CQ-TV

BRITISH AMATEUR TELEVISION CLUB

CONFERENCE ON AMATEUR TELEVISION - 1994

CAT '94

SHUTTLEWORTH COLLEGE

SEPT 10th and 11TH

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BRITISH AMATEUR TELEVISION CLUB

Full details of CAT 94 can be found in the pamphlet enclosed with this issue

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POST & NEWS

23cm CONTACTS PLEASE !!!

Dear Mike,

Nice to hear you on the repeater ....I am all set up for 23cm simplex on 1256 MHz. I should be pleased with offers of QSO's. QTH: 53 Knottsall Lane, Oldbury, Warley, West Midlands, B68 9LG. Tel: 021 552 4456.

Thanks Mike ... Arthur G5KS

OK Arthur, I hope this does the trick for you. I hope to be QRV again very soon, so perhaps I will be calling you !. ... Mike

RALLY 94

Although I said in the Rally 94 Report elsewhere in this magazine that I had only received letters and comments all good about the rally, I have just received this fax from terry Martini ... Mike

Dear Mike,

Having attended this year's BATC rally I was a little disappointed at the deluge of PC gear that was evident on the day. In fact it would be fair to say that many of the radio and radio related rallies that used to be so good are now more PC oriented than anything else.

Let's be honest about it, there are more computer rallies held up and down the country then vice versa, you wouldn't expect to see radio gear at those events would you?? So why has the BATC allowed an excellent once-a-year event to be spoilt with PC's. I am sure I speak for many who attended this year's event and came away disappointed, especially after travelling such long distances. Whilst times and technology changes, it appears, for many of us, computers are now a part of our everyday lives. I do hope sanity will prevail and any future BATC rallies will be "PC free zones" !!

Having said that, I'm sure all the members and visitors who attended on the day would agree that the rally was run with good spirit and professionalism. Praise and thanks must surely go to all the hard working souls on the BATC Committee, the stewards and their helpers.

Terry Martini

I could raise all sorts of comments, and probably get quite hot under the collar Terry. However, there are two simple answers I will give you:

Firstly, in order for any event to survive in this day and age you have to supply what the customer wants - and at the moment the customer wants, amongst other things, computers and peripherals. If this is not your line then so be it, but that makes you the minority, not the reverse. The rally cost something of the order of 4800 to put on, and I could imagine your complaint then, if we lost it all!

Secondly: I would contend that we had either at least as large or even the largest ratio of radio-related traders to others at our show than at any other UK event.

Finally, another point, if you do not like the way that I organised the event, or the type of traders I booked (remember this was not the Committee but me) then come to Shuttleworth and be counted amongst the few that do the work, and volunteer to organise the rally yourself next year! ... Mike

CONTEST WORKING & 144.750

Quite a few people recently have approached me with complaints of stations "hogging" 144.750 during contests, this culminated with a "mob-handed" discussion at Elvaston Rally with a contingent from Lincolnshire. It appears that on this particular occasion (during the Summer Fun contest) a certain portable station "up North" was conducting the contest mostly on 144.750, without QSY'ing and thus effectively blocking others from using '750 and thus stopping them from making contest contacts.

It states in the contest rules that stations should QSY from the calling channel after a contact is established, and that points may be deducted if this is not carried out. Perhaps the Contest Manager and the portable station he helps operate should take note of this rule and of the complaints lodged! ... Mike

COVENTRY VIDEO

I am pleased to report that GB3RT has been back on the air for some time now after being switched off late in March due to a complete mix-up over the paper-work dealing with the licence. Many of you may not realise that ALL repeaters are now licenced as NOVs (Notice of Variation) to the repeater keeper's own licence, rather than being licenced in their own right.

There are many schools of thought over this move, and many previous repeater managers have been reluctant to accept this change, as they fear that their own licence may be in jeopardy due to misuse of the repeater. This could in fact be the case if you read the fine print exactly - any abuse of the licence conditions by any repeater user could result in the licence being revoked - that is the repeater keeper's licence!

However, having spoken with those that know more than I, then I can assure all present and future repeater keepers that all that would be rescinded would be the NOV - unless it proves to be the repeater keeper him/herself that is the cause of the problem!

Anyway, the result of this is that GB3RT has come home in a manner of speaking. I was the original manager and co-builder of the repeater and am now, once again, the registered repeater keeper. Anyone wishing information about GB3RT or wishing to send in reception reports please do so to the editorial address.

Finally, I wish to thank CAMTECH ELECTRONICS and MAINLINE ELECTRONICS for their kind donations of equipment for the prospective rebuild of the repeater, to take place over the next few months.

73 ... Mike G6IQM / GB3RT

WEYMOUTH VIDEO

Dear Mike,

Just a few lines to let everyone know that GB3WV (Weymouth Video) is at last licenced and on air. It's located at my QTH at Wyke regis for the time being, as we have been unable to find a better site in this area. The Alford Slot transmit aerial is mounted 200 feet ASL and local reports are good. There are no ATVers as yet in the surrounding areas, but we continue to promote the mode with talks and demos, etc. Hopefully some interest will be shown from the Torbay area as we have a good sea path across Lyme bay. However, activity is at a good level locally after five years of trying to convince the amateur population down here that 23cm TV does not involve a City & Guilds in plumbing, need not be over the top cost wise, or require that you live on top of a mountain!

Should signals be seen further afield I would very much appreciate reports.

John Ashton G4NTS, 18 Mandeville Close, Wyke Regis, Weymouth, Dorset, DT4 9HP. Tel: 0305 778575.

LEICESTER VIDEO !!

Dear Mike,

Andy was enquiring about the GB3GV the Leicester TV repeater in CQ-TV 165. The repeater was putt off the air some time ago by the collapse of the aerial support mast. Since that time a new mast has been erected and GB3CF, LE and LES (13cm Beacon) put back on air. Extra cable ducts and feeders are required to reactivate the TV repeater, the 3cm beacon GB2LEX and a new 9cm beacon GB3LEF. It is hoped that this work may be completed some time this summer.

73 Steve Berry G4LRT

JVFAX 6 - AN UPDATE

Dear Mike,

Just to let the members know, I can supply a complete pack, consisting of the Hamcomm TX/RX interface, printed manual, the program disk of JVFAX and Hamcomm utility, and a disk of 15 GIF pictures ... all for ~20. This combination seems most popular, but all items are available separately.

Peter Lockwood G8SLB, 36 Davington Road, Dagenham, RM8 2LR. Tel: 081 595 0823

All the best ... Peter

JVFAX 6 - YET MORE!

Dear Editor,

I am writing in response to the JVFAX review by Art Backman on page 26 of CQ-TV 165.

I am active in FAX for some years now, mostly on VHF, and I share Art SM1BUOs happiness with the recently expanding use of this special mode. One reason that this did not happen earlier was the number of different modes caused by different fax machine producers. So it was

sometimes difficult to find a station with the same picture dimensions (IOC) on the bands.

Nowadays it is only some fingertips away to change this by software parameters in good fax programs, and the received start tone can even do this automatically - fine. But we have a problem: there are not so may different apt start tones as we have mode numbers in the JVFAX panel! Unlike your suggestion I would rather stay with the modes that have been "The Standard" for many years already, and they include older fax machines with mechanical systems, as well as some scan converters like the SC-1 from Wraase:

A) LPM 120 / IOC 288 / start tone 675 Hz (amateur radio) B) LPM 240 / IOC 576 / start tone 300 Hz (WEEFAX, VHF) C) LPM 360 / IOC 204 / start tone 200 Hz (colour fax, new)

Only with heavy QRM should you double the IOC to 120, which means "long faces" on most normal fax receivers and very much patience for the other users of the scarce picture transmission frequencies! Please do not invent another incompatible standard, as we have already enough of them in the colour SSTV area.

I know that Eberhard DK8VJ and I am sure that he never intended to confuse the situation on the bands when he opened "Pandoras Box" with the various mode possibilities in his program JVFAX.

The only reason to create a new mode should be a real progress in picture quality - for instance: "real 3D", with two B&W shots from slightly different viewing angles coded in the red and green part of the JV colour transmission. That would need red and green 3D glasses at the receiving end to have a deep look "into" the colour monitor screen. This mode would have to be announced by the transmitting station before the start tone. New parameters should be fixed for that "3D"-fax mode to gain the best possible results. LPM 240 / IOC 204 / start tone 120 Hz or near by. The new Scanmate-1 mode is compatible to it. Hw?

73 Klaus DL4KCK (AGAF)

THE MANCHESTER CHILD- RENS HOSPITAL APPEAL SPECIAL EVENT STATION

Dear Ed,

For the past five years or so the Manchester and District ARS has been putting on a special event station for the above fund-raising event, which essentially consists of a Krypton Factor style assault course!

We have never been able to locate any FSTV enthusiasts to join with us and also put on an ATV station for the event.

If anyone would like to help us please contact me for all the necessary details. I hope someone in your Club will come and help us out. The date for the event is the 27th to the 29th of August.

Kev Hudson, 20 Claude Street, Crumpsall, Manchester M8 6AN. Tel: 061 720 6839.

73 Kev G0TOG

THAT EDITORIAL !! - Part 1

Dear Mike,

I've just read your Editorial in CQ-TV 166 and I'd like to congratulate you on speaking your mind. Well done! Don't let them get you down, you do it your way.

Years ago I did a stint as Editor (from issues 61 to 109). Things don't change do they? I used to have just the same problems. There was one member I'll never forget. He was particularly vitriolic in his all too regular complaining letters. But I won in the end - he died!

The magazine has got so much better since my time - I find it quite staggering. The quality and quantity of material is most impressive. Do please keep up the good work for as long as you can. It really is appreciated by the 99.999% of us who matter.

Yours ... Andrew Hughes

THAT EDITORIAL !! - Part 2

Dear Mike,

CQ-TV arrived this morning and I was perturbed (but not surprised) to read your editorial commenting on telephone complaints about the closing dates. What do these people want? This sort of thing usually comes from people who offer the least support to the hard working few.

The efforts of yourself and the committee are greatly appreciated in this area at least, as well as the contributors to the magazine.

Unfortunately, I will not be at the Rally

on Sunday (holidays coming up) but I wish the event every success and hope to make the Rally next year.

A very big THANK YOU again to you and all concerned with the very successful running of the BATC.

73 ... Brian Alderson G3KJX

THAT EDITORIAL !! - Part 3

Dear Mike,

May I through your letters page thank all the committee members of the BATC for all the hard work put in to make the club what it is today. I would especially like to thank Peter Delaney who provides an excellent service, both answering queries over the phone and in the despatching of orders. Most impressive.

I would also like to say to all the moaners out there - if you can do better then get on the committee. If not just stop whining and support the people who, in their own free time, provide us with an excellent magazine and, more importantly, an excellent club.

As you can see from my address I'm currently serving in the Falkland Islands, and as such missed the BATC Rally, which is a bit sad, but I don't think I could have travelled 16000 miles in one day!

In my spare time down here, when I'm not Penguin spotting, I'm busy building my 24cm Solent TX, ready for when I get back to the UK.

OK, many thanks again, all the best, 73 ... Nick Major G0HFL/VP8CPY

Many thanks to all of you for taking the time to write to me, and also to those of you who spoke to me at the Rally. I, and the rest of the committee, do realise that the majority of you out there do appreciate our valiant efforts. It's just that the odd few seem to think that we are at their beck-and-call 24 hours a day, 365 days a year - AND ALL FOR NINE QUID! Thanks again for your kind comments ... Mike

MAKING PCB's

Dear Editor,

Following Peter Delaney's excellent article on making PCB's in CQ-TV 165, I thought that my own method might prove of interest for less demanding applications. Incidentally, I always design a board's component side first, then make a mirror image. In the absence of a light box, a window (during daylight hours) works quite well!

For resist I use car touch-up paint, the sort in tins with a little brush in the lid. Most of us have one or more in the garage from some long forgotten car.

I start by drilling all holes in the blank board, including the mounting holes. Then, using an artist's brush, I paint a ring around each hole, and finally paint on the tracks. When the paint is fully dry, in half an hour or so, I use a scriber to neaten up the board, clean up between IC pins, etc., before etching.

With care, a very presentable board can be made and the cost is negligible.

73 ... Bryan Dandy

RALLY 94

Dear Mike,

Congratulations and a sincere thank you for organising such an excellent and most enjoyable BATC Rally.

73 ... John GW3JGA and David GW8PBX

THE CAMBRIDGE SCENE

Dear Mr.Wooding, *(very formal!)*

After many years with nothing happening we now have an active group on the air on 23cm in the Cambridge area.

The local ATV repeater, GB3PV, operated by the Cambridgeshire Repeater Group (CRG) and located at Madingley, just west of the city, was returned to service on 3rd May 1994. It now has a significantly improved performance. The input is on 1249 and the output has been changed, per the latest instructions, to 1316 MHz. Unless accessed it now radiated a colour test card on a 3 min on / 3 min off cycle. The ERP is 25W omnidirectional.

The following stations are active in 24cm: Phil G8MLA in Comberton, Andy G6OHM in Chatteris, Sid G6FKS in Chesterton, Bob G1XIE in Balsham, Guy G7RFY also near Balsham and Ian G3KKD in Quy.

Phil G4BIK in Earith and Ian G8RYL in Fulbourne are also potentially active. In addition we believe we have some viewers.

73 ... Ian G3KKD

GB2RS NEWS BROADCAST

Our very good friend at RadCom Norman Fitch G3FPK (VHF/UHF News) sent me this excerpt from the GB2RS news broadcast from May 22nd last. I agree with his comments in his letter to me that we should publish it to emphasise what we should and should not do - or we may lose the allocation! I know as I work for the primary user of the band! By the way Norman many thanks for the kind words about CQ-TV, both in your letter and your column.

Good morning. it's Sunday the 22nd of May and here Is the GB2RS news broadcast, prepared by the Radio Society of Great Britain. And we start this weeks broadcast with the good news that at a recent meeting with the RSGB the Radiocommunications Agency (the RA) assured the Society that the amateur radio licence fees would not be increased during the next year. The last increase was made in April 1991.

Not such good news is that the Radiocommunications Agency has experienced a number of problems in recent months with unattended operation of amateur stations, and have asked us to publicise the following:

Quote: *"ATV stations operating in the 1.3 GHz band have been left running unattended on sites remote from the main station address, and have caused severe interference at distances of 30-40km away to air traffic control radars, which are the primary users of this band. The Amateur Licence does not permit unattended operation of TV in this band (except where a Notice of Variation has been issued for a repeater, and these are subject to careful site clearance procedures). Operation outside of the terms of a licence is unlicensed use, and enforcement action (which could mean prosecution and/or revocation) can be expected in these cases. This is particularly so where a safety of life service, the security of which is the RISs first priority, is at risk.* End quote.

The potential consequences of being unable to close down an unattended transmitter that is causing interference to such services are very serious. It is important that all amateurs behave in a responsible manner and adhere to the procedures in the licence for unattended operation.

The RA have also had to investigate interference from unattended operation of digital modes on 144/432 MHz. The licence does not require notification to the local Radio Investigation Service (the RIS) for such operation under clause 2(4)c, but amateurs should perhaps give some thought as to how their station could be closed down in their absence if problems arise. It might be wise to inform the local RIS of such operation as a precaution. These matters are currently under discussion between the RSGB and the RA.

Unattended operation is *ILLEGAL*

Clive Reynolds G8EQZ

The Radiocommunications Agency has in the last few months had to deal with unattended operation of 24cm ATV transmissions that have wreaked havoc with Air Traffic Control Radar in Sussex and Shropshire.

The RA obviously take a very serious view of this activity as a Safety of Life service was disrupted. The RA asked the RSGB to publicise the statement which appeared in the June RadCom leader and was broadcast on the GB2RS news broadcast as detailed on the previous page.

It seems strange that the perpetrators of this interference, assuming they are genuine amateurs and were not intent on deliberately jamming, should choose frequencies used by the radars; with the enormous ERP of the radars it would make more sense to use the gaps in the spectrum to ensure minimum radar interference to the received pictures. However, the unattended remote site operation, close to the radars must have made it especially difficult for the RIS to deal with is inexcusable if ATV operators are responsible.

On the grapevine I hear that the CAA are so upset by the problems caused to the radars that they have requested that all TV operation should be permanently closed down. Let us hope that the selfish and thoughtless actions of a few do not ruin it for the majority who keep to their licence conditions. (*As a rider to Clives comment about the CAA, I feel safe in assuring members that the matter has been resolved for the time being - although I say it myself, it was useful that yours truly, an Officer of the BATC works for NATS, the operational arm of the CAA, and was able to have a small input into the CAAs enquiry ... Mike*).

Surveillance TV again?

It is just possible that the interference was not of genuine amateur origin. Some of you may remember of reports in CQ-TV a few years back of surveillance TV signals appearing on 24cm Some of these were traced to a misguided G3*** based in Kent who marketed "wireless" TV surveillance systems that operated in the 1.3 GHz band. That was stopped and I hope we are not being blamed for a re-emergence of this type of system.
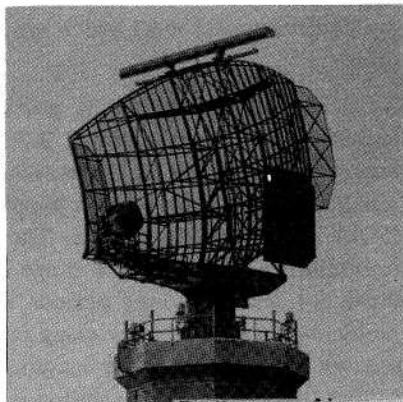
(If any of you are currently aware of any such systems operating on 24cm please write to me with details QT H R).

Radar Station locations

The 1.3GHz Air Traffic Control primary radars, introduced in 1984, operate on the frequencies shown from the following locations:

Claxby, Caistor, Lincolnshire

1254 - 1269 & 1317 - 1332 MHz

Heathrow & Tiree, West Scotland

1254 - 1269 & 1317 - 1332 MHz

Pease Pottage, Crawley, Sussex

1260 - 1275 & 1323 - 1338 MHz

Debden, nr Stansted, Essex

1266 - 1281 & 1326 - 1341 MHz

Great Dun Fell, North Pennines

1266 - 1275 & 1326 - 1341 MHz

Older radars are located at Clee Hill, Shropshire and Burrington, Devon.

ATC Radar Transmitters

The range of frequencies shown for each of the two transmitters simultaneously operated at each site are the result of non-linear frequency modulation, with a deviation of about 2.5 MHz, which is applied to the relatively long pulse (66 microseconds or in the case of Heathrow 34 microseconds) and the bursts of short pulses (3 microseconds) which are slotted into the long pulse gaps with a 15.5 MHz offset.

By using a long pulse it is possible to use a lower peak power than would be required from a conventional 2-3 microsecond pulse to obtain the same reflected energy from a target in the receiver. The advantages of lower peak power are better reliability and simpler power supplies as travelling wave tubes can be used for the 150kW peak power required. The disadvantage of using a long pulse is that the resolution is poor and short range operation is hampered by the receiver being shut down for relatively long periods while the long pulse is being transmitted. These problems are overcome by using pulse compression techniques in the receiver which reduces the apparent pulse length, and staggered short pulses that overlap the gaps so that the short range resolution is restored.

The power from each of the two transmitters is split and fed to the antenna to provide two circularly polarised beams; a low pencil beam with 25% of the energy and a wide vertical aperture beam with the remaining 75%. The overall gain of the combined beam antenna is 35.5dB giving a peak ERP of over 53OMW.

ATC Receivers

The wide aperture and pencil beams are processed in separate, but similar receive channels. Each has a 2.5 MHZ wide front end with a 2dB NF and sensitivity down to 127dBm.

The returns from each radar are mixed down to final IFs at 31 MHz for long pulses and short pulses to 46.5 MHz and are applied to special surface wave acoustic filters (S. W. A. F.) in which the velocity of propagation is frequency dependant. The frequency modulation coding originated in the transmitter produces an output pulse from the S.W.A.F. of 0.6 microseconds duration with an amplitude multiplication factor of 10.5. The output from the filter is then fed to A to D converters and processed digitally to remove unwanted and spurious returns from weather, ground etc. and enhance the wanted signals with Moving Target Indicator and Detection, Zero Velocity Fading Filters, Sensitivity Time Control and other functions.

Radar interference susceptibility

It would appear that these radars are likely to be particularly sensitive to interference from ATV transmissions. With a pulse length close to line frequency and the use of FM by both systems, I suspect that a line sawtooth on 24cm would produce the most false targets. Other video waveforms could also seriously corrupt the display. The sensitive receivers will also be troubled by strong ATV signals bearing in mind the huge gain of the antenna.

> The bottom line is that the radars are the **PRIMARY** user of 24cm; we are there under sufferance and must do our utmost to avoid interference to the radar if we are to retain the privilege of operating in it.

RALLY 94 Report

Mike Wooding G6IQM

It's now over a month since the event, so I guess I have had time enough to relax and recover - and start planning next year's rally. As I write this we have still to hold the wake - sorry meant committee meeting - so you will find a stop press notice in the Postbag giving notice of the location of the 1995 event - it's my guess it will remain at the Sports Connexion, especially as I am willing to organise it if it is !!!

OK, lets have a look at what happened. Organisationally everything went very smoothly. The halls were marvellous to work with - it's so relatively simple to lay out when what you have is two large rectangles. There were plenty of tables, and what is more important from my point of view, there was a LOT of space for people to walk around.

Trevor and I still have nightmares about that rally we held at the Esso Hotel in Coventry !!!!!
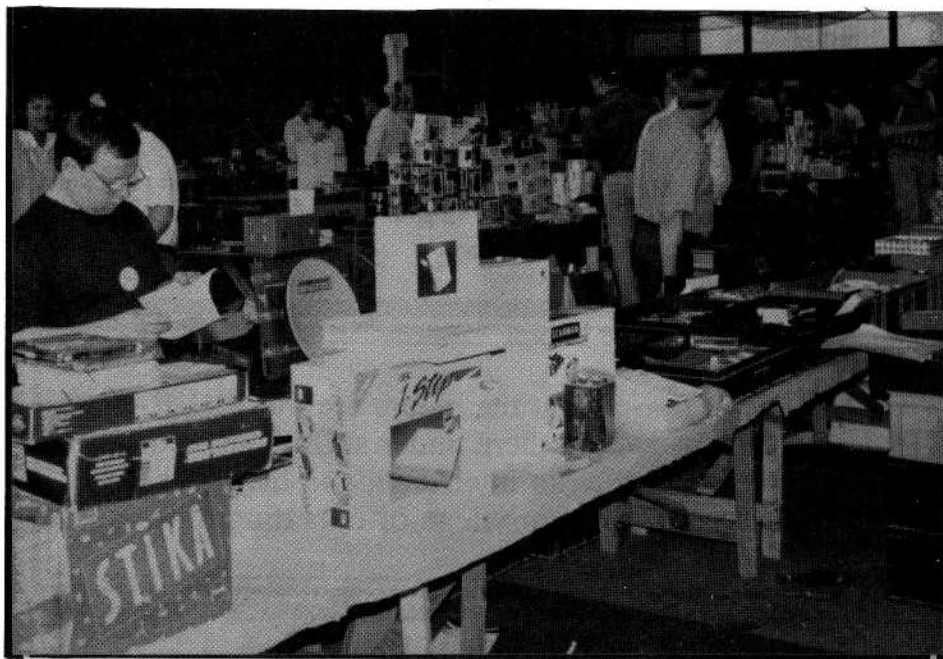
There was a good cross-section of traders, selling everything from basic components, through TV transmitters and receivers, to satellite equipment and computer systems. I like to think that there was more emphasis on it being a 'proper radio rally', rather than the more common radio/computer show, with the emphasis on computer.

The outside display was a little short this year, the 'bus' being noticeable by its absence. The main reason for this was that Paul Marshall was on a three-line whip to attend a wedding on the Saturday, which did not leave enough time to drive it down and assemble the display. However, 'old faithful' was there in the presence of Brian Summers' Scanner with newcomer to the scene (at least as far as OB vehicles is concerned) 'Hairy' Dave and his unit. Although I did not get time to see the display in action, I understand that all went well.

