CQ-TV MAGAZINE No. 133

BRITISH AMATEUR TELEVISION CLUB

FEBRUARY 1986

REVIEW –

DRAE SSTV TRANSCEIVER

PROJECT

A COMPLETE 1.3G TRANSMITTER TO BUILD

WINTER ISSUE

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PLEASE NOTE: If, when writing to a committee member, a reply is required, please enclose a stamped addressed envelope or, in the case of an overseas member, an International Reply Coupon.

MEMBERSHIP

FULL YEAR: £5 or £1.25 for each remaining quarter of the year. All subscriptions fall due on the first of January.
OVERSEAS MEMBERS are asked to send cheques bearing the name of the bankers London agent. Postage stamps are not acceptable as payment. Overseas airmail is extra - please enquire.

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The British Amateur Television Club is affiliated to the Radio Society of Great Britain.

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****EARLY CLOSING FOR THE NEXT ISSUE****

CLOSE FOR PRESS DATE FOR THE MAY 1986 ISSUE.....8th March

EDITORS POSTBAG

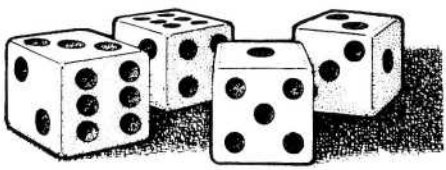
CONTEST COMPLAINTS

Dear Ed,

This letter concerns bad operating practices during ATV contests.
144.750MHz is the ATV CALLING frequency, however some stations seem to consider that they are the only ones who should use it. One may expect this sort of operating on 11 metres, or even 145.5 (+ and -) but surely not on '750? When one calls CQ on a clear frequency one expects to be given the time to listen for replys, not have them immediately 'drowned out' by other stations too impatient to wait a few seconds. During the last contest it was necessary to work split frequency on more than one occasion, just to try and establish some contacts.
Due to the increase in activity and the growing lack of co-operation in such contests, maybe it's time to get away from calling frequencies?
And another thing: During the same contest two valuable contacts were lost completely because of long 'non-contest' exchanges on 70. It would be nice if operators could keep their shack shots for the long winter evenings or summer afternoons. After all we don't have many contests in a year so let's all try to enjoy those that there are.

Ken Walker G8DIR.

** *More on this subject may be found elsewhere in this issue - Ed.*



IN THE BEGINNING

Dear Ed,

I was very interested to read the article entitled 'Television 1873-1927' in CQ-TV 132. My father had taken me up to Carlisle from our home in Whitehaven and I was travelling by train to a boarding school in Yorkshire. On the station bookstall were a number of schoolboy type magazines but I insisted in choosing the first copy of a new magazine called 'Television'....this was the start of an interest in the subject which has lasted all my life. I only wish that I had had the foresight to keep the magazine as it is now a museum piece!
Many thanks for that bit of TV nostalgia.

C.Grant DIXON, G8CGK

WRIGGLING INSURERS

I was interested to see, in an article in CQ-TV132 entitled "Television 1873-1927", that there was a piece entitled "Television not photo-telegraphy". Try explaining that to my household insurance company!
I have a policy which covers accidental damage to my video equipment. When my little monsters kicked over the whole lot - camera included - I wasn't too worried. "Put in a claim" I thought. Some time later I got a phone call from the insurance company, a man tells me that it wasn't my video that was damaged, it was my photographic equipment and photographic equipment isn't covered! Of course I got a bit huffy about it and told said man that my eyes wern't actually playing tricks and that the damaged equipment was VIDEO and not PHOTOGRAPHIC.
A letter to head office is winging its way and I look forward with interest to the outcome.
Oh, the moral? "watch em, the're as slippery as eels".

D.Tilley.

advertisement

Overheard at the local club.
"Ere Fred,I'm having trouble working the repeater."
"Why Tosh? What'the problem?"
"24cms. scourge,transmitter drift."
"That's no problem,get yourself a DC 1G3 FM."
"What?"
"It's the new 24cms.FM ATV transmitter from DC to Light.Real state of the art design,and a real case not a painted box.It comes with four channels,sound input,switchable pre-emphasis,it's synthersised,and 10 watts output."
"But I want to drive my 2C39a's!"
"No sweat,there's a 2·5 watt model,just right for you."
"Yeah,but I don't want to take out a second morgage!"
"With prices from £210·95,no problem."
"That's great,where from?"
"Easy ,just give Mike a ring on (0782)639406,or drop him a line at DC to Light,

15 Bursley Way,
Bradwell,
Stoke-on-Trent,
Staffs. ST5 8QQ

and while you're at it,ask him about his other ATV goodies.You'll get a pleasant suprise."
"See you in a bit Fred,I'm just going to phone Mike.I'll have a pint while you're at the bar."

If you have this problem or just want to get started on 70cms,contact me at the address or telephone number Fred gave.Normally up to 11 p.m.
So for the cost of a stamped addressed envelope I'll send you data on all the goodies,and if you have any particular needs,try me I may already be working on it.

See you on the 1986 Rally Circuit,with my new stand,new products,the usual warm welcome and any help I can give you,to enjoy your hobby,AMATEUR TELEVISION..last few FORTOP TVT437 built,at £35 inc P&P

AND SO INTO THE FOLD

Dear BATC,

On January 27th this year I was tuning my TV set when I came upon a transmission; it was not one of the four main channels and it was a very weak signal.
The transmission was of a man sitting down, speaking into a hand-held microphone with electronic equipment behind him. This was alternating with a test card, on which I could make out the letters "BATC". I picked up this transmission at the far left of the tuning range on a Philips 2206 TV with a Labgear 'Tri-star Supreme' amplified set-top aerial.
Not until this month, whilst reading "New Scientist" magazine did I find out what the transmission was. The article "TV Times for Amateurs" confirmed my thoughts. I believe that the transmission was from a Bristol ATV club, because of my location relative to Bristol.
I am a sixth former, studying for three science 'A' levels at school, and would be grateful for any information you could send me on the BATC.

Phillip Isles, Bristol.

NEWS ROUNDUP

SATELLITE ATV?

It seems there is a possibility of TV amateurs having access to a satellite transponder in the next few years.
Spec-Com magazine (USA) reports that NASA is interested in providing such facilities using a spacecraft scheduled as a "geostationary satellite transponder experiment", which could be launched in 1989. The transponder's downlink would be in the 18-29GHz band whilst its uplink will be between 28 and 30GHz.
The satellite will be orbited 22,500 miles high in a fixed, or geostationary position. It is intended that special channels be designated for "hobby TV communications".

DUD TEST CARD PROMS

As reported in the last issue of CQ-TV, the batch of test card PROMs supplied to members between October 1984 and August 1985 are faulty. A number of these have not yet been returned for replacement. Any member having a suspect device is asked to return it as soon as possible to Members Services, when a tested PROM will be sent by return post.

NEW PCB COMING

A new printed circuit board will soon be available from Members Services. This will be the first of the wipe generator boards based on the circuits in Amateur Television Handbook Vol.2 (revised). The first board will generate basic patterns at line and field rate - other patterns and multiples will be available later as an add-on to the basic board. If you would like details of this as soon as they are available, please send a stamped addressed postcard, or international reply coupon, to Peter Delaney at the Members Services address.

SYNC GENERATOR PCB

The pcb for the ZNA134 s.p.g. is designed to accept the full circuit for subcarrier lock, as per the Revised Amateur Television Handbook. To use this p.c.b. for the unlocked version as in Amateur Television Handbook Vol 2, ic's 1, 3, 4, 5, 7, 8, 9, 10, 13, (and associated R's, C's and diodes), VXO-3, and the varicap diode should be omitted. A 30pF capacitor is wired between the crystal and ic 2 pin 8, and a link from ic 2 pin 16 to ic 11 pin 4.

PRESTEL AGAIN

We had hoped to have the PRESTEL service in operation by now. Unfortunately the Prestel editor's course we have to attend before the service can start, has been put back yet again from October to Jan/Feb. 1986. We hope to start the service soon after that. Anyone with influence in Prestel, having a good rocket to hand or perhaps a large boot - please contact CQ-TV!

ADDRESS LABEL CALLSIGNS

Several people have commented that their callsign is missing from the address label on their CQ-TV envelope. Now that the entire mailing operation is computerised we have adopted a new size of label and it is not possible to have both callsign and 'paid up to' date both on together. It was decided that the latter was the most important (administration wise) and that system has therefore been adopted.
You will find a number; eg: 86 on the same line as your surname, '86' means that you are paid-up to the end of that year etc.

DATA PROTECTION ACT

In case you are wondering; the new Data Protection Act which comes into effect soon WILL affect the BATC, we have therefore duly applied for registration under the act.
Members may rest assured that only the very minimum of information is kept on a computer storage system and that information is not generally made available to persons other than officers of the club.
A full statement on this act will be forthcoming in a future issue.

RECEIPTS

Written receipts for subscription renewals are not normally given. To do so would cost the club an awful lot of money, however, a receipt will be given to those requiring one on receipt of a stamped addressed envelope.

BATC SHOW/RALLY

The 1986 BATC 'do' is to be held again at the Post House Hotel, Crick, near Rugby on Sunday May 4th 1986.
1986 is also the year of the biennial AGM and a slight departure this year is that the meeting will be held AFTER the rally events - at 4.30pm. Further details appear elsewhere in this issue and will also be included in the next issue, which we hope to bring out a bit earlier in order to give more time for those attending to finalise their arrangements.

ATV REPEATER CONFERENCE

The BATC rally in May is to include a special conference on amateur TV repeaters. All repeater groups are invited to send a delegation and anyone interested in the subject will be welcome to attend.
On hand will be Paul Elliott, G4MQS, Special Projects Manager for the RSGB repeater management group, Graham Shirville, the BATC's Repeater Liason Officer, and Officers and committee members from the BATC.

NEW SCIENTIST ARTICLE

An article entitled 'TV Times For Amateurs' in the prestigious 'New Scientist' magazine for 3rd October 1985, seems to have sent a ripple through many parts of the amateur radio world.
The piece, written by John Wilson from the BBC's World Service, was mostly compiled from material supplied by members of the BATC. The article was very well put together, especially when compared to the sensationalist or faintly mocking approach usually adopted by the media, and explained much about amateur TV activities, its history and its links with other areas of the amateur fraternity.
Many letters and messages of approval and even congratulation have been received by the BATC including some from America, Canada, Australia, India, and many parts of Europe and a personal one from Joan Heathershaw, G4CHH; President of the RSGB. Many thanks to all.

CHANGED YOUR ADDRESS?

Please remember that when notifying Dave Lawton about a change of address, it is important to include your OLD address.
With apologies to most of the Mr.Smiths: saying; "My new address is....." and signing Mr.Smith is not sufficient, I have to distinguish between the 35 Mr.Smiths on record!

FIRST METEOR-SCATTER SSTV?

At 0600 GMT on May 7th, G3NOX - Saffron Walden - and GM3WOJ in Rosemarkie completed what is thought to be the first ever successful SSTV transmission via meteor scatter propogation.
The single-frame composite colour picture was sent on 50MHz and a long burst at 5-9+ in Scotland was enough to produce an excellent picture on the monitor.
Congratulations to those two stations - it's a pity though that this information only reached the BATC via an American magazine!

CALLSIGN SLIP-UP

Page 60 of the last issue advised of an application for an ATV repeater to cover the western part of Glasgow. The callsign given was GB3GV, however I suspected it like mad of course when the information came in ('GV is already on air in Leicester), but there was no time before printing to check - hence the question mark.
I am happy to say that the mystery has now been solved and the callsign should have been GB3GT.

SUBSCRIPTIONS - LAST CHANCE

Subscriptions to the BATC were due on the first of January this year. If you have not returned the renewal form or have not previously paid, may I suggest that you do so without delay. Unless subscriptions are received very soon your copies of CQ-TV magazine will cease.
Please send your £5, stating name, callsign and address to: Mr. D.Lawton, 'Grenehurst', Pinewood Road, High Wycombe, Bucks HP12 4DD. Overseas members requiring air mail should consult the extra charges list on page 3 of CQ-TV 132.

CALLSIGN BADGES ARE BACK

The BATC callsign badge is again available, at £1.50 each from Members Services. Please ensure that your callsign is printed CLEARLY IN CAPITALS when ordering. Please allow up to three weeks for delivery.

TV REPEATER NEWS

GB3PV, the proposed FM-TV repeater of the Cambridgeshire Repeater Group, has had its proposal accepted and approved by the RSGB which has now been passed to the DTI for licencing. According to the Group's newsletter (No.9) 'the RSGB are hopeful that 1kW e.r.p. will be allowed as an experiment for TV repeaters.'
Although Madingly has been specified as an original location the sight is known to be less than ideal. It seems though that a prestigious site in North Cambridge, on a very large existing mast, has been offered as a repeater site. Tests are being carried out and further information will be released as it becomes available.

GB3TV - Dunstable Downs now has 'big ears' in the form of a new GaAsFET preamplifier.

GB3GV - Leicester. At the time of writing (late December) a brand-new repeater for 'GV is undergoing field trials from my own QTH (Ed). If tests prove successful the new machine could be installed about the time this magazine is published. With this new design it is hoped to be able to provide a more effective repeater with more power output and better coverage.

RESEARCH MATERIAL

I am still hunting for research material for my forthcoming documentation of ATV (see 'wanted' ad. under Market Place).
It has occurred to me that there might be some home movies around, or even video tape, which helps to illustrate the history and evolution of ATV. If anyone has such material that they are prepared to loan to me, I would like to have copies made onto broadcast quality video tape, with a view to including the material in a possible video to accompany the book.

Ed, G3YQC

EARLY CLOSING FOR NEXT ISSUE

Because of the 1986 BATC Rally (see previous item) the closing date for the May issue of CQ-TV has been brought forward to March 8th.

1986 BATC RALLY/SHOW

The BATC annual RALLY/SHOW will be held on Sunday May 4th at the Post House Hotel, Crick, Near Rugby (the same venue as last year). The entire Hotel has been booked and the rally will be bigger than ever before, since more trade exhibits etc. can be accomodated due to the expansion of the display areas into a marque in the grounds. It is hoped also to have ammusements for children on hand, such as a 'fun castle' etc. A full lecture program will take place in a much larger lecture theatre that last time. A seminar on Amateur TV repeaters will be conducted by BATC's Graham Shirville, G3VZV, and it is hoped that all ATV repeater groups will send a delegation. Also in attendance will be Paul Elliott, G4MQS, BATC Committee Member and Special Projects Manager of the RSGB Repeater Management Group. Any information relating to the Seminar may be obtained from Graham Shirville, 18 Church End, Milton Bryan, Milton Keynes, Bucks MK17 9HR. (SAE please) or tel: 0525 210011.

The BATC's Biennial General Meeting will take place in the lecture theatre at 4.30pm. Any member wishing to place a topic on the agenda should contact the General Secretary; Trevor Brown G8CJS, 25 Gainsbro Drive, Adel, Leeds LS16 7PF. Tel: 0532 670115, at least four weeks before the meeting.

Members are asked to note that a number of committee members come up for re-election at the meeting. The club is continually seeking new committee members, particularly those who are active in various fields of ATV and who can use their expertise and skills to the benefit of the membership. The BATC is now a large organisation and, in order to maintain high standards, needs ACTIVE and ENTHUSIASTIC members to help in its running.

Anyone wishing to stand for election to the committee, or just find out more about it, should contact Trevor Brown at the above address. WE NEED YOUR HELP!
As in previous years special rates for overnight accommodation are available. Bookings may be made on 0788 822101 but please mention that you are attending the show. Please book early to make sure of a room - it will be very full.

Despite the increased presence of traders, the BATC rally is still an amateur TV show. Accordingly members are invited to bring along anything which they would like to exhibit. Plenty of stand space is available, although you should notify the organiser of your requirements (table area, power, outside access etc) as soon as possible. Space will also be available for members to display and sell their surplus equipment etc. Boot sales may be made in the car parks.

Any information concerning the Rally may be obtained by contacting Frank Elliott, G4PDZ, on (Leicester) 0533 553293 (shop hours) or 0533 871086 (evenings), or by writing to 26/28 Braunstone Gate, Leicester LE3 5LG (SAE please).

FULL DETAILS will be included in the next issue of CQ-TV together with directions for travellers. We hope to have a 'talk-in' station this time to help those in need.

See you there

24CM FM-TV TRANSMITTER

By Peter Johnson G4LXC

This design is based on the experience gained in the construction and operation of various transmitters for the 23/24cm band, for use expressly as TV transmitters. The design is not suitable for beginners or those with little experience in this field.

The first transmitter to be built was based on the requirement to produce vestigial sideband AM with sound and an output of 2.5 Watts. This was accomplished in 1983 but, when FM-TV became the accepted method of TV transmission at microwave frequencies, a completely fresh approach was required.

A Wood & Douglas 400-450MHz FM-TV source driving a PA into a varactor tripler was tried. This produced 6 Watts RF at 24cm but still did not provide a clean transmission without the use of inter-digital filters. Another approach was to triple the output of the W&D source using discrete transistors, this was followed by straight amplification to reach 2 Watts RF output.

An attempt was then made to build a suitable solid-state power amplifier with an output in the region of 10 Watts. This proved very expensive and my attempts at construction didn't go too well anyway. The price of really suitable devices were beyond the average amateur's pocket until the emergence of the BLV92/93 series from Mullard. Now at reasonable cost 8 Watts can be achieved with guaranteed repeatability. The design described here makes use of the cheapest possible components to achieve 1 or 2 Watts of RF output power related to cost in order to drive a PA.

PCB-1 VISION AND SOUND COMBINER

Video input at 'A' should be composite mono or colour at the standard 1v p-p level across 50-ohms. T1 is an emitter follower driving the pre-emphasis network which is to the CCIR recommended standard. The network should be included in all FM-TV transmitters in order to achieve complete inter-station compatability. The termination resistor (R6) does not seem to effect the circuit's performance greatly, but its omission does reduce the current drawn by T1. T2 is a phase splitter stage which enables either positive or negative going video to be selected. The preset (P1) is adjusted to equalise the video signal at both switch positions. A remote switch may be fitted to the front panel.

T3 and T4 is a long tail pair and controls the video gain and the combining of the FM sound subcarrier. A video signal bearing the sub-carrier is available at the collecter of T4 via 10uF and 1n capacitors. P2 is adjusted to provide 0.7v p-p video BEFORE the sound is connected.

