this can be a common cause of Dolby SRD tracks not working. Again, he said that the use of compressed air isn't recommended, because the dust then gets blown about all over the mechanism.

Another possible cause of vertical movement can sometimes be **print error**. If this is suspected, careful comparisons should be made of the picture image against the frameline.

Another cause of vertical instability can be problems with **intermittent units**. These are very long-lasting, many working perfectly for over 20 years since they are beautifully engineered units whose parts move only relatively slowly. But damaged sprockets with worn and badly shaped teeth can give rise to unstable pictures as well as damaging every film that passes through. When intermittent sprockets wear so that you get undercutting of teeth, one side is effectively doing all the work. Nigel said that you can hear badly worn sprocket, and suggested that it is often possible to reverse a worn or hooked sprocket, thus doubling its working life. With such sprockets giving up to 5 years life, at a cost only tens of pounds, this represents only a penny a week, not an expensive means of ensuring film stability. Vertical movement can be caused if the intermittent unit is not locking correctly. You can feel this with your fingers - if it is in the locked position it shouldn't be possible to feel any movement at all, and units can be adjusted to achieve this aim. If the intermittent sprocket shaft is even slightly bent (not quite 'true') as can occur, especially with single-ended designs, this too can cause vertical movement.

Nigel used the SMPTE35A/RP40 test film to illustrate, using its chequerboard pattern, how to check for image stability, and demonstrated the 'shadow' method, whereby a static shadow from a fixed object in the light beam (often the shadow of a mike stand) is used as the fixed image against which any movement of the chequerboard pattern can be clearly seen and measured. A vertical movement of one square represent a picture movement of about 1.1%, and the best that can be achieved is usually about one-quarter square of movement, about 0.25%.

Nigel summed up by saying that if you keep

Mike shadow on screen with RP40 background

the gate tension correct and everything in the film path scrupulously clean then movement problems will be minimised. He also pointed out that if there is any excessive movement of a picture it can affect the apparent focus - no matter how good the lens is.

Nigel gave a useful tip that when running a projector without film you should check that no pad roller is moving - they certainly shouldn't be touching the sprockets. He also mentioned that when running polyester film it is possible for misaligned sprockets to distort the perforations. If 'jump' is regularly noticed at film joins, then it could be that the splicer is out of adjustment - check it!

Horizontal movement - 'weave' is almost always caused by wear or misadjustment. Check that the reference edge is in the right place, using a straight edge (an aperture plate can often be suitable), and ensure that the film is being controlled laterally as it passes through the gate.

Picture 'Ghosting' is distinct from what we usually think of as picture movement. The ghosting effect is because you are actually seeing the whole film frame move, due to wrong shutter synchronisation, when you are not supposed to see this. Basic rules of film projection are that the film must not start to move until the shutter is completely closed, and that the film must have finished moving before the shutter is opened. Ghosting will appear as an upward or downward streaking that is particularly noticeable on titles. Nigel showed how to check ghosting using the blocks on an RP35 test film, although he said that a film with white titles could be used at a push. He gave the useful mnemonic BRAT to remind projectionists which way the shutter should be adjusted.

BR - Bottom ghost, **R**etard shutter

AT - Advance shutter, **T**op ghost.

Nigel said that you should always check for ghosting using the 'scope aperture, since this is full frame height, and he stressed that there is only one correct shutter timing position to get no ghosts, and that patience is sometimes needed to find this.

After the coffee break, which provided an opportunity for people to discuss 'the course so far' (and I was delighted to hear just how

enthusiastic everyone was), Matt Jahans of TLS (Technical Lamp Supplies) took to the lectern and, after a short but interesting 'commercial' for his company, in which he said that TLS doesn't only supply lamps,



but has expertise in the design, supply and maintenance of rectifiers and power supplies, and also designed the Screen Checker unit mentioned earlier [I have asked TLS for a technical article on this for a future issue -Ed.], he addressed the important topic of **Light Sources**. Light sources, of course, doesn't just mean lamps, and Matt explained that Xenons need rectifiers because they need to be fed from a high-quality Direct Current (DC) electricity supply, typically at 30-37 volts, whereas the normal mains electricity coming into a projection room is likely to be 415V, 3-phase Alternating Current (AC). He gave a very good explanation of the process of AC-DC rectification, detailing the roles played by the contactor, the transformers, the diodes and the smoothing capacitors, and he told us that the AC ripple component needs to be as low as possible if the light quality on the screen is to be immaculate.