The weather was exceptional for us this year and consequently the outside boot fair did brisk business. My only complaint about it was that due to things being a little hectic between 6.30am and 9am the traders parking got somewhat out-of-control. Consequently our control over where the boot traders set up became very fragmented and they appeared all over the place! Next time a proper separate area will be defined and set aside.

The Club stand was well-attended by Committee Members and Officers of the Club, with plenty of advice being sought and given, and lots of business for Peter Delaney's Members' Services and Ian Pawson's Publications departments.

Next door to the Club stand was Rally Control, yours truly, the PA (wow!!) and Ted. You may not have seen 'The Bear', but I bet you heard him!

Finally, the most important aspect of any radio rally - the visitors. The door count was around 1100, which was considerably down on previous year estimates. It seems that there may be several reasons for this. A new location for the rally and the necessity to build it up again; a split this year, with a rally and a convention later in the year; a computer/radio rally held at the same location only a month or so previously; Drayton Manor the week after. I could probably think of a few more excuses.

Taking some of the more obvious answers; a new location for the BATC Rally may well need a year or two to build up; the split rally and convention may well cause attendances to be lower at the rally for the first year, but I feel that that would rationalise next year back to normal; as from now onwards we, if we stayed there, would be the only Amateur Radio event to be held there, as the Centre of England rallies will be no more - that must be a great plus for us; and finally Drayton Manor has always been the week after us, so I don't see that affecting us any more now than before.
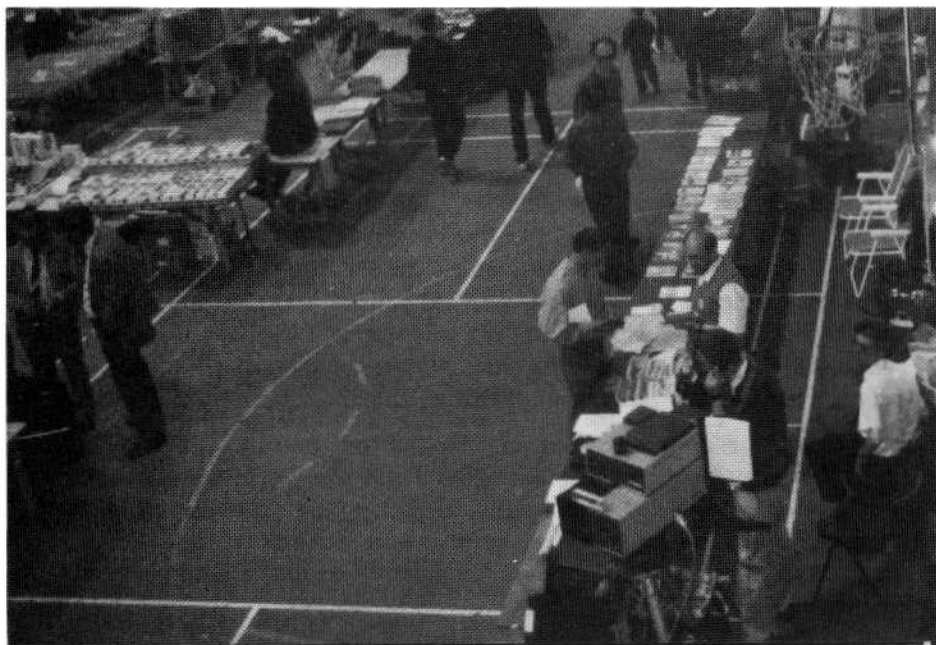
The Club stand at a quite moment
but who is Dave Lawton talking to on the phone?

The answer? It lies with you. There are around 1800 of you in the UK, so I reckon that we should expect at least 60% of you to support your Club on its major annual event - that makes around 1080. I know fairly certainly that at least half of the 1100 visitors were not Club members - so where were you?

If you need any encouragement and are not sure about the rally or the venue, ask anyone who went. I have not had one letter of criticism or complaint from anyone who came, quite the opposite in fact, everyone who has commented to me has said how great they thought it was. So come on - next year *YOU COME TOO* - and bring a friend!

Anyway, I enjoyed it - the event covered costs and made a very modest profit - so as far as I am concerned it was a success and worth all the hours of work it took to organise.

Finally, I would like to offer my own sincere thanks and thanks on behalf of the Committee and Club to the following organisations and people for their help before and during the event. It is morbidly interesting to note that over 50% of the people who helped over the two days were not even members of the Club!

Thanks to: Coventry Amateur Radio Society; Rugby Amateur Transmitting Society; Martin Bushnell; Margaret Bushnell; the "Elliot" clan, Keith Johnson; the staff of the Sports Connexion, Krystyna Wooding, Michelle and Ashley Wooding and Ted!

The answer to who Dave was talking to is in the Blue Van !

405 Line - Sync Pulse Generator

Chris Smith G1FEF

In CQ-TV 163, page 40 you will find a design for a 'serial-to-parallel' keyboard converter, using a simple microprocessor circuit (8031). By altering the software contained in the EPROM, this board can be programmed to perform a whole host of tasks. Although I am not involved in 405 line TV myself, Andrew Emmerson (a keen 405 line enthusiast) suggested this project, so here it is.

For a full description of the hardware, you should refer to the original article in CQ-TV 163. The new software will provide the following outputs:-

| Description	Port	Pin number on 8031
Mixed Syncs	P1.0	1
Mixed Blanking	P1.1	2
Line Drive	P1.2	3
Field Drive	P1.3	4
Odd/Even Field	P1.4	5

These outputs are all active low, TTL level and will require translating to the appropriate standard, i.e. 1volt into 75Ω.

With a 12 MHz crystal on the 8031 the minimum resolution for changing the state of any output is 1uS, so a few small liberties have been taken with the 405 line standard. The front porch is 2uS instead of 1.7uS, the line blanking period is 19uS instead of 18.5uS and the line period is 99uS instead of 98.8uS. I am told by those 'in the know' that this is perfectly acceptable. See the timimg diagrams opposite for full details of the waveforms produced by this SPG. For anyone interested in producing 'custom' sync pulses the source code for this project is available for you to modify, just bear in mind that the minimum resolution is 1uS. The existing software could be made more interesting. For example, the other port pins could output a simple test pattern, but as I wrote the software in an evening, I did not have time to add all these extra features.

The software can be obtained from myself. As with the keyboard software, I have made it 'public domain', so the software is free of charge. Send me a 2764 EPROM in a suitable mailer and £1.00 in assorted stamps to cover return costs, etc. Or send me £5.00 (cheque/postal order) if you wish me to supply the EPROM. If you would like a copy of the source code, send a formatted disc (any PC format) in a suitable mailer with £1.00 in stamps.

I am currently in the process of moving (again!) so please phone Trevor Brown for my current phone number and address, before sending me anything.
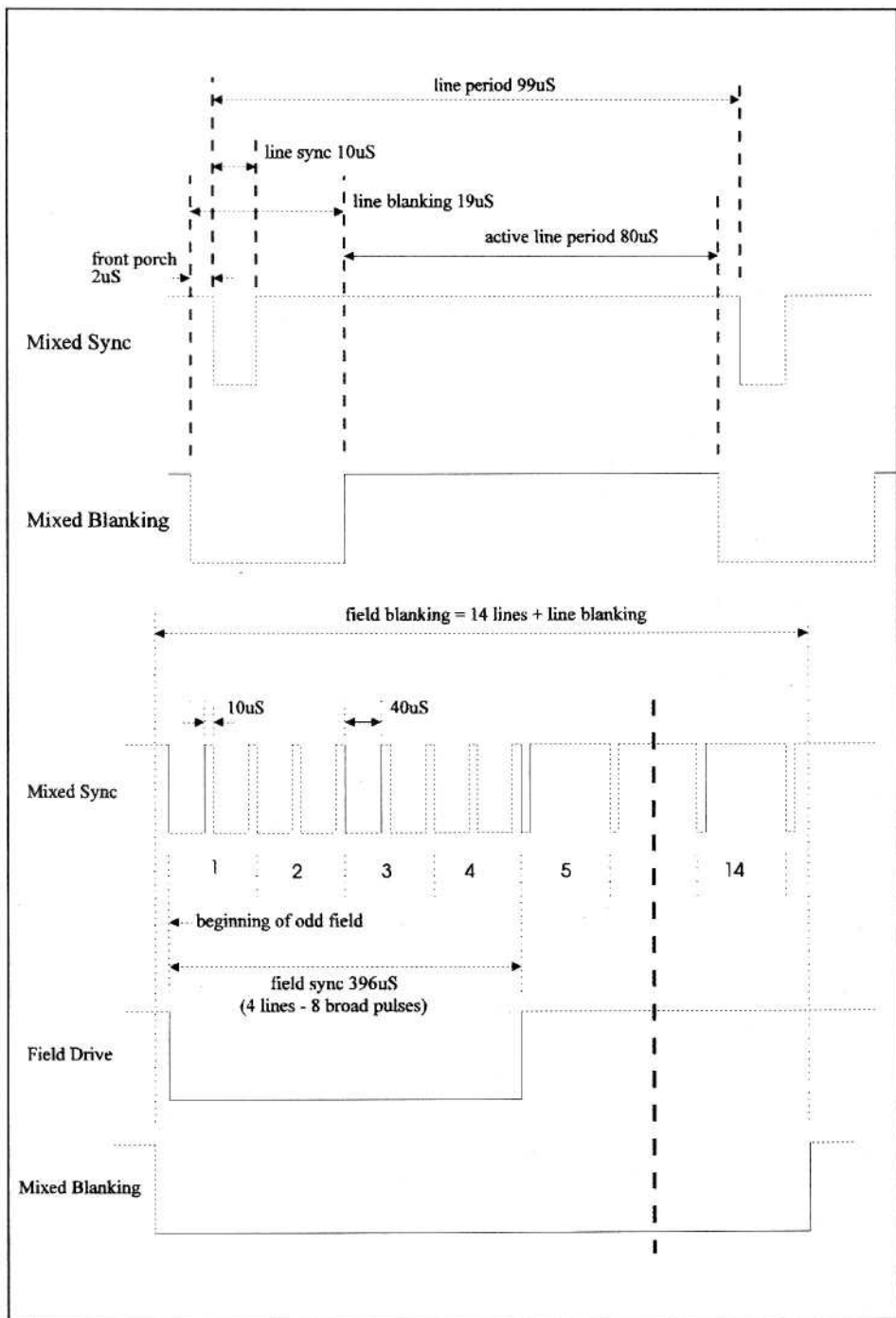
Automatic Test Signal for TX

John Stockley G8MNY

This circuit is intended to be fitted inside ATV transmitters. It generates a half black and white line test signal with frame syncs, when the external TX video is removed. This reduces the chance of damaging your 70cm PA with continuous peak carrier.

The circuit uses two common dual TTL mono chips 74LS221. These provide both the line and the frame, porches and sync signals. Although the circuit seems over complex, it is simple to understand, and uses common components. All diodes are 1N4148 type, except for one germanium, the three PNP transistors are BC213 or similar.

Line Circuit

An astable configuration is used for the line oscillator with a 40:60 ratio, set by the resistor values. So the frequency is finely tuned by adding a small capacitor on test to the main 4n7. The astable output is fed by a resistor to a biased video emitter follower. The square wave signal also feeds a small C/R network, which gives a porch delay before triggering the line sync mono. That output, then diode clamps the video output to sync level.

Frame Circuit

This is another astable configuration, but running at 50 Hz, this time with a 10:1 ratio set by the resistor values. The frequency is finely tuned by an additional small capacitor as before. The output clamps the video to around black level, in the frame blanking time by the use of a two-diode clamp. The blanking signal also feeds a small C/R delay, giving a frame porch delay, before triggering the frame sync mono. This mono output, diode clamps the video to sync level.

Triggering

The line astable proved to be less than 100% reliable at starting with these ratios, so a start circuit feeding pulses of frame sync to the line oscillator was added. Also the frame astable did not like 10:1 width, but adding line pulses to its trigger pin, produces the required pulse width, with accurate line locking of the frame switching.

Video Switching

The circuit uses a nearly biased PNP to detect loss of video, this initiates the switching relay and powers the TTL +5V regulator. This stage can be omitted, if the generator is to be used barefoot as a normal test signal generator.
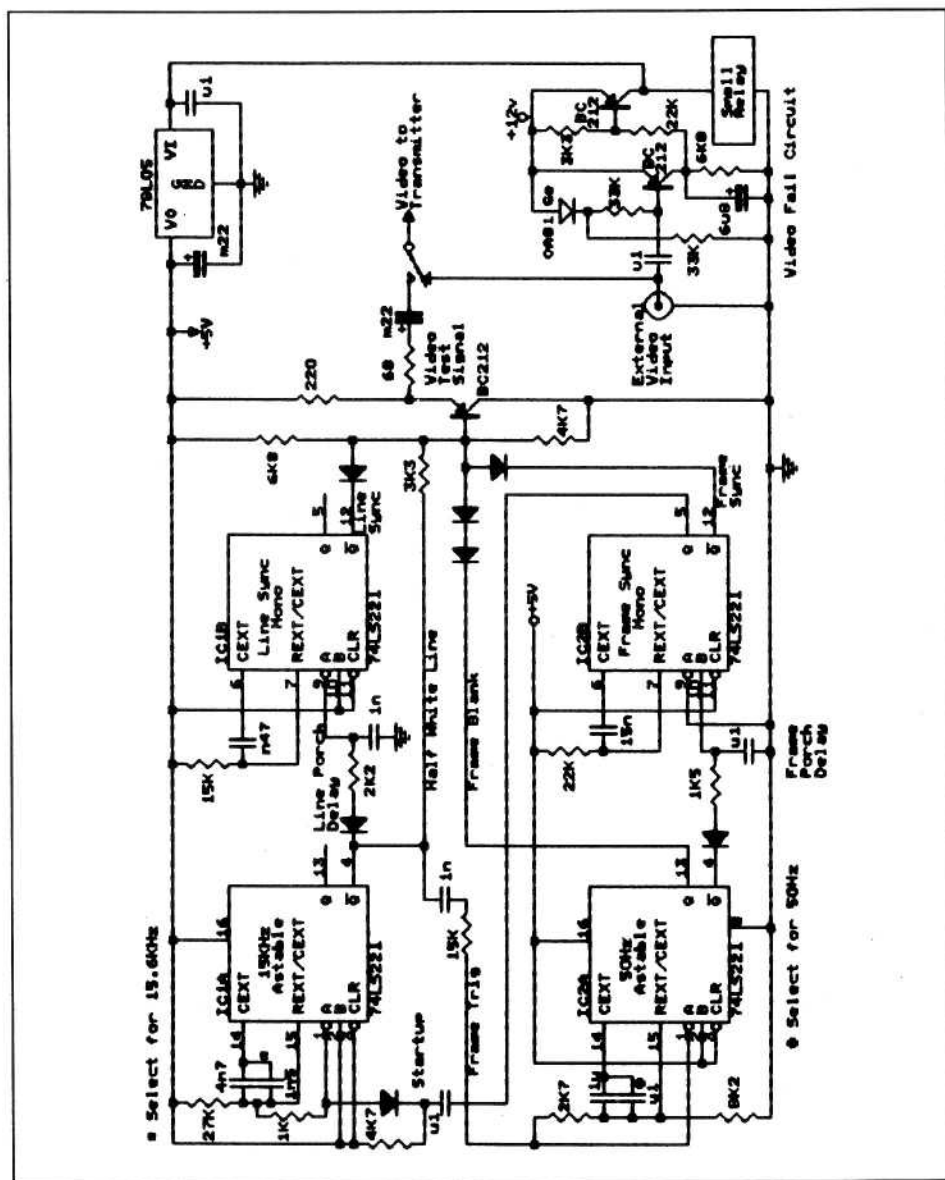
Getting The Best From the BATC BBS

As many of you now know, the BATC telephone BBS has moved. It is now co-residing with the BetWiXt BBS and is run by Brian Kelly. The telephone number for BBS access is 0633 614765. The following is actually the download-able text user guide which we have reproduced here in full, to save your telephone costs!!! For all the references to BetWiXt you can read BATC, as all the commands etc. are of course the same.

What BetWiXt is

BetWiXt is a free access Bulletin Board, that means I don't charge for its use. All the costs, which are considerable, are met from my own pocket. That's why it is in my best interest that you use it efficiently and for the purpose intended. Abusers, and there are a few, are not welcome, they waste my time and hog the system when legitimate users want to call.

Some parts of the BBS are hidden from some users, this isn't because they contain anything illegal or naughty. They are filled with files and messages by business users who require confidentiality. Only those with permission from the companies involved can reach these areas, in fact they never get listed to anybody else.

The vast majority of the system is available to anybody with "FULLUSER" or "BATCmember" access levels, these are equivalent except for additional message and file areas available to BATC members. New callers are given "NEWUSER" access level (surprise) until I upgrade them at the system console. They only have access to a few file areas and one conference until their level is raised. The reason behind this is simple, I don't want them to reach the "goods" until I verify who they are. I try to check the BBS at least once a day, usually in the evening, and I upgrade users at that time and write a message to welcome them.

File Integrity

BetWiXt automatically increases your time allowance if you upload files to the BBS, this is my way of saying thanks for taking the time. All files sent in are checked for integrity and virus infection.

Files are checked for: Correct checksums (CRC) where applicable, Valid file names (against a blacklist of known bad ones), Virus infection, always using the latest VIRUSCAN direct from McAfee, Invalid dates, for example a .ZIP dated before its component files.

Files in embedded directories are also checked. ZIP format files are always uncompressed and re-zipped with maximum compression (-ex option) to save disk space and save download time. One unusual feature on BetWiXt is re-dating ZIP files. Some would argue this is bad practice but it does give a better degree of security against someone tampering with the file and re-zipping it before uploading. The BBS always sets the file date to the date of the youngest (most recent) file stored within it so you can easily tell when it was last updated.

There can be a problem when a huge file is uploaded, BetWiXt unzips the file to a virtual disk before performing the virus scan. The disk is three megabytes in size and will very occasionally fill up and cause an error which the BBS interprets as being a virus. This interpretation is intentional, if it were ignored a virus in a huge file could get through. Any file that fills the virtual disk will be saved safely in a special area and marked for my attention. I check such files off-line and move them to their proper areas if I'm happy with them.

Conferences (Message areas)

BetWiXt has the ability to link file areas to conference areas but at the moment this is disabled. The idea is that people grouped together in special interest conferences only see files applicable to the group's topic. Until BetWiXt gets many more users I've made all the file areas available from all the conferences.

As with the file areas, there are hidden conferences, again this is only for reasons of company confidentiality.

I encourage the use of BetWiXt for keeping in touch with other users. Several friendships have been struck between people sending Email to each other and its gratifying to see the good use some people make of the message system. There have been quite a few sales and purchases made from adverts placed in the "Bring & Buy" conference although I stress what I quote in the disclaimer Bulletin: Check what you are buying. Don't come complaining to me if you buy a lemon, remember, you didn't pay *ME* anything for it!

Making the link

The vast majority of callers use PC systems, I apologise to those with anything else because I simply have no knowledge of most other computer types.

Broadly speaking there are two types of communications programs, ones running under DOS and ones running under Windows. Almost without exception, all the problems I encounter are from Windows users. Windows has a fundamental problem when controlling serial data streams, the data keeps arriving but Windows stops and goes. Because it switches tasks to allow several programs to apparently run at once, it has to spend time away from the task of monitoring the serial ports. The

information from your modem arrives at a fairly constant rate, especially when transferring files. If a byte from the modem doesn't get processed before the next one comes along, the first one is overwritten and lost. This may not seem like a problem because most protocols have in built protection mechanisms anyway. That's the catch, you don't see the error *because* the protocol hid it, but in making the correction it has wasted time that could have been used to transfer more data. Experience teaches that Windows will drop transfer speeds by between 10% and 20% over those achievable by DOS under the same conditions.

A further complication is the protocols that come with Windows are Xmodem and Kermit, two of the slowest protocols around!

So how do we overcome these problems....

If possible don't use Windows! Even using the "MS DOS" shell from within Windows is slower than using the real thing. There are some reasonable comms programs for use under Windows but most need to you "fine tune" the .INI files to give them a bigger share of the time slices. OS/2 seems to behave admirably and even WinOS2 (OS/2 Windows) seems to cope better than the real thing!

Probably the biggest improvement (which also works on slow PCs) is to change the UART chip that drives the serial port in the PC. UART is an acronym for "Universal Asynchronous Receiver Transmitter" which in plain language means it takes a byte of data from the PC and shuffles it out sideways one bit at a time, adding some extra "framing" bits as it does so to enable the UART at the other end to detect where the original byte stops and the next one starts.(my apologies to lexical purists for such a long sentence) The process works both ways, receiving from the modem and sending to it, all the modem has to do it turn the bit stream into appropriate noises to send down the phone lines. There are many myths about these new UARTs, which incidentally are named NS16550AF or just 16550 for short. Ask most people about them and they will say they work faster than the older 8250 or 16450 devices traditionally fitted in PCs, this is total BULL. They work at exactly the same speed but allow the PC to work SLOWER. Inside the 16550 is a special bank of stores called a buffer or a "FIFO register". If the communications program enables the chips buffer (it defaults to being disabled) it gives it the ability to hold received bytes in a queue until the PC gets around to collecting them, hence avoiding the overwriting problem mentioned earlier. Up to 16 bytes are stored in the order they arrived which is where the name FIFO come from, First In First Out!

There are two "Gotchas" to be aware of. The NS16550AF is the good guy, it's made by National Semiconductors *BUT* the TL16C550 made by Texas Instruments and described as having a FIFO should be avoided, it doesn't work properly. If someone from TI would be courteous enough to return my phone calls about the problem I would be grateful. I've been told that Western Digital chips are

also suspect but Startech are OK. The other problem is that Windows doesn't understand that 16550s need their FIFO turning on! There are several replacements for COMM.DRV that overcome that problem and most decent comms programs will do it behind Windows back anyway. Before anybody shouts at me, I know you can change the .INI files to say ComFIFO=1 or whatever, but it never works for me!

The NS16550AF is a 40 pin chip, make sure the one presently in your PC can be removed before buying one as a replacement. If your present UART cannot be removed, I suggest fitting a second serial port on a plug in card, they cost about 20 UK pounds and the replacement UART is about 14 UK pounds.

I recommend QmodemPro as a non-Windows comms program. It does support the 16550, comes with excellent support for most protocols and has a built in mail reader. The test-drive versions of Qmodem have most of the features of QmodemPro and are in the comms programs file areas on BetWiXt. A Windows version, QmWin has also been released recently.

ANSI and when to use it

ANSI is yet another acronym, this time naming the body of people who set standards for things. Although it's rare for people in the comms business to agree on anything, they seem to have taken a liking to ANSI's screen driving commands. The commands do things like moving the cursor around and changing colours, the sort of things you might do if you used function or cursor keys on your keyboard, but sent from the BBS instead. Each ANSI control code (a.k.a. Escape code) consists of several characters prefixed by an "ESC" code (27H). On receiving the ESC, an ANSI driver interprets the following characters as being for control purposes rather than to be displayed. That's why selecting ANSI colour on the BBS while using a non-ANSI emulation on your computer results in garbage all over the screen.

When you first connect to BetWiXt you will notice a short delay before the opening text appears, during this time the BBS is trying to find out if you have an ANSI compatible system. BetWiXt tries sending ANSI commands to move the cursor around and then with another ANSI command asks your system to report the cursor position. If the cursor seems to have been moved correctly, BetWiXt assumes it was because you had ANSI and it turns the colour screens on, clever eh?

Again, Windows lets you down. The Terminal program in Windows *DOES* support ANSI cursor positioning but doesn't support colour.

You probably have an ANSI driver program already if you use MS or PC DOS, it comes on the DOS install disk as ANSI.SYS. If your comms program doesn't have colour you could try putting

"DEVICE=C:\DOS\ANSI.SYS"

in your config.sys file. You may need to change the path to point to the true location of ANSI.SYS on your own system.

The only time I recommend you *Do not* use ANSI is if you use a 300 or 1200 baud modem. At those speeds the fewer characters transferred the better. If you can live without the colour do so because it will turn a slow modem into an almost stopped modem!