It is essential to screen PCB1 from PCB2 to avoid cross modulation of unwanted sound subcarrier, they are best built into individual custom boxes or a twin unit with a centre screen and well fitting lids, although the prototype had the two boards mounted side by side with a screen dividing them (see Fig.6)

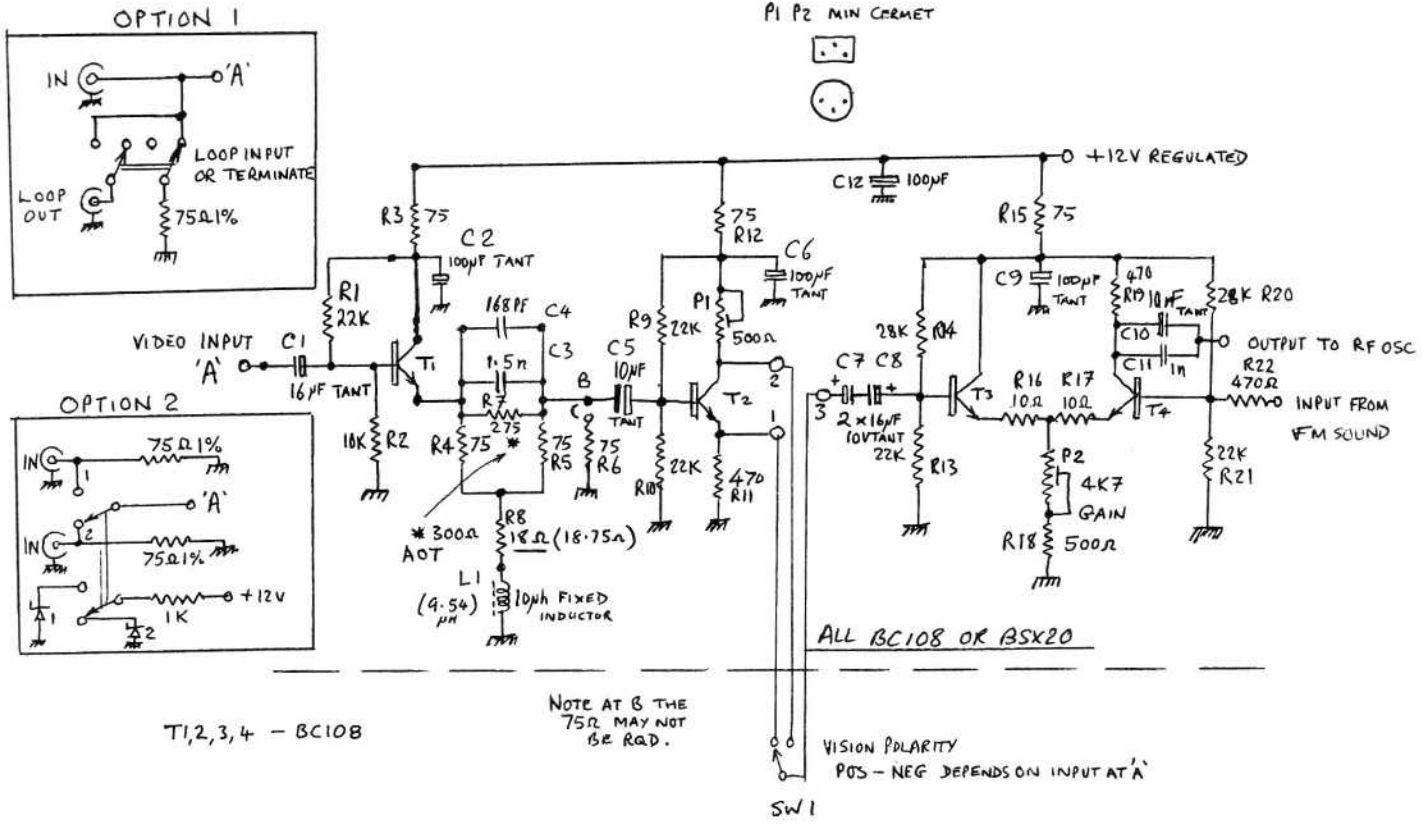


Fig.1 VISION AND SOUND COMBINER - PCB-1

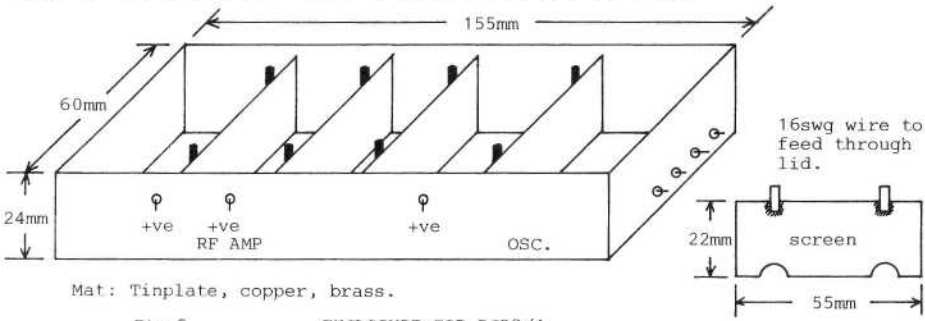
Two optional circuits are shown inset in Fig.1. Option-1 provides video loop-through or terminated loop for a single source, whilst option-2 selects between either of two terminated video inputs, the input selected being indicated by LED's.

PCB2 - AUDIO AMPLIFIER AND FM MODULATOR

The audio amplifier provides a gain of some 60dB, a 10mV input signal being required for full output. A crystal microphone gives this level of input and is also a much cheaper item to purchase than many other types. The two diodes act as a 'soft' limiter, clipping the audio above a specific level (which occurs at an input of 20mV) thus providing constant deviation which is set by P1. 50KHz is a normal deviation to use.

The varicap diode (VD1) shifts the frequency of the oscillator by two means: by modulation and by the switch selected frequency control circuit. This provides either 5.5 or 6MHz subcarrier frequencies. L1 is tuned in conjunction with the selected values to provide the split frequency.

The oscillator (T8) retains a stability within +-500Hz after a short warmup period, provided the circuit is constructed properly. Amplifier T9 provides greater than 2v p-p RF output which should be fed to PCB-1 via a piece of screened audio cable. P2 sets the amplitude and may be set on-air where a distant station should observe best recovered audio consistant with no sound breakthrough on the picture - a setting of around 1.4v p-p being typical. 1.4v of sound and 0.7v of video equals 2.1v p-p combined signal to feed PCB3/4. Distortion will occur if these levels are too high.



Mat: Tinplate, copper, brass.

Fig.5 ENCLOSURE FOR PCB3/4

PCB-3 - 1250-1350MHz MASTER OSCILLATOR.

The source (PCB3) board consists of an emitter follower video input stage followed by a varicap frequency modulated oscillator with a range of around +-20MHz about the nominal frequency set by a trimmer capacitor. Frequencies between 1200 and 1350MHz can be easily set enabling the transmitter to work anywhere in the amateur 1.3GHz allocation.

T10 is an emitter follower. P1 sets the modulation level to the oscillator and therefore its total deviation of around +-6MHz or greater by virtue of the sideband lobes. This would mean a total bandwidth of +- 16MHz so again an off-air check with a distant station is probably the best means of adjusting deviation. To start with set P1 at around half-travel (about 1v p-p).

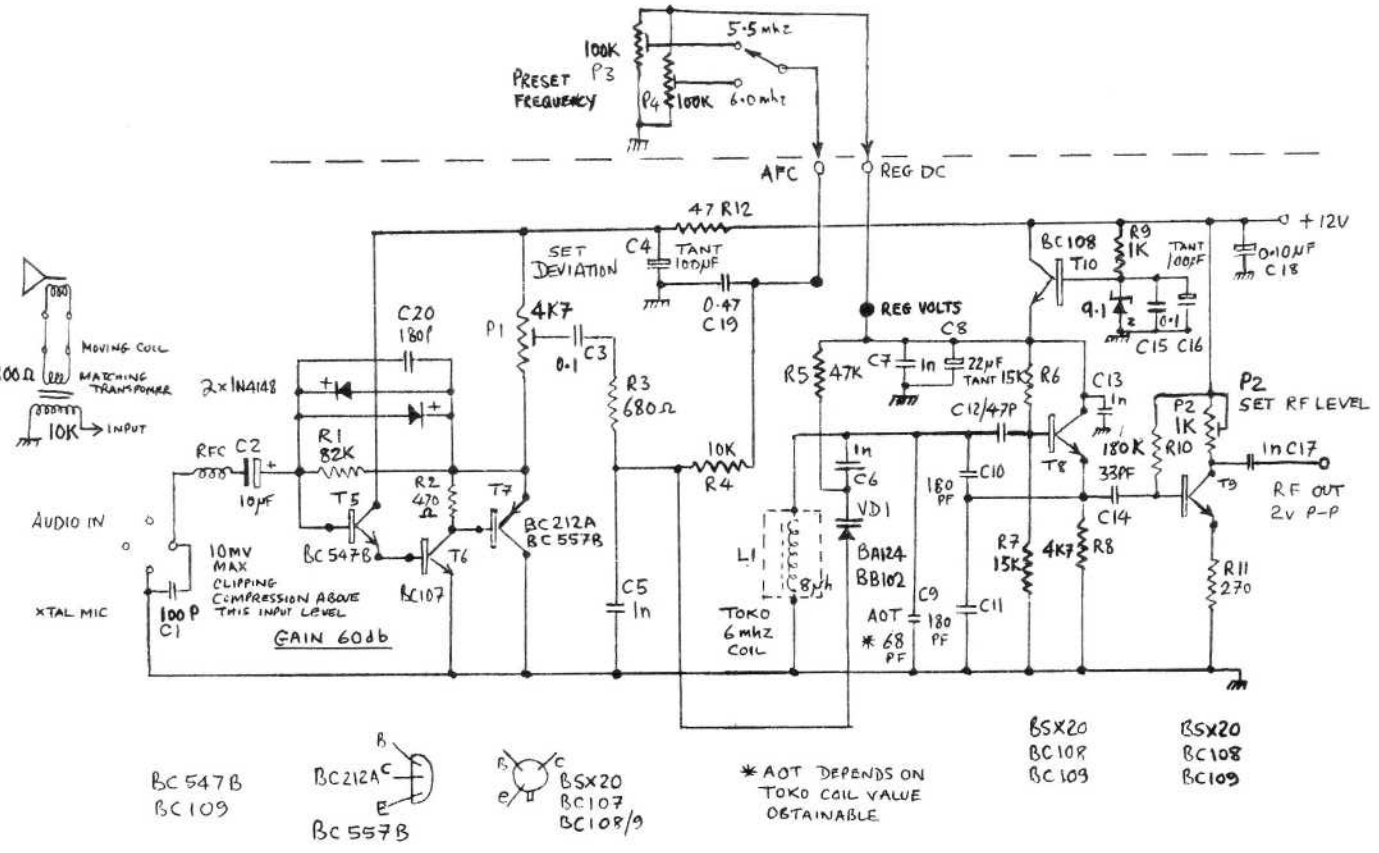


Fig.2 FM SOUND MODULATOR - PCB-2

VD1 and VD2 must have a linear voltage-to-capacity relationship. Any old diode may be tried but the best ones are those taken from an old ELC1043 type TV tuner. The only critical components are C1,2,3,4. C's 1 and 2 should be plastic film (Mullard) types; do not use ceramics. C's 3 and 4 are 1n minicaps and must be soldered as close to the base of T11 as possible with extremely short (zero) lead lengths. The ferrite beads placed over the lead of the 47-ohm resistor (R9) provides the inductive feedback necessary for oscillation to occur. Cut the resistor wire just long enough to accomodate the beads with as short a connection as possible to the emitter of T11.

Keep all component leads as short as possible paying particular attention to those of the decoupling capacitors. Don't stand resistors and capacitors up on legs but rather solder them in neatly and close to the PCB.

The 50-ohm output loop may or may not provide enough coupling for full power transfer. By allowing plenty of solder on the track, coupling is increased; this also applies to the tuned line L1. Transistor T12 regulates the voltage to the oscillator which ensures oscillator stability. This voltage is also used for the deviation and frequency controls.

C2 sets the maximum deviation in conjunction with 'set deviation' potentiometer. C1 sets the frequency in conjunction with the 'set frequency' potentiometer.

PCB-3 is combined with PCB-4 but may be cut from it to make a mini transmitter by itself. It is however vital that the oscillator is totally enclosed in a tin box when driving the 1W output stages. Ensure that all screen partitions are in place since RF feedback may destroy some transistors - especially types such as BFR96.

It is best to construct the oscillator and get this part working before proceeding with the remainder of the transmitter. The oscillator itself should be put on the air both for setting-up purposes and to ensure that the signals are in-band! A local station could help out here. When this has been satisfactorily completed the oscillator section may be fitted into its compartment in the box detailed in Fig.5. Make the box to the dimensions shown drilling holes in appropriate places, in which to fit feedthrough capacitors to convey the power to each board. A tight-fitting push-on lid should be made to cover the component side of the enclosure and suitable holes punched in the lid to allow access to the various preset controls.

PCB-4 - RF AMPLIFIER AND POWER OUTPUT STAGE

The wide-band amplifier (PCB4) provides an output of not less than 1 Watt of RF and may, by selection of discrete transistors, be increased to nearly 2 Watts of RF output into a 50-ohm load, this of course depends on cost. The design described below usually settles around 1.2 Watts DC input to the final transistor - an MRF511 which is obtainable on the surplus market at around £3.50 each. The FT is said to be 2GHz and the gain >6dB.

The diagram below shows the various transistor line-ups which may be employed together with the DC input figure to each stage and the expected output power.

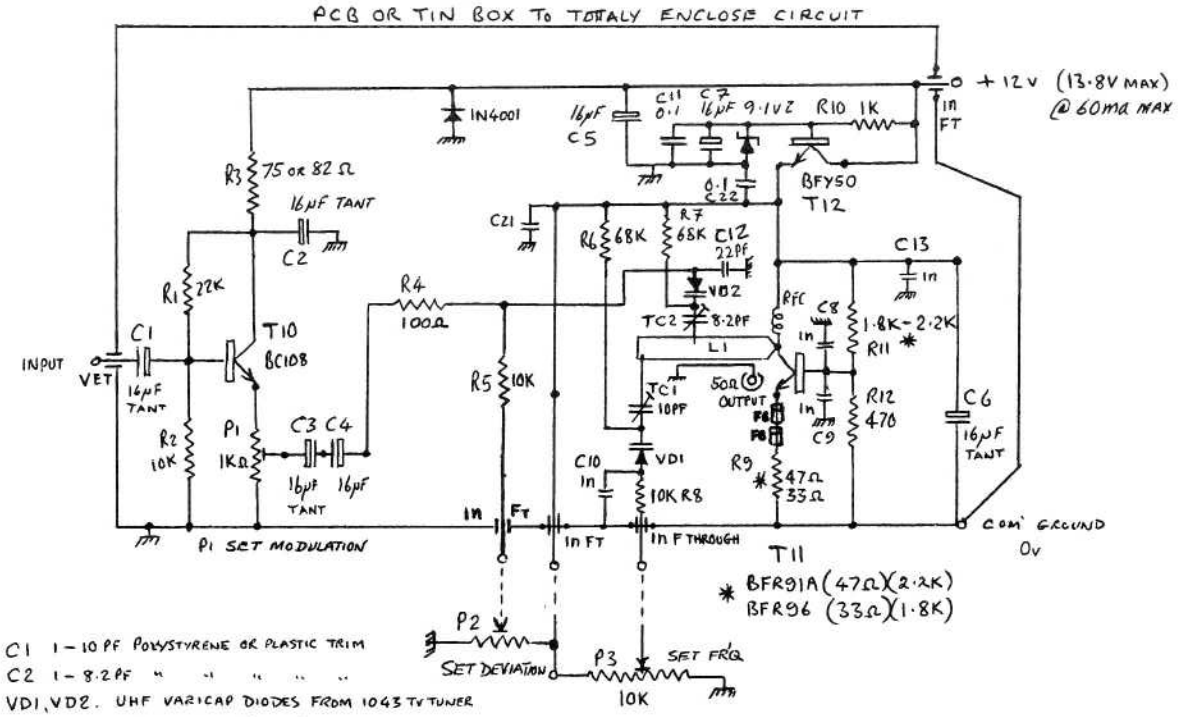
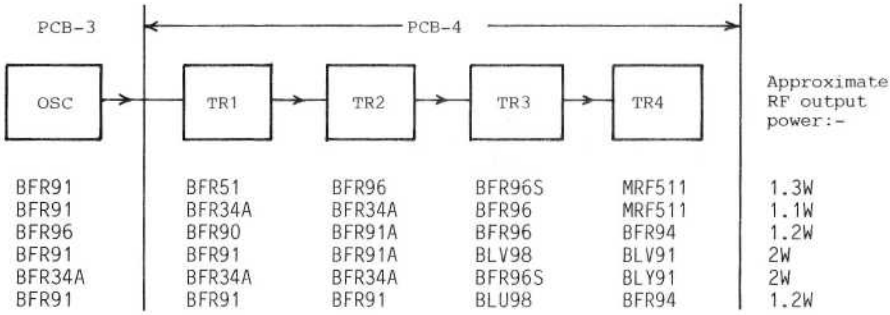


Fig.3 1250 - 1350MHz MODULATED FM-TV AND SOUND OSCILLATOR - PCB-3



BFR91	BFR51	BFR96	BFR96S	MRF511	1.3W
BFR91	BFR34A	BFR34A	BFR96	MRF511	1.1W
BFR96	BFR90	BFR91A	BFR96	BFR94	1.2W
BFR91	BFR91	BFR91A	BLV98	BLV91	2W
BFR34A	BFR34A	BFR34A	BFR96S	BLY91	2W
BFR91	BFR91	BFR91	BLU98	BFR94	1.2W

MRF511 - J.Birkett, The Strait, Lincoln.
All others - LMW Electronics, 102 Stamford Street, Ratby, Leicester LE6 0JU

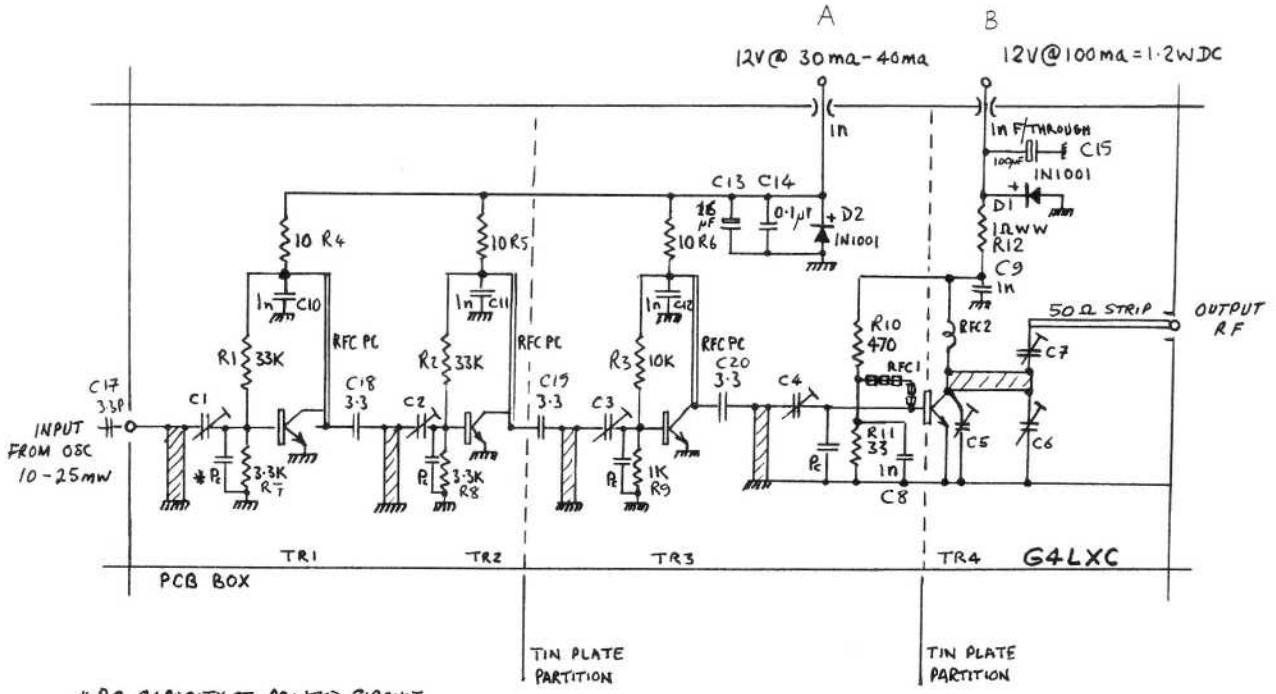
This board should be assembled exactly as per the circuit diagram and overlay component drawing, and TR4 should be fitted last of all. As with the oscillator the leads of all components, especially decoupling capacitors, should be kept as short as possible. Don't overheat any of the transistors whilst soldering them in.

Be careful when bolting Tr4 into place. Solder the collector tab in the correct position ensuring a short connection. Ensure a good mechanical connection to the chassis which provides the heatsink, using spacing washers as necessary to allow for solder blobs on the underside of the PCB. Ensure that the board is rigidly clamped to the chassis before finally placing Tr4 in position. Various mechanical arrangements are possible for Tr4 and it does not need any more heatsinking than a 16swg aluminium chassis.

ALIGNMENT

Connect Tr1,2 and 3, leaving Tr4 disconnected (remove RFC-2). Apply drive and tune the first three stages to draw maximum current from the +12v supply rail. Switch off and, if the box has not yet been installed on the main chassis, do it now. A single hole should be drilled to accept TR4's stud. Only after the box and TR4 has been fitted should the other connections to the final transistor be soldered down. install RFC-2. Connect a power meter and load to the output and apply drive and 12v. Tune C4,5,6 and 7 for maximum power output (should be 1W or more). If a condition exists where no power output is achieved, use an RF probe to make sure each stage is being driven correctly and also check that Tr4 is drawing current, this should lie in the range 60 to 100mA. If still no RF then switch off and check your work carefully.

Peak all trimmers for maximum output. This is best done somewhere between 1260 and 1280MHz. Check the output frequency with a wavemeter of known calibration.