He gave simple fault-finding tips - 'can you hear the clunk of the contactor going in?' - and explained that diodes come in sets of six, and that it is usually false economy to try to change them individually, since if one has gone, others in the set are likely to fail soon.

Matt explained how the capacitors smooth the rectified AC, and that they can take a huge 'inrush' current on starting up. The 'ignition board' has a relay/contactor and series resistor to limit this initial current, and the relay removes the resistor after the initial inrush. He explained that resistors can burn out, and detailed the symptoms. The huge capacitors can store large amounts of electrical charge, and can remain charged for some time after switching off, providing the chance of giving a projectionist a nasty electric

One of Matt's Slides

shock if touching the equipment soon after switching off. Matt emphasised that the 'old method' of discharging capacitors by putting a screwdriver wasn't to be recommended, for several reasons, and said that the best way is to go and have a cup of tea after switching off the power supply before attempting any further diagnosis or maintenance.

Matt then went on to explain that a Xenon bulb requires a high voltage discharge to initiate the arc, and he showed how an igniter works. A high voltage transformer is used to raise the mains input to about 6,000 Volts, which is applied to a Tesla coil (like the ignition coil that drives the spark plugs on a motor car) and spark gap which raises this to about 40KV to provide the 'lightening flash' to start the arc. He used a superb Powerpoint presentation to illustrate the stages of striking and running a Xenon lamp, detailing the high striking voltage leading to a large inrush current and how this had to be reduced once

Another one of Matt's Slides

the arc was established. He explained how to use this knowledge to carry out logical fault finding, and again used pictures to illustrate various failure mechanisms.

Matt's good advice to projectionists was 'don't just replace a lamp - find out why it failed'. He spoke about end-cap discoloration, which shouldn't happen, but when it does indicates that the metal has been exposed to temperatures of over 270 degrees C, and suggested causes to look out for, including cooling fans not working properly and high-resistance electrical connections - change the leads, tighten up the connections! If there is no end-cap discoloration but the bulb has changed to a blue/black colour then it has probably been damaged in transit, and if there are black deposits on the top of the bulb this is likely to be due to tungsten

evaporation. Lamps used to be rotated to 'even out' the blackness, but this isn't recommended, since rotation may distort the arc and cause flicker.

To some people's evident disbelief Matt said that lamps are occasional put in with reversed polarity (or the electrical leads are somehow interchanged) - the Xenon is destroyed in a few seconds!

Matt took the projectionists through the possible causes of premature lamp flicker, (i.e, occurring during the warranty period), including rectifier faults, high ripple, high inrush current, excessive operating current and magnetic instability, suggesting reasons for each condition. He showed projectionists how to identify damage due to ripple and high inrush currents by examining the electrodes, and showed the effects of magnetic destabilisation. Explaining how a permanent magnet is used to make the arc stable, especially on horizontal lamps, which fit much better into parabolic mirrors, Matt stressed that projectionists shouldn't ever touch or move the magnet!

Health and Safety issues relating to Xenon lamps were explained in detail, with Matt giving reasons why lamps shouldn't be used for more than about 25% more than their warranted lifetime - bulbs can weaken when running at high temperatures, and the glass can then fail disastrously. He showed a frightening slow-motion home video of a small (400W) lamp exploding, and you could see just how far the shock wave carried - enough to make everyone take note of Matt's advice to wear all the protective kit not only when you are changing a Xenon but also whenever the lamphouse is opened but also when checking newly-delivered lamps. Matt also went a step further, pointing out that an explosion might not be confined to a lamphouse, and advising that everyone else within the area also wears the protective kit whenever operations are being carried out on Xenons.

Other safety issues included the protection and disposal of Xenons, and the need to ensure that the mains isolator is turned off before working on equipment. Matt said that in other industries special safe working schemes are in place, whereby isolators are physically locked off to ensure that nobody else can come along and switch on the equipment by mistake. He urged cinemas to adopt similar working practices.

Graham Lodge, MD of Sound Associates, who has gained a great deal of practical knowledge and experience of the Digital Cinema business from installing the first fifty screens forming part of the UK Film Council's

Digital Screen Network, then gave an exciting and interesting presentation entitled **Digital Imagery.**



Using a series of very nice 'cartoon' slides to make his various points, he took us through the background as to why the industry is moving towards the use of digital techniques, and pointed out that of the 3500 cinema screens in the UK fewer than 100 are so far using Digital Cinema projection. His company had installed some 60 digital projectors to date, most of these as part of the UK Film Council's Digital Cinema Network, which had installed some 89 digital screens so far, en route to completing a 240 screen network by spring of 2007.

