

P5 NEWSLETTER

CHAIRMANS REPORT

Welcome to this issue of P5 although, a little late due prior commitments. I would like to take this opportunity in welcoming all new members who have joined recently and thank those who have subscribed for another year. If you have not yet subscribed and are overdue I have included a reminder with your P5. Membership is £6.00.

The A.G.M said goodbye to committee members- Ken Stevens G4BVK, Malcolm Parker G0UMP and Phil Smith G1HIA. I hope you will express your thanks over the air, or at the official presentations during the Christmas Social Saturday 13 December 97.

Your Newly elected committee is as follows:-

Chairman - Paul Stevenson G8YMM
Secretary - Mike Stevens G7GTN
Treasurer - Allan Tink G7DRU
Chief Engineer - Ian Bennett G6TVJ

Site Engineer - Ivor Green G1IXF
Mail Order - Matthew Bell G0ECN
Engineering - Ross Wilkinson G0WJR
Public Relations - Gary Cantello
Projects - Frank Field G

The committee would also like to thank all the members who have helped us during the year and hope you will continue providing your technical expertise to which we appreciate.

GB3ZZ

The repeater performs well. Ian G6TVJ has been constantly improving the system to Broadcast Specifications.

Reports have been received that the signal strength is slightly down. This could be due to a number of things, one that the Power Amp is ageing, two the aerials need checking, three that the recipients equipment is at fault. We hope to look at the aerials and power output before the winter sets in.

GB3XG

As you know we had to close the repeater down due to the D.T.I. band plan changes. We hope to have the repeater back on air ASAP. In the mean time it has been proposed to transmit a temporary beacon on the new frequency for reference. As and when this will happen I cannot say. Please be patient.

SURVEY 97

In order to improve our services we will be enclosing in the next P5 a Questionnaire for you to complete. This will be strictly confidential and will provide important statistical data.

WARNING

During June, we received via GB3ZZ brief transmissions of pre-recorded amateur video material without a callsign. This contravenes the Licence conditions. Please identify all activity through the repeater with your callsign.

INTERNET

Visit us at our new Internet Web Page. The address is "sevensideTV group@cableinet.com.uk". Take note that the address uses lower case apart from letters TV. Ian G6TVJ has created the page to which he will be updating from time to time. The page contains details about the group and its products and has links to other radio related web sites. Should you wish to send us an email please feel free to do so at the above address. This might be interesting to the members who cannot receive us.

DIARY

Xmas Social Saturday 13 December 97

Bristol Radio Rally. Sunday 7 September 97.

Competition Mendips TBA (see Sept. P5)

73 Paul Stevenson G8YMM
 Packet address

(G8YMM @ GB7TJZ)

ATV FROM CABOT TOWER BRISTOL

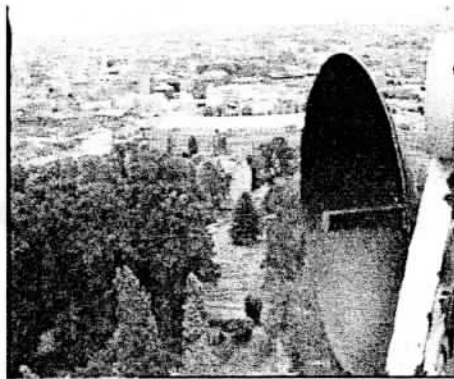
BY ROSS WILKINSON G0WJR



June 24th is a historic day for Bristol. On that day in 1497, a party of Bristol mariners, led by John Cabot, made landfall in Newfoundland, and exactly four centuries later, the landmark Cabot Tower was inaugurated. Therefore, in 1997, as well as the Cabot 500 celebrations, the Centenary of the Tower is also being celebrated.

To mark the occasion, Roger G4WBV and Reg G8NMU had obtained permission to set up a Special Event Radio Station at the site, and obtained the callsign GBOCT. Their main operation was to be on HF, in an attempt to contact the other Cabot Tower, on Signal Hill, at St. John's Newfoundland (coincidentally, the site of Marconi's first transatlantic radio contact). Having recently myself been to the top of the Bristol tower, and seen the panoramic views all over the City, I thought what a good site it would make for an ATV transmission.