* PC CAPACITY OF PRINTED CIRCUIT

RFC 1. 5x MINATURE FERRITE BEADS ON 26 SWG TC WIRE

RFC 2 2 T 26SWG TC WIRE 1/8 DIA

TRIMERS 0·5-7PF - C5 - C7

TRIMERS 0·2-3·5PF C1 - C4

OR 0·5-5PF 7 MM DIA PLASTIC MULLARD.

ALL RESISTORS 1/4 WATT MINIMUM, 1/2 WATT MAX.

Tr1-4 SEE BLOCK DIAGRAM AND LIST.

Fig.4 POWER AMPLIFIER - PCB-4

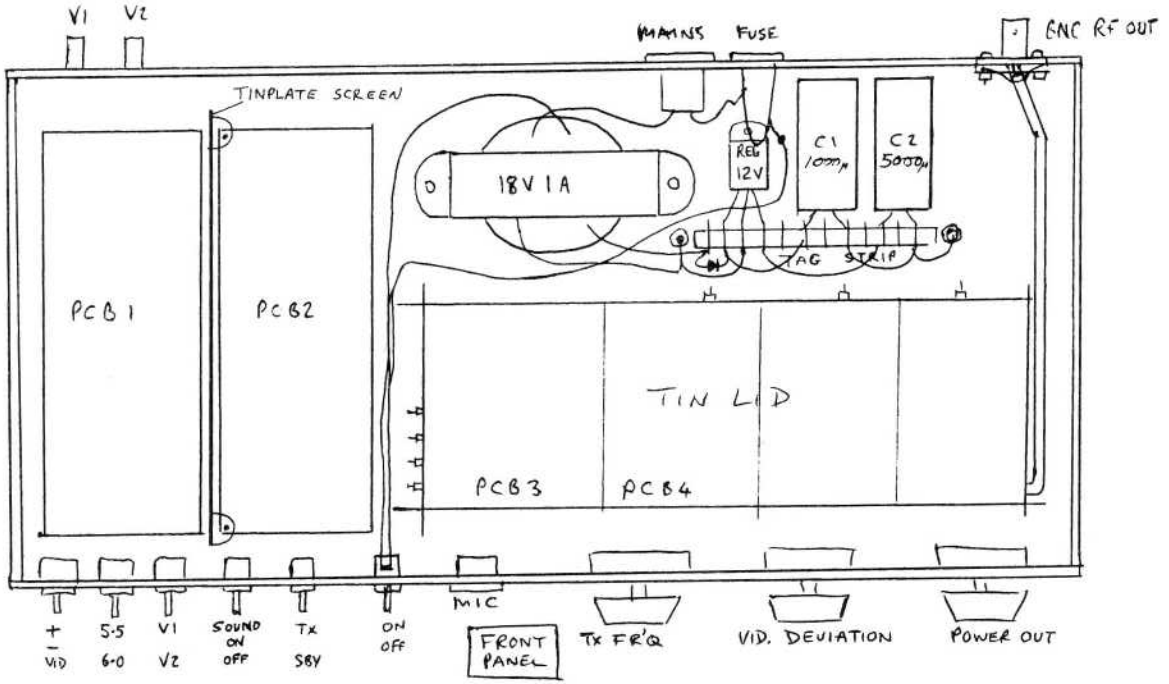


Fig.7 PLAN OF CHASSIS AND GENERAL LAYOUT

GENERAL NOTES

A 16swg aluminium chassis is used to mount all the modules in (see Fig.6).

The audio on/off switch simply switches the + rail to PCB2. The TX/STBY switch controls the + supply to A and B only (see Fig.4). PCB3 has the power rail applied all the time in order to maintain oscillator stability. Front panel controls and general layout can be determined from Fig.6. Printed circuit board patterns and component overlays are shown, actual size, in the remaining figures. Dimensions of the boards are shown to enable a check to be made that they have not changed size in the printing of CQ-TV!

Power requirements are +13.8v at around 1A (900mA average) and a suitable power supply circuit is shown in Fig.7.

1 - 3.5pF trimmer capacitors (type 809 - orange) and 2 - 10pF (type 808 - yellow) are available from LMW Electronics (address earlierinf this article) as are many other of the components.

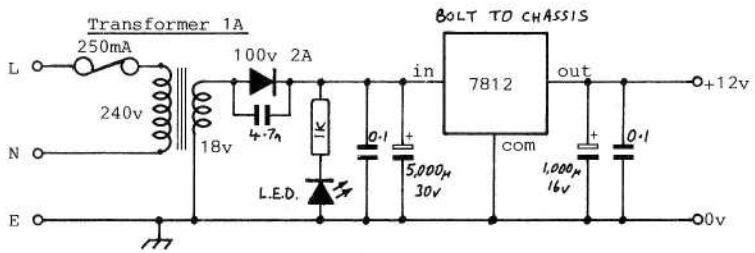


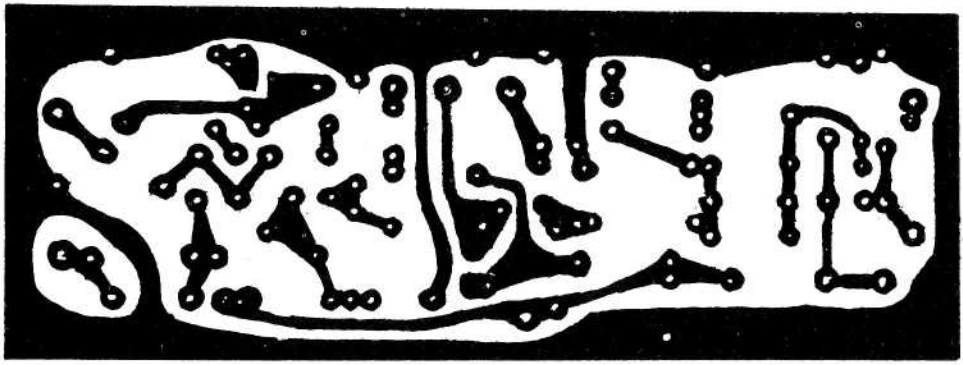
Fig.7 1 AMP POWER SUPPLY

NEW 70cm CONTEST

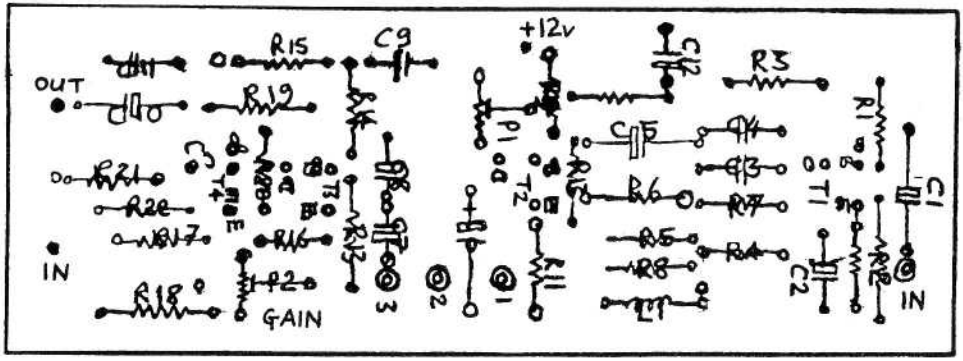
APRIL FOOLS FIESTA

This brand-new 70cm ONLY contest is to be an annual event and will make its debut on the 1st of April 1986. The contest is a "whole-day" affair and the object is to enjoy it rather than win.

Don't be 'out' on all fools day, stir your stumps and make a day of it. Everyone gets a prize! HOWZAT THEN?

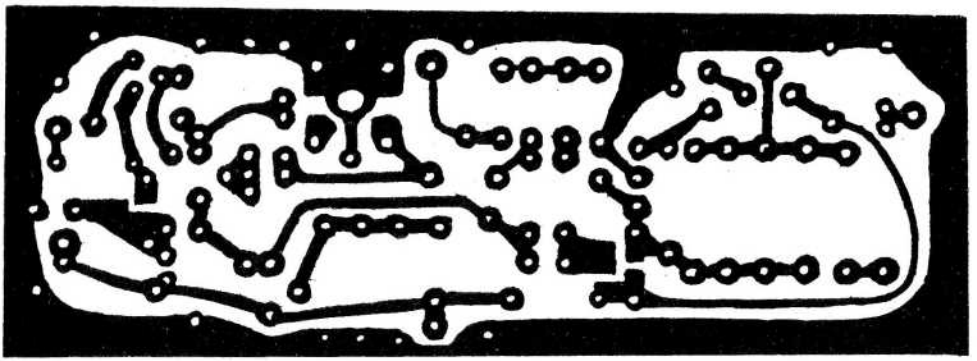


PCB-1 print pattern. 126 x 46mm 1/16" single-sided.

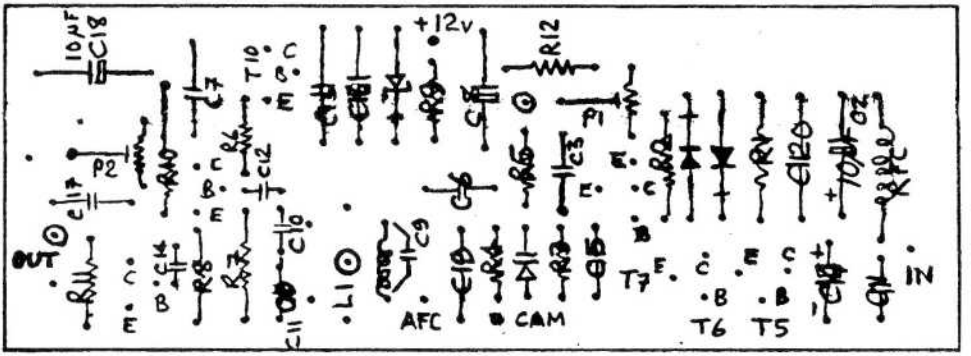


PCB-1 component overlay

The BATC regrets that printed boards for this project are NOT available from Members Services.



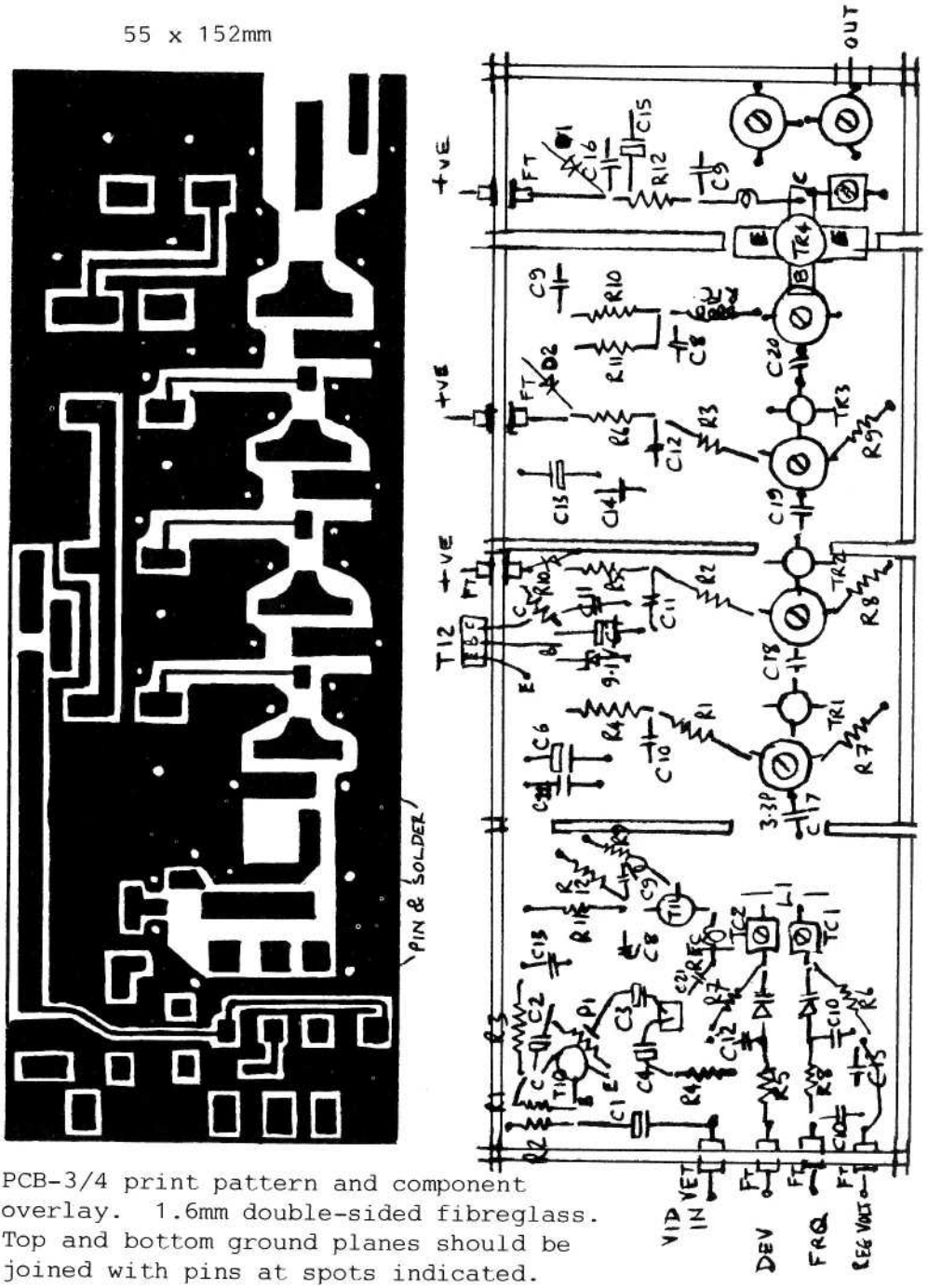
PCB-2 print pattern. 126 x 46mm 1/16" single-sided.



PCB-2 component overlay

Both PCB-1 and PCB-2 should be mounted either in separate boxes or be well screened from each other.

55 x 152mm



PCB-3/4 print pattern and component overlay. 1.6mm double-sided fibreglass. Top and bottom ground planes should be joined with pins at spots indicated.

ROBOT & WRASSE SSTV

PROBLEMS WITH COMPATABILITY BETWEEN WRASSE SLOW-SCAN CONVERTERS AND THE NEW ROBOT 450C AND 1200C EQUIPMENT

By Roderick Clews G3CDK

The new Robot SSTV converters provide a most effective composite colour system for the amateur, the quality of the pictures produced being unrivalled. The system though is not always compatible with the line sequential formula incorporated in the Wrasse converters.

Some, but not all, of the Wrasse converters, and some home-brew DL2RZ systems are not properly receivable on the new Robot equipment; the picture filling only part of the screen. In my station this was found to be a problem, especially when in contact with G3LUI who uses a home built DL2RZ unit. G3LUI and myself have carried out many experiments and finally discovered that the problem lay in the sync pulses he was transmitting which were short in duration; this is also true of some of the Wrasse commercial equipment. The new Robots are micro-processor controlled and they do not seem to recognise a pulse of inadequate duration. The trouble in the DL2RZ was traced to short frame and line pulses. Some of the line pulses were not being recognised at all and thus lines were being missed, resulting in a "squashed-up" picture. It was found that by adding more capacitance to the R/C timing circuits the problem could be rectified, in fact the line capacitor was made 2.2uF whilst the frame became 68uF.

Pictures from the DL2RZ system are now excellent and even colour frame sequential pictures register correctly. I understand that Wrasse himself is being asked to publish some modifications to his commercially produced equipment, however it seems that not all DL2RZ and Wrasse TV converters exhibit the same problems; indicating a probable variation in component tolerances.

The problem never occured when taking pictures using the earlier Robot 400 series, these could receive good pictures from signals having short pulses, but unfortunately the new equipment is less tolerant although it is perfectly compatible with the 'original' or 'standard' specification promulgated by Copthorne MacDonald.

There is still one small problem being experienced by G3LUI concerning colour transmissions from a 1200C: On an 8-second frame sequential transmission it is essential that each line be in correct register, but for some reason G3LUI finds that one frame can differ by plus or minus one line from that previously sent. To overcome this I send 3 red, 5 green and 5 blue frames, the correct pictures being ultimately selected for use.

To conclude; the new Robot 1200C provides, at its highest resolution, 64 grey shades and, in its 72-second colour mode, an image comparable to a still picture displayed on a 625-line TV. The Robot has four B&W speeds....8, 12, 24 and 36 seconds and four colour....12, 24, 36 and 72 seconds. The aspect ratio available is 4:3 but, although pictures will be slightly distorted against 'conventional' 1:1 systems, the performance is entirely satisfactory.

CONTEST NEWS

Mike Wooding G6IQM

Well, the 1985 contest season is finally over. Time to reflect on what might have been, or to re-build the 70cm portable station, perhaps even to have a go at some of that 24cm gear which you have been promising yourself. Whatever your thoughts or intentions for future contests I would like to thank all those participants for their support throughout the year, also for the many words of encouragement received following my undertaking of Contest Manager.

It may be a bit late, but I got confused with my dates and thought there was another magazine in 1985. 'Still I hope you had a merry Christmas and that the new year has got off to a good start.

I intend making one or two changes this year: A certificate will be sent to each contest entrant, provided an A4 (8.5" x 12") stamped, addressed envelope is included with your entry. Two grades of certificate have been prepared and the 'posh' one will be sent to the leading stations in each section. New-style contest entry forms and log sheets have also been printed and are available from me (SAE as above). I would appreciate the use of these forms since it helps to standardise things as well as considerably assisting the transfer of data to the computer.

CONTEST GENERAL RULES

EXCHANGES: A code group consisting of four non-consecutive numbers (ie: 2718) is to be sent by VIDEO ONLY. The same group is to be maintained throughout each contest session, but where more than one band is being operated, or the contest has more than one session (as in the cumulatives), a different code group should be used for each band and session.

Callsign, vision report (1 to 5 scale), contact serial number (commencing at 001) and Maidenhead locator should be sent either by vision or phone. For example: a report for the 12th contact in a session could be:- 4-012-IO92JI.

TRANSMITTING AMATEURS who can receive vision only should enter the receive only section and claim for a one-way contact for each correctly identified TV station.

LISTENERS may also enter the 'receive only' section but they cannot 'give' points to other stations.

SCORING: 2-way contacts on 70, 24, 3cm and SSTV: 2 points per Km.
One-way only contacts (including receive only and listener stations): 1 point per Km.

Dates, times, frequencies and any other information concerning individual contests will be published in CQ-TV prior to that contest, as will any variations to the above rules.

1986 CONTEST CALENDAR
(The Winter Cumulatives having already taken place).

Tuesday April 1st — APRIL FOOLS FIESTA - 70cm only - 0001-2359Hrs local.

Monday May 5th — MAY DAY MICROWAVE *** - 24cm only - 0001-2359Hrs local.

Saturday July 6th / Sunday July 7th — SUMMERFUN - 70cm, 24cm, 3cm, SSTV.

TBA (September) — INTERNATIONAL ATV CONTEST 70cm, 24cm, 3cm

*** Rod Timms G8VBC has generously offered a 5" Rigonda TV as first prize for the May Day Microwave contest.

THE 1985 INTERNATIONAL

It appears that although conditions were not entirely conducive to amateur TV operating, day one of the International was quite active with day two being less so. Nevertheless I have had a good number of UK entries for both 70 and 24, but alas nothing for 3cm.

From reports received it seems that the contest was a success, but I have had a number of complaints concerning operating procedures used by some stations. As requested those letters have been passed to the Editor, the main points of which are dealt with in 'TV On The Air'. Whilst being concerned about such reports I don't intend 'Contest News' to become a 'battle ground' so I will content myself with asking that the contest rules be adhered to and that participants diplay common sense when on the air and have due regard for other band users, whether they are in the contest or not. If I receive a number of complaints about an individual station, that station will be liable to disqualification from the contest.

Whilst working a contest members are asked to observe the following code:-

VISION transmissions should be kept to the absolute minimum required for correct identification to be made.

CQ calls should be kept short especially when using the calling channel. They should be made by phone only (except under extenuating circumstances), since a vision transmission may be causing another station to lose a contact.

IF you are waiting to use the calling channel and it is occupied by another station, please allow that station sufficient time to listen for any replies before transmitting yourself.

PLEASE remember that the observance of contest rules is a pre-condition of entry.

G8BWC requests a change in scoring: Quadruple points for working portable stations who are within sight of a public house! Reason: the video is more blurred from them!

A cry for help from G6IBA (who?!): they need a QRA distance calculator for their micro.