If you have colour, always use the full screen editor if you want to type messages to other users. ANSI gives you the ability to move around your text with the cursor keys and edit as though you were using a word processor.

As with most good things, there's a dark side too. Some comms programs send unwanted ANSI codes to the BBS, particularly when first logging in. If your name is prefixed with "[2 1" or something like it, the reason is your program transmitted the codes to move the cursor on your screen back to the BBS. If it happens, please backspace over the extra characters or BetWiXt will not recognise who you are. If you use an automated log-in you can prefix your name with a few Control-H (^H) characters to make absolutely sure you zap them.

File transfers

This is where most people waste most of their time and make the telephone company accountants very happy.

BetWiXt uses the genuine articles when it comes to transfer protocols. All the protocol drivers on the BBS are official registered programs written by their respective developers or their agents.

Lets take a moment to see what the protocols actually do.

The intent is to move a block of data from one system to another in the least possible time and with the least risk of the data being corrupted.

Suppose the file was 100,000 bytes long and it was sent in one block and just as byte 99,999 was being sent, the telephone line crackled. You would be rightfully unhappy to have lost everything at the last millisecond. If the file had been split into 1000 blocks each 100 bytes long and each block was saved as it arrived and had a method of detecting errors and resending bad blocks, you would only have to fix the problem in the last block to complete the transfer.

Sounds good doesn't it ?

Sorry to disillusion you - but no. Each block needs to be numbered to make sure it's the one expected and the blocks need some sort of checksum to verify the data they contain is intact and there has to be a delay while the receiving end calculates the blocks checksum, compares it to the checksum sent and signals "OK" or "resend".

The more blocks there are, the more overhead is added and the longer it takes to send and verify.

All the transfer protocols are compromises between speed and accuracy. Kermit uses many small blocks and works best under extremely bad line conditions but adds so much overhead that it rates as VERY SLOW. Xmodem uses blocks about twice the size as Kermit so only has half as much overhead. It's quicker but still rates as SLOW. Ymodem uses 1k long blocks, 8 times the size of Xmodem's and as you would expect it runs considerably faster. Rating, FAST. Zmodem is rather special, it gives the benefits of all the other protocols by adapting its block size according to the number of errors it detects. It starts at 1k but halves the block size if it finds 1k is causing too many delays from resending. The process continues until the size reaches 128 bytes, if the errors are still too severe it aborts. If the number of errors drops, Zmodem will increase their size to bring the speed back up again. Another feature of Zmodem is "crash recovery", if a transfer does abort and you try again later, Zmodem will compare the files at each end and find the place where they differ. Assuming That's where the transfer was interrupted, Zmodem restarts from that point saving you downloading the whole file again. Most implementations of Zmodem have automatic download, you ask the BBS to send the file and your system starts receiving it without you having to lift a finger.

Now the problems: Some programs get the protocols all wrong! Procomm is worst offender in this respect, it has incorrect Ymodem emulation and although its Zmodem does work, Omen Technology who own the rights to Zmodem, never gave permission for it to be used by Procomms authors. If you must use Procomm, the protocol they call Xmodem/1k is almost the same as real Ymodem and will work as it. BetWiXt is aware of some unofficial versions of Xmodem and Ymodem and will try to work with them. An interesting problem I've seen with Zmodem is transfers that abort as soon as they start. The problem occurs when the file already exists on the users computer. Zmodem quite correctly decides the transfer is pointless and gives up, leaving a confused user, wondering why the transfer didn't happen!

BetWiXt will offer "/G" protocols if it detects your modem has its own error correction (MNP or V42) built in. These variants of the normal protocols have some of the block overhead information removed to make the file transfer faster.

Based on actual logged results these speeds are typical:

Protocol	2400 baud	9600 baud	14400baud +v42bis
Kermit	120cps	500cps	800cps
Xmodem	170cps	700cps	1000cps
Ymodem	230cps	900cps	1400cps
Zmodem	232cps	950cps	1650cps

cps = characters per second.

If you have Zmodem please use it. Overall it gives best performance even on error correcting modems. As the figures demonstrate, the wrong choice of protocol can double your phone bill!

Which modem is cheapest to use.

I like simple questions like this one. The faster the modem runs, the less time you spend using it and the less your phone bill costs you. The modem is a once off purchase, the phone bill drops through the letter box with alarming regularity!

If you call from outside the UK or your local STD code is *NOT* one of 0633, 0495, 0222 or 0291 you should consider looking for a cheaper phone connection. Several companies now offer reduced cost services and are typically 15% cheaper than BT.

Using the modem at best efficiency

If you do have a high speed modem (9600 baud or faster) there are a few things you need to set up to achieve best throughput.

Nearly all such modems have built in data buffers, if you have v42bis compression you certainly have one. The transmit buffer is to hold the next bytes to be sent out from the modem and the receive buffer holds incoming bytes before they are passed to the computer. The reason for buffering is obvious if you look at the way compression works. All compression methods work in a similar way, they examine a block of bytes and detect if there are any repeating patterns present. If the same pattern is detected, it is sent only once, subsequent occurrences are told to repeat the first copy. The exact methods used are beyond the scope of this text but you should get the general idea. The buffer is the place the data is held while scanning for patterns before sending and where the repeated groups as put back in again at the other end of the link. This explains why text can be sent much faster than program codes, text contains many spaces that are almost totally stripped out before transmission and re-inserted at the receiving end.

Right, so now we know how compression works. Lets look at what we can do to eliminate delays elsewhere.

Where most people go wrong is they don't allow the modems transmit buffer to stay topped up. Any time the buffer is less than full is wasted time, the modem can't work out the compression efficiently and if the buffer completely empties, the modem stops sending at all. To keep the modem happy, always keep the link to the computer running as fast as you can. there's little point in using a high speed modem if you only talk to it slowly. Set your computer serial port speed to at least the next higher speed than the modem link speed, if you can go even faster, all the better. BetWiXt runs it's link at 57600 baud!

Some comms programs have "auto baud detect" which means they try to adjust the serial port speed to that quoted in the modems "connect" message. If the message "connect 9600" came from the modem they set the serial port speed to 9600 baud. You *must* turn this feature OFF, it causes two problems, firstly it prevents the modems buffer ever filling up and secondly if the message isn't recognised by the program it may not realise the link was ever made and time-out, dropping carrier unexpectedly. Some programs use the terminology "lock DTE rate" which means the same as turning auto-detect off, always keep the rate locked.

There are two common ways of "handshaking", the process of controlling the flow of information between the modem and computer. One is called XON/XOFF, this is the one to avoid, it adds characters to the stream of data that tell the other end to start or stop sending (substitute "transmit" for the "x"). It causes problems because it increases the number of characters that have to be sent and because some modems will put the XON and XOFF characters in their buffers, introducing a delay until the buffer contents are processed. The much preferred handshaking method is called CTS/RTS or "hardwired", this uses a pair of pins on the modems serial connector to signal to the computer. It works faster because no extra characters are sent along with the data, in fact the handshake works in parallel with the data stream using the extra two wires. CTS (Clear To Send) and RTS (Ready To Send) must be selected in your comms program and of course the wires must be connected in the modem cable for the handshake to work. Most internal (plug-in card) modems will have the RTS and CTS lines already connected.

The modems at BetWiXt are US Robotics Courier models. They work with ITU "V" standards and USR's own HST standard. They adapt to line speeds from 300 baud to 21,600 baud and can transfer compressed data at up to 57,600 characters per second.

Keeping connection costs down

There are no connection charges to use BetWiXt. All you pay for is the time on the phone line, sadly, none of that money ends up in my pocket. The information above should help you eliminate bottlenecks at your end, lets turn our attention to how you can get the best from my end. For what purpose are you calling? Broadly speaking there are two reasons people call the BBS, some call to use the message services, others to browse for files. There are built in aids for both these uses.

Message services

As soon as your name and password have been checked, BetWiXt starts searching through the message system for any mail addressed to you. If it finds any it tells you and offers you the opportunity to read it there and then or to list it. Listing will only show you the senders name and the subject they specified when the mail was

composed. If you decide to read the mail, you are immediately taken to the message system where you can read, reply, or forward (CC) the text. All this takes place while your connection charges are mounting up. There is another way of using the mail system which keeps your time on the system to a minimum. You use a program called an off-line mail reader. There are at least two such programs for download on BetWiXt, I recommend OLX (Off Line eXpress) which is available in test-drive form in the communications programs file area. "Test Drive" gives the impression it is only half a program, in fact as far as I can tell it is the complete program but a few versions behind the latest release.

Off line mail works like this: You call BetWiXt, head for the mail menu and select [O]ffline reader, this is Tomcat! which is the name given to the Wildcat! mail door. The BBS actually shuts down at this point, copying all its workspace to the virtual disk and starting up the Tomcat program. In Tomcat! you are presented with a menu, if you have previously configured the mail system you can select [D]ownload right away, otherwise it's a good idea to [C]onfigure first. There is a default configuration so if you skip the config you still get usable results. Tomcat! now scans through the BBS database and collects any mail that is either marked to you personally or marked public, it ignores private mail unless addressed to you which is why you will notice gaps in the message numbers. After collecting the mail it makes a list of any files added to the file areas and new bulletins since your last call and finally compresses everything it has gathered into one file. You then download the file (Zmodem will do an automatic download for you) to your system. You then exit Tomcat! and log-off BetWiXt, there is a menu option to do this for you. At your leisure you start the off-line mail program, you are not connected to the BBS any longer so you can take your time from now on. The mail program extracts the mail, files, bulletins and anything else you requested, uncompresses it all and presents it for you to read. If you want to reply to a message you hit the appropriate key (it's all menu driven) and the originator's name and your own are automatically entered and you are taken to an editor to compose your reply. The off-line reader takes all your replies and any new mail you have written and builds a .REP file from it. Next time you call BetWiXt you enter Tomcat! as before but this time upload the .REP file before doing any downloads. Tomcat! takes care of all the message routing and makes sure the replies are passed to BetWiXt for mailing to the right people.

To give you some idea of how easy it is, I log on to another BBS once a week to transfer mail. Typically my mail consists of 300 messages, my connect time is about 3 minutes! Imagine how long it would take to handle that amount of mail without Tomcat! helping.

At the moment BetWiXt has no netmail connections. Netmail is similar to the internal mail system but extends to other BBS around the world. You can send mail to anybody else on the netmail circuit but because the mail files are passed from

one BBS to another at most once a day, it can take a long time to reach its destination. The reason BetWiXt is not on a network is purely one of economy. To join a network involves a subscription cost and at least one long distance phone call a day and that costs money. If you feel such a service would be useful to you I would consider adding it, there may have to be a small charge for this to cover the extra costs involved.

Finding Files

If you are looking for a particular file, the quickest way to locate it is by name or keyword searching. Go to the files menu and select [T]ext search, then select the option for looking at names or keywords. Enter the name of the file or word and start the search. Any files matching your entry will be listed. Keywords are simply aids to identify the kind of file, for example a word processor might have "EDIT, WORDS, TEXT, DOCUMENT" as keywords. If you upload a file to the BBS you are asked to enter up to six keywords that could be used in such a search.

To check for files uploaded since you last checked, use [N]ew at the files menu. BetWiXt stores the date when you check for files and lists any added since that date.

If you use Tomcat to download mail you also get a summary of new files included with the messages.

At midnight or as soon as the system is free after midnight, BetWiXt starts an automatic scan of all the files in public areas on the BBS. It builds a file called BETWIXT.ZIP that holds the files names, areas, information on size and location, keywords and descriptions if any. If you want a complete list of what's available, download the file, unzip it and read it after your call.

That's all folks!

I hope all this typing is of use to you. I've tried to answer most of the frequently asked questions. Inevitably there will be things I've missed out so if you need more help *please* contact me. I would rather solve problems than get a bad name for running an unfriendly BBS.

Brian Kelly. Sysop of BetWiXt/BATC BBS. 0633 614765 (2 lines) 20 April 1994.

To keep people happy: MS DOS and Windows are (c) Microsoft Inc. PC DOS and OS/2 are (c) International Business Machines. Wildcat! and Tomcat! are (c) Mustang Software Inc. Procomm is (c) DataStorm Technologies. BetWiXt BBS and this document are (c) Brian Kelly.

23/24cm PreAmplifier

This article was given to me at the Rally by a member who unfortunately did not include his name with the paperwork. Consequently, I am unable to credit them with the articles, but if they would like to let me know who he is I will credit them in the next issue. Also, if the articles appear to be a little short on textual details, don't blame me - I'm only printing what I got !!! ... Mike
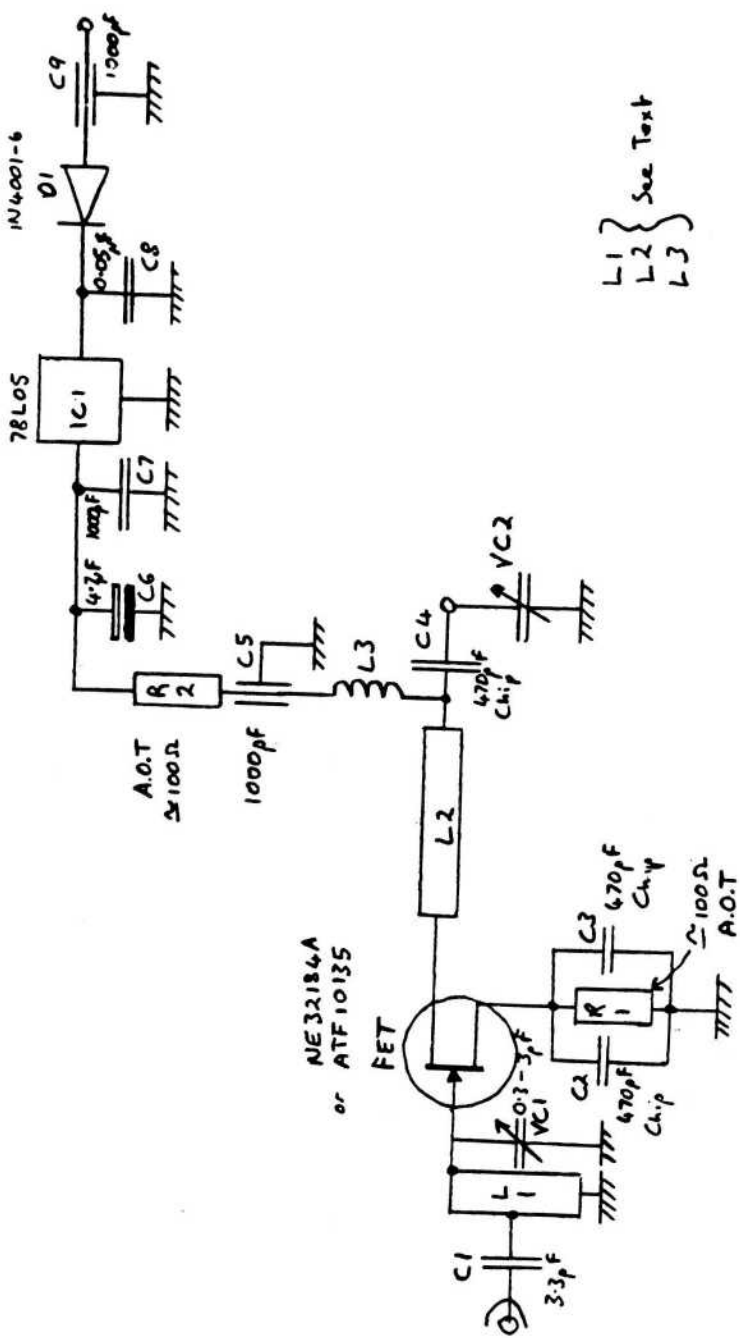
The circuit is as shown. Construction should follow the diagrams. There are one or two special components which must be used:

VC1 is a 0.3pF PTFE Piston Trimmer (Available from Circuit or Mainline Electronics)

C2, C3 and C4 are chip capacitors (mounted vertically) 1206 format (not 0805) (Length 3.45 mm approx. 1/8") RS Components (Electromail) Pt No: 126-326

C5   470-1000pF feedthrough capacitor

L1   Brass sheet 0.015" thick x 1/4" x 9/16" long + 1/8" bend (see diagram)

L2   3/4" long 25/26 SWG copper wire mounted 1/8" above ground plane

L3   6 turns of 25/26 SWG 1/8" i.d. close wound enamelled copper wire

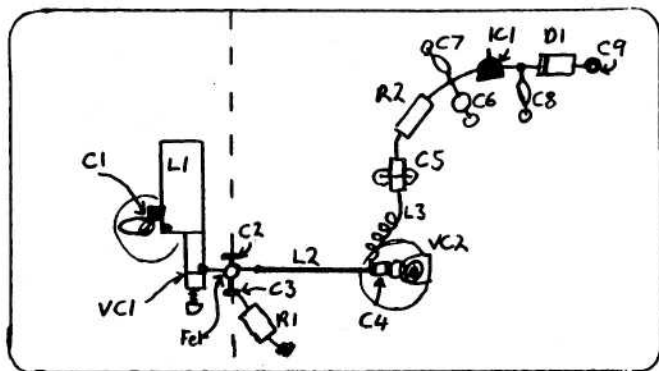C7   Preferably 1000pF chip (gives extra mechanical support) mounted vertically

When setting up, the voltage across source drain should be set for 2 to 3 volts with R2. Current (measured across R1, I=V/R) is set to 10-15mA by changing value of R1 (after adjustment, check source drain voltage again).

Component List

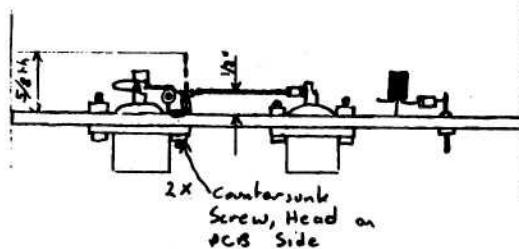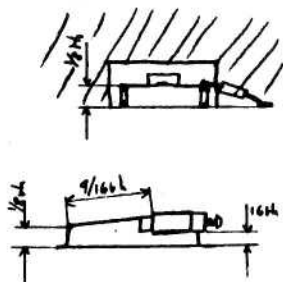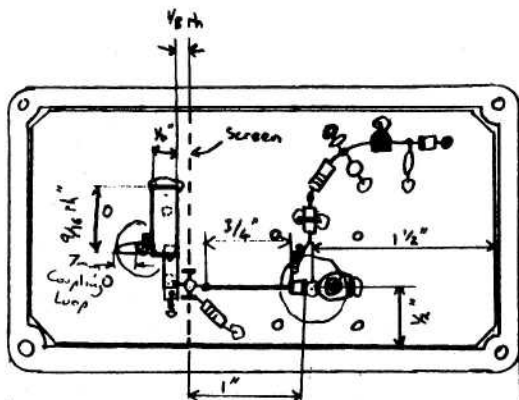|	
L1, L2, L3	(see text)
FET	ATF 10135 or NEC NE32184A
C1	3.3pF Ceramin
VC1	0.3-3pF Piston Trimmer
VC2	5mm 0.8-7pF Ceramic Trimmer
C2, C3, C4	47OpF Chip Caps (see text)
C5	1000pF solder feedthrough
C6	4.7uF Tantalum
C7	1000pF Chip or disc ceramic
C8	0.05uF Disk ceramic
C9	1000pF feedthrough (screw type)
R1, R2	100 ohms (Adjust-On-Test)
IC1	78L05
D1	1N4001-6

Double Sided PCB

C7 K1 D1 C9
R2 C6 C8
C5
L3
C1 L1
C2
VC2
VCI L2 C3
Fet R1 C4

⅛"th

Screen
⁹⁄₁₆"th
7mm Coupling Loop
¾" 1½"
¼"
1"

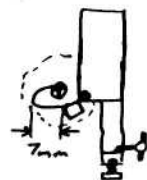⅛"th
⁹⁄₁₆"th
¼" ⅛"th

⅝"th
½"

2× Countersunk Screw, Head on PCB Side

C1 Mounting
7mm

Philips/Ferguson BSB Satellite Receiver Modification for ATV

This is another article given to me at the Rally, although this one proclaims the author, like the previous article, it is a little short on descriptive text! However, it would appear that all is self-explanatory from the diagrams (I hope) ... Mike

Adrian C Hunt G0OJY

PARTS LIST (Available from Circuit unless otherwise noted)

Resistors

6	75R or 68R	Maplin
1	300R/330R	Maplin
2	1k5	(47-15242)
2	10k	(47-10342)
1	82R	(47-82042)
1	150R	(47-15142)
1	390R	(47-39142)
1	330R	(47-33142)
1	47R	(47-47042)
1	680R	(47-68142)
1	56k	(47-56342)
1	12k	(47-12342)

1	10k Hor Preset	(48-10307)

Inductors

1	33uH	(34-33004)
1	MKANSK1731HM	(35-17310)

Capacitors

2	560pF	(04-56103)
1	5n6 or 4n7	(04-47106)
1	47uF	(05-47609)
3	220uF	(05-22706)
1	0.1uF	(04-10404)
1	470uF	(05-47707)

Semiconductors

1	2N3904	(58-03904)
1	ZTX300	(58-01300)
1	ZTX500	(58-01500)
1	NE5921C	(61-00592)

Miscellaneous

PC pins	(21-09090)
Veroboard (makes 2)	(21-09003)

Sound Kit (6 MHz TV Sound Demod)	(41-03450)

NOTE: Software for the Ferguson & Philips BSB A TV Receivers is available from: Trevor Brown 14, Stairfoot Close Adel Leeds LS 16 BJR. Price £15.