On Monday 23rd, during my lunch break, I went over to the Tower, and met Roger and Reg, who had just finished installing their aerials, a long wire, and a sloping 20m dipole, both tied off to the top of the Tower, and a 2m collinear, again using the famous monument as a mast! They were only too pleased to allow me to come back the following day, to put the Special Event call on air on 3cm ATV. Whilst there, I made another trip up the narrow spiral staircase, to check out where I could mount my dish antenna. With GB3XG off-air, I was fortunate to find that Phil G1HIA would be able to receive my signals direct, at his home in Horfield. He had promised to rush back from a dentist's appointment, in time for my transmissions at 1:15. Richard M1ATD was also present in Phil's shack to watch the historic 'Outside Broadcast'.



On the Tuesday, with the Great George bell in the Wills Memorial Building tolling one, I was struggling up Brandon Hill, laden down with ATV equipment. In a shoulder bag, I had a Sony camcorder (kindly loaned by my Department at the University), a Gunn diode modulator, an assortment of leads, not to mention a 12V, 15AHr gel battery (the smallest I could find!). Under the other arm was a Solfan head, attached to a PW EXE dish with a penny feed, and in my pocket was a 70cm handie, for talkback. My arrival at the bottom of the Tower was greeted with comments about the "wok" I was carrying, and requests for a Chinese meal!

The spiral staircase up the centre of the Tower is narrow and awkward at the best of times, but doubly so with the all the equipment, and the dish clanged noisily against the stone walls innumerable times during my ascent. Finally I reached the top, and set about securing the dish to a part of the support for one of the signalling lamps. Great care was necessary, to avoid dropping the clamp or wing nuts over the edge! With the dish trained hopefully in the direction of Horfield, and the camera pointed out toward the City, I gave Phil a call on 70cm. Even after some adjustments to the tuning of the receiver, and the aim of the dish, no picture had been received, at which point Phil suggested that I should check the video source. Sure enough, there was a lead coming out of the camera, and one going to the

modulator, but I'd forgotten to join the two of them together! As I fitted the connector, I heard Phil call "Ah, P5 now". With sub-carrier sound on 10GHz, and talkback on 70cm, I had a full duplex voice link, and was able to get immediate feedback from Phil on my pictures.

My transmissions lasted for about three quarters of an hour, and must have included every conceivable angle and view possible, including looking vertically down on the GB0CT HF station, operating from the foot of the tower. We also allowed some exchanges, in the form of greetings messages, with several of the visitors who came up to the top of the Tower that lunchtime, including Ben G7GKA and his family. Finally, I was joined by Dave Jennings, a colleague from the University, who took over the camera, and allowed me to appear on my own Outside Broadcast. I know that Phil has made an off-air recording of these transmissions, and I'm looking forward to seeing them replayed via 'ZZ or 'XG in the near future.

Finally, I'd like to thank Roger and Reg for allowing me to operate under their SES call, and Dave for his assistance as cameraman, and bringing the kit back down the Tower. PS If any of you have noticed that the Tower's automatic morse signalling lamp has changed recently, it is sending "Godspeed Matthew" at the moment, rather than "Cabot Tower, Brandon Hill, Bristol".

Ross Wilkinson G0WJR, 9th July 1997.

BIT MAP PICTURE OF IAN G6TVJ AT THE REPEATER SITE GB3ZZ



GB3ZZ The Secret Revolution *by Ian F Bennett G6TVJ*

As chief engineer for the Severnside group I have the sometimes awesome task of maintaining the GB3ZZ TV repeater, I also hold the "Notice of variation" for it as part of my licence. I am a bit shaky on its early history but I think that ZZ has been with us for almost 10 years, quite an achievement for a home built system. I know of quite a few professionally built remotely operating systems with less time between faults. ZZ generally only goes wrong when I start tinkering with it, tinkering is something that I have actually done quite a bit of.

Over the past few years I have refined this venerable machine making use of some newer technology and one or two tricks from the broadcasting trade. I have carried out a number of modifications to improve video performance and make it easier to add developments in the future. I think there are two schools of thought with TV repeaters, either you try and regenerate every thing such as syncs and colour or you make the system as transparent as possible with regard to losses and sources of distortion, this is what I have tried to do. You can never guarantee or expect stations that access the repeater to produce the best signals in the world but at least you can try not to mess them up. What would really be nice is if a repeated link was found to be better than a direct one but this is rather unlikely, the less devices a video signal travels through the better!