Congratulations to Ken G8DIR for coming first on 70cm and also to G6WOR for his UK first on 24. Congratulations also to G4JEC on his best DX of 52km using just 350mW of transmit power, alsc to G8LIR/P and G4CRJ for making it across the water, and condolences to GJ8EZA for not doing so.

Finally thanks to all those who sent in check logs.

All corespondence concerning contest should be sent to me: Mike Wooding G6IQM, 3 Perkins Grove, Rugby, CV21 4HU.

1985 INTERNATIONAL ATV CONTEST
UK RESULTS - 70cm SECTION

Place	Call	Points	Contacts	Place	Call	Points	Contacts
1	G8DIR/P	6843	47	16	G4VTD	1416	18
2	G8LIR/P	6514	28	17	G3WSC	1357	21
3	G6MNY/P	5236	38	18	G4ROB	1304	13
4	G6CUQ	5143	40	19	G6HMS	1297	14
5	GOATV/P	4988	39	20	G8GLQ	1252	14
6	G6WOR/P	3924	39	21	G4VBS	1099	10
7	G4WRA/P	3912	54	22	G6IBA	888	6
8	G4CRJ	3511	27	23	G3SBV	850	12
9	G1DDA/P	3449	40	24	G4TEP	406	7
10	G8BWC	2259	21	25	G2BMI	358	8
11	G6MNJ	2021	17	26	G4LDR/P	352	4
12	G3YQC	2007	18	27	G4JEC	270	7
13	G6SKO	1784	17	28	GJ8EZA/P	195	5
14	G6AMM/A	1696	15	29	G4LXC	95	6
15	GW8GIZ/P	1457	21				

UK RESULTS - 24cm SECTION

1	G6WOR/P	788	12	7	G8BWC	162	2
2	G8MMF/P	528	6	8	G4LXC	105	5
3	G4CRJ	494	5	9	G3WSC	70	2
4	G5KN/P	362	6	10	G8GLQ	18	2
5	G3YQC	330	5	11	G3SBV	14	1
6	G4VTD	220	5				

U.S. - ENG ON 70CM?

A broadcaster in Arizona has told the FCC that he wants direct access to the amateur service for what he says is to be a non-commercial public service purpose. Lee Shoblom (K6ADA), President of London Bridge Broadcasting, Inc., has filed a request for a waiver of the amateur rules to permit him to use ham radio for news gathering purposes. Specifically, Mr.Shoblom has requested that he be permitted to use fast-scan amateur television in the 435MHz spectrum for gathering news on matters of community interest and to broadcast it on his low power television station.

In explaining his request to us, K6ADA noted that the cost involved in the purchase and operating of commercial ENG microwave gear was so high as to preclude his obtaining any. The area served by his LPTV ststion is primarily a resort community about 5-miles in diameter; the low power limits of his TV station enables him to transmit only about 10 miles in any given direction.

Shoblom, who is on the Board of Directors of the National Association of Broadcasters, said that he filed his request after discussing the concept with NAB Counsel Jeff Baumann (formerly of the FCC's Mass Media Bureau) and commissioner Quello. This was followed by a formal presentation before Private Radio Bureau Chief Robert Foosaner.

K6ADA said that Foosaner was immediately concerned about the conflict of interest that could develop as the result of using amateur spectrum for broadcast purposes, but based upon the apparent merit of the proposal, suggested that K6ADA do further research on the feasability of the concept. Support for the idea was quickly forthcoming in the form of letters from the Mayor and President of the Chamber of Commerce. Another came from the President of the local amateur radio club that represented approximately 43 hams in the community, all of whom favoured the idea.

Shoblom noted that he had also notified ARRL Executive Vice President Dave Sumner, K1ZZ, of his plan in accordance with a suggestion made by the FCC that he do this prior to filing his waiver request. A response from Sumner indicated that the matter would have to be taken under advisement by the League's Executive Committee before any official ARRL position could be taken.

When he filed his waiver request, K6ADA had expected to either be granted or denied a waiver for such operation on a restricted basis in his community. Instead, the FCC's Private Radio Bureau appears to have taken the view that this request could have a greater impact upon the overall Amateur Service, the broadcast services and the welfare of the general public.

A positive finding on this proposal could give all broadcasters, including the major networks, the possibility of access to this mode of amateur communication, while a negative decision would adversely affect the ability of low power stations, such as Shoblom's K45AJ operation, to serve the news needs of small communities.

Shoblom told WESTLINK that if a blanket waiver results from PRB-2, he feels that it should have some definite restraints built in to preclude the commercialisation of the amateur service by the broadcasting news media. These might include, but not be limited to, specific restrictions based upon the remoteness of a station from a major urban area, or upon the population density of the community served. He does not want to see hams being used on a regular basis as traffic reporters or the like since it would be ".... a degradation of the [Amateur] Service and I do not want that."

To this end, Shoblom has made it clear in his filing that he is willing to place self-imposed restrictions upon his own operation, such as transmitting inverted video and using his commercial FM channels for the aural portion of any remote news report.

The above item is quoted from THE WESTLINK REPORT number 453 dated September 6th 1985.

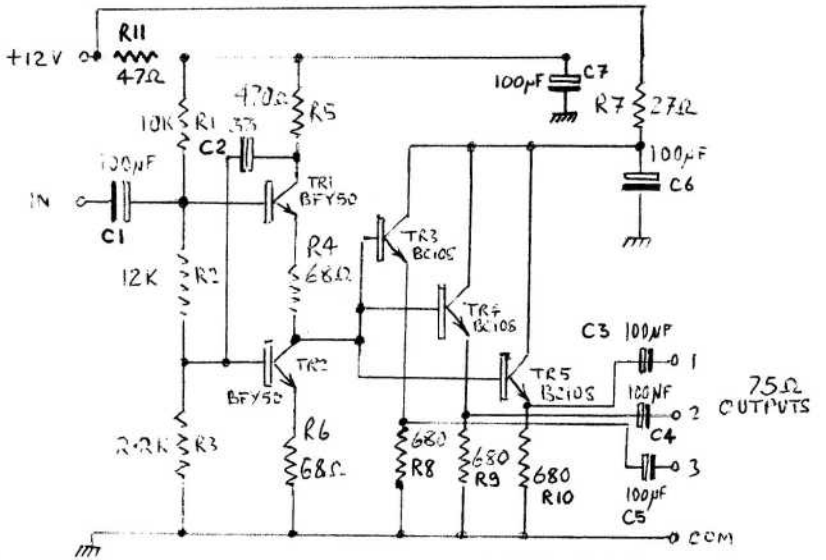
ONE IN - THREE OUT

By Peter Johnson G4LXC

Designed specifically for home-brew receivers such as the Handbook ATV receiver and IF strip, this circuit accepts a high impedance signal at its input and provides three, short-circuit proof, independent 75-ohm outputs.

Tr1 and 2 form a feedback pair having a high impedance input requirement but delivering a low impedance output. This drives three emitter follower stages (Tr3,4 and 5), each one providing a 1v p-p video signal across a 75-ohm termination from a DC isolated output.

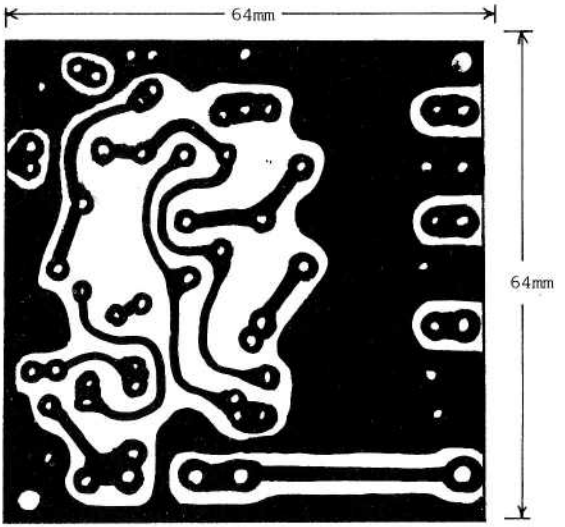
Although the prototype was made on Veroboard, it is nicer to use a custom printed-circuit board. The printed pattern and component layout are shown, full size, for those wishing to make one.



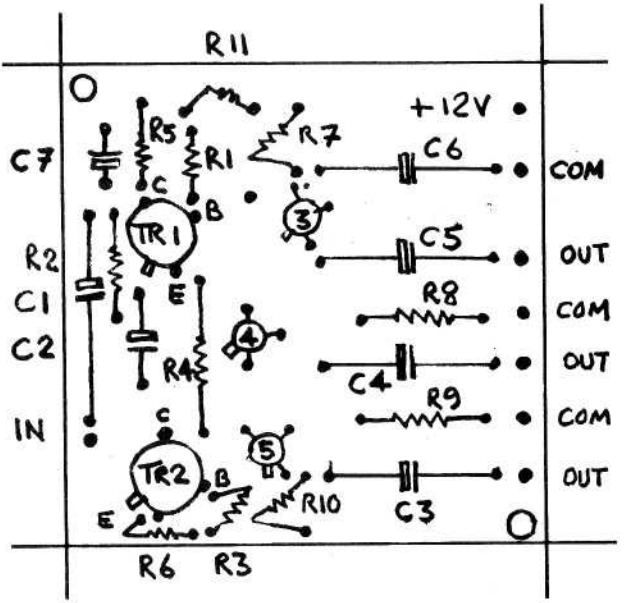
None of the components are hard to get and, what the junk box can't provide, any number of component suppliers can (see suggestions in the centre-page pullout section). If identical boards are wired in parallel, it is possible to have six or even twelve outputs at once. The unit is, of course, fully colour compatible.

It is interesting to note that a uL733 i/c will drive this circuit directly. The '733 is able to provide gain control and frequency compensation plus an inversion facility.

This design makes a very good quality, colour distribution amplifier, and, if used with the uL733 system suggested, has a flexibility which should meet almost all requirements within an ATV'ers shack.



Video distribution amplifier - print pattern



Component layout

REVIEW

DRAE SLOW SCAN SYSTEM

By C.Grant DIXON G8CGK

Let me say at the outset that I was very impressed by the packaging of this unit, which arrived by the normal parcel post; also by its general appearance and finish. A strong steel case with clearly labelled panels at the front and back, and the absolute minimum of controls gave a good first impression. The rear panel is pierced with several holes through which one can gain access to phono sockets which are mounted on the main PCB. It should be noted that phono plugs with long pins will not fit these sockets, but there is no need to worry as the correct plugs were sent with the unit in a small plastic bag. The two sockets at the right were labelled VIDEO I/P and VIDEO O/P which might, at first glance, have been mistaken for two 'looping-through' sockets; in fact the I/P socket is for the fast-scan camera, and the O/P socket for the video monitor. Other sockets are labelled AUDIO A, AUDIO B, TAPE O/P, MIC and KEY. It took all of two seconds to realise that this last was the push-to-talk switch on the mic! The MIC and KEY are wired up to a standard 4-pin microphone socket on the front panel, the two rear sockets then being linked to the mic. socket of the transmitter. INPUT A and TAPE O/P are connected to the tape recorder leaving INPUT B as an input from the receiver.

On the front panel there are only 5 switches and the mic. socket. The function of each switch is as follows:-

1. Mains on/off....with indicator built in.
2. Mic./SSTV.....selects audio or SSTV to be transmitted.
3. Audio I/P A-B...selects SSTV input to be displayed.
4. SSTV on/off.....effectively a freeze action on the SSTV display.
5. Audio/Snatch/Video
   Audio is used when displaying SSTV from receiver or tape.
   Snatch selects the camera input and snatches a complete frame during each SSTV frame pulse and transmits it as SSTV.
   Video snatches and displays at a fast rate enabling the camera position and focus to be adjusted rapidly.

Removal of the cover does not invalidate any guarantee; in fact the makers expect the average user to be intelligent enough to set up SOME of the preset pot's on the boards. The instructions specifically state certain presets which should not be touched. Looking inside the box we find a well designed arrangement of three PCBs which have been put together with the idea of minimising assembly time. The original design was for an SSTV receive-converter, but provision was made on the original PCB for a second board, the transmit board, to be plugged in. As stated earlier, all phono sockets are mounted directly on the PCB as are three of the front panel switches; so the whole assembly just drops into place in the box. The power supply is mounted on one side using a separate small PCB. The photo shows details of the actual layout of the unit.

MAKERS SPECIFICATION

Slow Scan TV Receiver

Frame Storage	1 Frame.
Resolution	128 x 128 Pixels 4 Bit (16) Grey Scale
Transmission Time	8.5 Seconds
SSTV Input	FM Modulation 2,300 Hz Black 1,500 Hz White 1,200 Hz Sync Pulse 100mV. to 2V. Rms.
Video Output	Phono Connector Standard composite video signal. 1V. PK to PK. (75 ohm)
UHF Output	Phono Connector Modulated UHF Signal on Channel 35 (75 ohm)
Power Input	220/240V. 45 to 65 Hz. 5 Watts approx.
Controls	Power ON/OFF Frame Hold Fast Scan/Slow Scan Input
Dimensions	293 x 230 x 72 mm
Weight	2.8 Kgs.

The Receiver can be upgraded to a Transceiver with the transmit module.

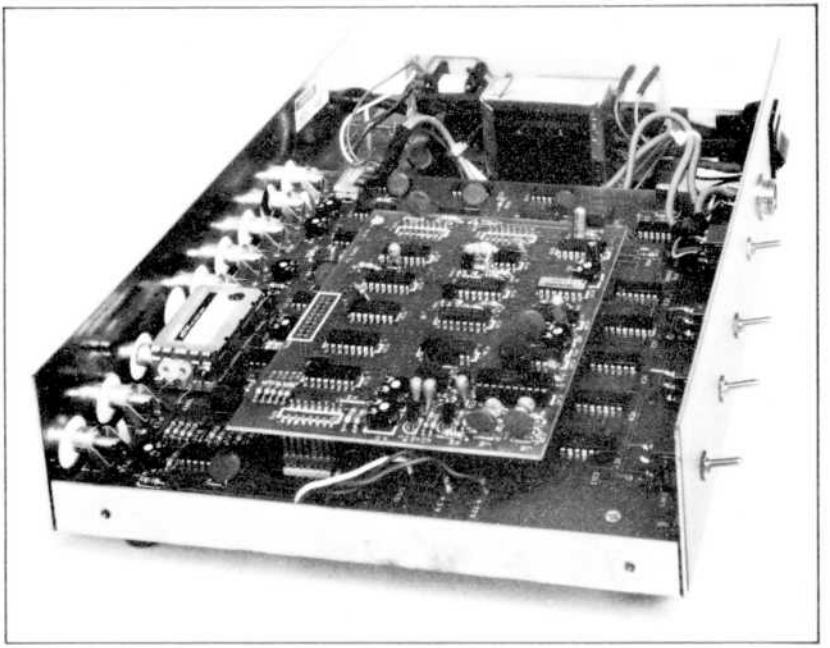
Slow Scan TV Transceiver

Receive section specification as per Slow Scan Receiver

Video Input	Standard 625 line TV 1V. PK to PK. composite video input. Positive or random interlace
SSTV Output	SSTV FM. Modulation 1,500 Hz to 2,300 Hz Sync pulse 1,200 Hz
Video Convertor	4 Bit Flash Convertor

PERFORMANCE

A camera was connected to the VIDEO I/P and a monitor to the VIDEO O/P and the unit was switched on; the left hand switch was set to 'snatch' and the SSTV to 'on' and after a short interval a picture appeared on the screen followed by further pictures at the SSTV frame rate. On close examination of the picture it was immediately apparent that things were not all that they should be; the pixels were rectangular when they should have been square and the picture almost filled the monitor screen. As the SSTV standard calls for a 1:1 aspect ratio there should have been blank borders at either side of the screen. In addition the picture was very pale and lacking contrast. A check with a 'scope revealed two things; first of all the signal had a 50:50 video/sync. ratio instead of the normal 70:30. On querying this with the makers it transpires that occasionally HC rather than LS chips have been used and certain resistors modified to cope with this. The review model required this modification to be cancelled but this had not been done; these units are normally supplied with the standard 70:30 ratio. (Note however that this unit did have an inspection label signed and stuck on the inside of the box). The second thing wrong was quickly righted by looking at the video output with a 'scope, setting the panel switch to 'video', and adjusting VR10 and VR11....the contrast and brightness controls on the transmit board. On the 'scope screen the video signal should be seen as occupying 16 distinct levels between black and white. Once set up, the only adjustment required was the use of the camera lens iris to ensure that the video signal was of standard amplitude.



This still left the problem of the aspect ratio and this was particularly worrying as SSTV generated by the DRAE transceiver when displayed on my usual slow-to-fast converter gave a picture which showed an obvious amount of lateral compression. Enquiries revealed the fact that the designer has endeavoured to tie all the relevant frequencies to a single crystal oscillator and the unit has been designed for a 5:4 aspect ratio instead of 1:1. Further, despite what is printed on the advertising literature issued by Davtrend, the SSTV output frequencies are 'about 6% high'.....no wonder that I had to use a variable speed tape recorder to play the DRAE test tape through my own system. When receiving SSTV off-air in the SSB mode one can compensate for a uniform frequency offset by careful tuning; but users of the DRAE transceiver might expect trouble if they try and swap tapes with people using other systems. The following table summarises the deviations from normal:-

	U.K. STANDARD	DRAE Adverts	DRAE UNIT (transmit mode)	% ERROR
Aspect Ratio	1:1	.....	5:4	.....
SSTV Sync Freq	1200 Hz	1200 Hz	Frame 1000 Hz*	-17%
			Line 1200 Hz	nil
SSTV Black Freq	1500 Hz	1500 Hz	1600 Hz	+6.6%
SSTV White Freq	2300 Hz	2300 Hz	2400 Hz	+4.3%
SSTV Line Time	60mS	60mS	65.5mS	+9.1%
SSTV Frame Time	7.68s	about 8s	8.39s	+9,2%

(*....this is an error which will be corrected.)

Other points to note are that there is no provision for adjustment of the picture width when receiving pictures from areas where 60Hz mains are in use; also, there is a slight fault in the picture display which causes a few black

dots to appear at random positions when a picture is snatched. This latter may be due to a timing error, but it is really a rather trivial fault and the picture quality is otherwise quite acceptable.

Experiments with a tape recorder showed that the unit is rather sensitive to the level of input, about 30mV of audio is about right; higher levels tend to produce patterning on the picture giving an unacceptable picture quality. There are preset pot's inside the case which allow the input and output levels to be set and this should enable the careful user to set up his converter to match the tape recorder in use.

CONCLUSIONS

This is a well made unit which has obviously had a lot of thought put in at the design stage. One or two errors are due to be corrected in future production, but the review model was capable of giving very acceptable pictures when matched by a similar unit at the other end of the QSO. The price asked may seem a lot of money, but it compares favourably with prices asked for other converters having similar facilities.

It is to be hoped that manufacturers will pay greater attention in future, to the incorporation of accepted standards. If this is not done and we have other manufacturers with similar deviations in the opposite direction, then we shall soon have no standards at all. Davtrend have declared their intention to produce another model to the required standards but they say "it will cost more".

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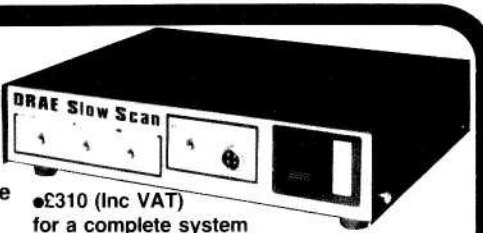

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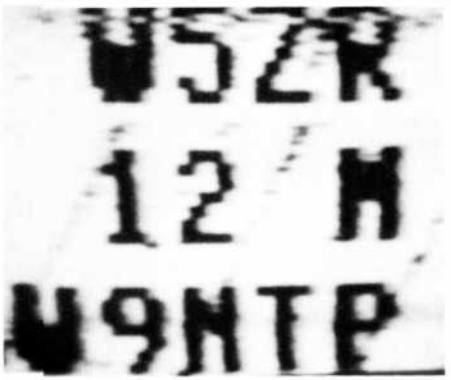

Don Miller W9NTP sent this photo, which shows the first two-way SSTV image on the new 12 metre band between W5ZR and W9NTP. Picture was originated by Don and returned by W5ZR, and other pix were also exchanged. This contact was made at 1815 GMT on June 22nd, the band having been authorised at 0000 the same day.