I/P

660p
MOUNTED UNDER
INDUCTOR

1731HM

33uH

75R

75R

300P

75R

5n6

82R

560pF

75R

MOUNTING HOLE
(PHILIPS)

•10K•

•220uF•

NE592

10K

1K5

1K5

47uF

2N3904

0.1 uF

+12V

220 uF

12k

390R

470 uF

—ve GND

56K

ZTX 500

47R

10K

680R

330R

ZTX 500

75R

O/P 1

O/P 2

150R

•220 uF•

75R

HIGH O/P

COPPER TRACK DIRECTION

⊖ = TRACK CUT ON
    UNDERSIDE OF BOARD

● = SOLDER CONNECTION

C

VIDEO O/P MENU TO
SWITCH IF REQUIRED

CUT TRACK

2014

2013

2007

2006

2027

MODULATOR VIDEO OUTPUT CONNECTION

D

3350

3359

3360

3351

2337

2364

REMOVE CAPACITORS 2337 & 2364
CONNECT VIDEO I/P LEAD
ON NEW BOARD TO THIS POINT

INPUT VIDEO CONNECTION

E

FROM 1nF ON PCB

2306

2305

IC 7311 (MCU2600)

EXISTING WIRE

CONNECTION FOR MENU OPTION PCB

A

WIRE TO VIDEO BOARD

DISCONNECTED DIODE

+12V CONNECTION

B

REMOVE +ve LEADS OF C2318
& C2319 AND CONNECT THEM
TOGETHER AS SHOWN

FROM O/P OF AUDIO BOARD

5001

2319

2318

5312

AUDIO OUTPUT CONNECTION

PHILIPS SAT RX PCB – COPPER TRACK SIDE

A

D

E

C

B

(ON COMPONENT SIDE OF BOARD)

2014

2319

2319

3356

SCART CONNECTOR

SEE ATV7 FOR SWITCH WIRING DETAILS

AUDIO O/P

VIDEO O/P

'B'

'E' UNDER ACM BOARD

LIFT OUT CATHODE OF Q6401

6 MHz AUDIO BOARD

VIDEO BOARD
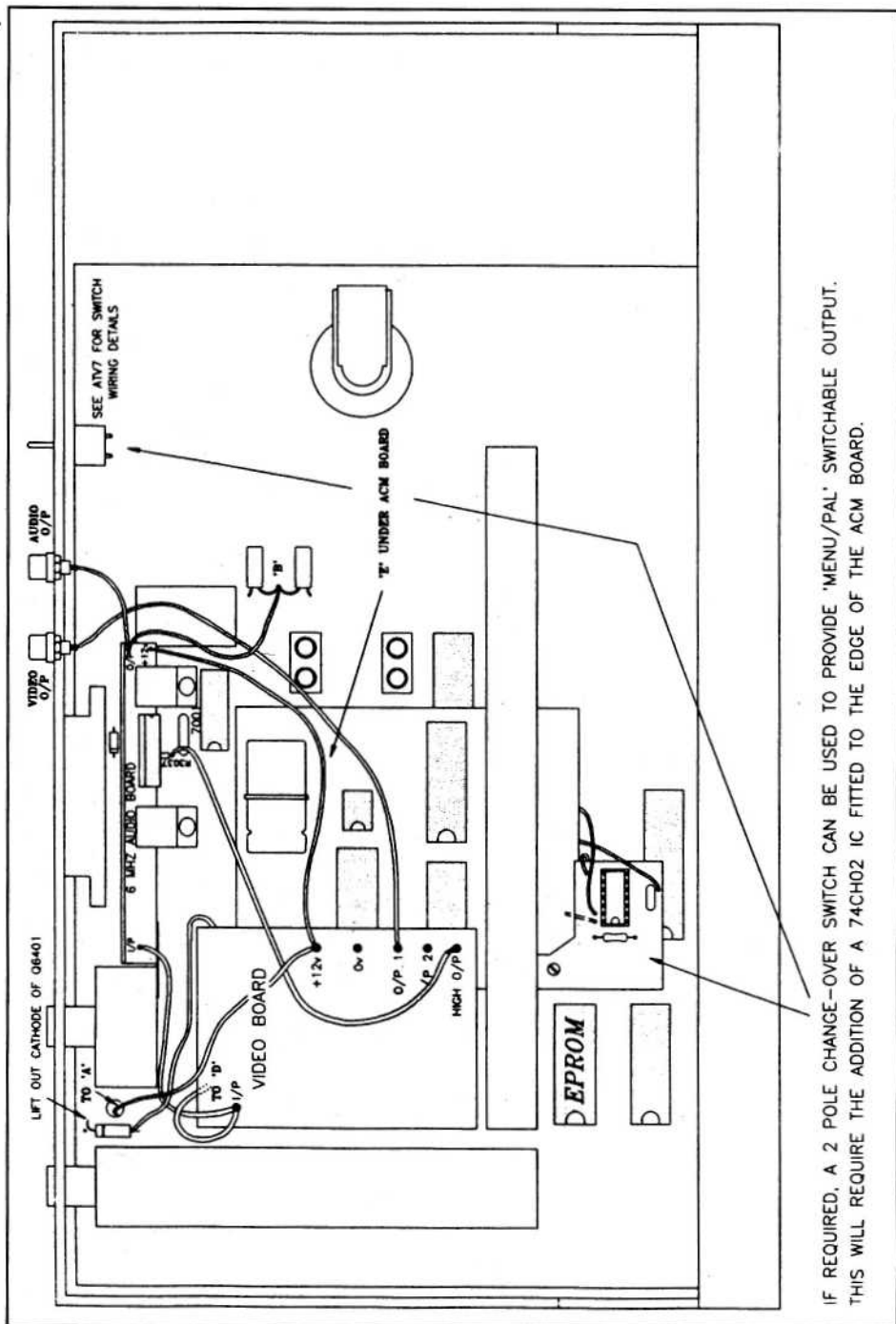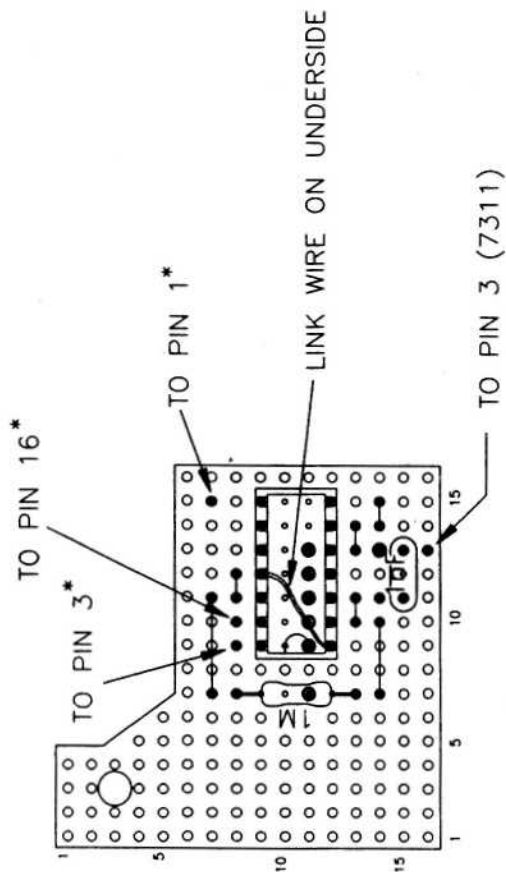
+12v
0v
O/P 1
O/P 2
HIGH O/P

TO 'A'

TO 'B' O/P

EPROM

IF REQUIRED, A 2 POLE CHANGE-OVER SWITCH CAN BE USED TO PROVIDE 'MENU/PAL' SWITCHABLE OUTPUT. THIS WILL REQUIRE THE ADDITION OF A 74CH02 IC FITTED TO THE EDGE OF THE ACM BOARD.
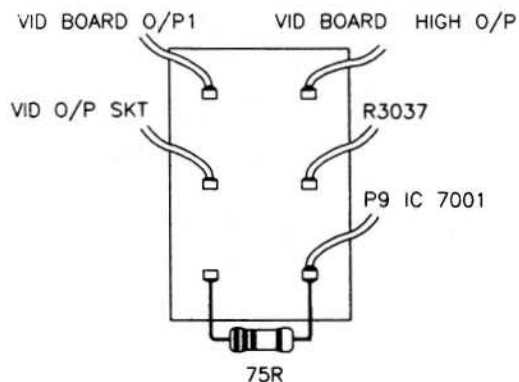
COPPER TRACK DIRECTION

PIN Nos SHOWN * ARE ON ACM CONNECTOR

TO PIN 16*

TO PIN 1*

LINK WIRE ON UNDERSIDE

TO PIN 3*

TO PIN 3 (7311)

1M

● = TRACK CUT ON UNDERSIDE

● = SOLDER CONNECTION

●—● = LINK WIRE

PAL/MENU SWITCH OPTION PCB

VID BOARD O/P1   VID BOARD   HIGH O/P

VID O/P SKT   R3037

                               P9 IC 7001

75R

REAR VIEW OF 2PCO SWITCH

THE FOLLOWING MODIFICATIONS TO THE WIRING ARE REQUIRED:-

1. REMOVE THE CONNECTION BETWEEN VIDEO BOARD HIGH O/P & R3037
2. REMOVE THE CONNECTION BETWEEN VIDEO BOARD O/P1 & VIDEO O/P SKT
3. CONNECT WIRES FROM SWITCH TO POSITION SHOWN

PAL/MENU SWITCH OPTION

Chunnel Vision !!!

The following is a report on an historic special event station which took place earlier this year. The first part of report is a letter to me from Ian Vincent G4MLY, Secretary of the Kent Television Group and the second part is a short report on the event itself.

Dear Mike,

Please find enclosed a brief report, photos and QSL card of a recent special event station which we assisted in running. Here is some background info: the Kent Television Group were asked to assist in providing a video link to northern France, for the Channel Tunnel special event station GB0CT. The Dover Radio Club had been approached but felt that they had too little experience in ATV, they proposed the KTG to take over in their place.

We took over the project at short notice hence the QSL cards acknowledge the BATC, as they were printed early on. I enclose a QSL card for the BATC archive. On the French side they combined the celebration with a celebration of Marconi, this was a much larger affair with visiting VIPs including Musa Manarov, the Mir astronaut, the president of the Russian Radio Society, the grand daughter of an early radio pioneer (unknown), a Nobel prize winner (unknown) and the Mayor of Wimereux.

The town hall at Wimereux hosted an exhibition of early wireless equipment which was well attended by the public. The French op's could speak a little English and I a little French - which moved them to kidnap G3DGW who was visiting the exhibition, David G3DGW very kindly acted as interpreter for the whole three days.

The link was very successful and we felt that ATV had scored lots of brownie points when the Mayor of Wimereux was able to see Dick Pascoe G0BPS, (*streuth mate !!!*) Chairman of Shepway district Council as they exchanged greetings and pleasantries.

Members of the Kent Television Group Would be delighted if you are able to use any of this info in CQ-TV, I also enclose a copy of our latest newsletter. If you require any more info please contact me on the above numbers. Over the past few years The Kent Television Group has been testing various sites with a view to establishing a licensed 23cm ATV repeater to serve the North Kent coastal area. More info can be obtained from Tan G4MLY.

73... Ian Vincent GAMLY

Secretary Kent Television Group.

GB0CT — TM5TSM
CHANNEL VISION - THE STORY

In connection with the official opening of the Channel Tunnel, the British Rail Amateur Radio Society along with their French counterparts of the SNCF and allied industries ran a three day special event station. The French station was at Wimereux, and the British station was established at New Romney Station on the Romney Hythe and Dymchurch Light Railway.

The Kent Television Group had been approached to set up a television link on 70cm and 23cm. At first we were a little sceptical of results from this sea-level location, as the French station was 53km away. However, plans were made and the great day arrived. After contact was made on 2m a great deal of searching took place for the TV signals. Eventually they appeared out of the noise. 70cm was a little disappointing at only PI, so this was not used after the first day. 23cm however, improved both ways throughout the day with peaks of P4 between the QSB.

On the second day we had a pretty constant P4 path and had good shots of their Marconi exhibition. The highlight of the day was when the Chairman of Shepway

The GB0CT Station Setup
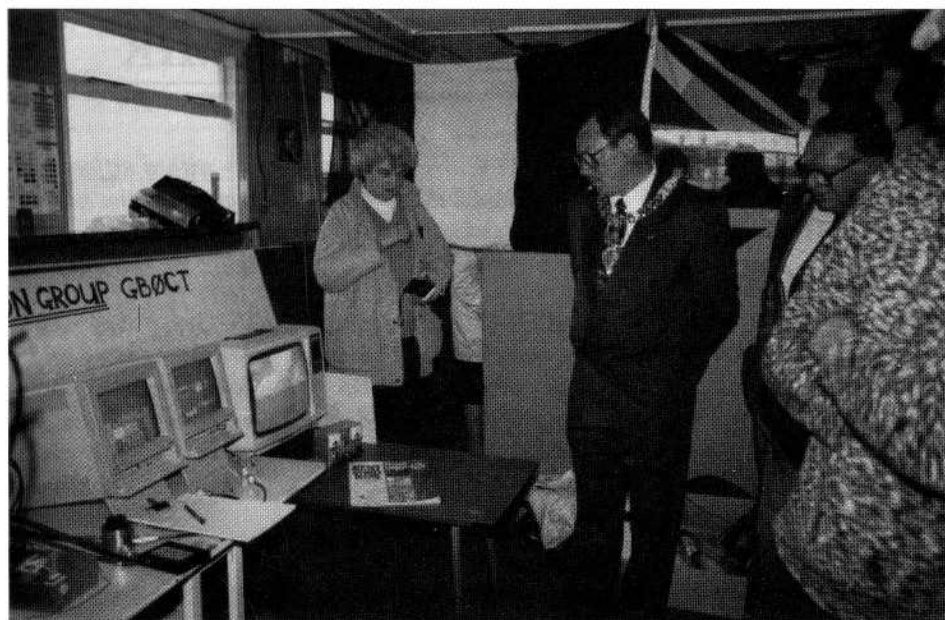
Dick Pascoe G0BPS watching live pictures from France

District Council, Dick Pascoe GOBPS, was able to be televised whilst speaking to the Mayor of Wimereux. We also spoke to the President of the Russian Amateur Radio Society.

On the third day, conditions were not so good to start with, but we did have a vision contact with Russian astronaut Musa Manarov, who was thoroughly enjoying himself on the radio and television. We were then able to show shots of the small steam trains arriving and departing from the platform adjacent to our building. Operators at the GBOCT video link were Group Secretary Ian G4MLY, and Technical co-ordinator Chris G8GHH. We are most grateful for the help of David G3DGW who the French operators 'found' in the Boulogne area and dragged to the mic to act as interpreter etc.!

The equipment used consisted of various cameras and test card generators belonging to group members, feeding Ian's vision switcher and home brew TX running I00W from a 2C39 amplifier. The aerial was G8GHH's 48ele loop Yagi at about 10m AGL. The RX was a satellite receiver preceded by a pre-amp. The French equipment was 5OW to a 55ele Tonna on top of the town Hall. The other part of the station ran 2m, 70cm and HF, where several thousand QSO's were made and special QSL cards issued. (The QSL card and photographs of the received French picture and one of the GB0CT captions are shown on the front cover of this magazine).

ATV IN SPACE: RR0DL on MIR

A second report on another planned ATV special event station - with a difference!
Original report by Heinz Venhaus DC6MR taken from "TV Amateur" the AGAF
journal, This precis English version by Andy Emmerson, G8PTH

Flashback ... Members of the AG-ATV (Bremen University ATV Group) had, under the leadership of DC0BV, already been involved in space experiments since 1985 when they developed the antenna for the Spacelab D1 mission amateur radio experiment. The next year they conceived the idea of an ATV experiment on the D2 mission, although in the event factors ruled against this. Although their chief interest was a full-fledged ATV experiment, they also modified a commercial 70cm hand-held FM transceiver for space operation.

Prospect ... Now at last arose a chance for Europe to turn this ATV-in-space experiment into reality. Within the framework of the SAFEX-II amateur radio experiment on the Russian space station MIR, the Bremen group have the opportunity to take part and provide an ATV link between the station and earth. Between them Thomas Kieselbach DL2MDE and the Russian experts evolved a scheme: In spring 1995 a capsule called *Priroda* will be fired into orbit and docked onto MIR. By this time the following items must be developed, built and tested: 1) the combination 13/23cm antenna, 2) the antenna splitter, (3) a 23cm preamplifier, and (4) the PA for 13cm. Since they will be carried outboard in space, they must be qualified for this environment.

Work, work and more work ... A high degree of effort will be required selecting the most appropriate designs, collecting suitable materials and completing everything by the time deadline. The next step is developing and building three times over the units required for the ATV transponder 'down here'. There are so many possibilities: should the camera be mounted fixed by a window, to view the world from space, or should it be used to provide visible contact with an astronaut (who hopefully speaks English). An even more exciting prospect is making Europe-wide contacts in amateur television, although this will not be all that easy - the flight passage of the spacecraft is such that a pass will last a maximum of 20 minutes and antennas will require constant (motorised) tracking.

Quick tempo ... Time is pressing and the tests must proceed. To support the efforts of the Bremen group there are many opportunities for amateurs, firms and institutes to donate cash, ideas or materials. Donations, marked DL0MIR can also be sent to the German ATV Club account. *(If anyone is interested in donating, details of how to do this can be obtained from me ... Mike)*

BATC MEMBERS' SERVICES PUBLICATIONS

PUBLICATION	EACH	QTY	TOTAL

AN INTRODUCTION TO AMATEUR TELEVISION (255gm)
by Mike Wooding G6IQM & Trevor Brown G8CJS

The latest handbook full of detailed
information on how to set up your ATV
station, plus lots of new video and RF
construction projects. .... 5.00 ....

SLOW SCAN TELEVISION EXPLAINED (275gm)
by Mike Wooding G6IQM

The latest SSTV handbook detailing all the
information you need to enter the fascinating
world of Slow Scan Television: basic principles,
explanations of all the modes to date, commercial
hardware and computer-based SSTV systems. Also
various construction projects for SSTV equipment. £5.00 ....

THE AMATEUR TV COMPENDIUM (155gm)
by Mike Wooding G6IQM.

The BATC handbook featuring construction
articles on video units, 24cm and 3cm ATV,
a Digital Frame Store, and much more. £3.50 ....

THE BEST OF CQ-TV (150gm)
compiled by Mike Wooding G6IQM

A compilation of the best construction
articles from CQ-TV's 133 to 146. £3.50 ....

CQ-TV BACK ISSUES: The following issues
are still available. Please circle those required:
144, 147, 148, 150, 152, 153, 154, 155, 156, 158
159, 160, 161, 162, 163, 164, 165, 166, 167 £1.50 ....
Special Offer: any four back issues £5.00 ....

TOTAL THIS PAGE £...................

PUBLICATION	EACH	QTY	TOTAL

INDEX (40gm)

All main articles in past issues of CQ-TV and seven Handbooks. Including page count, (essential for ordering re-prints)	£1.00	....	....

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Photocopies of any article from past publications are available. Please quote the issue number, page numbers and the article name. Discounts as shown, prices are per sheet:

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CQ-TV BINDERS	£3.50	....	....

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country:	zip/post code:	

MEMBERS' SERVICES

Items from these lists can ONLY be supplied to CURRENT members of the BATC. These lists supercede all previous ones.

We reserve the right to change prices without notice.

QTY	CAMERA TUBES, SCAN COILS, BASES & LENS MOUNTS	EACH £	P&P £	TOT £
1	One inch vidicon scan coils	6.00	1.50	....
2	2/3 inch vidicon scan coils **	6.00	0.95	....
3	One inch vidicon base	1.00	0.30	....
4	2/3 inch vidicon base	0.65	0.30	....
5	C-mount for lens	P.O.A	0.30	....
6	Camera tube	P.O.A	1.20	....

QTY	VIDEO CIRCUIT BOARDS/COMPONENTS	EACH	P&P	TOT
11	Character generator PCB	4.00	0.43	....
12	Teletext pattern PCB	3.00	0.43	....
82	Monochrome pattern PCB	2.00	0.30	....
13	Greyscale/colourbar generator PCB	3.00	0.43	....
14	Colour test card PCB set	15.00	0.70	....
15	TBP2BL22 circle program PROM	10.00	0.30	....
16	PAL colour coder PCB	6.00	0.43	....
17	Character colouriser PCB	5.00	0.43	....
18	TEA2000 colour coder PCB	2.00	0.30	....
19	Video filter PCB	1.00	0.30	....
20	Video processing amplifier PCB	4.00	0.43	....
26	Video level indicator PCB	5.00	0.43	....

TOTAL GOODS THIS PAGE £...............

QTY	VIDEO CIRCUIT BOARDS/COMPONENTS	EACH £	P&P £	TOT £
21	Vision switcher matrix PCB	4.00	0.43	....
22	Vision switcher logic PCB	4.00	0.43	....
23	Vision mix effects amplifier PCB	4.00	0.43	....
24	Wipe effect generator PCB	3.00	0.43	....
25	4 input TEA5114 vision select PCB	3.00	0.43	....
27	A - D and D -A converter PCB	5.00	0.43	....
28	Digital video read address PCB	5.00	0.43	....
29	Digital video write address PCB	5.00	0.43	....
30	Digital video RAM PCB	4.00	0.43	....
31	Digital video backplane PCB	6.00	0.43	....
32	UVC3130-09 A-D and D-A IC	40.00	0.30	....
33	Spectrum user port PCB	3.00	0.43	....
34	Spectrum prom blower PCB	3.00	0.43	....
35	FLEX prom blower PCB	5.00	0.43	....
40	I2C CPU PCB	8.50	0.43	....
41	I2C VDU PCB	8.50	0.43	....
81	I2C 27256 EPROM (quote callsign & mem. no.)	8.25	0.30	....
42	13.875 MHz crystal	4.00	0.30	....
43	SAA5231 genlock IC	7.50	0.30	....
44	SAA5243PE Teletext IC	12.50	0.30	....
45	PCF8583 clock IC	6.00	0.30	....
10	I2C relay PCB	5.50	0.43	....
9	PCF8574A Input expander IC	4.00	0.43	....
36	I2C video switch PCB	7.50	0.43	....
37	GX414 video switch IC	7.50	0.30	....
38	PCF8574P input expander IC	4.00	0.30	....
39	LM1881N Sync separator IC	3.00	0.30	....

TOTAL GOODS THIS PAGE £...............

QTY	RX, TX AND SSTV PCBS/COMPONENTS	EACH £	P&P £	TOT £
46	4 rail power supplies PCB	3.00	0.43	....
47	70cm downconverter PCB	9.00	0.30	....
83	70cm ATV transmitter PCB	12.50	0.43	....
50	108.875 MHz crystal	7.00	0.30	....
51	ATV up converter PCB**	2.25	0.30	....
52	Amateur television AM IF PCB	1.50	0.30	....
53	FM TV demodulator PCB	3.00	0.43	....
54	24cm GaAsFET converter PCB	3.50	0.43	....
84	24cm ATV receiver PCB	14.00	0.43	....
87	ASTEC AT2352V module	45.00	0.90	....
	Items 84 and 87 **only** supplied as a set			
88	XR215 phase lock loop IC	3.00	0.30	....
85	24cm ATV transmitter PCB	15.00	0.43	....
86	24cm solid state amplifier PCB	8.00	0.43	....
55	Gunn diode modulator PCB	2.50	0.30	....
56	10GHz head unit PCB set	2.50	0.30	....
57	Tunable if PCB	2.50	0.30	....
58	6MHz audio subcarrier generator PCB	2.50	0.30	....
59	G3WCY SSTV scan converter PCB set	10.00	0.65	....
60	G4ENA colour etc. SSTV mods PCB set	5.00	0.43	....
61	G4ENA SSTV transmit mod to WCY PCB	6.00	0.43	....
62	G4ENA auxiliary PCB	2.00	0.30	....
63	SSTV sync and pattern gen PCB	3.00	0.43	....
64	SSTV spg/pattern 2732 EPROM	12.00	0.30	....
65	MC1445 gated video amplifier IC **	3.50	0.30	....
66	TEA2014 video switch IC	1.10	0.30	....
67	TEA5114 video switch IC	1.50	0.30	....

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QTY	STATIONERY & STATION ACCESSORIES	EACH £	P&P £	TOT £
48	13.14 MHz crystal	5.00	0.30	....
68	4.433618 MHz crystal	2.75	0.30	....
69	5.0 MHz crystal	2.75	0.30	....
70	6.0 MHz Teletext crystal	1.50	0.30	....
71	BATC diamond buttonhole badge	0.40	0.30	....
72	BATC round lapel badge	0.50	0.30	....
73	BATC blue diamond clutchpin badge	1.50	0.30	....
74	BATC cloth badge	3.50	0.30	....
75	BATC equipment label (6)	0.20	0.30	....
76	BATC square windscreen sticker	0.10	0.30	....
77	Set of ferrite cores for VSB TX	0.20	0.30	....
	ZERO RATE VAT ITEMS			
78	BATC test card	0.50	0.43	....
79	BATC reporting chart	0.12	0.43	....

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VIDICONS

1'' vidicon tubes are available in different heater ratings (95 and 300mA) - 6'' long; 2/3'' tubes have 95mA heaters). These tubes are all of separate mesh construction, with magnetic focus. Tubes available to special order include electrostatic focus or deflection, and low light types not previously available to club members. Prices vary depending on the size, type and grade of tube. A tube guide appears in CO TV 149 and 150. Please contact Members Services for further information. The stripe filter tubes used in domestic type colour cameras are not available through BATC, and normally must be ordered direct from equipment supplier. Members requesting information on prices or other types of tube or equivalents are asked to send a stamped, addressed envelope for their reply.

CIRCUIT DETAILS can be found as follows:

Revised ATV Handbok: PCBs 7, 17, 21, 22, 23, 24, 53, 63
Amateur TV Handbook (vol.2): PCBs 52
An Introduction to ATV: PCBs 10, 18, 25, 40, 41, 36, 47, 82, 83, 84, 85, 86
TV for Amateurs: PCBs 19, 49, 51
Slow Scan TV Explained: PCBs 59, 60, 61, 62
Amateur TV Compendium: PCBs 11, 12, 27, 28, 29, 30, 31, 54, 55, 56, 57
Micro and TV projects: PCBs 14, 33, 34
CQ-TV(xxx): PCBs 13(128), 16(134), 20(130), 26(142), 35(143), 58(139)
Item 46 is supplied with circuit details, etc.