Receiver

A Wood and Douglas unit performs quite well as it is in fact a purpose built receiver as opposed to modified satellite receivers which suffer inherent problems. I have increased the size of several coupling capacitors to improve the video "Bass Response" which will reduce the chances of rolling or tearing pictures. A proper sample and hold type DC restored amplifier has been installed to help improve the syncs and remove some low frequency distortion. This is a superior device to many simpler diode type clamps and uses a high performance sync separator.

VCR

The video recorder apart from recording station's outputs and providing the freeze function, it also automatically maintains the correct video level between different stations. I have again modified it replacing a number of capacitors to improve its operation.

Video Equaliser

I have installed a special device a video equaliser which is a bit like an audio graphic equaliser. This device is adjusted using test signals and can help to correct distortions put in by other devices in the signal chain. The useful thing about video signals, is that corrections can be applied in one place which can correct for problems before and after the equaliser. It's effect is quite subtle but it helps to make a good signal better, it helps to remove kinks and overshoots in the video signal and boosts the colour to help prevent black and white pictures. By using a video equaliser differences between equipments can be ironed out.

Video Switcher

I have installed a new video switcher which is a slave unit running in parallel with the existing unit inside the repeater logic. The new switcher allows adjustments to individual video levels e.g. matching the contrast between the Test Cards and the GB3XG feed. The switcher is set up to maintain a 1V video amplitude through out the system which simplifies the removal of components and makes calibrating the transmitted deviation easier. The switcher also has more inputs for possible future expansion. The original unit did suffer some interference from the Logic's microprocessor circuitry. I can control the switcher manually from the front panel to aid in testing and aligning various devices.

Caption Generator / Down Stream Keyer

This unit I have re-built using the original design and a modified video amplifier with more dynamic range to protect the sync pulses from crushing at high average picture levels (All white). This unit also provides space for possible future video processing circuitry, I would like to develop a device to restrict picture-sync ratios, signals with smallish sync pulses can cause tearing and rolling pictures. A recent addition to this unit is a video low-pass filter which can help clean up the output of the logic unit and reduce sound buzzing. This phase equalised active filter works extremely well and was designed for broadcast applications. It is a requirement of the repeater licence that the video signal is filtered.

Antenna Switcher

In order to add various bits and pieces and keep the thing reasonably tidy more space was needed so I mechanically rebuilt the antenna switcher in a smaller enclosure.

Distribution Amplifier

All video signals travelling through GB3ZZ pass through a video DA. This unit I have replaced with an EL2020 IC based unit for better results.

Transmitter

This unit I have modified to reduce the possibility of rolling pictures by altering the synthesiser filter characteristics and increasing the size of some capacitors. I hope to add a synthesizer to the audio modulator in the transmitter to maintain an accurate 6 MHz subcarrier, this may be a future licence requirement, such a device I have had in my own transmitter for several years now.

All these mods are pretty subtle, but if you could remove them all at once I think you would notice quite a difference. As you increase the level of precision in the system individual changes produce less and less effects but are still worth doing.

Getting a perfect video signal from a to b is never an easy task but if the repeater does it's best not to hinder ATV contacts operating through it then we can all benefit with clearer more stable pictures.

GB3ZZ The Secret Revolution

VCR modified to reduce field rate distortion (Rolling pictures).

Video equalizer reduces picture distortion and compensates for losses in the VCR, receiver and TX.

W&D receiver modified to reduce field rate distortion. Sample and hold DC restored video amp added to further correct distortion and reduce rolling pictures.

Logic Unit

Caption generator and down stream keyer rebuilt to reduce interference and sync crushing. 5.5 Mhz active video filter added to define bandwidth and comply with licence.