As to the reasons for cinema to go digital, Graham pointed out that all other branches of the entertainment industry are going digital, and he highlighted the advantages for our industry, which would include better image quality, improved control of piracy, cost savings, and the possibility of showing alternative content. He provided a list of many of the most common acronyms in use by the digital cinema business, and gave good explanations of many of these, including KDMs, the Key Delivery Messages that allow your server to unlock the data for a film at a specific time and the MXF packaging system that brings together all the separate data files that are needed to provide a full digital cinema showing.

In terms of quality, Graham said that 2K DLP digital projection produces on-screen images equivalent to those from a director's 35mm show print, but far more repeatable and consistent than film when used in cinemas worldwide. He said that there are no cost savings so far, but a large scale take up of digital cinema will change that, and he spoke of the different business models that are currently being trialled by companies such as Technicolor Digital Cinema and Christie AIX, where the companies provide funding for the equipment up front, and are eventually

repaid by some form of virtual print fee.

Graham spoke of the large quantities of data needed for D-Cinema movies, and explained how a two hour movie like 'Pirates 2' would require over 5 Terabytes of data uncompressed, but that this could be compressed to as little as 180Gbytes using JPEG 2000 in an MXF package - a significant reduction, but still not 'DVD-able'. He talked of the projectors using DLP technology, from Barco, Christie and NEC, and explained that the Sony 4K projector uses a completely different SXRD technology.

Graham gave a good explanation of the use of servers to provide signals to the digital projectors, and said that although there are currently 15 makes of digital servers in use for this purpose at the moment, the market was likely to stabilise around a much smaller number. He told how the interconnections between digital cinema equipment currently used ethernet network cabling, and of the flexibility this brought to a cinema.

No more Thursdays!

One big change for projectionists that the full adoption of Digital Cinema would bring would be that changeover day on Thursdays would cease to exist. The data representing a film can be sent to cinemas at any time before showing, usually on a hard drive package, and loaded up onto the cinema's server, ready to be played out when the digital security key permits. Security keys can be sent over the network, on a USB stick, or even on the hard drive with the movie. The key can then be transferred across to the server, and doesn't become valid, allowing the movie to play, until the appropriate time. Just to enable the projectionist to be sure what the key information contains, each key has an accompanying plain text file that can be read at any time, giving full details of the movie and the dates and times when the key will permit it to be played. The digital security system and key delivery messages should make piracy more difficult (a rogue projectionist wouldn't be able to show a movie outside its permitted showing times), and 'watermarking' of images would allow the source of any pirated version to be traced back to the actual screen from which they had been captured.

Graham said that the current practice of ads and trailers still using 35mm film, even though the main movie is digital, means that life is more complex for the digital projectionist that it need be, and he looked forward to the film advertising companies making the move to provide ads in digital form. At the moment, with only around 100 of the UK's

3500 screens having digital facilities, it was understandable that the advertising companies were reluctant to make a change that would cost them significant amounts of money, since they would still have to provide the film version for the majority of cinemas.

Graham explained how a digital projectionist will create a play list and then a show schedule for each performance. A digital projection system can provide many advantages. Since the digital projectors are connected to an external network via ADSL broadband links, external monitoring of digital projection equipment can take place at a remote centre, enabling preventative maintenance, and warning messages can be sent to the projection room if parts of the equipment are running too hot or the need for a filter or lamp change becomes imminent. Upgrades to the software driving the projector and server system can be sent via the network. The latest digital projectors can automatically carry out lamp alignment adjustments. As far as projectionists are concerned the sound systems for digital cinema are unchanged, except for the need for a digital to analogue convertor to modify the signals from the digital projector so that they can feed the standard cinema audio system.

Graham spoke about the possibilities for cinemas to show 'Alternative Content' that digital projection equipment provides, and pointed out that the cinema can often keep most of the box-office receipts from such events, rather than handing a large percentage to the film distributors. He ended with an overview of methods of providing 3D movie projection using digital equipment, (just a single digital projector can provide immaculate 3D images by rapidly switching images intended for each eye) giving the pros and cons of each system, and explaining some of the modern methods of 're-purposing' existing 2D film material for 3D - Lucas is promising that all the Star Wars movies will be re-issued in 3D.