Members of the BATC Committee are available to help and advise Club members on any ATV related subject. Please remember that all Club work is done in spare time, so please try to keep such queries to a minimum.

CQ-TV MAGAZINE - Anything destined for publication in CQ-TV or forthcoming publications; articles; review items; advertisements; other material. EDITOR: MIKE WOODING G6IQM, 5 Ware Orchard, Barby, Nr.Rugby, Warwickshire, CV23 8UF. Tel: 0788 890365 (Answerphone); Fax: 0788 891883.

CLUB AFFAIRS - Video tape library; technical queries, especially related to Handbook projects: TREVOR BROWN G8CJS, 14 Stairfoot Close, Adel, Leeds, LS16 8JR. Tel: 0532 670115.

MEMBERS' SERVICES - PCB's; components; camera tubes; accessories; etc., (other than publications). PETER DELANEY G8KZG, 6 East View Close, Wargrave, Berkshire, RG10 8BJ. Tel: 0734 403121.

MEMBERSHIP - Anything to do with membership, including new applications; queries and information about new and existing membership; non-receipt of CQ-TV; subscriptions; membership records; data protection. DAVE LAWTON G0ANO, 'Grenehurst', Pinewood Road, High Wycombe, Bucks., HP12 4DD. Tel: 0494 528899.

GENERAL CLUB CORRESPONDENCE & LIBRARY - Any general Club business. Queries relating to the borrowing or donation of written material. PAUL MARSHALL G8MJW, Fern House, Church Road, Harby, Nottinghamshire, NG23 7ED. Tel: 0522 703348.

PUBLICATIONS - Anything related to the supply of BATC publications. IAN PAWSON G8IQU, 14 lilac Avenue, Leicester, LE5 1FN. Tel: 0533 769425.

EXHIBITIONS & RALLIES - Also arrangements and information about lectures and talks to clubs; demonstrations, etc. PAUL MARSHALL G8MJW (address above).

CLUB LIAISON - And anything of a political nature; co-ordination of ATV repeater licences. GRAHAM SHIRVILLE G3VZV, The Hill farm, Potsgrove, Milton Keynes, Buckinghamshire., MK17 9HF. TEL: 0525 290 343.

CONTESTS - RICHARD GUTTRIDGE G4YTV, Ivy House, Rise Road, Skirlaugh, Hull, North Humberside, HU11 5BH. Tel: 0964 562498.

BATC TELEPHONE BBS SYSOP - Brian Kelly GW6BWX, 12 Cotswold Way, Risca, Gwent, NP1 6QT. Tel Voice: 0633 614376; **Tel BBS: 0633 614765**

CQ-TV AWARDS - BOB WEBB G8VBA, 78 Station Road, Rolleston-on-Dove, Burton-on-Trent, Staffordshire., DE13 9AB. Tel: 0283 814582

SATELLITE TV NEWS - PAUL HOLLAND G3TZO, Chatterton, Chapel Lane, Threapwoon, Nr.Malpas, Cheshire, SY14 7AX. Tel: 0948 81429.

TV ON THE AIR - ANDY EMMERSON G8PTH, 71 Falcutt Way, Northampton, NN2 8PH. Tel: 0604 844130.

Where possible, it is better to telephone your query rather than write. Please do not call at unsocial hours. As a guide, try to call between 1830 and 2130, and not before 1130 at weekends ... Thank you.

Camtech Electronics New Products

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Fun & Frustration of Home Construction

Graham Hankins G8EMX

I am no stranger to the gentle art of Project Building. Audio amplifiers, FM tuners, two colour TV's (Wireless World, "Television" mag years ago), Wood and Douglas RF kits, two Worthing 24cm transmitters - I could go on! A true "kit" of course comes with everything needed to create a working circuit - pcb, R,C,L, Semicon et all. That is the Fun bit. Other projects just supply the pcb, paperwork, diagram and parts list - sourcing ALL the required components is usually where the Frustration comes in! I'm currently "working" on three assemblies; the G7MRF Amateur Test Card Generator (Stoke Repeater Group), the BATC 24cm receiver and the Trevor Brown/Chris Smith EPROM Programmer. Armed with catalogues from Maplin, Mainline, Cirkit, Bonex, Marco, RS Electromail (3 books!) here I go! (No, haven't got Farnell - maybe I should)

'MRF Test Card Generator: This one's fairly straightforward. The documents give Maplin Order Numbers for crystals, coils etc and RS Stock Numbers for the IC's. But RS don't supply the amateur direct, their retail mail order outlet Electromail does. You could get the IC's from Maplin, EXCEPT the 74LS169. I find a supplier who lists ALL the IC's and order from them.

24cm Receiver: I order the Astec module as soon as my CQ-TV arrives. It includes the PCB, the Club also supplies the Audio IC. The Components List is back in CQ-TV 161, Feb.1993. Written by committee member Bob Robson GW8AGI. The Parts List has a Package Column - oh dear, some very strange things here! What is C 1206-1? Meaningless to me. I interpret Cap-Rad 5M as a Radial Capacitor with a 5mm lead spacing. The rest I work out eventually. Then search the cats. for the bits. Ah! I've just found some small multi-turn presets with STAGGERED leads (RS Electromail) to fit the board (side-adjust or skeletons couldn't be used, because the board layout would prevent you turning them) Hang on though - they only list a 20k, not a 22k as called for.

Now I'm well aware that a 20k will very probably be adequate because a good design should not need variable components to be set near the extremes of their range. My point is that a 22k, with staggered leads, must have been originally used, to be specified. Where from or is the value discontinued?

Eprom Programmer: Just what I need! Programming 2732 EPROMs (as used in the above Test Card Generator) via a PC. This is the REALLY interesting one, 'cos I'm going to have to open up my machine! I have NEVER programmed an EPROM - but don't want to keep paying to have it done, also want to be able to change at

will. When I receive the programme disc I'll get the Maplin I/O kit - meanwhile there is Trevor's circuit in the mag. Two components are a mystery - a 1.1 volt zener and a 21 volt regulator? None of the cats. list either! The lowest zener is 2.4v and regs. jump from 18v to 24v. RS list a 1.2v Precision Bandgap Voltage Reference, but not a 21v reg. The drawing clearly shows a single device, not a lower voltage raised or an adjustable. So, send a message to Trevor via the BBS, meanwhile keep looking (at my bank balance!), ordering and building! This is harder work than being AT work! But it is all good fun, really!

SATELLITE TV NEWS

Paul Holland G3TZO

These balmy (or is it barmy ?) days of summer are perhaps not the best time for being indoors scouring the Clark Belt for new and unusual Satellite TV signals. However, even as you read this edition of "Satellite TV News" the satellite industry is once again gearing itself up for the launch of new satellites. In this edition I will look forward to the launch of Eutelsat's renamed "Hot Bird 1", Intelsat 702 also Astra 1 D and reflect back on all the goodies and gossip to be found at this years Cable & Satellite Show held at Olympia back in April.

ASTRA 1D

The launch of ASTRA 1D is now scheduled for launch from late September onwards. Much will depend on the success of Arianespace in overcoming delays to their launch programme following the disaster affecting Eutelsat II F5 and Turksat 1 back in January. For those who have not seen it elsewhere I am including a list of transponder frequencies and a profile of the ASTRA 1D spacecraft.

Transponder frequency plan

Horizontal		Vertical	
Tp 49	10.714 GHz	Tp 50	10.729 GHz
Tp 51	10.743 GHz	Tp 52	10.758 GHz
Tp 53	10.773 GHz	Tp 54	10.788 GHz
Tp 55	10.802 GHz	Tp 56	10.817 GHz
Tp 57	10.832 GHz	Tp 58	10.847 GHz
Tp 59	10.861 GHz	Tp 60	10.876 GHz
Tp 61	10.891 GHz	Tp 62	10.906 GHz

It should be borne in mind that the prime mission of ASTRA 1D is to provide back up for the existing ASTRA's 1A,1B & 1C as well protection in the BSS band for ASTRA 1E when that is launched in 1995. It therefore will provide capacity for only 14 additional analogue services to the existing 50 channels provided by the existing ASTRA's.

Satellite Profile

Launch Vehicle	: Ariane 4 (due 4th quarter 1994)
Launch Site	: Kourou French Guyana
Launch Mass	: 2760 Kg

Manufacturer	: Hughes (HS601 platform)
Location	: 19.2 Deg E.
Lifetime	: 13 years nominally
Power consumption	: 3.3 kw
Transponders	: 18
TWTA output power	: 63 W Nominal
EIRP	: 52 dBW
Transponder B/W	: 26 MHz in FSS band,36 MHz in BSS band.

EUTELSAT HOT BIRD 1 (Eutelsat II F6)

Eutelsat have renamed the planned "Hot Bird" and Hot Bird Plus" satellites as HOT BIRD 1 and HOT BIRD 2 respectively. Planned to launch on an ARIANE 4 vehicle in October or November HOT BIRD 1 will be co-located with Eutelsat II F1 at 13.0 Deg E. Among the many special features of Eutelsat II F6 is the satellite's increased power. In comparison to the 50 watt TWT amplifiers which are used on the existing Eutelsat II series satellites Eutelsat II F6 is equipped with 70 watt TWT amplifiers. This extra power will be used to strengthen coverage over the entire European continent as far as Ireland and Portugal in the West and to the Ukraine and Turkey in the East. These four corners of the continent are all within the satellite's central 49 dBW contour. This translates to an antenna size of 80 cm. The increased power will effectively give "Superbeam" power levels over the entire "Widebeam" coverage area provided by previous series II craft . This new beam will, ingeniously, be called "Super Widebeam" ! Eutelsat II F6 will operate in the range 11.2 GHz to 11.55 GHz filling the gap between the 10.95 - 11.2 and 11.55 - 11.7 GHz frequency bands used by Eutelsat II F1. Eutelsat II F6 will have 16 transponders each with a bandwidth of 36 MHz.

HOT BIRD 2

Eutelsat has chosen Matra Marconi Space to build its second "Hot Bird" to be located at 13.0 deg E. The launch is planned for the summer of 1996.Hot Bird 2 will have 20 transponders with 110 watt TWT amplifiers.

There are two footprint options. The Superbeam covers the whole of Europe with an EIRP of 54dBW enabling reception across the continent with a 40cm antenna. The Widebeam footprint covers from Russia to the Canaries and a large chunk of the Middle East. Each transponder can switch coverage patterns and will operate in both the FSS (11.45GHz - 11.7GHz) and BSS (11.7 GHz - 12.5 GHz) frequency bands.

Primarily designed for digital TV, Hot Bird 2 will bring the total TV channel capacity to over 200 at this orbital location.

Intelsat 702

June should have seen the successful flight of Arianespace V64 which carrying Intelsat 702 via an Ariane 44LP launch vehicle. The initial launch on June 4th was aborted with 1 second to go due to problems with a faulty fuel arm. The new launch date was not available at the time of writing. Intelsat 702 will take up station at 1.0 deg W replacing Intelsat 512 which moves to 21.5 Deg W. The provisional Ku band transponder allocation is as follows:

Horizontal		Vertical	
Tp 61	11.016 GHz	Tp 71	10.969 GHz
Tp 62	11.096 GHz	Tp 72	11.054 GHz
Tp 63	11.176 GHz	Tp 73	11.133 GHz
Tp 65	11.555 GHz	Tp 75	11.478 GHz
Tp 69	11.679 GHz	Tp 79	11.597 GHz

Tp 61 is allocated to TV Norge (TVN) currently carried by Intelsat 512.

EUROPEAN PROJECT FOR DIGITAL BROADCASTING

Members of the European Project for Digital Broadcasting (DVB) formerly known as the European Launching Group were due to reach agreement in late June on the question of access control and encryption for pan European digital DTH satellite services which will appear in 1995.

With the MPEG 2 digital compression standard already agreed the question of how encryption will be implemented is the only issue as yet unresolved. The issue is not just technical but is impacted by the attitudes of both national governments and the EC who are all seeking to break the stranglehold on European encryption that both Canal Plus and News Datacom currently have through their Eurocrypt and Videocrypt systems.

FROM THE POST BAG

Paul Godfrey, G8JBD, has written in giving advise on an inexpensive modification to his UNIDEN UST 8008 in order to receive signals below 10.95 GHz.

Paul says.. " at a rally last summer I purchased a Uniden UST 8008 ASTRA satellite receiver. These units do not tune below 950 MHz so RTL 5 and FilmNet the Movie Channel are out of reach. I checked the tuning volts and found that 2 volts was required for 950 MHz so I fitted a 470 k preset plus switch and fed this from a regulated 6 V supply available inside the receiver. Following adjustment RTL 5 and FilmNet are now available. About 1 V tunes RTL5 ".

Paul has also been experimenting with a converted Philips BSB receiver and has been observing the fairly low level of activity on TDF and TV Sat at 19.0 Deg W.
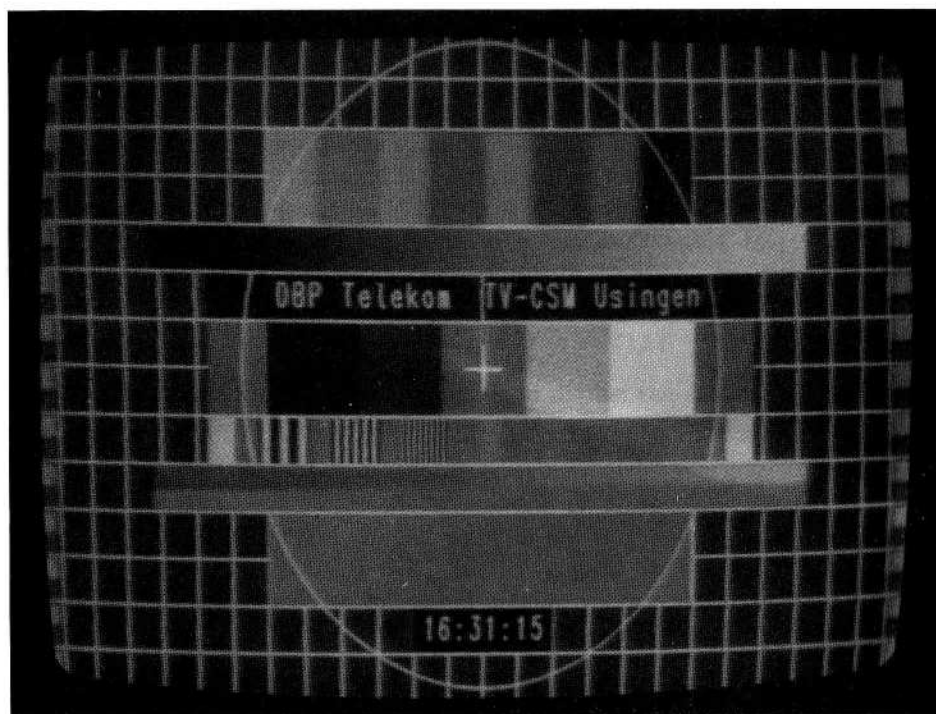
Paul's photographs show a Deutsche Bundespost Telekom test card originating from the DBP's earth station at Usingen and show the effect of switching from 4:3 to 16:9 aspect ratio on a widescreen format picture.

Robert Littlewood, G4YET, has dropped me a line asking for information on how to receive Secam signals from Telecom 2A and 2 B at 8.0 and 5.0 Deg W respectively. Robert says .."I know that commercial Secam to Pal transcoders are available but consider the prices to be excessive. I have identified at circuit for a Mullard chip TDA3592A in the Newnes Television & Radio Pocket Book. My receiver is a Discus Elipse which has a synch separator and H & V pulses for the on screen graphics but no "sand castle" pulse which the TDF3592A requires. The circuit also requires a PAL/PAL (invert) signal (pin 13) which normally comes from the decoder...". Can anyone help Robert make use of the circuit he has found in conjunction with the Discus Elipse receiver ? Robert can be contacted on 0724 764416.

SWISS CHANNEL

A new Swiss channel called CINEVISION is planning to launch on an, as yet unnamed, Eutelsat satellite providing a 24 hr film channel broadcasting films in English,French,German,Italian and Spanish. The planned encryption is Videocrypt 2 which would indicate a launch later this year or early next to take account of the availability of Videocrypt 2 decoders/IRD's which are not expected to be available in any volume until about this Autumn.

AMERICAN CHANNELS

Three American channels may be planning European launches later this year. Probably designed as cable only services the channels are Black Entertainment TV, The Outdoor Life Channel and the Parents Channel.

Tele 55

A new French 24 hr news, information and general entertainment channel is promised to be launching shortly. According to rumours from France the service may use either Eutelsat or one of the Telecom satellites.

TRANSPONDER REPORT

Eutelsat I F4 25.5 Deg E.

ITN has taken a full time lease on Tp 1 10.972 GHz (H) for satellite news gathering.

ASTRA 1A,1B,1C 19.2 Deg E

September 1st has been mooted as the probable date for the launch of the music channel VH1 which will use Tp 15 on ASTRA 1A. It is possible that MTV will start encryption using both Videocrypt's 1 and 2 before the end of the year on Tp 22. Eurosport has moved from ASTRA 1A to ASTRA 1C to pre-empt overheating problems on ASTRA 1A. The frequency remains the same but the footprint will now extend to mainland Spain. The German channel VOX was finally due to close down in late June in favour of RTL 3, another German general entertainment channel, which will launch using the same Cologne studio and uplink facilities. RTL 5 on Astra 1C is now using Luxcrypt encryption on imported programming.

Eutelsat II F3 16.0 Deg E.

TV7 Europe has launched on this satellite. It broadcasts in clear PAL in English between 1400 - 1600 BST during the week and until 1800 on Sundays. TV7 uplinks from Hilversum on TP 32 11.554 GHz (H) which it shares with the D2MAC Eurocrypt service of TV Plus. Look out for a new Asian service called Global Satellite Television which started testing in late June on Tp 25, 10.987 GHz (V).

Eutelsat II F1 13.0 Deg E.

BBC World Service Television has announced plans to provide an enencrypted 24 hrs news channel which is due to appear in the Autumn. The channel will be supported by advertising and may await the arrival of Eutelsat II F6 before launching.

With the launch of Eutelsat II F6 some of the existing services on Eutelsat II F3 will transfer. Although many of these are not yet named it is likely that a number of new services will appear. Amongst the newcomers will be RTL 7, a private Polish general entertainment channel.

Eutelsat II F2

World Tamil Television was reported to be moving to this satellite from Eutelsat II F3.Check 11.595 GHz (H). Look out for a new Spanish rolling news station called Cinco Todo Noticias using Tp 22 widebeam. This half transponder operation could affect received signals from TVE International which currently uses the full transponder.

SIRIUS 5.2 Deg E

The arrival of Marco Polo 1 now renamed Sirius at this location will see the transfer of services from Tele X together with the introduction of new services at this orbital location. For those like myself using triple band LNB's with 950 MHz - 1750 MHz receivers it is possible to fill the gap in coverage through the use of the Global ADX frequency extender. The use of the ADX device, primarily aimed at ASTRA 1D reception, has revealed healthy carriers from Sirius, but as I write, I have not spotted any video.

Tele X 5.0 Deg E.

The operators of Tele X, the Swedish Space Corporation, are still experiencing overheating problems with this satellite. It is likely that Tele X will be switched off following the successful transfer of services to Sirius.

Intelsat 702 1 Deg W.

At the time of writing no signals have been received from Intelsat 702 to indicate a transfer of traffic from Intelsat 512.

Telecom 2B 5.0 Deg W.

July was scheduled for the launch of TF1's dedicated news channel called "LA CHAINE INFO". The channel will transmit on 12.543 GHz (H), initially in the clear in Secam, but will change to D2Mac using Eurocrypt in mid September. Plans are eventually to move the service to a digitally compressed link from Telecom 1C at the end of the year.

Stat 11/Gorizont 11 11.0 Deg W.

The Czech channel Cable Plus on 11.525 GHz (RHC) has commenced partial encryption using Videocrypt 2. The channel can be observed from about 17.30 till midnight daily.

Hispasat 1A & 1B 30.0 Deg W

All five services have now launched on HISPASAT 1B. Transponder allocations are as follows;

Tp 23   12.149 GHz   (RHC)   Teledeporte
Tp 27   12.226 GHz   (RHC)   Canal Classico
Tp 31   12.383 GHz   (RHC)   Canal Plus Espana
Tp 35   12.380 GHz   (RHC)   Telesat 5
Tp 39   12.456 GHz   (RHC)   Antena 3

All channels use 6.69 MHz for mono sound and will encrypt about now in Nagravision.

CABLE & SATELLITE 94

Only a cursory glance around Olympia back in April was necessary to see which way the wind is blowing in the Satellite TV industry. The move is clearly to a more controlled environment with digital compression, cable services and encryption ensuring that the skies of the future will reveal little programming available if not paid for in one way or another. It may be as long as 10 years before the current free to air analogue services bite the dust but the economics of satellite delivery will dictate that things must change.

On the NTL stand

NTL, formerly the IBA, provided a centrepiece for the show with their demonstrations of digital compression using both MPEG 1 and MPEG 2. There were two live demonstrations using Eutelsat II F1 that demonstrated how bandwidth economies can be achieved. In the first demonstration a standard Eutelsat 36 MHz transponder was utilised to carry a normal PAL video and sound feed using 27 MHz of the transponder.

A digital service carrying the same feed and occupying the remaining 9 MHz of the transponder revealed subjectively equal quality with no degradation to the analogue service. Frequency division multiplexing in this way could allow a number of digital Satellite News Gathering (SNG) crews to utilise one transponder from different locations.

In the second demonstration NTL demonstrated the robustness of incoming video when the amount of digital compression was varied. Distortion in digital "speak" is manifested in visual artifacts. Starting at 12 Mbit/s the bit rate was gradually

reduced to 1.5 Mbit/s. For most people who watched the demonstration the appearance of significant artifacts only became apparent at 1.5 Mbit/s and only then on pictures which were characterised by very rapid changes.

In theory four 8 Mbit/s or twelve 2 Mbit/s services would use the bandwidth currently occupied by one analogue FM service. In practice it is likely that a combination of compression rates will be used. At a frame rate of 25 Hz a bit rate of between 5-12 Mbits is recommended for source resolution of 704 pixels x 576 lines. A bit rate of 2-4 Mbits is recommended for a source resolution of 352 pixels x 288 lines.

Co-operation between NTL and PACE which was evident at the show should mean that a domestic MPEG 2 receiver will be available in time for the launch of ASTRA 1E.

Does this mean we may have to use MPEG 2 on 70 cm in the near future !!

On the Amstrad stand

Amstrad made much on their stand of the need for wide band receivers to cover Astra 1D when it launches. The basic mathematics are that for reception of ASTRA's 1A - 1D, i.e. 10.7 GHz - 11.7 GHz using a standard 950 MHz to 1700 MHz tuner you must use either an LNB with a LO freq of 9.75 GHz or a frequency converting device such as the Global ADX.

If you use a receiver with a tuning range of between 700 MHz to 1700 MHz then a standard 10.0 GHz LNB will do. For DBS and Telecom reception a tuner covering 700 MHz to 2050 MHz is necessary.

Amstrad, not surprisingly, were making much of their new range of receivers such as the SRD's 540,545 and 550 which cover the wider range.

CONCLUSION

Well that's it for this edition. Thanks for your letters and please keep writing. By the time I get around to writing the next edition of "Satellite News" I hope to be able to reflect on a crop of successful launches. If not, I might take up deep sea diving - there will be some very nice hardware down there somewhere !

Satellite TV News is a Paul Holland production !

Paul Holland G3TZO, Chatterton, Chapel lane, Threapwood, Nr.Malpas, Cheshire, SY14 7AX

An Intercarrier Sound Generator

John Cronk GW3MEO

This circuit has its origins in an article in March 1977 QST was refined by G3YQC and GOGSA in CQ-TV 139. As they comment, the usual Colpitts oscillator plus varicap has become almost standard, and although functional for speech, to achieve sufficient linear deviation at 6 MHz is difficult.

I built the circuit in CQ-TV 139 using discrete transistors and found a couple of problems which led to the development of the circuit shown in Fig.1.