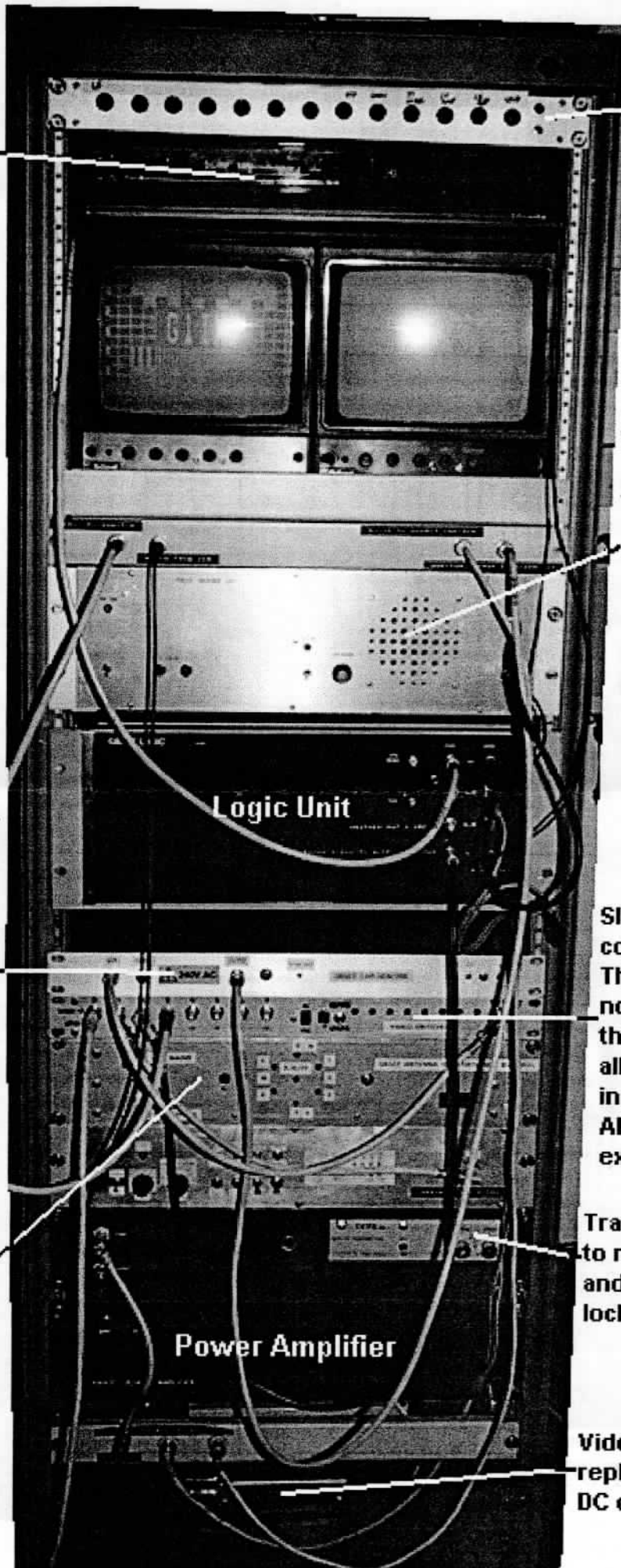
Slave video switcher controlled by logic unit. The switcher suffers no interference from the logic unit and allows adjustment of individual video levels. Also allows for future expansion.

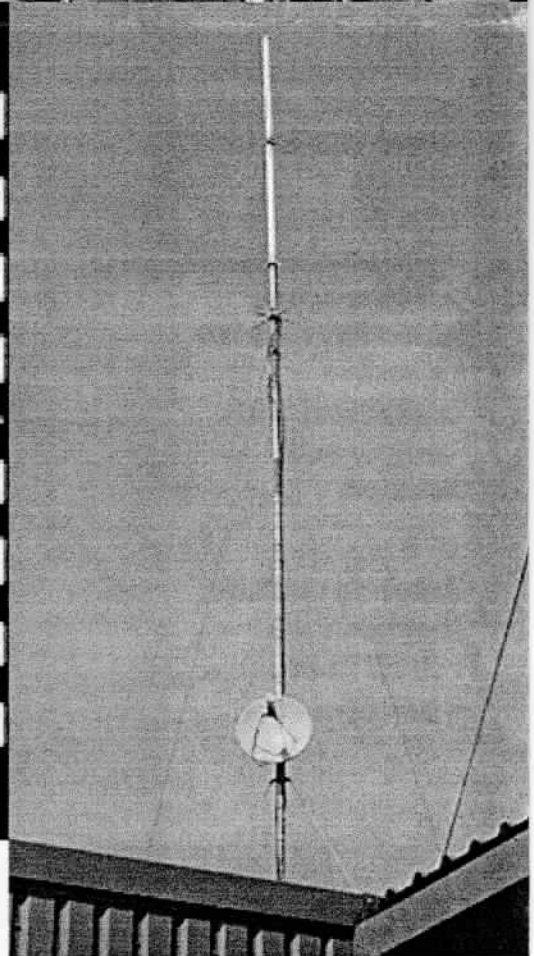
Antenna switcher mechanically rebuilt to provide extra space.