Quite a Panel Session

After lunch Alan McCann acted as Chairman and chief interrogator for what turned out to be a lively and interesting panel session. An initial show of hands amongst the audience indicated that most of those present read *Cinema Technology* regularly and that a fair number had ready access to the BKSTS Projectionists' Manual. Before the Q&A session started Alan McCann introduced the panel and then explained the details of the new Projectionist's Certification System which he and other members of the CTC have been



The Panel. Graham Lodge (inset), L-R Matt Jahans, Richard Hühndorf, Dion Hanson, Paul Schofield, Nigel Shore, Nigel Wolland, Alan McCann (Chairman)

working so hard to implement. This system, which is not a training scheme, but a method of assessing projectionists to prove that they can carry out the full range of tasks expected of a modern projectionist, will be launched in November. It has the support of the industry, and will provide projectionists with a certificate to demonstrate their competence.

Whilst initially planning the day's training event there had been some discussion as to whether the projectionists in the audience would want to take part in a question and answer session, which has to be essentially a two-way business if it is to work well, so it was good to see that after some initial reluctance there was in fact a good deal of questioning from the floor, which Alan directed to the most appropriate panel members. One of the strengths of the occasion was in fact the sheer quality of the panel members - it is not often that projectionists get to talk directly with representatives of the top managements of cinema chains and distributors, and rare to be able to put technical questions directly to experts who really do know their stuff. Questions from the floor relating to digital cinema included



'when will the industry be completely digital?'

- 'what is the life of a digital projector?'
- 'how can small cinema operators be sure of getting Hollywood movies to show on small digital projectors?', and
- 'how will projectionists adapt to the new equipment and procedures?'

Graham gave the current statistics for digital cinema numbers, saying that by the end of 2006 in the UK more than 250 of the UK's 3500 screens will be equipped for D-Cinema, and that world-wide over 2300 screens are expected to be digital, out of about 130,000 screens in total. Although the digital numbers currently represent only a small proportion of the total, rapid growth is taking place, and as one panel member commented - 'It will be quicker than you think!' The DSN digital projectors currently being installed are guaranteed for five years after the last of the 240 screens has been installed, and are expected to last for much longer than that - early obsolescence is not foreseen.

The panel agreed that there was no chance that Hollywood would allow first run movies to be shown on low-cost digital projectors, but explained how a few weeks after the initial launch window it was generally possible to get permission to provide DVD showings on such equipment - Richard Hühndorf stressed that it was important to go through the proper booking procedures through companies such as Warner FilmBank when putting on such shows. Paul Schofield talked about the various business cases for adopting digital cinema, and said that it was important to find ways of encouraging independents to join in. Those cinemas who had been given a single digital projector were already finding that one is not enough, because it doesn't al-

low a movie to be moved to another screen without having to get a film copy from the distributor, which negates any financial advantages that the original digital showing might have had.

The panel agreed that projectionists will need to develop new skills as digital cinema arrives, but these skills will be additional to the ones that they have already learned - putting on a show requires far more than basic technical skills. Paul said that in his experience even the older projectionists are showing that they can readily adapt to the new systems and new ways of working, provided that appropriate training is provided, and many are very enthusiastic about the chance to move forward with the industry.

- Another questioner asked if Bollywood cinemas are using the same standards as Hollywood, to which the answer was 'no', but that there was a huge growth in e-cinema in countries like India and China which cannot be ignored. Dion defended e-cinema, especially for independents, and said that he saw big opportunities for small cinemas to make use of DVD distribution methods like Warner FilmBank.

- 'How much does a print cost?' was a difficult question to answer, but Richard did his best, explaining that distributors were continuously negotiating to get the best deals from their printers, and that the cost would depend very much on how many copies are required and what the total footage is likely to be. Somewhere between £400 and £1200 for a print seemed to be typical, and it was interesting to learn that in these days when digital is growing there has never been so much film about - 'day and date' releases require so many more prints to be provided for a launch.

- 'Why do we still get ads and trailers on 35mm?' addressed a topic that had been mentioned earlier. Companies like Carlton Screen Advertising and Pearl & Dean are not moving to digital quite as quickly as some would like, primarily because they still have to produce the same material on film for the thousands of non-digital screens. It was pointed out that the advertising companies have already moved to electronic slides in many screens, some having networks over which such advertising material could be easily distributed and downloaded. The companies seem ready to change when the industry is ready, and it is only a matter of time before 'rolling stock' will be provided for digital cinemas. This led to an interesting discussion on the future of cinema advertising. At a time when some TV advertisers are unhappy because digital viewers can now choose to 'skip' the advertising slots, cinema's relatively captive audience could be attractive, and the coming of digital cinema might produce

a new spurt of growth in local advertising, which would be easier and cheaper to arrange than the complex business of having film prints made.