Using 2N2222 transistors, the circuit in CQ-TV 139 failed to oscillate when the audio section was connected to TI. The base of TI was found to be live to RF.

The emitter coupled oscillator (T1 and T3) can be recognised as a Butler circuit if the base of TI were grounded to RF. When a bypass capacitor was fitted oscillation became reliable.

The QST article says the current through L1 produces a magnetic flux which reduces the effective inductance of the resonating coil L2. The relative phase of the winding L1 has no effect on the operation of the circuit. So it seems logical to apply the audio to T2 which, although still emitter coupled to TI, takes no direct part in the oscillation. The zener diode used in the QST circuit, improves the stability to changes in the supply voltage. The decoupling and output buffer have been simplified, thus reducing the component count. The graph of frequency against DC applied to the base of T2 shows a remarkable characteristic that needs no comment.

My simple microphone amplifier also has a low component count. The 0.1pF (0.07lpF calculated) coupling capacitor and base components of T2 give the 50µs pre-emphasis.

The whole circuit although slightly complex, has a very good quality modulation characteristic.

CCIR specified requirement

Unmodulated sound carrier 5.9996 MHz ±500 Hz
Modulating AF not to exceed 15 kHz.(40 Hz to 15 kHz)
Peak deviation ±50 kHz
Pre-emphasis with a time constant of 50µs
Peak vision to sound carrier ratio 5:1 (refers to asymmetrical AM)

Fig.1: Circuit of the Intercarrier Sound Generator
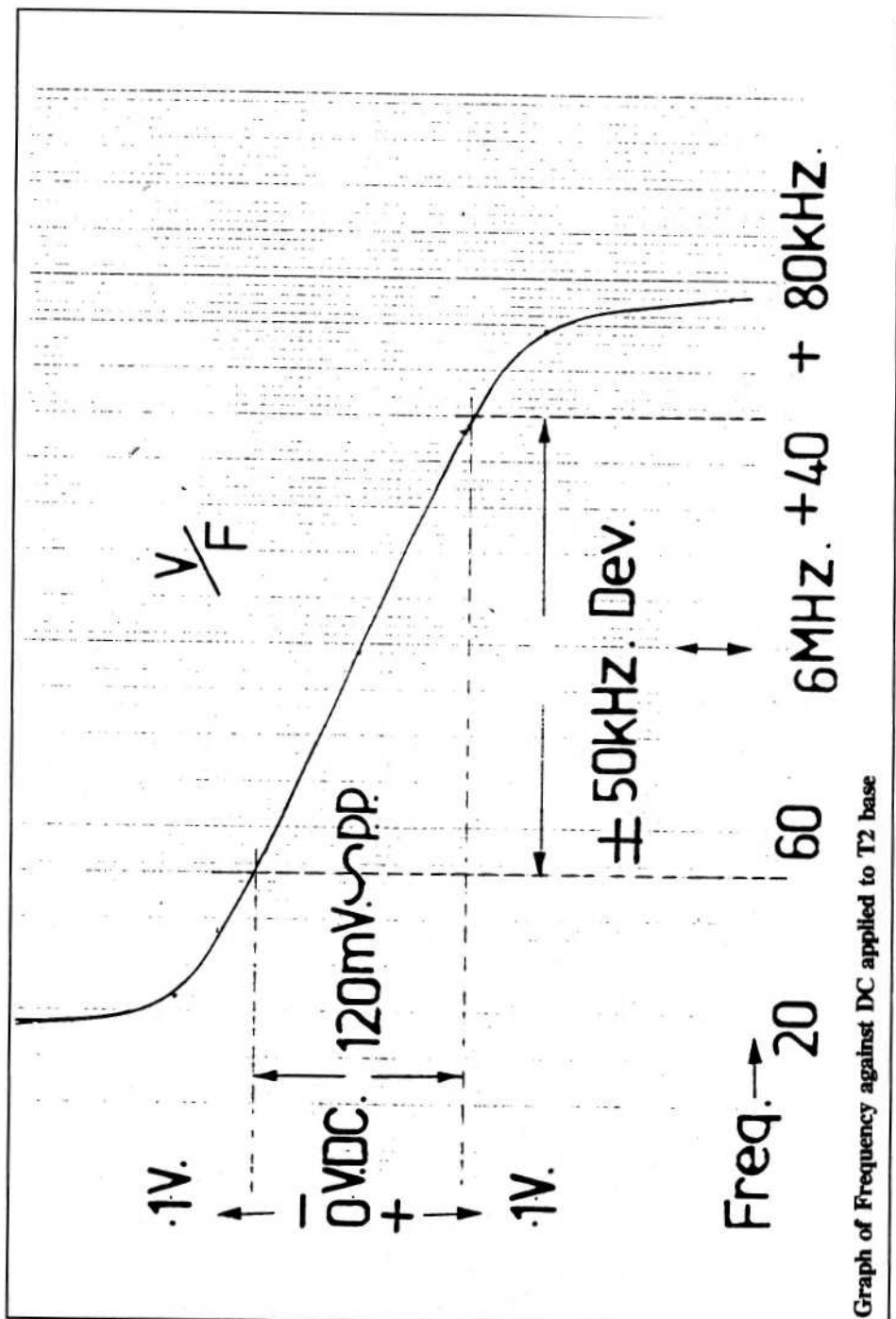
Graph of Frequency against DC applied to T2 base

TV on the AIR

Andy Emmerson G8PTH

Last time I was saying that rumours of my apparent resignation were somewhat exaggerated and this time Arthur G5KS says the same applies to activity on 70cm and slowscan.

ATV LIVES!

"I can convince you neither 70cm ATV nor slowscan has dried up here in the West Midlands. First of all there is a regular 70cm net on Sundays and Tuesday evening; this includes the following stations. G5KS, G1TBL, G1JZJ, G4WJJ, G4EUF, also G0AZX. On slowscan I am on four nights a week with a Robot 1200C (colour and modified EPROM), so you can see neither of the activities has dried up in the Midlands. I am also active on 24cm and would like to hook up with stations on simplex. PS: My early ATV callsign was G6AFV/T as well as G5KS."

Thanks for this Arthur, it is good to know there is still activity out there. But I must say, unless people make it known then it is no wonder that newcomers to ATV and people outside our hobby think amateur television activity is stagnant. Just think: if you were getting into the hobby, how would YOU know anything about amateur television? Even if you already had two metres and knew that the ATV calling channel was 144.75MHz, I bet you could listen many times and hear nothing if you didn't know when the activity periods were? It's only by regular exposure by the printed word that the average person comes to hear about amateur television. We really are our own worst enemies for not spreading the word more, and there are plenty of other people who would willingly grab our frequencies, whether for more packet radio or for business radio. I make no apology for repeating the message: use it or lose it! And while you're about it, send in a message to this column about activity in your area.

DIY LIVES TOO

A letter from Dick G4RRX in Norwich was prompted by the surprise of seeing his shack pictured in Practical Wireless. Dick is one of the brave types who built an I2C system from the printed circuit boards and designs published by the BATC in CQ-TV magazine. The 'shack view' picture shows the RGB monitor he uses in connection with this project and below that the Robot 1200 clone he hand-built (using wire wrapping techniques) over a period of 12 months.

"The small monitor and tidy cables are part of the two-wire bus video switcher and I2C keyboard project. The bottom monitor belongs to the PC that controls the Robot 1200, whilst the test card seen above the frequency counter is coming over the air from GB3LO, the Lowestoft ATV repeater."

The other 'scenic' picture shows the rest of the shack. The small monitor at centre top takes pictures from a homebrew Meteosat weather satellite system and provides a video output for use on amateur television. Dick also has a home-built G3WCY/G4ENA slowscan transceiver which has been adapted for 12V working to allow fully mobile operation! This can be seen next to the video recorder.

SLOWSCAN RECORD

"The last photo is a QSL card I received from VK when I was working SSTV mobile Ä is this a record?!? When Keith VK3AIH called me I thought he said DK but was surprised when he corrected me and said 'no, VK'. I worked him three times that week (September 1990). My equipment was FT-757GX transceiver with Palomar 400 watt amplifier, with a homebrew five-band bottom-loaded whip antenna on a Land Rover. SSTV equipment was the G3WCY/G4ENA setup, a 12-volt black and white monitor, plus a 12-volt video camera giving live pictures. All the equipment was in the back of the Land Rover and I was passenger (no, I wasn't driving!) travelling about 70km/h (45 mph). 73 and I hope this is of some use for the article."

Great stuff, Dick. We'll stand by for anyone who wants to dispute this world record but I suspect it will not be beaten. Does anyone else want to claim a record or 'first'? The zanier the better!

REPEATER NEWS

Graham Hankins G8EMX sends us the latest Birmingham ATV Repeater Project News, dated May 1994

"From famine to feast! Following my letter in a recent issue of RadCom, I have now received three offers of possible sites for the repeater!

"The first - and the one currently under discussion - came from two postgrads at the University of Birmingham. A meeting with them was hastily arranged and we were shown onto a roof at the campus. VERY favourable, affording open views in most directions (if the university agreed to lower the clock tower about twenty feet, even better, hi!). Since then, several phone calls and packet messages have been exchanged and it looks very likely that a test transmission will soon be on-air.

"Meanwhile, the other two site offers will not be ignored - it is always possible they may be even better! One is from the controller of a PMR mast, the other from the manager of a nursing home, himself licensed, who has loft space. At the moment I

am building the BATC 24cm receiver - very nice PCB - and the NEW Test Card Generator - very nice PCB too - designed by G7MRF of the Stoke ATV Repeater Group. This is based on the Cropredy design but incorporates a colouriser and a tone generator on the one board. When I can programme my own EPROMs (at the time of writing I am awaiting a disk from Chris Smith) this should give me a lot of quick flexibility to output different location information in vision.

"The ATV demo. planned for the Midland ARS is still to go ahead. A 24cm corner reflector has been erected and I tried to receive a genuine off-air signal from Arthur G5KS, but without success. Maybe the test signal will penetrate the Jewellery Quarter? So, how will you know when a Video test is on air? Undecided as yet, several options are available - 144.750, packet, the video nets on Sunday and Tuesday, RSGB News, letter. By whichever is appropriate, you WILL be informed!"

FREQUENCY MANAGEMENT

It is easy to forget that we amateurs share our allotted bands with various prime users, even if we never encounter their signals. In many cases, however, their equipment is affected by our amateur transmissions and sometimes we amateurs have to shift these to accommodate the professional users.

Thus it was that when GB3XT, the Bristol ATV repeater and GB3UD, Stoke on Trent, requested auxiliary vision inputs on 10.250GHz, these apparently harmless applications were declined by the prime user of the band (don't ask me who this is!). In the event the input frequency allocated for Bristol is 10.280GHz and for GB3UD is 10.300GHz. In both cases the output is 10.150GHz. The frequency bands 10.250 to 10.270 and 10.360 to 10.400GHz must not be used for repeater inputs in Britain and it is also worth noting that the frequency 10.300GHz is used for airport surface movement radar and should be avoided for amateur use. Police equipment also uses the band 10.25 to 10.26GHz apparently, so you should avoid putting your transmissions inside this sub-band.

DOES THE TEAM THINK?

Clive G8EQZ reports that some enterprising ATVers found a new use for their hobby on Thursday 19th May. A live amateur television link was used to connect the Bridlington and Hornsea amateur radio clubs, enabling them to hold their annual quiz over the air. Some slick changeover operation on this simplex link enabled the questionmasters at each end to set their posers and then see the reaction of the opposing team.

Path length was about 15 miles across Bridlington Bay and 20-watt transmitters and 48-element loop yagi antennas at each end gave first class results. The setting up was done on 144.750MHz, thereafter all contact was on 24cm. All participants were

licensed amateurs, the questions were set by G4IGY and the result: Bridlington won, by 12 points to 10. Thanks for the info, Clive.

SCOTTISH REVIVAL

Simon Lewis GM4PLM writes with good news from Caledonia.

"I am writing on behalf of the Central Scotland FM Group (CSFMG) which I see from past issues of CQ-TV was affiliated with the BATC some years ago. We would like to renew our affiliations with the BATC with a view to putting GM back on the ATV map so to speak!

"I have been assigned (suckered!) by the CSFMG committee, on which I serve as special projects manager, to renew, relocate and rebuild the Glasgow television repeater, GB3GT. GB3GT has been off-air for some years now and suffered from a distinct lack of support from its keeper those years back. However, there is new blood on the committee and his interest is ATV(!) and I and a number of others would like to see GT back on air. The committee have asked me to resurrect this project with a view to getting the repeater back on air. A new team of three has been assigned to the project with myself as project manager and we have the backing of the committee to get things moving again. Which is why we wish to be re-affiliated.

"Although I was heavily involved with 70cm video some years ago, I was never involved with the 23cm video scene here in Glasgow. However, I have around 15 people who are either QRV or plan to be QRV on 23cm video shortly. This includes four novices and two trainees who are currently studying for their licences. With some support from myself and others I am sure we could swell that number, especially if the mode was demonstrated at rallies across Scotland. TV in any guise seems to be a rather forgotten mode in GM.

"I will keep your committee updated with our progress and I hope that this renewal of interests with be beneficial to both the BATC and the CSFMG.

"P.S Thanks for a great rally! Really enjoyed the day out at Ryton -worth driving down from GM. See you next year! Same place please!"

NEWS FROM KENT

From Belvedere (and that's definitely in Kent) a letter from Ian Vincent G4MLY, who is secretary of the Kent Television Group. The Group's newsletter has expanded, with lots of interesting news. From this I note their committee has been examining a new site on the Isle of Sheppey which was discovered by Andy G8SUY. The site is very close to the water tower which they were sadly unable to use due to very high site fees. A provisional site test was held at very short notice with as many stations taking part as could be contacted at short notice. The results

look very promising with many stations able to see the test transmission. The next step will be to repeat the site test, giving all members the chance to try seeing and working the repeater. No date has yet been set but they will be notified. The site looks to be the best offer of a permanent home for the repeater that the group has had to date. Their present temporary site is at G4JMP's location in Herne Bay.

Latest news, 26th April. Whilst Chris G8GHH and Ian G4MLY were casually chatting on two metres and monitoring the repeater they were surprised and excited to see Daniel ON6DV accessing the repeater. Daniel's pictures were P3 with colour and sound (6MHz). A two-way QSO was completed between Daniel (who was running 38 watts from two Mitsubishi bricks) . Unfortunately conditions were extremely variable and at times it was difficult to copy sound on both 24cm and 2m but it was not difficult to detect a note of excitement in Daniel's voice! The usefulness of the repeater was realised when they attempted to work direct and were unsuccessful.

I WAS THERE!

Lastly a letter from Dave Young, G8TVW, who writes: "I was having another look at Doug Wheele's video tape the other day. During his 8mm film of an early sixties BATC Convention at the Conway Hall, Red Lion Square, Holborn, London, I briefly saw a young lad standing by a TV camera. The film isn't very clear, so I can't be certain, but I think it just might be me! I joined the BATC in 1959, so if it is me in Doug's film, then the Convention must have been in 1960 or 1962 as the 1964 and most of the following few years' conventions were held at the ITA headquarters in Brompton Road, London. I would have been fourteen or sixteen at the time - well, that dates me! I think I will have to write to Doug and see if there's any possibility of borrowing the film or, perhaps, having a still taken from it. Then I might be able to decide for certain one way or the other."

Please note: two items have been edited from Andy's column, owing to their being covered elsewhere in this issue. They were items on the Cross Channel TV special event station which can be found on pages 41 to 43 and also the details of the unattended ATV stations, which can be found on pages 8 to 11.

Please send copy for TV on the Air to: Andy Emmerson G8PTH, 71 Falcutt Way, Northampton, NN2 8PH.

Using Television Part-5

Norman Ash G7ASH

In this final look at the practical side of using television, I am looking at Editing.
[Judging from your comments which have got back to me **(none!)** you have found this
series highly interesting and provocative!; therefore I have emphasised the technical
side in this final section and a part 6 will conclude. I hope you approve]

There are two aspects to Video Editing:

      1. the **technical** joining of sound and video into one
      (maintaining continuous and consistent continuity).

      2. the **compilation of information** to be communicated
      (achieving your intended effect upon your intended audience)

Video Editing: A technical over-view (basics)

Analogue video contains:

      (1) **vision information**
      (2) **positioning information** *(for the vision information).*

'Pixels' *(Picture Elements)*

Red Green & Blue

3 dots

(various proportions)
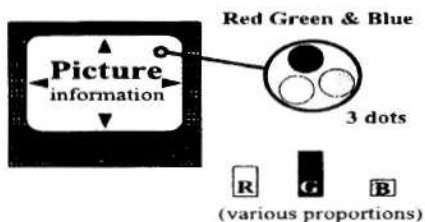
The picture you see relies upon the
persistence of the coloured phosphor dots.
which fluoresce when the electron beam
hits them. This lasts just long enough until
the beam replenishes it, without too much
flicker effect.

The three primary colours are grouped to
form a *combined effect* upon the eye (the
proportion causing an effect of a particular
colour and luminance). This grouping is
known as a **'Pixel'**.

'Pixels' represent the *theoretical* maximum horizontal definition; NB. the *horizontal
definition* is a **combined effect** of the *whole* system before the point concerned.
[*A high definition monitor will not render a low definition source with extra definition
information, although its 'pixels' were capable of better rendition!*]

Line Scanning

'Scanning'
This information is **'scanned'** by the
electron beam, in **'lines'** across the screen.
'Scanning' occurs from the top left of the
screen to the bottom right.

'Interlace'
To reduce the amount of flicker, spaces are left between each **'line'** as they are *scanned*
from top to bottom. These are then filled by the next *'line scan'*. This takes 2 *line scans*
to complete a single **'picture'** on the screen. Single *line scans* are known as **'Fields'**.
The result of these 2 'Fields' being 'offset' by 1 **'line'** is an **'interlacing'** of the **'picture'**.

Control Pulses
Line scanning requires two important bits of information:
      1.   when to stop and start scanning a 'line'
      2.   when to stop and start scanning a 'Field'
Pulses are added to the Video signal to 'cue' these events.
They are called **'Synchronising Pulses'** *(often abbreviated to 'Sync. Pulses')*

Control Pulses
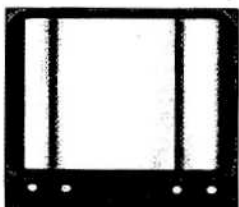
The Picture

'Line Pulses'
'The Sync. pulse' which occurs between each line scan is called a **'Line Pulse'**. sometimes known as 'horizontal drive' (**HD**).
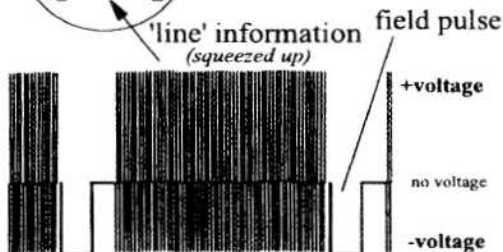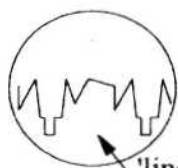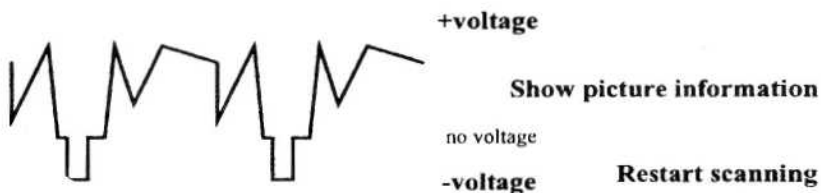
'Field Pulses'
'The Sync. pulse' which occurs between each field scan is called a **'Field Pulse'**, sometimes known as 'vertical drive' (**VD**).
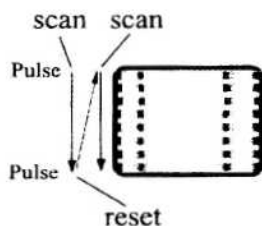

Pulse   Pulse

scan

scan

reset
reset
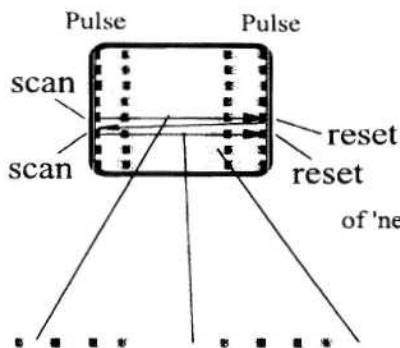
A Field Scan

Line scans are controlled by a pulse
of 'negative voltage', which starts a new scan.

+voltage

Show picture information

no voltage

-voltage   **Restart scanning**

A Field Pulse

'Fields' are controlled by a longer pulse of negative voltage,
which starts a new 'field'.

'line' information   field pulse
(squeezed up)

+voltage

no voltage

-voltage

scan   scan

Pulse

Pulse

reset

'Crash Editing'

'Crash Editing' is the crudest form of Editing. It involves simply recording the **next** *wanted sequence* onto the end of the **previous** *wanted sequence*, without attempting to align these synchronising pulses which are present:

(unwanted material)   field pulses   **wanted**
                         line pulses   **material**
Player

(the player is feeding into the recorder input)

wanted previous sequence

Recorder   Replay   Record
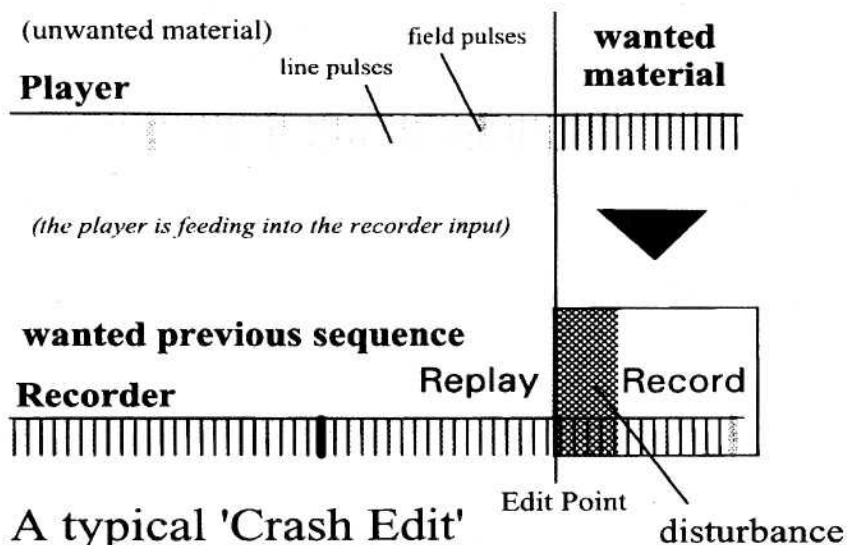
Edit Point

A typical 'Crash Edit'   disturbance

The player's 'sync.pulses' are not aligned with the recorder's.
causing a disturbance at the 'Edit Point'
(the point where the recorder changed from 'replaying' to 'recording')

'Crash Editing' results in (*sometimes severe*) disturbance for up to several seconds as all the equipment involved is suddenly faced with a completely different timing position.

The Full Synchronous Cycle

difference◄►
                         Player   coincident   Player

time ➔   Recorder   *time* ➔   Recorder

'Non-synchronised' timing   **'Synchronised' timing**
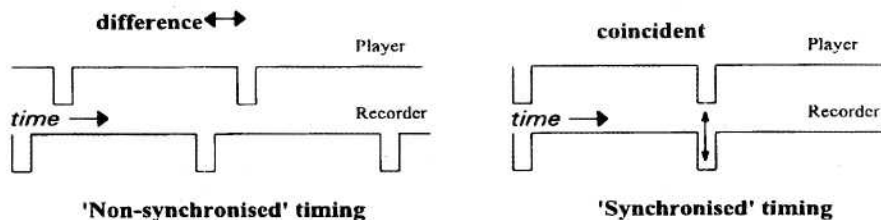
The above synchronous timings apply to both the **'line pulses'** and the **'field pulses'**; it can quickly be seen that 'synchronous Editing' is concerned with both long and short term synchronisation. Indeed when the colour information is taken into account this is increased, with even faster and even slower scale timing to be considered!