Transmitter modified to reduce field distortion and improve synthesizer lock characteristics.

Power Amplifier

Video distribution amp replaced with modern DC coupled design.





GB3ZZ Amateur TV Repeater Filton Bristol



A look at some of the options available for non-linear video editing using an IBM Compatible PC

By Mike G7GTN

The world of Video editing is under going a major shake up with the advent of reasonably priced video editing cards that have become available for the PC and APPLE MACINTOSH® range of computers.

No longer do we have to put up with the inherent generation losses associated with the traditional method of using our master tape to create the finished product when we want to do some editing on our home videos. Now the humble PC is not only being used as a replacement for the standalone edit controller in a linear system.

With the advent of modern computer technology we are now faced with the situation of having almost broadcast quality QUANTEL style effects the sort that would have been reserved for the likes of professional video editing suites not that many years ago.

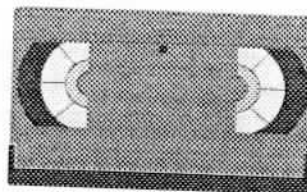
It is now possible to fly moving clips around the screen using video-editing packages like ADOBE PREMIER or MEDIA STUDIO. We are no longer limited to what the system manufacturer has decided to build into his equipment as every thing in a non-linear set up can be updated by software alone.

There is a growing range of these M-JPEG cards coming onto the market with two main manufacturers who stand out from the crowd MIRO and FAST ELECTRONICS both of which have been involved for a number of years in creating these post production accessories for the PC market place.

Some of the cards available in a little more detail With approximate ex-vat high street prices in brackets

Miro has the entry-level *DC10* (£279) PCI, that will compress video at VHS quality; you will require a separate sound card. This is basically an updated version of their DC1 & DC1 plus cards that have been around for 3 years or so. The DC1 was the card that kick-started the whole desktop video revolution at least on the PC. Will provide video overlay with certain graphics cards and WINDOWS 95®

Miro DC20 (£529) PCI, VHS, S-VHS quality with a higher compression ratio ranging from 10:1 to a maximum of 100:1



This card still requires a separate sound card to digitize any sound even within this price range. The DC20 is gradually being phased out in favour of the more powerful DC30, so you should soon be able to find a better street price than the one indicated here.

Miro DC30 (£789) PCI, S-VHS higher compression ratios ranging from 4:1 to 100:1 complete now at last with a built in sound card.

Includes a built in video overlay function so you don't strictly need a separate video monitor to clutter up your desk space.

Fast has the AV Master (£799) PCI, which is said to be full studio quality levels of compression range from 4:1 to 100:1 and also includes built in sound facilities.

At the slightly lower end of the market is the **FPS60** (£299), which is a direct competitor to the range of low-end boards available from Miro.

Diamond has the *Crunchit 2000* (£267) PCI

This is a relative new comer to the market place but offers high quality M-JPEG compression variable from 4:1 to a maximum of 100:1 at the standard S-VHS resolution of 768x576.

It has three video inputs (two composite and one S-video), together with one composite and one s-video output for playback to your video recorder.

Overlay function is only with some selected Diamond Graphics display cards, so you should check with them before purchase if this is important.

Hauppauge Win-Motion 60 (£349) PCI

This is the entry from the well-known multimedia people who first bought Television to the PC desktop in the shape of WinTV™

Compression is M-JPEG variable to 100:1

TrueVision Bravado 1000 (£499) PCI, This card in Line with the top end of the market will also digitize at full S-VHS quality, which is quoted as 768x568 again at 25fps playback to your recording video machine. This card was due to be reviewed in the may edition of Camcorder user & desktop video, so if you are interested then have a look out for a back copy of this magazine.


Whilst still by no means cheap these cards offer the kind of facilities that just can no longer be achieved by any other method at what still remains the hobbyist price level. You just need to make some comparisons with a linear editing suite say comprising of two hi-band video recorders an edit controller in between and a digital vision mixer to realize that if you already have a modern fast personal computer that this solution offers quite reasonable value for money.