- 'Alternative content' gave rise to much discussion, with suggestions from the audience that digital cinemas could, after many years once again offer their patrons 'newsreels', perhaps sourced from TV, and could overlay sports scores when important matches were being played, so that people would know that they could enjoy a movie without missing out on the what is happening in the world. Other suggestions for alternative content included 'making of' and 'out-takes' of movies, just as is done for DVDs.

Film operational problems were also given an airing, with projectionists taking the chance to ask the panellists about recent problems that they are getting with Dolby SRD sound failing within a week of use and with films shedding their coating. Interestingly, the Cinema Technology Committee had been carrying out a detailed monitoring and examination of such complaints, so members of the panel were able to provide timely advice and information, but they made an appeal to the projectionists to be sure that any such complaints are properly recorded and reported - rumour and hearsay are not a sensible way of progressing such complaints, and some cinemas don't bother to report such problems, their managements not really caring so long as there are no customer complaints. The distributors will always be glad to replace any prints that show problems. Although there have been suggestions that current prints may not be as long lasting because they are printed at very high speeds, so far there is no real evidence of this, and the use of cyan tracks, where re-application of the sound rack is not required, should be making things better. Similarly, use of the Digital Intermediate process should mean that bulk prints are all as good as the showprint. In answer to a complaint that damaged films do arrive in cinemas from time to time, it was confirmed that prints are not now checked as they changeover between cinemas, and that the distributors are relying on cinemas to report any problems, so that they can follow these up with those cinemas that may be guilty of poor film handling.

Advice was asked for and given on splicing tape residues (there shouldn't be any if proper tape is used!) and on the best way to apply the tape - you don't really need much strength in a join.

- 'What are the distributors doing to combat Piracy?' was a question that led to much discussion. Richard said that distributors



After the official course was finished many of the projectionists took the chance to talk with panel members about their particular concerns and queries.

take the problem extremely seriously, with divisions of people scouring the internet to find illegal copies, and even laying false trails with bogus films to try to trap those involved. It is not possible to prevent some regions having a new movie before others, which would help to prevent some piracy. Even though some worldwide day/date releases have up to 30,000 prints made, there is still the need for many different versions (up to 35 versions, sometimes) with different dubs and subtitles, so it physically not possible to distribute to the whole world simultaneously. The coming of digital cinema will help to reduce piracy, and a new technique developed by TLS will shortly be revolutionising how attempted camcording in cinemas is detected and dealt with.

The session closed with a discussion of the future for projectionists, with your editor asking whether all cinemas could be controlled from a single central control room in the future. Paul Schofield saw no danger of this in our lifetimes, but said that companies will obviously be looking at whether the adoption of digital cinema can help them to make savings on manning levels. He foresaw that the job of a projectionist would inevitably change, as it has done over many years as new features and facilities were introduced into cinemas, but he saw this as a totally positive step, enabling projectionists to be trained and to learn about the new digital techniques that the world of the future will rely on, equipping them to cope with whatever comes along in the entertainment industry.

As this report makes plain, the Projectionist's Training Day provided a great opportunity for projectionists to talk with senior people in the industry about their concerns, as well as to undertake some useful basic training and to update themselves as to what is happening in the industry. Those who came thoroughly enjoyed the day and found it useful (I spoke with several people during the day) and interesting, and it was notable that many

stayed behind afterwards to chat with the panel members.

The CTC is already discussing next year's courses, for which we shall again be seeking David Lean Foundation funding, so please, if you have found this description interesting, book yourself on the next training courses when they are advertised, and tell your friends too. Projectionists get few enough opportunities to learn about what is happening in the business, so do take advantage of the BKSTS CTC courses when you can.

Many thanks to all those who put so much time and effort into arranging the course and providing such useful and interesting content. Thanks to all the panel members for their major contributions, to Dion and to Susan Hanson for making all the arrangements and for seeing that everything went smoothly, and to FRED BLOGGS, Manager of the Vue Cinema, Reading, for agreeing to let us use their excellent facilities.

Jim Slater