The Full Synchronous Cycle

Representing Colour

The component within a video signal representing colour actually exploits the difference in timing between two similar sets of pulses:

Colour information

Reference Pulses

'Synchronised' timing *(see text)*   *time* ⟶
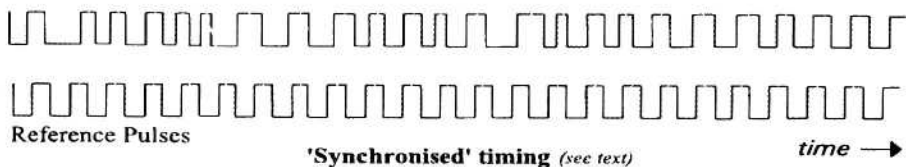
The difference is that although the pulses vary in timing (when compared with a reference set of pulses), they **never** exceed a pulse difference between them. Therefore they remain '**synchronised**'.

'Phase' Reference

The difference between the colour information and the reference is only a different *positioning* as the pulses change (they repeat a similar shape for each pulse). Information can be represented by the 'position of the pulse' at any point in this cycle. Colour is represented by this *position difference* between the reference pulses and the colour information pulses. This difference is said to be the '**phase**' of the pulse.

[NB. In practice, with analogue video these pulses progressively increase and decrease, rather than switch on and off as shown]

The Colour Video Signal

picture colour information

colour reference pulses
('colour burst')

+voltage

no voltage

-voltage
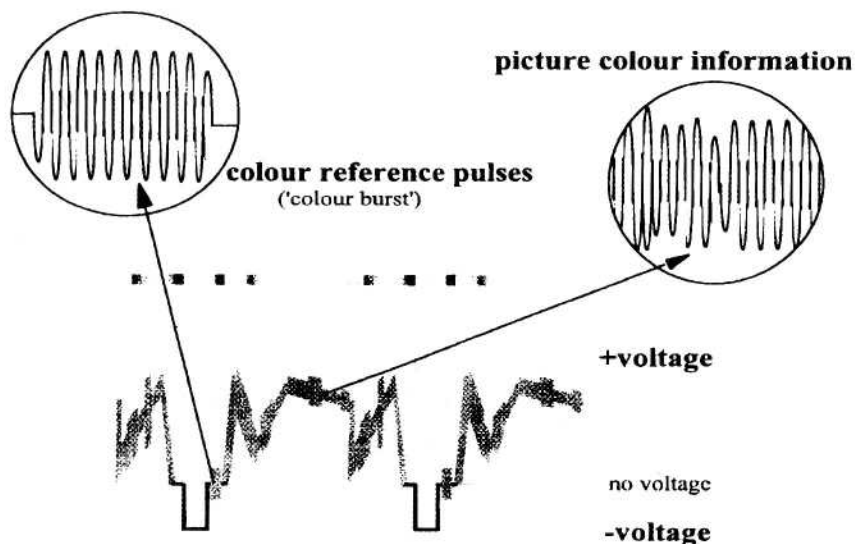
PAL Colour (Phase Alternating Line)

It can be seen from this diagram, that the reference (which is sent with the video signal) is only 'up dated' once, before the scan of each line. This 'Burst' of pulses is intended to keep a local pulse generator within the equipment running at the correct timing.

It can readily be seen that the greatest errors will be at the end of the line when this local pulse generator has been running the longest without correction. The 'PAL system' is a way of compensating for (minor) errors.

If the local pulse generator where to drift from what it should be, the phase error is likely to result in a change from the true colour rendition of the picture. By reversing the position of the pulses (*phase*) on each alternate line, the error occurs, but in equal and opposite ways. As the eye mixes the colours it sees displayed, it works out the average between the two errors, therefore the viewer sees approximately the correct colour rendition. Cleaver stuff!

Editing Consequences for the full video cycle

The full video cycle takes eight fields, before it returns to exactly the same conditions. This is due to the relationship between the '**PAL**' operating in '**odd**' and '**even**' fields (required to achieve interlace).

This is a long period for top broadcast quality Editing. Most Editing at this level has to be much more accurate than four pictures.

Edit Point ± 2 Pictures
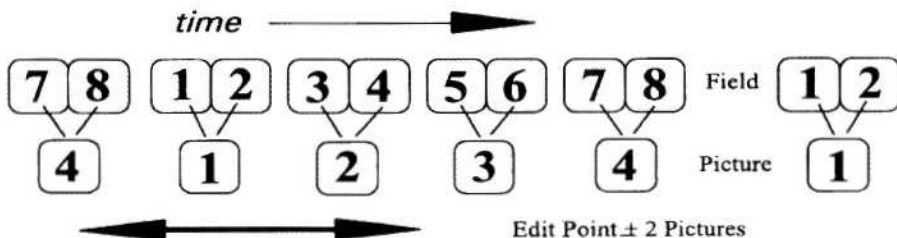
Is it really necessary?

Until recently the technology to cope with this accuracy of Editing was beyond all but the top quality Broadcast systems. There has been many satisfactory Editing systems available, which do not have this capability. So how accurate do you need it?

One method of dealing with this is to ignore the 'colour cycle' aspect and Edit to '**Line**' accuracy, within the correct '**field**'. Most high quality Editing equipment should permit this.

The Edit Point is often placed within the 'field Blanking' period, which is either just before the top of the picture, or just after its finish at the bottom. The reason for this is to give the Edit as much time as possible to settle down (Any disturbance at the Edit Point being hidden).

Note
Notice there are two factors involved here;
1. the accuracy to which the Editor selects the 'picture' & 'field'
2. the accuracy to which the Editor 'Edits', within a 'field'

Does it Edit?

When a machine is claimed to carry out video Editing, it is important to satisfy yourself of what that means (if you have a fixed idea about what the resulting Edit tolerances should be).

I have used machines which will Edit odd and even fields together, ones which leave a huge band across the picture and ones with selectable Edit choices; Editing can mean anything from 'Crash Editing' to full 8 field Edits!

Framestores

Framestore technology is now more affordable, these days they are even installed in camcorders. A 'high-grade' framestore can act as a 'buffer store' and 'signal processing' combined in one unit. This can solve the 8 field Edit problem as the store can be up-dated at a different point in the cycle to the Editor. It can also be used to 'synchronise' such a source to the Editor (as the input rate can vary without effecting the output).

A 'Storage' Principle for Editing
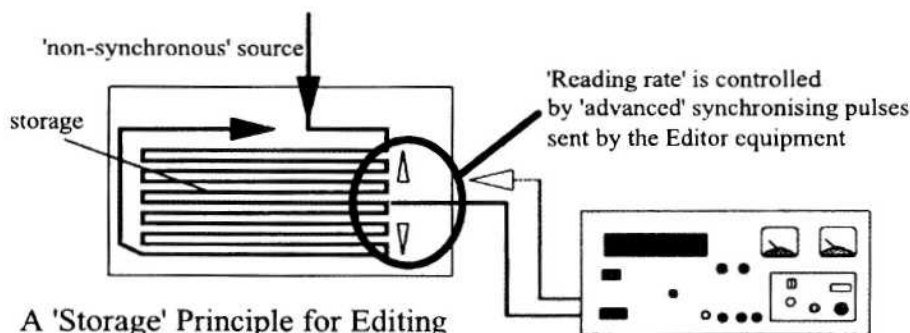
Time Base Correction

These are based upon high quality stable 'Sync.Pulse Generators' (**SPG**'s, or **PG**'s), which permit the timing errors of an input to be corrected, by stripping off the 'sync.pulses' and replacing them with very accurate ones. This is called 'Time Base Correction' (the units are known as **TBC**'s).

Correcting timing errors can make a **significant** difference to the final quality of your production: Remember that you **add** these errors together, **both** through the number of generations (*a copy of a Master Videotape might be at least 3rd generation!*) and through the number of video processing stages concerned with timing in your production process [It is thought 'good practice' in professional circles, to stick TBC's in at almost any appropriate point in the system!].

It is often possible to '*lock*' some video sources using TBC's (they often work along the lines of the storage system (*shown above*)). These days quality Videotape Recorders can have these built in, they are so beneficial.

Simple Editing Systems

Player — Video → Recorder
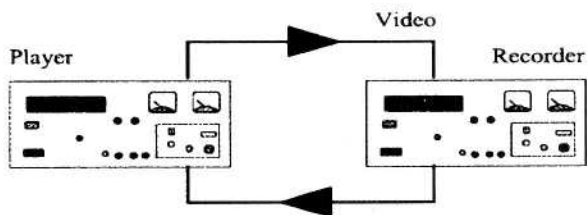
'advanced' synchronising pulses

This basic Video Editing set-up just uses an Editing Videotape Recorder (VTR) and a player machine with the capability to be driven from an external synchronising source.

The 'Editing' control is done on the recorder itself .

The **'advanced sync.'** is timed by the Recorder to allow for the delay in timing. The video arrives at the appropriate point within the Recorder at precisely the correct timing - switching from 'play' to 'record' will then continue in 'synchronisation' (so far as the *signals* are concerned).

Video Editing: Basic Methods

The Three Principle Components of Information
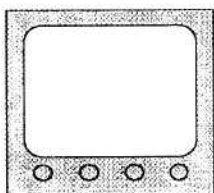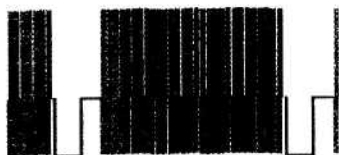
Sound   **Vision**   **Control Pulses**

Assemble Editing

In **'Assemble Editing'** all three components are required to be 'Edited' simultaneously.
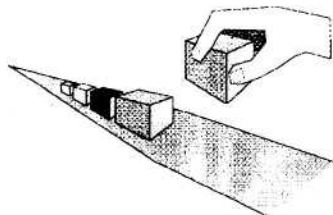
It is called 'Assembly Editing' because it simply *'assembles'* the whole lot in **final order sequence**. [Just like dumping blocks onto an 'assembly line']

Note

If you jump back over previously 'assembled' material, you loose continuity of synchronisation with the material you jump over; an erase bar will occur right through the return point if attempted.

Edit Point
New recording
overlap
Previous recording
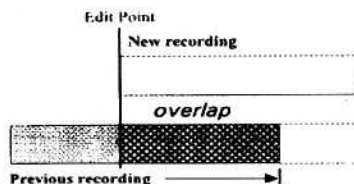
'Assembly Editing' requires that you record slightly more than you require on each 'Edit'. This is then erased by overlapping the next 'Edit'. In this way you avoid any gaps occurring in the recorded material.

'Insert' Editing

In 'Insert Editing' the three components of information can be dealt with separately.

$$(\&/or)$$

Once the synchronising pulses are recorded on the recorder, sound and vision can be chosen to add at **any** point on the recording.

Recording sync. pulses on a blank videotape, permits the whole production to be 'Insert Edited'.
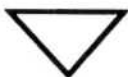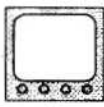
Pre-recorded (continuous) 'sync. pulses'

Alternatively, as the name suggests '**Insert Editing**' can be used to go over previously (*continuously*) recorded material, '*inserting*' sound and/or vision, returning to the original without any synchronisation disturbance.
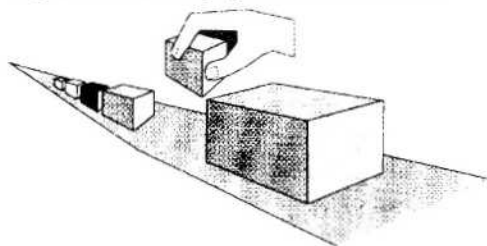
You can see from this 'production line' diagram, that fixed blocks may not fit fixed spaces in the production:

Good Editing depends upon good timing. It is possibly more crucial to get it right in 'Insert Editing' than 'Assemble Editing' due to the added constraint of timing a 'coming out point'.

Timing a return to coincide with both the 'insert material' and the 'original material' you are returning to (in possibly sound and vision) requires skill, practice and experience. Though much is down to good planning, preparation and use of good technique.

Video Editing: Controlling Edits

Using Camcorders

The amateur enthusiast will soon realise that the so-called 'Editing Camcorders' can have crucial limitations. Yes, you may get them to carry out an Edit - but is it *exactly* where you wanted it and is it *exactly* the bit you wanted?

A common problem I've found with some of these, is that they rewind a set amount - but not precisely or consistently enough, therefore I have never been able to get the Edit point to go *exactly* where I want it (even allowing for the plus or minus factor of the machine).

The result for me is I avoid using these facilities altogether: Sometimes, where a proper Edit is not necessary, I use the 'record pause' control (if I can record in sequence and start the next, before the machine trips out of pause). This can give surprisingly good results considering it must be something of a 'crash edit'! What's more I find I can string sentences together without having half (or more) chopped off!

I have had mixed results when the recorder does trip out, or is taken out and is 're-set' by running in 'play-back' mode - 'Pausing' on the 'Edit Point' and switching over to 'record-pause' mode. My results often have visible disturbance in view to varying degrees (though if you are lucky you can get a 'visually' good result this way).

Plenty of time, patience and persistence is required with these basic facilities. If your material is well chosen and your techniques appropriate, I've seen some remarkably good results, when allowing for these constraints.

Doing the Business
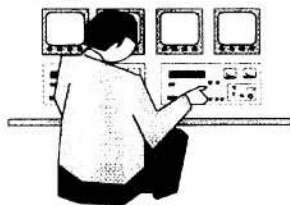
Being able to control the Edits, is just as important to me as the machines physical capability to carry it out.

Monitoring and Control

One way to make your production look professional is to make your Edits very precise - without proper monitoring and control it is highly frustrating - 'hit & miss' - with more misses than hits!

In a professional context such practice would not be viable, as so much 'non-productive' time would be wasted trying to get the equipment to do what **you** want, with inferior results!

Basic Control Features

'Control Based Editing'

'Control based Editing' uses the 'synchronising pulses' to establish where positions are and the timings involved. This is fine for many purposes, but has the disadvantage that these timings are not unique to each segment of the video(s) involved (take a videotape out of the player to run another and you loose the timing on this first tape).

Timings

Positions and lengths are measured in time units on professional Edit equipment.
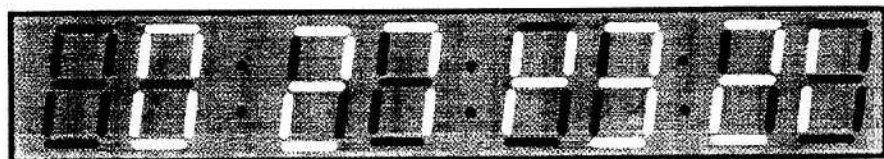
hours   minutes   seconds   frames

On this typical meter display you can see an extra number (*after 'seconds'*) called 'frames', 'frames' is another name for 'pictures'. The counter reads up to 24 (as there are 25 pictures per second, on a normal system). This represents a 'metered accuracy' of about a twenty-fifth of a second.

The normal 'industrial grade' Editor may typically be able to **'Frame Edit'** - That is Edit to the accuracy of a single one of these 'frames' (consistently!?!). Remember that this still means plus or minus a **'field'**! - which might mean the previous, or next picture on some machines (rather than the odd or even 'field' of the chosen 'frame').

'Time Code Editing' (TC)

This timing can be recorded with the video information, either in the period before the picture starts (Vertical Interval Time Code **VITC**), or Longitudinally (using a spare, or extra sound track). Once this time is permanently 'burnt' into the material, Editing can be speeded up substantially by the use of prior compiled 'Dope Sheets' containing references to all the Edit points. Some machines can be 'programmed' to carry out these Edits automatically and on some simple productions you may just be sitting there waiting to change VT's (videotapes) from time to time.

Monitoring Capabilities

Features to look for on Editing equipment. The 'Shuttle' and 'Jog' controls are now common place even on domestic machines: You may find you can get pin-point accuracy using such features, but does it also allow you to hear the sound at slow speed? This I find invaluable when Editing speech, where there is often very tight timings (made worse by the delay in erase/record propagation (due to the flux density on the sound head needing time to rise to full intensity)).

Preview

An Edit Preview feature is a great asset and when you have a tight, or questionable Edit it is well worth using.

Run-up time

An Edit system can have a minimum run-up time, which it requires just before the Edit Point. This means that your player material must run extra continuous recording just prior to the bit you want. Some systems may require 10 seconds or more, though this is much less on many recent machines. The use of devices such as the 'frame store' means that virtually instant Editing may be possible, but I would not recommend it, as I see it as bad practice. You can easily find that there is not sufficient wanted material to get into and you need to always try to maximise your options and choices, which you bring in to be Edited.
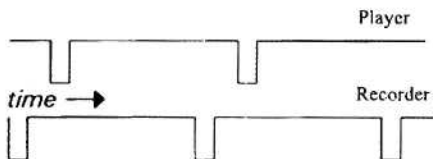
'Synchronising' Player with Recorder

(run-up time)

I will conclude in part 6   - I hope these articles have been of *some* interest.

NEA

BATC AFFILIATED TELEVISION REPEATERS (and others)

Callsign	Channel	Locator	Contact	Telephone
GB3CT**	RT2		G4TVC	
GB3ET	RMT2	IO93EO	Mike Cox G8HUA	
GB3EY	RMT3	IO93WT	C.Renolds G8EQZ	0482 563691
GB3GT	RMT2	IO75UV	S.Lewis GM4PLM	
GB3GV**	RT2		G3IPL	
GB3HV*	RMT3	IO91OO	M.Sanders G8LES	0420 563859
GB3KT*	RT2R	JO01MI	I.D.Vincent G4MLY	
GB3LO	RT2R	JO02VL	C.A.Cuomore G0FIY	0502 564325
GB3NV*	RT2R		G7EJG	
GB3MV**	RT2R		G4WIM	
GB3PV**	RMT2	IO02AF	G4NBS	
GB3RT	RMT3	IO92EJ	Mike Wooding G6IQM	0788 890365
GB3TG	RT103	IO91PX	D.McQue G4NJU	0908 378277
GB3TN	RT2	JO02KS	***	0328 851603
GB3TM**	RT2R		GW4KAZ	
GB3TT*	RT2R		G4EKD	
GB3TV	RMT2	IO91RU	***	
GB3UD	RMT2	IO83VC	T.Burndred G0KBI	0782 782886
GB3UT	RMT1	IO81UJ	R.Weston G0LIB	0225 761296
GB3VI*	RMT1		G8CMK	
GB3VR	RMT2	IO90WT	D. Stewart G4HSY	0903 212373
GB3WV	RT2R	IO80SO	J Ashton G4NTS	0305 778575
GB3XT**	RT103		G8OZP	
GB3ZZ	RT2	IO81RM	S.O'Sullivan G8VPG	0225 873098

* Not currently affiliated; ** Not affiliated; *** Enquiries Via BATC Membership Sec D.Lawton G0ANO in writing only!

Channel	Input	Output	Mode
RMT1	1276.5 MHz	1311.5 MHz	AM TV
RMT2	1249.0 MHz	1318.5 MHz	FM TV
RMT2R	1249.0 MHz	1316.0 MHz	FM TV
RMT3	1248.0 MHz	1308.0 MHz	FM TV

Channel	Input	Output	Mode
RMT101	10.200 GHz	10.040 GHz	FM TV
RMT102	10.255 GHz	10.065 GHz	FM TV
RMT103	10.250 GHz	10.150 GHz	FM TV

Repeater Group Name/Location

GB3CT	Crawley
GB3ET	ET Repeater Group (Emiley Moor)
GB3EY	E.Yorkshire ATV Repeater Group
GB3GT	Glasgow TV Repeater Group
GB3GV	Leicester Repeater Group
GB3HV	Home Counties ATV Group
GB3KT	Kent TV Group (Hoo Peninsula)
GB3LO	Lowestoft and Yarmouth Repeater Management Group
GB3NV	Nottingham
GB3MV	Mereway, Northampton
GB3PV	Cambridge
GB3RT	Coventry
GB3TG	Milton Keynes Repeater Group
GB3TN	North Norfolk Repeater Group
GB3TM	Amlwch, Gwynedd
GB3TT	Near Chesterfield
GB3TV	Dunstable Downs Radio Club
GB3UD	Kent Television Grp.
GB3UT	Mendip Repeater Group
GB3VI	Hastings
GB3VR	Worthing and District Video Repeater Group
GB3WV	Dorset Video Repeater Group
GB3XT	Burton on Trent
GB3ZZ	Severnside TV Group

Other ATV groups/Clubs who are BATC affiliated members

	N.B.T.V. Group, Nottingham,	D. Pitt	0602 282896
G3EEO	Nunsfield House ARG, Alvaston		
G4ECT	Cheshunt & District A.R.C.	R. Brunton G4TUT	081 804 3704
G4HTV	G4HTV Amateur Radio Club, Bristol		
VK4BTV	South East Old ATV Group, Chermside, Queensland, Australia		
VK2RFM	Australian ATV Club, Liverpool, NSW, Australia.		
G5FZ	Lincoln Short Wave Club		

Compiled by B.Summers G8GQ,S 0895 810144, 9 June 1994

Contest News

Richard Guttridge G4YTV

CONTEST RESULTS

70cm SPRING VISION 1994

Place	Callsign	Points	Best Dx	@ Km
1	G8EQZ/P	1116	G7ATG	181
2	G7ATG	1005	G8MNY	222
3	G8MNY	839	G7ATG	222
4	G4AGE	316	G7ATG	99

24cm SPRING VISION 1994

Place	Callsign	Points	Best Dx	@ Km
1	G8EQZ/P	1317	G1XRA	97
2	G7ATG	249	G4CBW	43
3	G7KAO	226	G0OJY	45
4	G4AGE	198	G8EQZ/P	87
5	G8MNY	187	G8VMP	30
6=	G1XIE	62	G6FKS	15
6=	G7RFY	62	G6FKS	15

3cm SPRING VISION 1994

Place	Callsign	Points	Best Dx	@ Km
1	G8EQZ/P	298	G4RNA	78
2	G7ATG	127	G4CBW	43

24cm MAY MICROWAVE 1994

Place	Callsign	Points	Best Dx	@ Km
1	G8EQZ/P	994	G4RNA/P	85
2	G4RNA/P	672	G4XMQ	94
3	G4XMQ	233	G4RNA/P	94
4	G8MNY	224	G8SYY	42
5	G8GKQ	102	G8EGG	51
6	G1XIE/P		)4 G8DKC	34

13cm MAY MICROWAVE 1994

Place	Callsign	Points	Best Dx	@ Km
1	G4RNA	146	G1AUQ/P	73
2	G4XMQ	9	G1AUQ/P	9

3cm MAY MICROWAVE 1994

Place	Callsign	Points	Best Dx	@ Km
1	G4RNA	302	G8EQZ/P	78
2	G8EQZ/P	156	G4RNA	78
3	G4XMQ	9	G1AUQ/P	9

WHERE HAVE ALL THE STATIONS GONE?

It's an unfortunate fact of contesting life that there will usually be a big rally or two somewhere in the country when there is an ATV contest on and not only ATV contests. Most amateur radio contests are suffering from lack of numbers. This will mean that a number of the stations that might have taken part are otherwise engaged chewing the fat and sifting through some traders goody box.

The country is just beginning to climb out of a very deep recession and I think that a number of amateurs will have been hit rather hard and can no longer afford to continue.

Those of us still in work are having to run twice as fast just to stand still and are too tired at the end of the week to climb to the top of the local hill, assemble a box of four 70cm antennas, put together the odd quad-loop and get the whole lot up in the air.

Then there is that other mode, packet. Words fail me, when I see the number of people that have been hooked by it. Packet is like a drug! It gives the Hyde Park tub thumpers a platform. Instead of holding court on the local repeater their words of wisdom are held in the bowls of a hard disc drive, waiting for the summons to profligate the air waves with their rabid thoughts. I suppose it has advantages for the amateur who is to busy to get into the shack. He can still keep in touch after a fashion. I would call it radio by proxy!

Television is the most effective communication medium known to man let's use it before we lose it and throw away a hard won privilege. We all need to get back on the air fast so see you on the next contest folks.

SPRING VISION

"Conditions were bad". "Where is everyone?" "It was hard enough to make contact on 2m, let alone 70 or 24cm ATV". General comments from most of the contestants. It's at times like these that contest stations need all the support they can get from their local ATV stations.