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G9AED REMEMBERED

By Andy Emmerson G8PTH

This year sees the 30th anniversary of video from G9AED, a callsign that was once very familiar to TV enthusiasts. If the G9 callsign does not strike you as an amateur one, you're right since the G9 series is reserved for test and development licences issued to experimental stations. Generally these transmissions are for industrial purposes and not intended for public reception, but G9AED was an exception - it even issued QSL cards for reception reports!

G9AED was the creation of Belling and Lee Ltd. and was in fact a "static mobile" transmitter operating in Band 3. Independent television started in Britain in 1955 but prior to the commencement of regular programmes, dealers and viewers needed a source of test signals for aerial and receiver alignment. Belling and Lee were at that time a major manufacturer of TV aerials and had the excellent idea of taking a pilot transmitter to the eventual main transmitter sites. While the 'proper' aerial mast was being constructed at each location G9AED was already putting out low-power signals from its own 85ft. tower, 40 hours a week. The actual power was 1kW, and relative to the eventual regular broadcasts this was low power.

G9AED was provided as a service to the TV industry and was recognised as such - the IBA later purchased the van. The transmitter van itself was well equipped (it was even on the phone) and put out two signals, generated from monoscopes. One was a special test card with calibrations enabling the distance of obstructions causing 'ghosts' to be calculated. The other picture was a caption announcing that new transmisions would start soon on Band 3 - make sure your aerial and receiver are ready. So this was really Britain's first TV commercial.

Although G9AED was really intended for TV dealers and aerial installers many TV enthusiasts also used it for testing their homebrew converters, which took the Band 3 signal and transposed it to an unused channel in Band 1. A 'Belling-Lee' mobile research unit also used the signal for plotting propagation and coverage of the radiated signal.

Like so many other temporary arrangements G9AED was soon forgotten once it had fulfilled its role. It featured in several articles and pictures in "Practical Television" during 1955 and 1956 and then disappeared. I am told one of the Belling-Lee employees had the task of smashing the monoscopes and later went to work for J-Beam aerials, but I have seen nothing published about the fate of the transmitter or caravan. Any feedback will be most welcome, care of the editor.

(Illustration with acknowledgement to Belling & Lee Ltd)

CQ-TV MAGAZINE

By John Wood G3YQC

Many members have shown an interest in the production of CQ-TV so I thought a short article about it was appropriate. Apart from general interest, I hope that it will help contributors to present their work in the most effective and helpful manner.

A great many hours are spent in the hot seat, so here's what it looks like.

I've been at it for nearly six years now! I undertook the Editorship of CQ-TV in 1980 when my predecessor - Andy Hughes - had to give up at short notice after long and distinguished service. In the interim period a couple of rather hurried issues were put together by Mike Crampton (present Chairman) and some helpers.

My first issue was number 112 and members from that period (less than 800 I believe) will be aware of the gradual changes which have taken place over the last few years. Producing CQ-TV has taught me a great deal about behind-the-scenes working of magazine production, and I have been able to introduce some new techniques to CQ-TV which I hope has made the appearance and content more readable and informative.

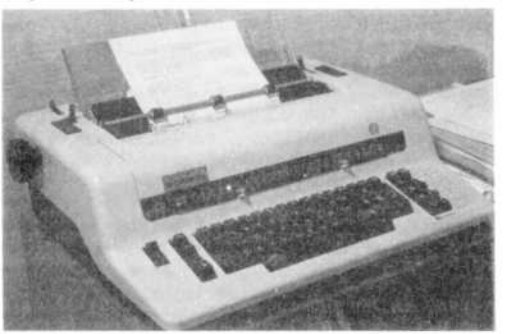
Initially, my only qualification was having produced a few articles in both this and other journals. I devised 'TV on The Air' and continued to write that column for some time, this gave me a little more contact with the members. Then it was in at the deep end. The editorial equipment at that time consisted of a worn-out old IBM electric typewriter, which was in sore need of a complete overhaul, but there was no time for such work to be carried out and I plodded on with it for the first two or three issues, together with the production of BATC 'Handbook-1' which was published during that period. Imagine being presented with a dilapidated machine and told to "get on with it"? There was nothing else at all! I didn't even know how to present the manuscript to the printer let alone how to go about producing it! Nevertheless, by asking around a bit and buying a cheap lettering stencil together with a couple of art pens and much prayer, I got started.

No more stencilling - this titling machine saves a lot of time.

After some early encouragement and the great success of 'Handbook-1', the committee approved the purchase of a brand-new daisywheel electronic typewriter/printer - the Olympia ES100 - which also boasts a serial RS232 computer interface - I was determined to change over to a word processor as soon as possible. Later on a 3M dry lettering system was purchased for producing titles. This alone saved me a complete weekend of stencilling on a sheet of paper and then patiently blocking-in the letters by hand using an art pen, it gave a much better appearance too, especially when additional typewheels were obtained enabling different typefaces and sizes of title to be produced.

It was about that time that I purchased my own BBC-B computer and disc drive. I immediately installed a 'Wordwise' word processor ROM (View wasn't available then) and started producing CQ-TV with it. The joy of being able to make mistakes and correct them without wasting valuable time and reams of paper was nothing short of ecstatic. After about a year, having proved the viability of word processing for CQ-TV, the committee purchased its own BBC micro complete with a single disc drive and a green-screen monitor. This replaced my own personal equipment and is the system currently in use. I think you will agree that a better magazine is being produced because of it. The right-hand line-justification gives a professional look to the page and (hopefully) typing errors are less evident since they can be corrected before the text is committed to paper.

Now for a quick tour of the editorial office (actually the shack/spare bedroom) and an outline of the making of a magazine.



The magazine's printer - this can often be heard rattling away whilst I am in QSO on '750.

Most of the material comes to me courtesy Royal Mail and is usually either hand written or typed, and yes, I have received drawings on the backs of envelopes and even one on the inside of a cigarette packet! Occasionally I get artwork which is of a high enough quality to be directly pasted-up in the magazine, but this is quite rare and I usually have to completely re-draw the artwork myself. Sometimes ('though not often enough) text is sent to me on computer disc or tape; 'TV on The Air', 'Circuit Notebook' and more recently items from John Goode are presented in this manner, you have no idea how much time this saves. Of course one can't just sit back and wait for all the material to come through the letter box, much of it I generate myself. Apart from the obvious articles (those with my name on) I spend a great deal of time scouring magazines etc for additional information, shorts, news and so on. Then I have ideas myself, usually triggered by requests or even chance remarks from members about suitable subjects. When this happens I am often able to ask one or other of our learned contributors to put together an article on the subject in question. An excellent example is John Goode's superb series 'In The Studio', this came about from an idea sent in by a member who wanted to know how a small commercial studio functioned.

The station operating position is located conveniently beside the word processor; 'means I can write and talk at the same time!

After the material has been read and any queries sorted out with the author, it is roughly sub-edited on paper using the famous 'red pen', the trade mark of editors, which is why double spacing on the original manuscript is desirable. Next the artwork and any photographs are prepared, this is to enable on-the-spot formatting of the text as it is being typed into the computer - it saves a bit of time in the long run. The text is then typed in and formatted, that is; appropriate spaces left for paste-up of artwork and titles (care here ensures that the reader is not continually flipping over pages whilst trying to follow the description of a circuit), and ensuring that pages end at sensible places, not allowing say a couple of words on the end of a paragraph to be carried forward on to the next page etc. Then the article is printed out onto A4 sized sheets directly from the micro; titles and artwork are added and a final read through to make sure that things like figures, diagrams, photographs and so on are correctly referenced. The article is then filed away to await closing date. In the case of tricky articles or those whose subjects I am not too familiar with, I send a proof copy to the author for checking prior to publication. I am quite keen on checking the material since I know from bitter experience how frustrating it is to build something from a magazine article only to find that it doesn't work and that a string of corrections comes out months later when all interest has been lost. Obviously one can't eliminate all errors but I try to ensure that CQ-TV is known for the accuracy of its articles. I have occasionally turned down 'suspect' designs, particularly if it's only been built once, but more often than not I try to work with the author in order to have the design proved before using it.

Some items of course can't be printed 'till after closing date; news, letters and advertisements can all be expanded right up to the last minute, and I can often be found pacing the floor waiting for closing date so that I can assemble the magazine into its final form. Once closing date has passed however things start to happen. The last of the printing is done and the task of assembling the finished articles into some sort of order can begin. That's where the scientific bit comes in. First I take all the articles and lay them in little heaps all over the shack floor, then I simply pick them up in the order which I think is best for the magazine. Once in this rough order I lay the pages out, two at a time, to see that each pair of facing pages either go together or at least don't clash. For instance an article often starts on a left hand page so I might put a full page (or at least large) piece of associated artwork on the right-hand one, in this way I try to avoid consecutive pages of boring, uninterrupted text which is difficult for readers to wade through, this I believe makes the magazine more readable and less of a drag. After final collation, 'fillers' are added so that there are no large empty gaps at the bottoms of pages, then a page count. In order that there are no blank pages in a magazine the total number of individual pages must be exactly divisible by four, (think about it), only then is page numbering done. Now the contents page can be prepared and, together with the covers artwork and Club Services inserts, the whole lot is ready for the printers.

Printing is done locally (in Rugby) and is organised by our Chairman Mike (G8DLX). He takes the manuscript to the printer, goes over any special instructions, decides on the print run, arranges the finances and then collects the finished product when it is ready. Now you know why Mike has to have a large car, over two and a half thousand magazines takes up a lot of space and weigh a good deal. Then it's hot-foot up to Leicester where some are delivered to Ian Pawson for use as back issues in the Publications department, and the remainder to despatch, viz: George Mayo G4EUF and his wife, the lovely and long suffering Daisy.

Meanwhile, in darkest High Wycombe, Dave Lawton from Members records has printed out hundreds of address labels - one for each member - and these have been sent to Daisy. Envelopes will have been collected from their storage point (G4MQS) and, by the time the magazines arrive, Daisy is ready to swing into action. Often is the time, when George comes on the air showing a shack-shot, that Daisy can be spotted in the utility room, knee deep in magazine cartons, working away feverishly. But soon enough the magazines are ready whereupon they are passed to Ian Pawson (Publications) who looks after the bulk posting through the Leicester sorting office. Quite a team job eh?

Many magazines must be read if one is to keep up with progress in TV. These are some that pass through the office regularly.

Now some figures: Membership currently stands at over 2,200, approximately 2,500 magazines are printed (this varies depending on the time of year and the issue content) and the total cost to the club, just to produce and deliver magazines, is likely to be in excess of £10,000 for 1985. The postage bill alone for one issue is £550 and, because CQ-TV 131 was such a large issue (by far the largest ever), the weight just went over into the next postal price band; this meant an increase, just on postage, of £100. Now you can see where your subscription goes - in producing the magazine. Virtually all other club activities are financed by sales of Publications and Members Services items.

HINTS TO AUTHORS

Anyone who knows me or who works me on the air will know that I chatter a lot! So I'm not going to miss this opportunity to indulge myself! This time about sending material for publication in CQ-TV. I'm not talking about an advertisement or a short item, but rather about the longer more technical pieces.

Please remember that I also have a full-time job and have to compile the whole magazine singlehanded in my spare time, I get no payment whatsoever (no - that's not a complaint, simply a statement of fact). It's amazing how many

think I'm a full-time professional magazine editor with lots of time to completely rewrite everything and re-do all the artwork! If authors would bear in mind a few simple points the workload could be cut by a significant amount. Basically the more that can be done before sending material the less I have to do and the better the quality of the finished product.

Material should be read through, several times if necessary, in order to correct any obvious mistakes and grammatical errors, it's surprising how many pieces I get which are just dashed down any old how and in no sort of logical order. Then there are the figures; Many of you are quite able to draw nice presentable circuit diagrams, if these are kept to such a size which enables their direct pasting-up on an A4 sheet of paper, and if the ORIGINAL is sent (not photocopies) drawn on WHITE paper with BLACK ink, then I wouldn't have to re-draw the circuit at all. Obviously some of you just can't produce such drawings in which case don't hold up the article because of it! I can re-produce printed circuit layouts actual size in the mag but first I must have the artwork from which to work. It is little use sending print patterns hand drawn on a piece of tracing paper with a pencil or blue Biro. They can be drawn this way but should be fully blocked in with black ink and have clean edges. Remember all the artwork is photographed prior to printing using a special high-contrast film. Any artwork that is a bit faint or of low contrast (pencil or blue and red inks are fatal), will be averaged out in the final plate whereas good, bold high-contrast material will be enhanced by the film.

Where possible photographs should be black and white (if you have problems getting these developed, send me the film and I will have it done). Colour ones can of course be used but they should be of high contrast if possible. Sizes are not too important since I can have them enlarged or reduced to fit available space, however around 4" x 4" is a good size since those pictures can often be directly pasted-up onto a page. The following points then should sum up:-

1. Circuits and drawings should, where possible, be drawn in black ink on white paper.

2. Originals should be sent rather than photocopies.

3. Text should be read over to ensure that it makes sense, keeps to the point and contains a minimum of errors.

4. Photographs should be black and white, or colour if they are reasonably contrasty.

5. Text can be sent on tape or disc from a BBC computer using Wordwise or View word processors. A copy should be retained by you - just in case!

I recently came across a super piece in the August issue of "Electronics & Wireless World", and, although they are in a different league, the contents are appropriate to CQ-TV so I would like to quote from that piece:

'Authors frequently tell us how pleased they were with the presentation of their work. Some of them have said that, at best, they were incensed that their work had been "edited" (the process is called sub-editing) but that, on maturer consideration, had decided that it was fully justified.

It is natural to feel resentment when someone else fiddles about with your painfully composed writing and one's instinctive reaction is to describe the tamperer as an illiterate fool, particularly if one had slipped in a merry jest of some kind in the original which was subsequently excised.

There are several reasons for subbing an article. It may be that the author stands too close to the writing and is completely unable to see that it contains ambiguities, repetition, omissions or even errors. ....Many of our authors are very highly qualified people who have worked for years in a particular discipline. They are so familiar with it that its groundwork is second nature to them. Consequently, it sometimes happens that their writing carries the assumption that everyone else is similarly well versed in the subject. .....It is a truism that there are literates and the, are numerates, but not very many literate numerates. Most of the (relatively) illiterate numerates accept this and gladly proffer their work, knowing that sub-editing will polish it smooth.'

Of course, I'm not suggesting that any of the above applies to CQ-TV contributors, but on the other hand.....!!!

Ed.

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MODIFYING THE SONY HVS2000 VIDEO MIXER

by Roy Humphreys G4WTV

In this second article, a further modification is described which greatly adds to the facilities of the Sony HVS2000 unit. The basic unit offers synchronous cutting between caption and main cameras, as well as keying and fading of the caption signal. With the addition of this modification, it is also possible to perform horizontal and vertical split-screen wipes, and a corner insert.

Figure 1 shows an extract from the circuit of the Sony unit, and figure 2 shows the additional components which are required.

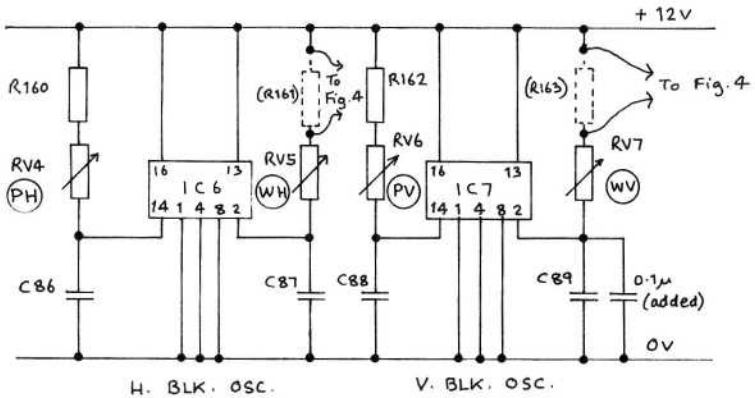

Fig.1 EXTRACT FROM CIRCUIT DIAGRAM

CONSTRUCTION

The top cover of the unit is removed by undoing the screws in its base, the main p.c.b. must also be removed. Located in the centre of the board will be found IC's 6 and 7, and adjacent to them four preset pots, RV's 4,5,6 and 7. Resistors R161 (22k) and R163 (56k) will be found nearby, and should be removed completely from the board, as they are no longer required. To the rear of IC7 is C89 (0.047uF), in parallel with which a 0.1uF capacitor is required - this is best soldered across the terminals of C89 on the track side of the p.c.b. Two pairs of flying leads are needed, about 250mm (10") long. These are soldered in the pairs of holes vacated by R161 and R163, and connect to the two added wipe pots. I found a convenient place to mount these was on the front edge of the top cover, as illustrated in figure 3. This completes the work on the p.c.b., which may now be refitted.

All that remains is to mount the pots and their associated components, which can be mounted on the tags of the pots. Before finally replacing the cover, it is necessary to connect up the colour and monochrome signal inputs, and adjust RV's 4 to 7 whilst viewing the output picture. Before making any

PUBLICATIONS

QTY	PUBLICATION	PRICE EACH	UK P&P	TOTAL inc.P&P
.....	The revised AMATEUR TELEVISION HANDBOOK by T.Brown G8CJS (155gm)	£2.00	0.40	.....
.....	TV FOR AMATEURS by J.Wood G3YQC (85gm)	£1.50	0.25	.....
.....	MICRO & TELEVISION PROJECTS by T.Brown G8CJS (140gm)	£3.00	0.50	.....
	CQ-TV BACK ISSUES. The following issues are still available although stocks of some are low. Please circle those required.			
.....	127, 130, 131, 132..... *Please estimate appropriate postage (approx 90gm per copy)	£1.00	*	.....
.....	RE-PRINTS. Photocopies of any article from past issues of CQ-TV are available	0.20 sheet	0.20	.....
.....	INDEX. All main articles in past issues of CQ-TV and 5 Handbooks. Inc. page count, (essential for ordering re-prints). (40gm)	£1.00	nil	.....

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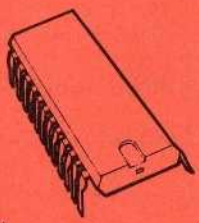

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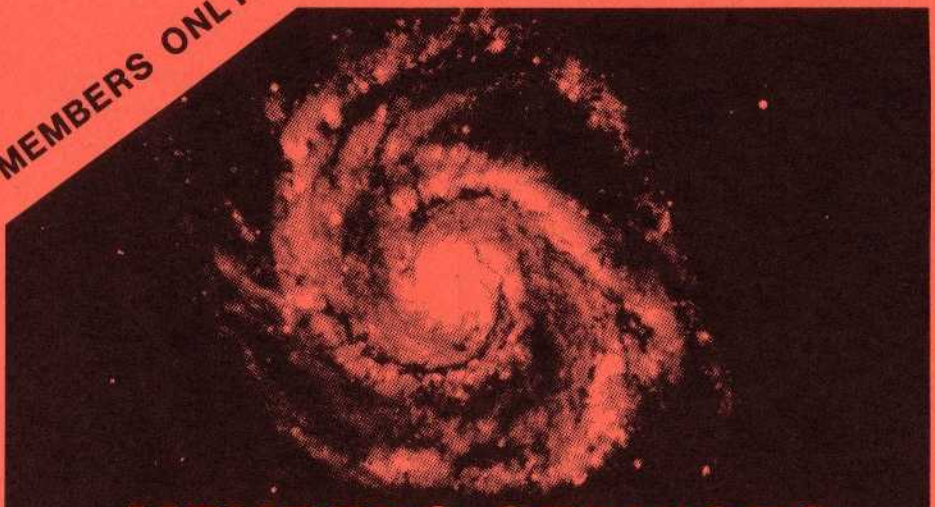


MEMBERS SERVICES

QTY	CAMERA TUBES, SCAN COILS, BASES & LENS MOUNTS	EACH	P&P	TOTAL
.....	1" Vidicon scan-coils (low Z focus coils)	£6.00	£1.20	.....
.....	1" Vidicon scan-coils (high Z focus coils)	£6.00	£1.20	.....
.....	2/3" Vidicon scan-coils	£6.00	0.80	.....
.....	Vidicon bases - 1"	0.50	0.17	.....
.....	Vidicon bases - 2/3"	0.50	0.17	.....
.....	TV camera lens mounts - "C" type	£1.00	0.24	.....
.....	Vidicon camera tubes - see below	-	-	
.....	Image Orthicon camera tubes type 9565 **	£10.00	+	.....
.....	Photomultiplier tube type 9656A **	£2.00	0.60	.....
.....	Photomultiplier tube type 6097F **	£2.00	0.60	.....