Compression ratios and what these actually mean to the visual quality of the finished project

In the above data you will see mention made to the maximum compression ratio that a card can digitize the video information at, the more compression the more that can be stored on to the computers hard disk sub system. There is a trade off between using too much compression a figure of around 10:1 will give excellent results when fed with S-VHS or Hi-8 quality footage, and of course we are not subjected to the same type of generation losses as we have with the analogue tape formats. Our finished tape will only be second generation at the very worst, which will be used to make additional copies direct from hard disk to the required videotape.

Unfortunately a powerful Computer is still needed

As the individual clips and files pulled into the project still have to be rendered by the computer-editing program.



The faster the machine the better, you also need large amounts of RAM typically around 32Mb being a good starting point. Since you will be using some heavy weight graphics programs that you will probably want to multi task. Most of the systems that are being sold for desktop video by the specialist companies are based on the 150mhz Pentium chip, with the MMX 166 chip now becoming common place. As you will no doubt have noticed all the major manufacturers have developed their products for the PCI interface to be found on most modern motherboards. This provides a theoretical data through put of approximately 3.5mb per second.

The type of hard drive used has a major impact

A lot of high-end desktop video equipment vendors suggest that the SCSI route is the only way to go, with the large files that are generated by video work this may well be true. One of the main constraints is that of the sustained data throughput. Further more what needs to be understood is the amount of space say a three-minute video will consume in terms of storage space. There are some new DMA drives available from companies such as QUANTUM, which should be as fast as SCSI drives. They also offer for the first time the same sorts of data storage capacities ranging from 3.2Gb to 6.4Gb. You will probably have to install a special controller card such as the PROMISE pro ATA 33, unless your PC is very new. When you come to doing the editing work it is common for the required files to be copied from the SCSI drive to an IDE drive as the actual editing part of the job is not so critical as the video capture process.

What types of editing software is readily available

The two main heavy weight video editing packages available for the PC are MEDIA STUDIO 2.5 and ADOBE Premier 4.2 both are based on the time line principle. The time line is an area of the screen where you pull in all the required files to make the finished

project. With these systems all the sound that was captured when the filming took place follows the video when placed onto the time line. It doesn't matter where you place your video clips you can still be sure that the sound will stay in perfect sync with the pictures. Once you start to place clips down you have the option to add any special effects and apply photographic style filters that can change the appearance of the project. As I have already mentioned you need to compile or more correctly render the finished project to create anything that can be output back to videotape. This can take anything from a couple of minutes to several hours depending on what kind of Special effects you desire.

There are some software packages for the MACINTOSH such as MEDIA 100 which are supposedly going real time in the near future, which will take away this need to render only to find out that this wasn't quite the effect desired.

At present in PREMIER you can use the yellow sliding bar to decide just how much of the project you want to render at a time. The cost of such packages as MEDIA STUDIO (£295), and ADOBE PREMIER (£367) will seem like a vast sum if you only wish to make casual use of some of the facilities on offer. There is also a much cheaper program called ASYMETRIX DIGITAL VIDEO PRODUCER that provides the ideal basis for the more simple projects, cost should be around (£80). Although no where near as comprehensive as either of the other systems, it does provide you with enough wipes and fades etc to be a very useful little starting block package.

It does not just stop here

One of the real beauties of using a computer to edit together all your footage is the range of additional programs that can be used to create effects. Any program that can generate a MICROSOFT AVI file can be used. Again ASYMETRIX comes to the rescue with programs such as 3D F/X which can be used to create some quite impressive spinning title and graphics sequences. This has the rather grandiose title of Drag and Drop 3D for Windows, and does much to live up to the hype in the slim manual. My copy of the program came from a stand at the recent PICKETS LOCK radio rally and only cost some (£12) for the Windows 3.1 version on CD-ROM. Another good program for warping, stretching and generally changing parts of your video images is a program called PowerGoo by KAI. You can grab single frames and then make subtle changes to each frame to create animation. Cost again is quite good at around £40

The next generation

There are only a few cards currently available to cope with the next generation of video "The Digital Video Camera". If you were interested in upgrading in the near future to one of the many cameras now available, you would be wise to check the upgrade path offered by the card manufacturer that you've chosen.