There was only one portable station mad enough to be out in the weather on that weekend. That's right, it was Clive (G8EQZ), Richard (G7MFO) and I. We were also trying out a new site as well on the edge of an old quarry. Thoughts of ending up in it did cross our minds at three o'clock in the morning when we had to tie everything down again for the second time. John (G8MNY) commented on the clash with Pickets Lock and that he didn't go portable as there was a bit of a breeze on. You can say that again John.

When we tried to set up Dave's (G3ZTR) 3cm TX it needed two of us to hold it steady in the wind and rain. However we were well pleased with the two QSO's over 70 km in vicious weather conditions for a first time out on 3cm. Our thanks to Peter (G4RNA) who operated from his home QTH and Dave G4UFS who worked /P from near the Emley Moor tower. Remember it takes two to have a QSO!

John working under the callsign G7ATG did very well on 70 cm from his home QTH. He gave Clive a good run for his money.

MAY MICROWAVE

I thought, "Things can only get better", after the Spring Vision saga. Wrong. I think we had our very own private gale on the Yorkshire Wolds that week-end and we got very wet. No real DX was worked with a maximum distance of 94 km on 24 cm. Four stations went portable during some period over the week-end. The continued effort on 3cm and two entries on 13cm for the first time with both stations running 30mw is an encouraging sign. Peter (G4RNA) was pleased to work Richard (G1AUQ) on three bands during the contest and went on to say apart from G1AUQ, Terry G4XMQ and Bob G7AVU are also active on 13cm. All would welcome contacts on all three microwave bands in the South Yorkshire and Lincolnshire areas.

This thought is for feed back later before the end of the year. Do you think some form of multi operating should be allowed on the various bands with the points gained added to the main or group callsign at the end of the contest? This will enable the main operator to continue operating on say 70 & 24 cm while someone else can set up a QSO on another microwave band.

Remember the International on the second full week-end in September, that's the 10th & 11th. If you need the rules let me know. At the moment Clive (G8EQZ) and I don't know if we will be operating from Shuttleworth Beds. or the Yorkshire Wolds that week-end. We will be on the air though and I hope you are too.

Contact: Richard Guttridge G4YTV., Ivy House, Rise Road, Skirlaugh. HULL. Humberside. England. HU11 5BH. Tel: 0964-562498.

Contest Calendar

The International
9 Saturday 10 to Sunday 11th September
Time 1800 GMT Sat to 1200 GMT Sunday
Fast Scan only TX & RX all bands
Rules are issued in August by the contest manager If you want a copy let me know
Entries to be posted by 26th September 199

Autumn Vision 94
Saturday 12th & Sunday 13th November
Time 1800 GMT Sat. to 1200 GMT Sun.
Slow & Fast Scan all bands.
Entries by 5th Dec. 1994

Winter Vision 94
Saturday 10th & Sunday 11th December
Time 1800 GMT Sat. to 1200 GMT Sun.
Slow & Fast Scan all bands.
Entries by 3rd Jan 1995

SEVERNSIDE TELEVISION GROUP

**23 cm
38 & 18 ELEMENT
WIDEBAND YAGIS**
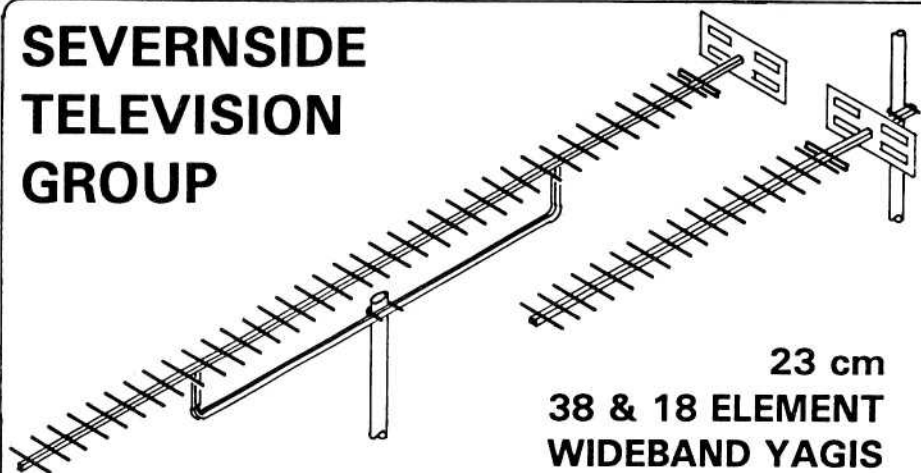
All of our 23 cm Aerials are specifically designed for ATV use - although they can be used for other modes aswell. Wideband characteristics mean that you need only *one* aerial to cover the repeater input and output channels. Our famous wideband yagis come fully assembled in two versions :

38 ELEMENT HIGH GAIN : 14 dB gain, 1.8 m long, £26.00 plus postage.
18 ELEMENT STANDARD : 10 dB gain, 0.9 m long, £15.00 plus postage.
Don't forget our **20 ELEMENT CONVERSION KIT**, which converts your existing 18 element aerial to the full 38 element high gain specification : £13.00 plus postage.

Our 23 cm **TROUGH REFLECTOR** is quite unique, combining 11 dB gain with wide bandwidth *and* wide beamwidth. It's also compact, just 0.55 m high, 0.35 m wide and 0.3 m deep. Supplied as a kit of predrilled and preformed parts, for easy "screwdriver assembly · £19.00 plus postage.

All aerials feature an SWR of less than 1.5:1 and are supplied with mast clamps suitable for masts up to 55 mm diameter. Mast poles shown are not supplied.

POSTAGE : £3.75 for one aerial, £5.00 for two or more. Telephone orders with cash on delivery : £2.75 supplement per order. Orders from outside of the UK - please write for carriage quotation.

CHEQUES payable to "SEVERNSIDE TELEVISION GROUP" and send to 15, Witney Close, Saltford, Bristol BS18 3DX. Tel. 0272 860 422 (office hours), 0225 873 098 (evenings & weekends), Fax. 0272 869 387. Please allow 28 days for delivery.

**TROUGH REFLECTOR
SIDE VIEW**
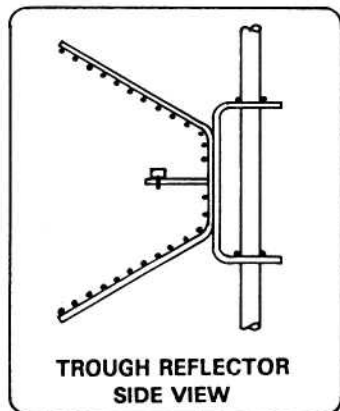
WORTHING & DISTRICT VIDEO REPEATER GROUP
GB3VR GB7VRB

AMIGA ATV PROGRAM

The Amiga ATV program as seen at the BATC show now has over 45 different selectable testcards with a host of additional features including 20 different wipes, full text control,now with 30 screens of text messages available, QRA calc, Testcard Music, selectable displays, all cards are overscan ie the whole screen is used.

Load in your own customised testcards, Large characters, Scrolling messages, 24Hr Clock, C/S extensions, Hot key operation, Doc reader, ATV CLI, Cross Hatch, Purity and also a comprehensive section for Gen-lock users.

If your interested in ATV then this program is for you. Two disk set, 1 Meg required. Please state callsign and QRA (if know) when ordering. £20.00

1W FM-TV 24cm TRANSMITTER

This transmitter generates its singnal directly at the wanted frequency which may be set anywhere in the band colour or B/W. On-board intercarrier sound and fixed pre-emphasis are standard features. The kit includes diecast box and cost £80.00

TWO CHANNEL PHASE LOCKED LOOP KIT

This add on vastly improves the overall frequency stability of the 1 watt transmitter. Two crystal locked channels and third free running tuning position are available. Kit price only £30.00
Crystals for the PLL on channels RMT1,2,3 or simplex 1255Mhz £8.00. Other frequencies to order.

VIDEO AGC KIT

This unit accepts a composite video signal in the range 0.15 to 2V P-P and outputs a constant 1V P-P accross 75-0hms. This unique design is a must for TV stations and repeaters. £16.00 each.

THE SPECTRUM ATV PROGRAM

This 48K version has over 60 commands which includes 7 Testcards, memo pad, clock, maps, tones, locater calc (old & new), flag, x-hatch, various size text printing plus disk transfer command and more. All this for only £6.00 Opus disk version £6.00 a must for all spectrum owners.

BBC AMATEUR TELEVISION PROGRAM £8.50
CROPREADY ADD ON'S SAE FOR DETAILS

ORDERS TO:- TREASURER OF GB3VR, R.STEPHENS G8XEU, 21 St.JAMES AVE, LANCING,WEST SUSSEX, BN15 0NN. 0903 765760 7 to 8 pm
CHEQUES PAYABLE TO:-
'Worthing and District Video Repeater Group'

FOR SALE

BATC SALE: IBM clone 286 mother board with 1meg RAM, used to run the BATC bulletin board now surplus to requirements ... £25.00 or offer proceeds to BATC. B.Summers G8GQS 0895 810144/0850 014892 not QTHR.

THREE HC25 CRYSTALS FOR 70CM ATV TRANSMITTERS, 108.500, 109.250 and 109.812MHz (for 434.0, 437.0 and 439.25MHz). Unused ... £5 the three post-paid. Andy Emmerson G8PTH, 71 Falcutt Way, Northampton, NN2 8PH. 0604-844130.

GB3UD Amateur Television Repeater Group offer Test Card Generator PCB's for sale. The PCB has been produced professionally for the group and is of very high quality, through-hole-plated and double-sided Eurocard size. The board contains the colour circuit and a 1 kHz tone oscillator. The board uses easy-to-obtain 74LS type IC devices. The board is priced at ... £18 + £1.50 p&p and is available from Trevor Burndred G0KBI, 52 Everest Road, Whitehill, Kidsgrove, Stoke-on-Trent, ST7 4DY. Tel: 0782 782886.

PHILIPS PM 5534 SECAM COLOUR PATTERN GENERATOR, as new, only DM 950 (approx £400). Manfred Rudolph DL2OU, Krefelder Str. 20, 10555 Berlin, Germany. Tel: (0)30 393 21 31.

SILENT KEY SALE: 5 off Reliance 12" mono monitors ... £10ea. or £30 the lot. Marconi Instruments Sine Squared Pulse & Bar Gen ... £30. Marconi Mk7 Pal coder ... £30. 2 Reliance vidicon cameras with viewfinders in poor condition £20 pair. EMI dual Pal coders ... £40 pair. Vintage RBM 19" shadow mask hybrid colour monitor and separate decoder ... £35. Vortexion valve preamp ... £15. Quantity of Prowest 19" mono monitors CHEAP neg. Veteran PYE 2780 14" monitor circa 1955 unfortunately in poor condition due to bad storage hence only ... £35. Marconi Mk5 picture and waveform monitor ... £25. Philips Hybrid Colour monitor in nice clean condition, a chance to acquire one of these increasingly rare quality late 60's monitor ... £35 Sanwell & Hutton Wobulator model 167 ... £25.00. Large Prowest Vision Mixer, needs sorting out, offers, ring for details. Brandenburg EHT meter (current Model) ... £25.00. Marconi Mk8 3 tube broadcast colour camera, CCU, PSU, cable, viewfinder, Circuits, 10:1 Varotal zoom lens ... £250.00 Pye Mk3 Image Orithicon camera circa 1955, CCU, PSU, cables, circuits, 2 lenses, Please enquire of Paul or myself (Brian) for further details. The above is offered on a "as seen" basis no details as what works or doesn't work is available. Circuits may come to light in the fullness of time. Please contact Brian or Paul on 0895 810144 or 0522 703348

PROBEL X-Y PANEL, modern, with serial data link.. EMI 2001 Camera complete, Phone for details.. IVC 2001 TimeBase Corrector ... £100.00 Motor drive amplifier for use with IVC 2001 TBCs and non servo VTRs ... £20.00. BBC model B computer with Cox genlock unit, no disk drives, seems to work, slight keyboard problem... Electronic Visuals waveform monitor EV4040, 3u high ½ rack width in case, working order ... £80.00 Marconi Mk9 camera head in poor condition for spares.. Ikegami ITC CCU 601 and length of 37 pin camera cable ... £20.00 Glass BBC test transparency No. 52 (12" * 10" test slide) Swap for something of equal interest. Marconi Mk8 CCU and PSU for spares. Marconi MK7 head PSU for spares.. Quantify of Marconi Talkback panels and Microphones.. Mitisbushi 14" Colour high res CRT AT1429LB22-TC12 Known OK ... £20.00. TV lens, the sort you used to hang in front of your 1952 tele to make the pictures bigger, swap etc.. Vidchron timecode generator, 8 digit display of hours, mins, secs, frames in smart plastic box, video input etc (NOT broadcast SMPTE T/C) ... £7.50. Audio Jackfield, 5 rows in Neve colours ... £30. 35mm. slides of Grey scale & Cam registration chart ... £2.50 ea. Spare PCB's for link 109 camera, includes ZNA134 chip, unused ... £10. BBC White units.. BBC Crosshatch gen ... £5.00. GE2M/543 BBC augmented pulse & bar generator, working ... £25.00. GE4/529 Calibration Gen. & PSU ... £10. GE4/532 Sawtooth & Lift Gen. ... £7.50 Vertical Aperture Corrector nice clean condition but one unit missing. ?? BBC switched video delay line ... £5.00. UN/643...UN/589.. MN2/511 Selection of BBC, LINK, Marconi and other extender boards. Handbooks Fernseh MC37 colour monitor, Barco CM33 colour monitor, Prowest PM17/9a colour monitor, Prowest PM 11/3A mono monitor, Citroen CX diesel H/book £5.00. offers or swaps. B.Summers G8GQS 0895 810144/0850 014892 not QTHR

3 off PANASONIC WV341 STUDIO CAMERAS ... £20 each; Panasonic MX10 Vision Mixer ... £450; Sony XVC700 Colour Corrector ... £225; TOA ED4500/WT736 Radio Microphone TX & RX ... £345; Tascam MX80 Mic/Line Mixer ... £450; Tascam M208 8-4-2 production Mixer ... £450; Philips LDK5 Manual 1 ... £15; Dinky "BBC Roving Eye" model, VGC ... £25; Dinky "Extending Mast Vehicle" in need of parts ... £5; Betamax alignment Tape ... £5; 48 off Sony BCT20G Betacam Tapes, used once ... £1.50 each; Postage extra on all items. Nigel Philips, 80 Johnston Road, Oakdale, Poole, Dorset. Tel: 0202 670733.

WELZ 3-15V/4.5A METERED PSU ... £30. Kenpro KR600B (combining Azimuth and Elevation) Rotator unit, heavy duty version, brand new ... £345. Kansas City Tracker PC card/software for same ... £80. "Superjack" 18" Dish Actuator Arm + Alba Control Unit, brand new ... £70. SSB (German) 50-3000 MHz Masthead Preamp, as new ... £69. Gould 08250 15 MHz dual-beam Oscilloscope, manual and leads ... £70. "Black Star" 200 kHz Function Generator, manual and leads ... £60. Advance digital (Nixie display) mains operated Multimeter, excellent condition ... £25. Back numbers (10 years worth) of CQ-TV ... enquire. Carriage at cost or collect. Paul G4XHF. Tel: 0293 515201 (home; 0622 696437 (work).

ALL MARCONI Mk.7"B": 2 Power Supplies; 2 Camera Control Units; 2 Camera Cables (G101) 60ft long; 1 Camera with tubes fitted, viewfinder, lens and shot box; 1 Camera with lens, not working, viewfinder not working, with tubes but not fitted, no shot box; plenty of spare panels for the above. 3 Marconi Aperture Correctors; 1 Cream Unit (BBC) Vectorscope, complete but untested; 2 EHT units for Peto-Scott 1204, removed in working order. P.T. Mag March 70 625-line constructors television. Offers on any item. Dave Longstaff G4WCD. Tel: 0482 509898.

CLEARANCE ! ALL ITEMS MUST GO ! MAKE AN OFFER !: TELEQUIP-MENT D83 50 MHz dual beam scope c/w service manuals ... £125; Telequipment D66A, 52, and S51B service manuals ... £5 each; fully built set BATC test card PCB's, with S100 SPG and circle EPROM ... £30; advance SG63F AF/RF test generator to approx. 200 MHz c/w manual ... £45; CED mono/colour CRT tester/reactivator ... £35; spectrum +2 computer c/w PSU, cassette, joystick ... £25; Philips 12in green composite monitor ... £25; Vero 19in 3u case with insert ... £25; RS console/terminal case ... £30; pair new 9664b photo multiplier tubes ... £15; Commodore 64 computer c/w cassette unit and PSU ... £35; Sharp PC1500A pocket computer c/w cassette, printer (printer has slight fault) ... £30; mono Vidicon camera (PSU needs rectifier) c/w lens ... £30; Philips PM2454 professional AC millivolt meter ... £25; Wizard JOY-ROM for BBC B computer (use non-joystick games with joystick) ... £5; ***RARE ITEMS*** ! Cossor valve multimeter type 1044K, Marconi AF power meter type TF893a, Western professional watt meter type S67, Taylor capacitance/resistance bridge type 110A, Solartron 4EP7 CRT with mu-metal shield, new 3WP7 SRT, 5in PLL electromagnetic F.S.S. CRT, Remscope S01 storage CRT, new 408C CRT for flying-spot scanner, Smiths car tacho fits 4/6/8

cylinder vehicles. Also S100 5-slot motherboard with fd/hd controller, 64k RAM and CPU, Shelton sig-net multi-user CP/M computer with 3-user satellite and engineer's disc, professional S100 development system with fd/hd, 64k RAM, HDC, hi-res colour graphics, real time clock, speech board, RAM disc, D to A and A to D converters etc... complete with all diagrams and stacks of software including Pascal, dBase, Wordstar, etc, c/w ICL 6402 terminal and books galore on CP/M and utilities. Offers invited on the above !!!!!!! any carriage extra. Contact : Simon, G8POO QTHR (Hexham) 0434 633913.

WANTED: CQ-TV back issues 1 to 131 inclusive, 133, 134, 136, 137, 1348, 140, 141, 142, 145 & 149. If you have any of these you wish to dispose of then please contact Editor Mike and I will try to beg, steal, borrow or even buy off you! This is on behalf of Antonio Retamero Diaz, one of our Spanish members, although as far as the seller is concerned delivery is to my address here in the UK, I will deal with the shipping to Spain. Mike G6IQM. Tel: 0788 890365; Fax: 0788 891883.

WANTED: A Spectrum Analyser, specifications similar to the Tektronix 491 series, up to around 12 GHz. Again, this is on behalf of Antonio Retamero Diaz, one of our Spanish members, and delivery is to my address here in the UK. Mike G6IQM. Tel: 0788 890365; Fax: 0788 891883.

WANTED: PCB or PCB layout of the Sync Processor from CQ-TV 129. All costs refunded. Richard Parkes G7MFO, 7 Main Street, Preston, Hull, HU12 8UB. Tel: 0482 898559.

WANTED: Philips televisions: 383 (9" table model), 2405 (9" table model), 2407 (9" console model), 2412 (9" console model with radio), 2415 (12" console model with radio), and projection TV with radio. Prewar television: prewar CRT of EMI (Marconi or HMV), cabinet for Ekco TA201, prewar television brochures. I can collect. Does anyone know of the existence of a Philips experimental TV (with radio) type SG860A (c.1947-1948)? Thank you for your kind help. Jac Janssen PE1OCE, Hoge Ham 117D, NL-5104 JD Dongen, The Netherlands. Tel: (from the UK, evenings) 010 31 1623 18158. Fax: (at the office, from the UK, please mark "private"): 010 31 13 624664. OFFERED: help with documentation of Dutch (mainly Philips) TVs from 1930s to approximately 1960.

WANTED: Any information WHATSOEVER on the Sony HVC4000P Colour Camera. I would like to use the tape run/stop button to key my TX and I wish to put video from the receiver up to the viewfinder. All expenses paid etc. John Blackburn G4EAB. Tel: 090 237 2349.

WANTED: For Sony laser disc player LDP 1500/P a remote control, service manual and any information regarding conversion of this player to digital audio. Also needed is a copy of IV-DOS release !. Paul Godfrey G8JBD, 77 St.Margarets Road, Lowestoft, Suffolk, NR32 4HT. Tel: 0502 560420.

WANTED: Source of discontinued chips: a) M083 - Top Octave Generator and b) MM5837 (or MM5437)_ - Noise Generator. P.A.Janes GW1SXU, 19 Fair View, Chepstow, Gwent, NP6 5BX. Tel: 0291 621532.

WANTED: Philips televisions: 383 (9" table model), 2407 (9" console model), 2412 (9" console model with radio). Pre-war Televisions; prewar CRT of EMI (Marconi or HMV); cabinet for Ekco TA201; pre-war television brochures. I can collect. Does anyone know of the existence of a Philips TV (with radio) type SG860A (c.1947-1948)? Thank you for your kind help. Jac Janssen PE1OCE, Hoge Ham 117D, NL-5104 JD Dongen, The Netherlands. Tel: (from UK evenings) 010 31 1623 18158; Fax (office from UK - please mark "private") 010 31 13 624427. OFFERED: help with documentation of Dutch (mainly Philips) TVs from 1930s to approximately 1960.

WANTED: Service data for the following equipment: JVC-NIVICO portable VTR PV 4500; JVC low-band editing U-matic CR6600; National Panasonic VTR types NV8030 and portable 3085; National Panasonic cameras type WV3085, WV220 and WV1450; Philips pattern generator type PM 5508. Also wanted scrap/non working VO 3800 Sony portable U-matic. Also scrap/non working Sony C9 Beta format VCR (+ remote) for spares. Quantity of Technicolor Funai 1/4 video cassettes and PAL colour card for IVC 761P VTR. Mr.T.Martini, 6 Levant House, Mile End Road, London, E1 4RB. Tel: 071 790 6807; Fax: 071 702 8774.

WANTED: Service info on the JVC GX-N-70E Camera and for the Servo PCB in the Ferguson 3V24 VCR. Barry Senior G8YGT, 1 Bedale Close, Coalbville. Tel: 0530 832088

WANTED: 10:1 Zoom lens, C-mount, also maintenance manual for Sony HVC2000 Camera. Nigel Philips, 80 Johnston Road, Oakdale, Poole, Dorset. Tel: 0202 670733.

WANTED: Lenses with a 1.5" mount (larger than C-Mount) and a toothed ring for iris operation. My thanks to all who have already helped! Andy Emmerson G8PTH, 71 Falcutt Way, Northampton, NN2 8PH. 0604-844130.

WANTED: Ectar 35mm. film camera lens with approx 2 3/16ths inch fine thread mount. Circuit for Aston time code reader "TD20". Circuit for Tektronix ITS gen 148. Circuit for CEL P169v 8*4 vision matrix. Circuit for Marconi TF2701 Bridge. Working rain covers for the Marconi Mk8 camera. Pye, EMI, and Marconi television product catalogues for 1950 - 1970 wanted for research for article/book. TV related books wanted WHY. 1.25" HOP Plumbicons. Bosch KCN portable camera circa 1975 for collection. "G Plan" teak wall unit and base unit. B.Summers G8GQS 0895 810144/0850 014892 not QTHR.

VHF COMMUNICATIONS

VHF COMMUNICATIONS magazine is published four times per year and is available from KM Publications, 5 Ware Orchard, Barby, Nr.Rugby, CV23 8UF, Warks. U.K. Tel: 0788 890365; Fax: 0788 891833. The yearly subscription is **£15.00**, which is payable by credit card (+ a surcharge of 75p), personal cheque (drawn on a UK bank or bearing the name of a UK banking agent), postal orders or bankers draft made payable to VHF Communications. This subscription includes surface mail charges, air mail is extra at £6.00. The magazine is a *MUST* for the radio amateur interested in VHF, UHF and Microwave working, containing, as it does, detailed constructional articles for equipment operating in these bands.

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BINDERS TO HOLD 12 ISSUES £5.75
Surface mail charges included - Air mail extra