(+ Buyer to arrange transport).

TOTAL THIS PAGE £.....

1" vidicon tubes are available in different heater ratings (95 and 300mA) - 6" long, and also a 95mA 5" long version; (EMI types 9677, 9728, 9706 and EEV types P849 and P8031). 2/3" tubes have 95mA heaters (EMI type 9831, EEV type P8037). All tubes are of separate mesh construction, with magnetic focus and cost £25 each, including postage. Electrostatic vidicons, Leddicon and Ebitron tubes are available, to special order. Members requesting information on different types of tube or equivalents for other manufacturers are asked to send a stamped, addressed envelope for their reply.

QTY	PRINTED CIRCUIT BOARDS - HANDBOOKS	EACH	P&P	TOTAL
.....	Amateur television receiver (HB1)	£1.50	0.30	.....
.....	Electronic character generator (HB1)	£3.00	0.30	.....
.....	Colour test card (set of 3-double-sided)	£15.00	0.60	.....
.....	Horizontal aperture corrector (HB1) **	£3.00	0.30	.....
.....	PAL colour coder (HB1)	£3.00	0.30	.....
.....	Sync pulse generator (HB2)	£3.00	0.30	.....
.....	Vision switcher matrix (HB2)	£4.00	0.30	.....
.....	Vision switcher logic (HB2)	£4.00	0.30	.....
.....	Vision mixer (HB2)	£4.00	0.30	.....
.....	70cm VSB transmitter-7 boards (HB2)	£15.00	0.40	.....
.....	SSTV pattern/sync generator (HB2)	£3.00	0.30	.....
.....	Character colourizer,(printed legends HB2)	£5.00	0.30	.....
.....	70cm TV transmitter (TVA and CQ-TV122)	£3.00	0.30	.....
.....	ATV up-converter (TVA and CQ-TV112)	£2.25	0.30	.....
.....	Spectrum user port (MTP)	£3.00	0.30	.....
.....	Spectrum PROM blower (MTP)	£3.00	0.30	.....
.....	Teletron (MTP)	£3.00	0.30	.....
.....	SPG, greyscale, char gen (MTP)	£4.set	0.60	.....
.....	Keyboard add-on (for above char. gen) (MTP)	£2.25	0.25	.....
.....	4 Way vision switch (MTP)	£3.00	0.25	.....
	CQ-TV & MISCELLANEOUS			
.....	'Project 100' sync generator (CQ-TV100)	£3.00	0.30	.....
.....	TX-9 video/audio in/out (CQ-TV119) **	£2.25	0.30	.....
.....	FM-TV demodulator (CQ-TV122)	£3.00	0.30	.....
.....	Video filter (TVA and CQ-TV122)	£1.00	0.17	.....
.....	Sync processor (CQ-TV129)	£3.00	0.30	.....

TOTAL THIS PAGE .....

QTY	SLOW-SCAN TV	EACH	P&P	TOTAL
.....	G3WCY SSTV to FSTV RX converter & reprint (Radio Communication - Feb.1983)	£10.set	0.60	.....
.....	G4ENA modifications for above CQ-TV127 - set of 4	£5.set	0.30	.....
.....	G4ENA SSTV transmit board (CQ-TV129) (Add-on to G3WCY converter) NB: Incorporates LSC and width circuit as in G4ENA SSTV mods. PCB set (above).	£6.00	0.30	.....
.....	G4ENA SSTV aux board (CQ-TV130)	£2.00	0.20	.....
.....	G8CGK SSTV pattern generator - inc. notes	£3.00	0.30	.....
	STATIONERY, ACCESSORIES AND COMPONENTS			
.....	BATC test card - with data sheet	0.50	0.24	.....
.....	BATC reporting chart (illustrated)	0.12	0.20	.....
.....	BATC lapel badge - diamond - button hole	0.40	0.17	.....
.....	BATC lapel badge - round - pin fastening**	0.50	0.17	.....
.....	BATC key fob	0.60	0.17	.....
.....	BATC equipment stickers - 1" round	0.15	0.17	.....
.....	BATC windscreen stickers - 2.5" round	0.10	0.17	.....
.....	Surplus delay lines (not KT-3) **	0.40	0.20	.....
.....	13.14MHz TV TX crystal (HB2)	£5.00	0.17	.....
.....	108.875MHz TV TX crystal (TVA)	£7.00	0.17	.....
.....	5MHz SPG crystal for P100 (CQ-TV 100)	£2.75	0.17	.....
.....	2.5625MHz SPG crystal for ZNA134 (HB2)	£2.75	0.17	.....
.....	4.433618MHz PAL colour subcarrier crystal	£2.75	0.17	.....
.....	TBP28L22 PROM. Pre-programed for colour test card circle. (eqt.745471)*	£10.00	0.25	.....
.....	2732 E-PROM. SSTV program (HB2)	£12.00	0.17	.....
.....	2716 E-PROM - programed as a substitute for 74S262 (see mod in CQ-TV132)	£5.00	0.17	.....

TOTAL THIS PAGE £.....

TOTAL FOR GOODS £.....

TOTAL POSTAGE £.....

TOTAL ENCLOSED £.....

*SPECIAL NOTICE - Some of the PROM's forthe test card circle have been incorrectly programed by our suppliers. If you have purchased a TBP28L22 from the BATC between Oct 84 & Aug 85, please contact Members Services as soon as possible.

ORDERING INFORMATION

OVERSEAS MEMBERS should ask for a quotation of postage costs and acceptable forms of payment BEFORE ordering from Members Services. Please enclose an International Reply Coupon for reply.

PUBLICATIONS must be ordered SEPARATELY from the Publications Department on the form provided in this magazine.

CHEQUES should be made payable to "BATC" and should be for English banks only please.

ORDERS PLEASE TO:- Mr. P.Delaney. 6 East View Close, Wargrave, BERKS RG10 8BJ, England. Tel: 073 522 3121 (evenings/weekends only please)

BLOCK LETTERS PLEASE

name	callsign
	post code

HB1 = ATV Handbook (blue); HB2 = ATV Handbook vol.2, or revised edition; TVA = TV for Amateurs; MTP = Micro & Television Projects.

All Club crystals are HC18/U (wire ended).

Items from these lists can only be supplied to current members of the BATC. These lists supercede all previous ones. Components for club projects are not available from Members Services unless contained within these lists.

Items marked thus: ** are available only until present stocks are exhausted.

Do components make you MAD?

A number of members seem to be having difficulty in obtaining certain parts for club projects and circuits, so in answer to the questions most asked we have compiled a list of suppliers which may help:

Economic Devices of P.O.Box 228, Telford, Shropshire TF2 8QP stock the SL1432, TBA520 and many other discrete semiconductors.

Post-A-Part Electronics of 6 Chapman Court, Charfleets Road, Canvey Island, Essex SS8 0PQ stock the TDA2540 and SW153A filter.

Technomatic Ltd of 17 Burnley Road, London NW10 1ED stock ZNA134J, NE564, NE592, MC1495L, LM711, RO-3-2513-UC plus 74.., 74LS.., and 74S series as well as most of the C-Mos series IC's. This firm also keep a comprehensive stock of general electronic parts.

Greatech Electronics Ltd of Hay Lane, Braintree, Essex CM7 6ST stock 2N3866, BFR90, BLX67 together with other thermionic and solid-state RF devices.

BCD Electronic Services of 200 Hessle Road, Hull HU3 3BE Tel: 0482 225437
and
Cricklewood Electronics of 40 Cricklewood Broadway, London NW2 3ET Tel: 01 450 0995

Both the above firms offer a comprehensive range of components. BCD Electronics advertises in CQ-TV and - being a BATC member - is particularly biassed towards amateur radio and TV .

CQ-TV AWARD

This award is available to both transmitting and receiving enthusiasts, in any part of the world, whether they are members of the BATC or not.

The award is for contacts made using fast-scan high definition television systems only.

TRANSMITTING AWARD

For pictures transmitted which have been successfully identified by another station, claim 2-points per kilometer; if the contact becomes a successfull two-way exchange of pictures, then 10 bonus points may be claimed by each station regardless of distance. For contacts on the 1.3GHz band or above, points are doubled.

RECEIVING AWARD

For any picture positively identified - claim for a one-way contact. Otherwise rules are as for transmitting.

POINTS

The award is divided into five grades: For the Bronze - 1,000 points, for the Silver - 5,000 points, for the Gold - 10,000 points and for the Diamond - 100,000 points.

Points already gained for an existing award may be added in when applying for a higher grade.

CONTACTS

A station may be worked once only per day for the purpose of this award. It is quite possible for it to be gained by working the same station many times. Contacts through TV repeaters do not count.

THE AWARD

Upon qualification for the Bronze award, a certificate will be issued together with a Bronze seal; the certificate may be up-graded later with Silver and Gold seals. The Diamond award is in the form of a specially made trophy.

APPLICATIONS

Applications should include log details consisting of call sign, date of QSO, band, location of the station worked and points claimed. Contacts made from other than the home station should be clearly marked. QSL cards are not required, but the application should be checked and signed by either a licenced amateur or a BATC member .

CERTIFICATE APPLICATIONS SHOULD INCLUDE A LARGE (12" x 8.5") STAMPED, ADDRESSED ENVELOPE. For upgrade seals an ordinary SAE should be enclosed.

Applications should be made to the Awards Manager: Rod Timms G8VBC, 16 Butt Lane, Woodville, Nr. Burton-on-Trent, Staffs DE11 7EL

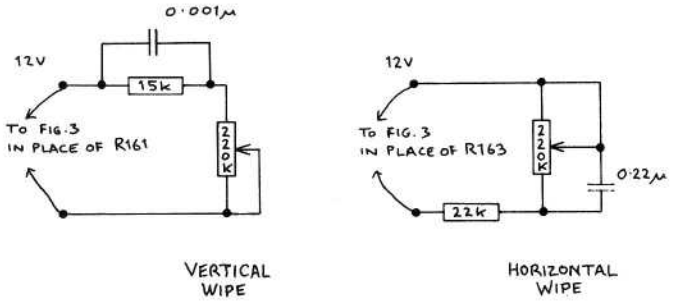


Fig.2 NEW COMPONENTS

adjustments, set the horizontal and vertical wipe pots to maximum resistance. Select the monochrome signal on the control panel and adjust the pots so that the monochrome signal correctly blanks out the colour background. It should be noted that in the original circuit there is always a narrow border of colour picture visible round the caption - this is not normally visible on a correctly adjusted television. However, when carrying out these setting-up adjustments, it is important to retain this narrow border (about 4 or 5 lines at the top and bottom), otherwise sync. jitter will result. RV6 and 7 adjust the vertical blanking position, and RV4 and 5 the horizontal. The unit is now set up ready for use and it should be possible, by using the horizontal and vertical pots, to perform wipes in either dimension, and a bottom right corner insert by using both pots together.

I am sure there are many more possibilities for modifiying this useful unit, and if anyone is interested in experimenting and would like to obtain a photocopy of the circuit diagram and layout, they are welcome to write to me (enclosing a stamped, addressed envelope), c/o the Worthing and District Repeater Group, 106 Willow Crescent, Worthing, West Sussex BN13 2SY.

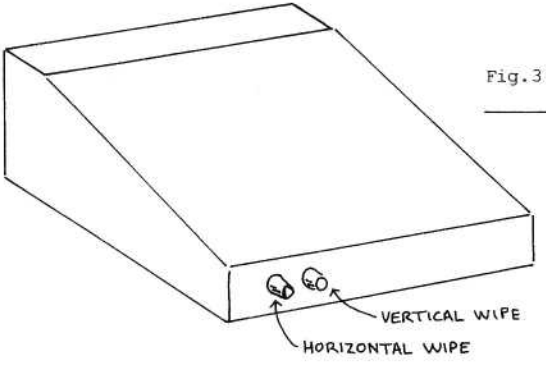


Fig.3 Position of new controls.

TV ON THE AIR

By Andy Emmerson G8PTH

Many thanks to all those who sent letters for this time's activity statement; I must say I could have done with some more, though. Amazing that such a few operators noticed the openings during October, for instance!

Anyway, one of those who exploited the lifts was Peter G8KZG, our trusty supplies officer residing in Wargrave. On October 16th both he and Mike G8LES received pictures from Bob G1DPM in Paignton. Bob was running about 20W and Peter was able to give him P1. Mike did better, being closer and higher and with a better preamp. Peter says that excluding F1EDM this is the longest 70cm path for him. Later the same evening G1IRF in Dawlish was sending to G8LES and seen at KZG's. Peter hazards a guess that this is the first time 'KZG, 'DPM or 'IRF have been mentioned in this column, which just shows there are some others active!

As there were so few letters I have had passed to me some contest logs from the 1985 International event. These reveal no little dissatisfaction plus some interesting tips, such as this one from G8MNY ... "Again the 0.5 MHz narrow-band TV receiver worked well. This meant that running 250W peak sync on TX we could see many stations with only 20W at the same grade 1." John continues: "Some stations' technique leaves a lot to be desired, such as calling almost continuously on 144.750, leaving no gap after another station had just called. Also long colour shack shots not only during the early hours, and stations transmitting while the QSO partner was unready or unable to receive. With fifty or more stations on at the same time, some slicker operation might push up the G entry in the international ratings."

G4TGM of the G4WRA contest group also had some complaints to make about operating standards, so it appears there was bad feeling in more areas than one. It seems a shame, really, as we ATVers only have a few contests annually. Perhaps the "ignorant" operators will get better with experience ... Of course it is easy to let excitement take over but not if it leads to bad feeling. Thank goodness this is only a hobby!

New station: GOBII is now active at Cassington, near Oxford. Welcome to 70 cm!

Another welcome, or welcome back on the air, goes to media megastar of BATC promo tapes, Eric GW8LJJ. Married life has "taken its toll" on his ATV activities but he is making a come-back on 24 cm. This he hopes will compensate for the total lack of TV activity in his neck of the woods, once a real hotspot. It's a new regime now - no more constructing until 3 in the morning - but Eric plans to build a portable/mobile outfit as well as the fixed station at his new Barry QTH. The video effects and production side are due to be modernised, too, probably with the aid of a BBC micro. Let's hope this sparks off more activity in south Wales ...

Second letter in this section is from Robin G8XEU, who is treasurer of the Worthing and District Repeater Group. The repeater is located at G6MPE in Brighton for the moment, and stations working through it include G6MPE and G4LXC (Brighton), G4HSY (Shoreham), G8XRX and G8VEH (Lancing), G8DHE, G8XEU and G4WTV (Worthing), G8KOE (East Preston), G1NBX, G3UEQ and G6CSX (Chichester), G1DSO (Havant) and "would you believe, all are mebers!". G6XGH is also a member but cannot get in from home, though he did when on the Isle of Wight. Guest user is F1EDM of course.

They have almost completed a second, backup repeater as access to new site will be less easy than currently. This will simplify repairs, "not that we expect any failures but this lot just love tinkering around with new ideas." As proof of this, the repeater can now relay both 5.5 and 6.0 MHz sound and several users can transmit both standards, useful for transmitting computer data on one channel while continuing a conversation uninterrupted on the other. This is also useful for any foreign contacts.

Video AGC has now been fitted to the repeater and a dynamic range of 23 dB can now be handled. This means that between 0.2 and 4.0 volts can be detected and cleaned up. The practical utility of this is that many computers do not put out 1.0V video and users would need to adjust deviation if they intended to switch between camera and computer. Now they can let the "box" worry about that. It is not recommended that deviation is set watching the repeater output, though.

Another novelty is G8DHE's band scanner design, which can be used with a Wood & Douglas or other tuner. Scanning info comes up on the receiver screen showing the state of the 24cm band and a tuning indicator in great clarity. It proved of great value in the recent contest.

Back on the band, the evening of October 13th proved memorable for several folk. F1EDM was active and was heard (but not seen, perhaps because of ducting) at my QTH in Northampton. I gather he may have worked G6EHJ in Tamworth, though. People who gave me useful two-way contacts were Richard G8BWC 10km NNW of Nottingham and Allan G8CMQ down in Solent country. Richard was providing 15W from a 2C39 on 1250MHz and we both noticed deep fading on this path. Allan chose 1285MHz and sent 4W, which seemed to reach here much better. He even managed to record my own signals and send them back for checking! Others in the party that evening included G3DFL, G3YQC and G4EUF, and all found this a welcome opportunity to work a bit of DX for a change. Conditions faded out just after midnight.

Another media star (did you see him in "New Scientist"?) and keen 24cm operator is Garry G4CRJ in High Wycombe. He now runs a Solent transmitter (1.5W) into a loop yagi. For receive there is an MGF1402 preamp and G8LES converter. A recent operating highlight was a 2-way duplex hookup with G8LES (Four Marks): Garry transmitted on 70cm and received on 24. The transmitted pictures were genlocked to the incoming signals and mixed with them for retransmission. This was over a lengthy path and under flat conditions - just shows what you can do when both ends are mountain tops!

A week later an interesting chain of six stations was tried out. Starting on 70 cm with G3MCS (Farnham) to G8LES, then on 23 to G4CRJ, out on 23 again to G6HVQ (West Molesey), onward on 70cm to G8MNY (Croydon) who recorded it on tape then played it back to the others on 70cm. Apparently it worked well, and John 'MNY employed the useful dodge of a camera pointing at a monitor to reduce or integrate the noise on the video playback.

Garry tells me things are starting to move on the Home Counties repeater project. So far no interfering signals have been noted on the proposed input and output frequencies, and simplex activity has been stepped up on the "output" in order to establish "squatters' rights". The air traffic control centre at West Drayton has also been alerted to this source of signals. Occupancy of the 23cm band increases, though, with a new radar source with a low repetition rate springing up south of Heathrow. This may be the new Pease Pottage machine. The repeater group

has also been experimenting with aerials. The Alford slot has been a bit of a disappointment and they may instead use numbers of quad loops. This is the twin-square "figure of eight" design from the UHF Compendium, which has surprising gain for its simplicity.

Activity on the Isle of Thanet continues: a new 24cm "catch" was F1ESA received by Roy G6OKB on 29th September. F1ESA is at Seclin, southwest of Lille - not a bad haul.

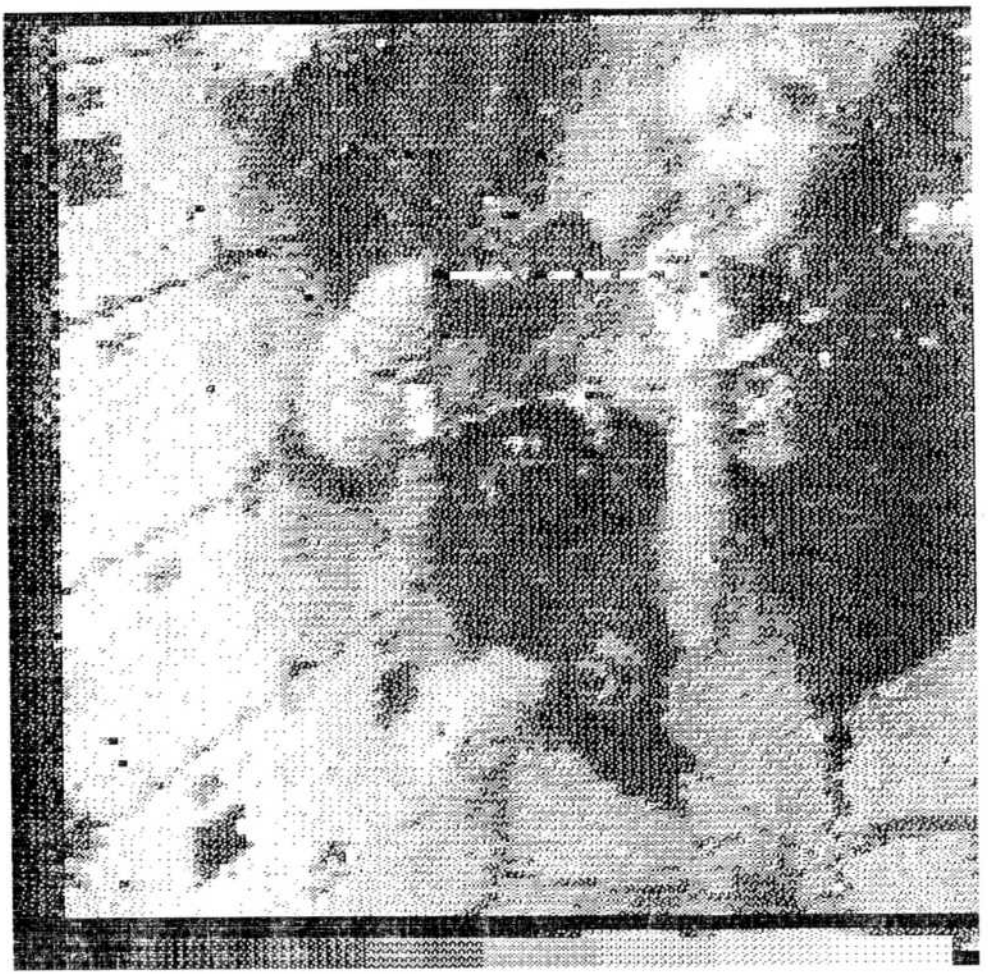
All the running this time comes from G3WW, who has been licensed over 47 years now - not bad going, Richard! On 3rd November DL1KAD/A gave Richard his 2100th new station on SSTV - others worked that day were HB0AWQ, DL9DAC, G10ZH, HA5XY, SP9KJM, EA9NN and G3KDD. On the 9th Robot 12 and 36 seconds colour pix were exchanged with W1JKF and K4KG, the latter reporting 90 per cent reception on an opening band; later 100 per cent colour pix were received by G3WW.

Richard is currently hoping to move home somewhere southwards to be closer to his family, but this does not mean he is giving up the hobby. The aerial system has been simplified but activity continues! G3WW has updated his Robot 450C to 1200C but still finds the SC-2K very good. G4NJI is now the agent for Volker Wraase in the UK.

That's it for this time. As I said, I could do with a few more letters for the next roundup, so don't keep all the news to yourselves. Drop me a line at 71 Falcutt Way, Northampton, NN2 8PH or run up your (or your firm's) phone bill and leave a message on the answering machine (0604-844130).

INTERNATIONAL ATV CALLING

144.750MHZ



SHUTTLE PICTURES RECEIVED IN ROSS

The flight of the current Shuttle mission was marked by the presence on board of a radio-amateur (W0ORE) equipped with apparatus for sending slow-scan television. On two orbits, on Aug. 3rd and 4th, these pictures were received by Grant Dixon G8CGK at Peterstow, and Alan Wood G4RRT in Ross. Pictures were recorded on a standard audio compact cassette and in Grant Dixon's case they were subsequently processed by a home computer and printed out using a dot-matrix printer in the 'graphics' mode; the result is shown here.

ALUMINIUM BOOMS, STAINLESS STEEL ELEMENTS.

SANDPIPER COMMUNICATIONS

40 Trehafod Road, Trehafod, Nr. PontyPridd, Mid Glamorgan

Tel: PORTH 685515
ABERDARE 870425

70cm AERIALS	P&P	GAIN dBd	BOOM LENGTH	READY MADE	DIY PARTS
Fibreglass colinear	£2:00	5.0	5'0"	£25:00	-
12 element Yagi	£3:00	14.0	6'0"	£12:00	-
17element Yagi	£4:00	15.0	8'0"	£18:00	£14:00
24element Yagi	£4:00	17.0	10'0"	£25:00	£19:00
Double Delta	£4:00	16.0	4'6"	£35:00	-
8 turn helical	£4:00	13.0dBi	5'0"	£35:00	-
12 element crossed Yagi	£4:00	14.0	6'0"	£22:00	-
23/24cm AERIALS					
20 turn Helical	£4:00	17.0dBi	4'0"	£33:00	-
PARADELTA	£5:00	18.0	3'x2'x12"	£40:00	-
6'6" PARABOLIC DISH (mesh)	£9:00	25.5dBi	6'6"	£95:00	-
18 element Parabeam	£4:00	15.0	5'0"	£45:00	-

Lots of others: 2-Metres, 4-Metres, 6-Metres, P.M.R., Weather satellite etc. Any frequency to order.
FIBREGLASS BOOMS, TUBES RODS:
3/8" tube: £1. per Metre, 1/2" rod: £2., 3/4" tube: £2:50., 1-1/2" tube: £5., 1-3/4" tube: £6.
Aluminium tubes, spares, element holders etc.

SEND S.A.E. FOR LISTS.

U.S. VIDEOPHILES

By Peter J.Stonard (ex G8PJS)

I relocated to this side of the Atlantic some five years ago and now live in Rockford, Illinois; a fairly large town about 100 miles north-west of Chicago. About nine months ago an experiment was started by one of the local television broadcast stations here which I think members of the BATC would be interested in.

For those who have not experienced life in the U.S.A., it is not exactly as portrayed on TV, and away from the few major cities the population is spread very thinly. Trying to cover this area for local news stories is a difficult task for the media, especially since each of our local TV stations produce their own news, weather and sports programmes three or four times a day. Field reporters and ENG camera crews, microwave remote production vans and so forth are the daily tools of this highly competitive trade, but they can't be everywhere. The local ABC-affiliated station; WREX-TV channel-13 has found a new source of newsworthy video - the local video enthusiast. The Americans call video or amateur TV hobbyists 'Videophiles', but to their credit WREX-TV call us 'Video Photographers'.

The way it works is simple: Anyone with a TV camera and VCR can exchange contracts with the station, this gives the station all rights to the material for use in its own service area. It prohibits the use of the material by any other station in the same market and (the best part) awards a small financial incentive to the contractee. This idea is a sort of update on the old newspaper 'Stringer' that brought film to news reporting. The piece is aired at the discretion of the duty news producer and an on-screen acknowledgement made to the originating group and member concerned. The group is called 'Dateline News Network' and this name and the graphics tie in with other labels used in the news broadcast.

From a technical stand the material is produced on half-inch format, using typical home video equipment. At the broadcast station an editing suite has been modified to provide 'bump-up' to U-Matic - the staple diet for ENG and commercials. Dateline News Network (DNN) members operate their own equipment and can freely submit VHS or Beta formats to the station; I don't know of any other format in use but 8mm video is being promoted over here and the appeal of small camcorders will not be lost on the American public. My own equipment operates in the VHS format although the equipment is intended for industrial or small-studio markets.

There are currently more than 70 members of DNN but some have more oportunity to submit tapes than others. I am at a disadvantage because I live in the Rockford metropolitain area and compete with the studio's own ENG team. Events that occur at remote locations are more likely to get DDN attention, and often the other broadcast stations are left without coverage of these stories because they don't have such a reporting system.

The best use of DDN is for those fast-breaking news stories such as severe weather: dust storms, tornadoes, flash floods, lightening strikes, blizzards; they all occur in this area. Accidents of course are another frequent event covered by DDN.

Possibly the most valuable story from a DDN member so far was a case of being in the right place at the right time. A potential videophile was at a TV and appliance store testing a camera before purchasing it; he happened to walk out onto the street with the salesman just as a small packaging company building on the opposite side of the road exploded! It later transpired that the owner of the company was fabricating rodent extermination bombs in the back! The resulting video tape was irreplaceable and was aired exclusively on WREX-TV. News of the accident, and the death of the owner, caught the attention of the national network and the tape was flown to Chicgo where, via microwave links, it finished up in New York to be aired on the ABC network as an exclusive. The lucky videophile received his WREX-TV fee plus a much larger one from the network.

Although not in the same league I have had a news story (hit-and-run lorry crash) aired together with some other pieces which have been used by the station meteorologist as chroma-keyed backgrounds for the weather statistics and forcasts. The system seems to work very well and lessons may be learned from this experiment by other stations; after all, the more reporters there are the better the news coverage is likely to be.

TELETRON AS A TV TYPEWRITER

By Trevor Brown G8CJS

The recent BATC publication 'Micro and Television Projects' introduced the BATC's micro computer, which is dedicated to the needs of television amateurs, the Teletron project in the book should be referred to whilst reading this article. CQ-TV132 added a new and much improved VDU card and now, I would like to describe how to add a keyboard, and give details of an EPROM to enable Teletron to be used as a TV typewriter.

We amateurs, when transmitting text over the air, usually require that text to be somewhat larger than (say) commercial Teletext characters. The reason of course is that we don't often have the luxury of working with noise-free pictures. If the lettering therefore is too small it can't be read properly. The program described here produces up to seven lines of text with sixteen characters per line: Moreover, because Teletron has been specially designed for TV work, it has the ability to superimpose the screen display over an existing picture.

Printed circuit cards are available for both the micro itself and the VDU, so construction of this system should present few problems. The pre-programmed EPROM described here is also to be made available from BATC Members Services (enquire for price/delivery). In order that those who wish to develop their own software for Teletron may gain some familiarity with it, a listing of the 'TV Typewriter' EPROM program is reproduced later in this article.

The crystal for Teletron, although not critical, may be 4.433MHz. The choice here is obvious (cheap and easy to buy off the shelf) although it should not be made very much higher in frequency.

KEYBOARD

A standard ASCII keyboard is used - the type often found quite cheaply on the surplus market. An ASCII keyboard has seven data lines and a strobe output which should be active low. The data lines should be connected to the A port of the PIO via Teletron's edge connector (see table below). The strobe connects to the Non Maskable Interupt (NMI); pin 32. Links 1 and 2 should be wired into positions AB and the programmed EPROM fitted. Please note that the EPROM used here has only 24 pins although the socket on the PCB has 28! Ignoring pins 1,2,25 and 26, the IC may be plugged directly into the socket.

TELETRON EDGE CONNECTOR	ASCII DATA
24	1
25	2
26	3
27	4
31	5
30	6
29	7
28	ground
32	strobe

After connecting everything up and switching on, connect a video source to the VDU input (in order to lock the micro). The picture should be seen on the monitor screen with the legend "TELETRON TELETYPE" inlaid into it, together with a flashing cursor. The keyboard always types where the cursor indicates and will scroll up automatically when the bottom of the page is reached. If you don't have a keyboard connected to Teletron it will still produce the start-up legend. The cursor may be controlled with the following keys:

BACK SPACE	moves the cursor back one space
LINE FEED	moves the cursor down
RETURN	moves the cursor to the start of the next line
CONTROL-Z	clears page and homes the cursor
CONTROL-Y	Clears text from the cursor
CONTROL-X	toggles cursor on and off
CONTROL C	reset

SOFTWARE

Writing Z80 machine code programs is really not as difficult as is generally thought. There are several books available covering the subject in great depth and, for the beginner, a good 'tutorial' book is recommended.

In order to conserve magazine space the assembly listing given here DOES NOT include the character fonts; these are located from 0200 hex to 07FF hex. The listing was written by G6BIN using a MACRO-80 assembler package and is reproduced to help would-be Z80 programmers and, to that end, a 'phantom RAM' type development system has been worked out for this project. Unfortunately it has not yet been tested properly but it will be described in a later article.

The potential of Teletron is considerable for ATV work but, like all such projects, it needs a spread of ideas and skills in order to realise that potential. Any member who would like to help by building prototypes of the various expansion units as they come along, or help with producing software or even if you are just a user with some ideas, is invited to contact me to discuss the project. Please don't leave it all to one person - it won't do itself!

Trevor Brown G8CJS, 25 Gainsbro Drive, Adel, Leeds LS16 7PF. Tel: 0532 670115

```
                                .z80
                        ;*
                        ;*
                                .COMMENT        "Primitive routines to show how
                                                to operate the Single Board Micro.
                                                The program allows you to type
                                                onto the screen with some control
                                                over the editing by use of
                                                Control/Keys

                                                        C Brownbridge G6 BIN"
                        ;
                        ;
0000                    KB      EQU  0          ;KEYBOARD PORT 'A'
0200                    TABLE   EQU  0200H      ;START ADDRESS OF CHARACTER GEN.
87FF                    RAMTOP  EQU  087FFH     ;END OF T.P.A
E000                    VIDRAM  EQU  0E000H     ;ADDRESS OF START VIDEO RAM
E100                    SCRNST  EQU  0E100H     ;START OF ACTIVE SCREEN MEMORY
00E8                    SCRNEND EQU  0E8H       ;MASK FOR END OF SCREEN TO SCROLL
8000                    CURSOR  EQU  08000H     ;STORAGE FOR CURRENT CURSOR ADDRESS
8001                    CURSEN  EQU  08001H     ;STORAGE FOR CURSOR ENABLED zero=false
001A                    CTLZ    EQU  01AH       ;^Z  clear screen
0018                    CTLX    EQU  018H       ;^X  toggle cursor on/off
0003                    CTLC    EQU  03H        ;^C  cold start
0019                    CTLY    EQU  019H       ;^Y  clear from cursor to end of screen
0008                    BSPACE  EQU  08H        ;BACK SPACE
0008                    CTLH    EQU  08H        ;BACK SPACE
000A                    CTLJ    EQU  0AH        ;LINE FEED
0090                    SETUP   EQU  090H       ;PIO SET UP WORD A i/p B & C o/p
0003                    COMMAND EQU  3          ;PIO COMMAND PORT
000D                    CRET    EQU  0DH        ;CARRIAGE RETURN
                        ;
                        ;---------- INITIALIZATION-------
                        ;
                                ORG 0
0000'                           ASEG
                        ;
0000    31 87FF                 LD      SP,RAMTOP
0003    3E FF                   LD      A,0FFH
0005    32 8001                 LD      (CURSEN),A
0008    21 E100                 LD      HL,SCRNST
000B    11 8000                 LD      DE,CURSOR
000E    22 8000                 LD      (CURSOR),HL     ;PRESET CURSOR ADDRESS
0011    3E 90                   LD      A,SETUP
0013    D3 03                   OUT     (COMMAND),A
0015    11 E000                 LD      DE,VIDRAM
0018    CD 008D                 CALL    CLEAR
001B    CD 003E                 CALL    LMESS
                        ;
                        ;
                        ;------------TOGGLE CURSOR ON AND OFF UNTIL N.M.I ------
                        ;
001E    3A 8001         BLINK:  LD      A,(CURSEN)
0021    B7                      OR      A
0022    28 16                   JR      Z,LHALT         ;cursor disabled
```

```
0024    2A 8000     LOOPV:      LD      HL,(CURSOR)
0027    11 000F                 LD      DE,0FH
002A    19                      ADD     HL,DE           ;move to next location
002B    3E FF                   LD      A,0FFH          ;and display cursor
002D    77                      LD      (HL),A
002E    CD 00AB                 CALL    WAIT
0031    3E 00                   LD      A,0H
0033    77                      LD      (HL),A
0034    CD 00AB                 CALL    WAIT
0037    C3 001E                 JP      BLINK
003A    76          LHALT:      HALT                    ;do nothing until  NMI
003B    C3 001E                 JP BLINK                ;here from NMI
                    ;
                    ;---------------- END OF PROG -----------------------
                    ;
003E    06 1C       LMESS:      LD      B,28
0040    FD 21 0153              LD      IY,MESSAGE
0044    FD 7E 00    LOOPF:      LD      A,(IY+0)
0047    C5                      PUSH    BC
0048    CD 0068                 CALL    CHOUT
004B    C1                      POP     BC
004C    FD 23                   INC     IY
004E    10 F4                   DJNZ    LOOPF
0050    C9                      RET
                    ;
                    ;---------------+------NON MASKABLE ROUTINE ------------
                    ;
                                ORG     066H
                    ;
0066    DB 00                   IN      A,(KB)
0068    FE 03       CHOUT:      CP      CTLC
006A    CA 0000                 JP      Z,0
006D    F5                      PUSH    AF
006E    2A 8000                 LD      HL,(CURSOR)
0071    11 000F                 LD      DE,0FH
0074    19                      ADD     HL,DE
0075    3E 00                   LD      A,0
0077    77                      LD      (HL),A
0078    F1                      POP     AF
0079    FE 1A                   CP      CTLZ
007B    CA 00ED                 JP      Z,LCTLZ
007E    FE 19                   CP      CTLY
0080    CA 00FC                 JP      Z,LCTLY
0083    FE 18                   CP      CTLX
0085    CA 0105                 JP      Z,LCTLX
0088    FE 08                   CP      BSPACE
008A    CA 00DE                 JP      Z,LBSPACE
008D    FE 0A                   CP      CTLJ
008F    CA 00C8                 JP      Z,LCTLJ
0092    FE 08                   CP      CTLH
0094    CA 00DE                 JP      Z,LBSPACE
0097    FE 0D                   CP      CRET
0099    CA 00D2                 JP      Z,LCRET
009C    FE 20                   CP      020H            ;>SPACE 20H
009E    DA 00A9                 JP      C,LRETN         ;checking for ASCII
00A1    FE 80                   CP      080H            ;<7FH
```

```
00A3   D2 00A9                  JP      NC,LRETN
00A6   CD 0130                  CALL    OUTCHAR
00A9   ED 45        LRETN:      RETN
                    ;
                    ;--------------- SUBROUTINE --------
                    ;
00AB   3E 80        WAIT:       LD      A,80H           ;delay for cusor flash
00AD   06 00                    LD      B,0             ;rate
00AF   DD E5        LOOPW:      PUSH    IX
00B1   DD E1                    POP     IX
00B3   DD E5                    PUSH    IX
00B5   DD E1                    POP     IX
00B7   10 F6                    DJNZ    LOOPW
00B9   3D                       DEC A
00BA   20 F3                    JR      NZ,LOOPW
00BC   C9                       RET
                    ;.....................................
00BD   3E 00        CLEAR:      LD      A,0             ;clear from cursor to
00BF   12                       LD      (DE),A          ;end of screen
00C0   13                       INC     DE
00C1   7A                       LD      A,D
00C2   FE E8                    CP      SCRNEND
00C4   20 F7                    JR      NZ,CLEAR
00C6   C9                       RET
00C7   00                       NOP
                    ;.....................................
00C8   ED 5B 8000   LCTLJ:      LD      DE,(CURSOR)     ;line feed
00CC   14                       INC     D
00CD   CD 010E                  CALL    SCROLL
00D0   ED 45                    RETN
                    ;.....................................
00D2   ED 5B 8000   LCRET:      LD      DE,(CURSOR)     ;carriage return
00D6   14                       INC     D
00D7   1E 00                    LD      E,0
00D9   CD 010E                  CALL    SCROLL
00DC   ED 45                    RETN
                    ;.....................................
00DE   ED 5B 8000   LBSPACE:    LD      DE,(CURSOR)     ;non distructive
00E2   E5                       PUSH    HL
00E3   21 FFF0                  LD      HL,-16          ;back space
00E6   19                       ADD     HL,DE
00E7   22 8000                  LD      (CURSOR),HL
00EA   E1                       POP     HL
00EB   ED 45                    RETN
                    ;.....................................
00ED   11 E100      LCTLZ:      LD      DE,SCRNST       ;clear screen
00F0   CD 00BD                  CALL    CLEAR
00F3   11 E100                  LD      DE,SCRNST
00F6   ED 53 8000               LD      (CURSOR),DE
00FA   ED 45                    RETN
                    ;.....................................
00FC   ED 5B 8000   LCTLY:      LD      DE,(CURSOR)     ;clear from cursor to
0100   CD 00BD                  CALL    CLEAR           ;end of screen
0103   ED 45                    RETN
                    ;.....................................
0105   3A 8001      LCTLX:      LD      A,(CURSEN)      ;cursor on/off toggle
0108   2F                       CPL
0109   32 8001                  LD      (CURSEN),A
010C   ED 45                    RETN
```

```
010E    F5                ;...................................
010F    7A                SCROLL:       PUSH    AF                      ;checks if past end
0110    FE E8                           LD      A,D                     ;of screen
0112    C2 012A                         CP      SCRNEND
0115    21 E200                         JP      NZ,LOOPS
0118    11 E100                         LD      HL,0E200H
011B    01 0600                         LD      DE,0E100H
011E    ED B0                           LD      BC,0E800H-0E200H
0120    11 E7FF                         LDIR
0123    3E 00                           LD      DE,0E7FFH
0125    12                              LD      A,0
0126    1D                LOOPP:        LD      (DE),A
0127    20 FC                           DEC     E
0129    12                              JR      NZ,LOOPP
012A    ED 53 8000                      LD      (DE),A
012E    F1                LOOPS:        LD      (CURSOR),DE
012F    C9                              POP     AF
                                        RET
0130    D9                ;...................................
0131    21 0000           OUTCHAR:      EXX                             ;outputs the char in
0134    11 0000                         LD      HL,0                    ; A reg
0137    5F                              LD      DE,0
0138    06 10                           LD      E,A
013A    19                              LD      B,010H
013B    10 FD             TIMES16:      ADD     HL,DE
013D    ED 5B 8000                      DJNZ    TIMES16
0141    01 0010                         LD      DE,(CURSOR)
0144    ED B0                           LD      BC,010H
0146    ED 53 8000                      LDIR
014A    D9                              LD      (CURSOR),DE
014B    ED 5B 8000                      EXX
014F    CD 010E                         LD      DE,(CURSOR)
0152    C9                              CALL    SCROLL
0153    0A 0A 20 20                     RET
0157    20 20             MESSAGE:      DEFB    0AH,0AH,20H,20H,20H,20H
0159    54 45 4C 45
015D    54 52 4F 4E                     DEFB    'T','E','L','E','T','R','O','N'
0161    0D 0A 20 20
0165    20 20                           DEFB    0DH,0AH,20H,20H,20H,20H
0167    54 45 4C 45
016B    54 59 50 45                     DEFB    'T','E','L','E','T','Y','P','E'

                                        END
```

Macros:

Symbols:

001E	BLINK	0008	BSPACE	0068	CHOUT
00BD	CLEAR	0003	COMMAND	000D	CRET
0003	CTLC	0008	CTLH	000A	CTLJ
0018	CTLX	0019	CTLY	001A	CTLZ
8001	CURSEN	8000	CURSOR	0000	KB
00DE	LBSPACE	00D2	LCRET	00C8	LCTLJ
0105	LCTLX	00FC	LCTLY	00ED	LCTLZ
003A	LHALT	003E	LMESS	0044	LOOPF
0125	LOOPP	012A	LOOPS	0024	LOOPV
00AF	LOOPW	00A9	LRETN	0153	MESSAGE
0130	OUTCHAR	87FF	RAMTOP	00E8	SCRNEND
E100	SCRNST	010E	SCROLL	0090	SETUP
0200	TABLE	013A	TIMES16	E000	VIDRAM
00AB	WAIT				

WHERE ARE THEY NOW?

By Mike Barlow, Montreal.

Mike Barlow is the founder of the British Amateur Television Club. It was he who, in 1948, had a letter published in a radio magazine asking for anyone interested in television to contact him. From the resulting tiny nucleus of a few amateurs sprang the club which now boasts a membership of nearly two-and-a-half thousand, and whose influence in matters relating to amateur TV is recognised throughout the world.

Mike - then G3CVO - emigrated to Canada in 1957.

Your Editor thought it would be a fine idea to twist my arm and see if I would write to some of the very early members of the BATC whom we have lost touch with, to see what they have been up to. So out came the trusty word processor and some stamps, and here are the first few replies.

DOUG WHEELE G3AKJ (Hon Sec). Doug was one of the organisers of the regular Dagenham Town Fair BATC exhibit when he was living in Chadwell Heath, Essex; at that time (during the 50s) he was working for the GPO on telegraph and data transmission. He later moved to Welwyn and is now retired in Devon.

Doug was seconded to the MoT and in the 60s installed the first computer Traffic Control system for West London. He then returned to the P.O. to work on other computer systems, and was elected a Fellow of the British Computer Society. Eventually he became Head of Division for North Area, London with a staff of 250.

Doug's house overlooks the Bristol Channel from Milford Haven to Cardiff, so an SX-200 for the marine bands and a pair of binoculars come in handy. Doug has turned his attention to electronic organs, and now has a home-built instrument with two 48-key manuals and pedal board. He has also built his own computers and written the operating system for them - all of which doesn't leave too much time for his photographic activities, which include sound movies. Doug still takes a close interest in "CQ-TV".

IVAN HOWARD G2DUS - was one of the really early camera builders, (see picture in CQ-TV130 pp55), using probably the first 5527 Iconoscope tube brought into England after the war. Ivan had a radio shop and was also into electronic organs. I wrote to Stotfold, Beds, but did not receive a reply; he may have moved to Wallington. Has anyone news of Ivan? We know he's around, because Grant Dixon pointed him out to John Wood at a recent BATC show - but by the time John had turned round, he'd vanished (with that figure??). Does he still wheel TV cameras home from club meetings at 1 am in a perambulator, and on being asked by a constable What Have You Got In There, reply "Oh, just a television camera"?

HAROLD JONES G5ZT - was one of the early 70cm transmitting members. I wrote to his old address in Eggbuckland, Plymouth, but the letter was returned "Not Known Here". Anyone know where Harold is?

FRED ROSE G3BLV - was another with a 5527 camera. I wrote to Sunderland and a neighbour, Mrs Lowes, kindly found a nearby amateur who had a new address, and forwarded my letter. However, I've heard nothing from Fred himself. Anyone?

MIKE BARLOW G3CVO - edited the first few "CQs-TV", and was active on 70cm from Gt.Baddow before emigrating to Canada. I joined Canadian Marconi, built a couple of TV stations, and then moved to the CBC, where I am now a Supervising Engineer with the Studio department. I am currently assigned to Special Projects; such things as Captioning for the Deaf, computers, and nation-wide telephone systems.

I am not active in amateur radio or TV (but am continually amazed at the standard of CQ-TV), but you can sometimes see my latest efforts in the J.S.M.P.T.E. journal. After passing through a spell of photography and home movies, my hobby is currently recreational computing. A member of the American Cryptogram Association, I solve ciphers with a TRS80, an occupation which I rate as just as stimulating as amateur TV!

Some members may recall the rest of the Barlow family, who were much involved in BATC happenings. Young Stephen, who in his pram was used as a test pattern for various cameras, is now in charge of a p.c. board assembly shop in Ottowa. Margaret (my Wife) responsible for innumerable cups of tea and mailing of CQ-TV, is now Vice President of an Ottawa company importing laser power supplies and similar exotics. Jacqueline, who was born in Canada, is with a news clipping company that works with audio and videotape rather than newspapers.

We'd like to hear from Alwyn Stockley (Treasurer) who is in Auckland, New Zealand. Some of the other "old-timers" such as Grant Dixon are still very active in the club. If you have news of others who have dropped out, please let us know. (letters via CQ-TV Editor).

Mike Barlow and wife Margaret in the shack during the mid fifties.

(photo - BATC archive)

BRUCH BLANKING

By B.J.Dandy G4YPB

Bruch blanking is apparently considered to be difficult to achieve, normally requiring highly complex circuitry. In this article, describing the circuitry I use to convert my monochrome sync generator to colour, I hope to show that it can be quite straightforward. An excellent example of the blanking requirements may be found on page 6 of the BATC 'Amateur Television Handbook' (blue cover), or on page 36 of CQ-TV 127.

CIRCUIT DESCRIPTION

Fig.1 shows the circuit which I have developed. PAL SWITCH (PS) is generated by IC1a, dividing LINE DRIVE (LD) by 2, with IC1b producing H/4 for subcarrier locking if required. BURST GATE (BG) is generated by IC2, IC2a setting the position, and IC2b the duration of the burst. IC2 is disabled for nine lines each field.

To identify which lines are disabled we first identify the start of FIELD BLANKING (FB) on each field. MIXED SYNC (MS) is fed to IC3. IC3a has a timed period of 3.5uS enabling IC3b to trigger on the trailing edge of the first equalising pulse. IC3b has a timed period of about half a field so it ignores the rest of the FIELD sequence. The leading edge, suitably shortened, is gated with LD and PS to give an IDENT pulse at the start of the fourth field. This sets the field counter IC4 and line counter IC5 to zero. Later in the field the trailing edge from IC3b drives IC4 to logic one.

Meanwhile, IC5 is driven by LD and, after 312 lines, the output goes high, setting the latch formed by IC6c and IC6d. The latch Q output resets IC5 to logic zero. Nine lines later the latch is reset. While the latch is set IC2 is disabled, blanking the colour bursts. This sequence continues for two more fields, but during field 3 IC4 is driven to 4. IC4's output, inverted by IC7c, supresses the output from IC5 and the latch is set once again by the IDENT pulse, IC5 and IC4 both being reset to zero.

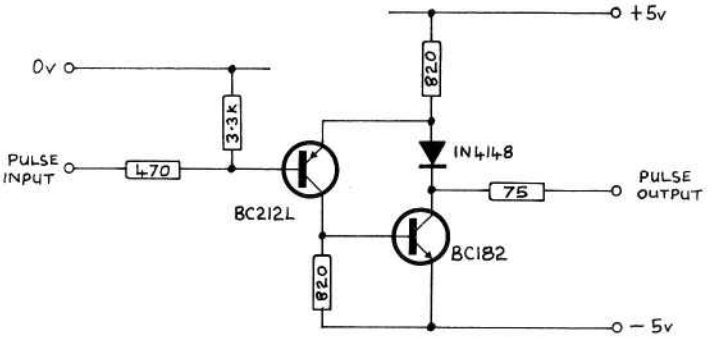


Fig.2 PULSE OUTPUT CIRCUIT

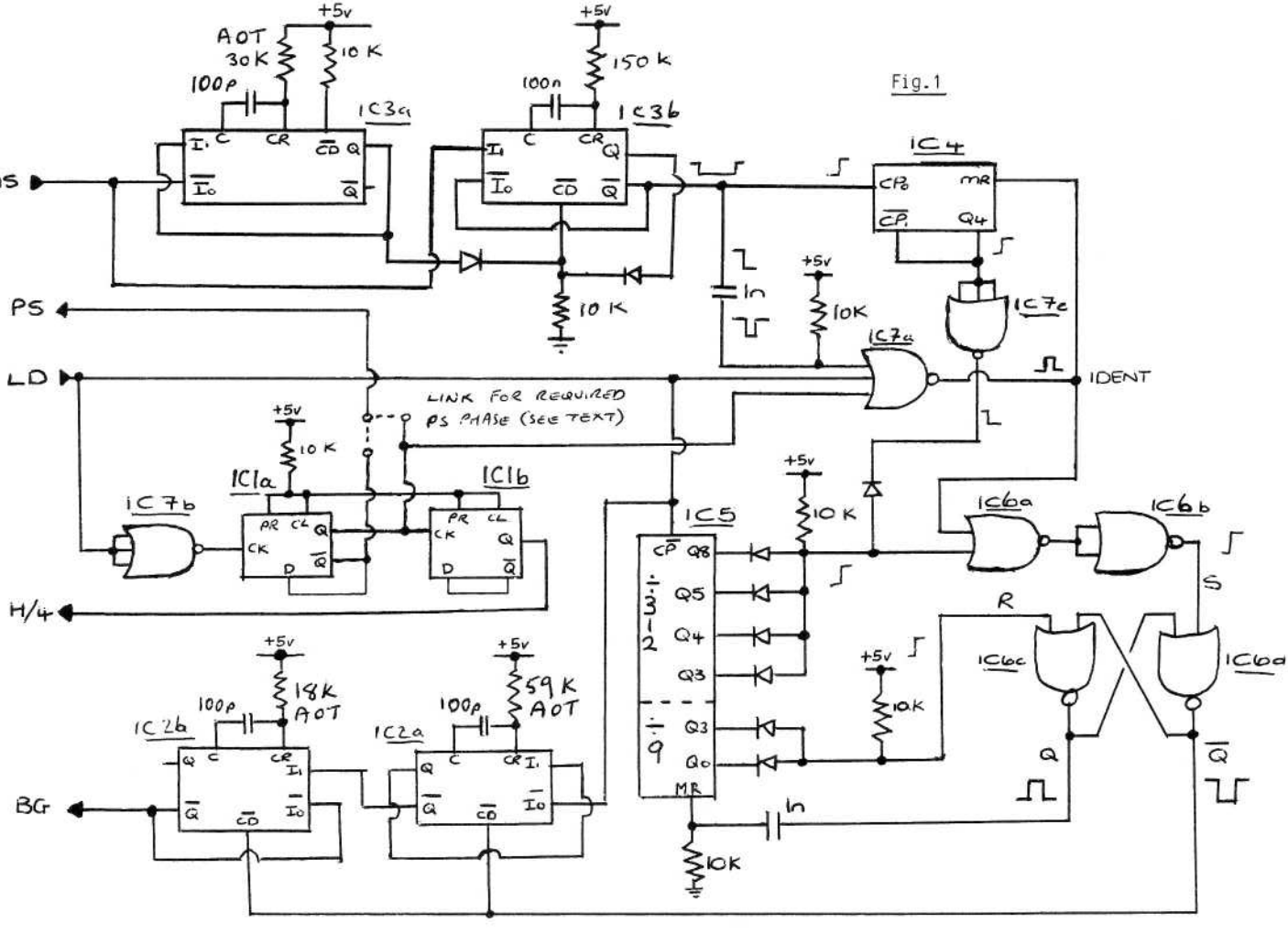


Fig.1
+5v
AOT
30K
10 K
100P
IC3a
100n
150 k
IC3b
MS
IC4
PS
LD
10K
IC7c
IC7a
IDENT
LINK FOR REQUIRED
PS PHASE (SEE TEXT)
IC1a
IC1b
IC7b
IC5
IC6a
IC6b
H/4
2-3:1
÷ 9
Q8
Q5
Q4
Q3
Q0
MR
R
S
Q
IC6c
IC6d
18K
AOT
59K
AOT
IC2b
IC2a
BG
10K

NOTES

Opinions appear to differ as to the correct polarity of PS. A lot of professional equipment is made to cater for either so I have followed suit. I personally take the PS output from $\overline{Q}$ of IC1a.

Setting-up is quite straightforward. Adjust IC3's timing resistor so that the trailing edge occurs about 5uS after the start of LD. IC3b is not critical. IC2a and IC2b should be adjusted similarly so that the burst is correctly placed within the back porch and of correct duration.

Fig.2 shows the output stage that I use in my SPG. Note that it requires the SPG circuitry to be run from +5v and -5v.

INTEGRATED CIRCUIT LIST

IC1	=	74HC74
IC2,3	=	74HC4538
IC4	=	74HC4017
IC5	=	74HC4040
IC6	=	74HC02
IC7	=	74HC27

DC TO LIGHT

A new company specialising in finished products for the more specialised parts of the amateur market, has emerged recently. DC to Light have already announced an initial product range which includes a 50MHz transverter, 70cm ATV transceiver, power supply, demodulator probe/VSWR bridge/power meter together with a range of smart stacking enclosures to accomodate the individual units. A new product just released is the DC-1G3-FM 24cm FM-ATV transmitter. The design is described as 'state-of-the-art' and its features include: excellent stability, clean output signals, switchable channels and a choice of 2W or 10W output levels. The units are fully assembled in smart cabinets (not the usual diecast boxes) and are priced initially at £210.95 for the 2-Watt and £255.75 for the 10. Data sheets on these, and the other products are available upon receipt of a SAE.

Mike Austin (proprietor) intends exhibiting at major rallies during 1986 including the BATC Convention/Rally in May, and It is hoped to review the various ATV products in CQ-TV as they become available.

DC TO LIGHT. 15 Bursley Way, Bradwell, Stoke-on-Trent ST5 8JQ. Tel: 0782 639406.

NEW MICRO - For TV'ers

A NEW MICRO ESPECIALLY FOR THE VIDEO ENTHUSIAST

PIONEER, famous for its range of audio Hi-Fi equipment, have just announced the release of a new Audio-Video Personal Computer - the PX-7. This micro is based on the International MSX standards, uses a Z80 CPU and can be locked to almost any composite video source.

Pioneer's advertising leaflet describes the machine:-

VIDEO EFFECTS CAPABILITIES

WIPES

If you're a home-video enthusiast, the PX-7 will give you more creative potential than you ever thought was possible - without spending a fortune on video processing equipment. With some simple programming the PX-7 offers a range of wipes that lets you add dynamic excitement to any video image or creation. Home movies can now have that edge of professionalism, while the video artist gains a sophisticated pallette of effects. There are all the standard wipes - single vertical or horizontal, dual vertical or horizontal - as well as a few unique patterns such as dot matrix and explosion. The results can be recorded on any standard video cassette recorder.

SUPERIMPOSE

In addition, the PX-7 allows you to add computer-generated text to video images, so (for example) the movie enthusiast can now add titles to his work. And, with appropriate programming the artist is limited only by his imagination in combining computer graphics with normal video images. What's more, the PX-7's superimpose function works without any extra adaptors, with virtually any video source.

With the PX-7 and a little imagination you will be able to enhance any video program with original titles and graphics.

Full details of this product have not yet been received at the CQ-TV office, however it is hoped that more information can be carried in the next issue with, hopefully, a full review in a future issue.

Where IS "Software Notebook"?

Owing to the fact that a long assembler listing appears with the article "Teletron as a TV Typewriter", and, not wishing to take up too many magazine pages just on computer listings, it has been decided to hold over "SOFTWARE NOTEBOOK" 'till the next issue.

ED

PHONELINE VIDEO

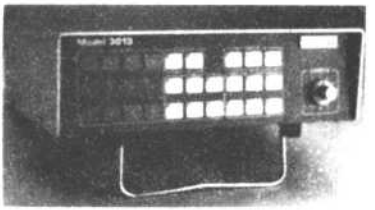
Editor

Of course everyone who has ever had anything to do with slow-scan TV will be familiar with the name 'Robot'. Robot of course are probably the world leader in designing and producing SSTV gear for the amateur market but, what you may not know, is that Robot also produce a range of Phone Line video equipment, intended primarily for the commercial market.

It is a recognised fact that Phoneline Video is derived from amateur Slow Scan TV, and, although radio amateurs are certainly credited with its invention, there is little doubt that nowadays amateurs are really benefitting from the commercial uses of Slow Scan Video. It is largely due to the research into SSTV for sophisticated industrial applications, that we now enjoy such a very high standard from Robot amateur SSTV equipment. As far back as 1978 Robot were offering 256 x 256 x 64 pictures in the commercial market. However, the new Phone Line TV system, from which the 450C and 1200C have benefitted enormously, offers definitions up to 512 x 480 x 64 as well of course as full colour. The other major benefit, a small part of which is included in the 1200C but which could not be completely included because of compatibility problems, is that whereas all previous Slow Scan has operated at a maximum of 2,000 pixels per second (in other words 8 seconds for a 128 x 128 picture and 32 seconds for a 256 x 256 picture), the new equipment is capable of operating at up to 8,000 pixels per second using sophisticated compression techniques. It is these techniques, that do in fact permit the 1200C to transmit a picture in 12 seconds which is demonstrably superior to a line sequential picture transmitted in 25.5 seconds. It is an amusing fact that Robot only put long transmission times on the 450C and 1200C because they feel that radio amateurs would not be convinced they were getting good picture quality without long transmissions. However, as any user of these models will tell you, the pictures in the shorter times are, as near as makes no difference, as good as the longer transmission one. It is precisely because of this fact that the longest colour transmissions from the Space Shuttle were 24-seconds rather than the longer transmission times incorporated in the unit.

Robot introduced their new and totally unique '3000' series of Phoneline Video Systems at the 'International Fire & Security Exhibition', held on 15th to 19th of April at Olympia, London.

The Robot '3000' series offers: (1) Full colour, ultra high definition pictures, (2) Twice the transmission speed previously available over the public telephone network. Four times the speed under good conditions. (3) Four times the monochrome picture quality of existing high-definition systems. (4) Largest ever memory, by far, capable of storing as many as twelve high definition pictures..... So runs Robot's press release issued just before the show.



For interests sake let's have a look at some of the technical specifications:-

TRANSMISSION TIME* (seconds)

	COLOUR		BLACK & WHITE			
	256/480	256/240	512/480	512/240	256/480	256/240
LOCAL	26	13	35	17	17	8
LONG DISTANCE	52	26	70	35	35	17
local QUAD SCREEN	6	3	8	4	4	2
long distance	12	6	17	8	8	4

*Exact transmission time is a function of picture content and may vary by 25%.

INPUTS

VIDEO	NTSC or PAL composite colour video (3013 only) and EIA monochrome video. 1v p-p, 75-ohms
TELEPHONE	-9 to -45 dBm, 600-ohms, balanced.
COMPUTER	TTL level. 8-bit parallel data with handshaking.
TAPE	-9 to -45 dBm, high impedance, unbalanced.

OUTPUTS

VIDEO	NTSC or PAL composite colour video, RGB video, (3013 only). Composite monochrome video (3012 only). Vertical and composite sync.
TELEPHONE	Modulated carrier. Fixed -9dBm, 600-ohms balanced.
COMPUTER	TTL level, 8-bit parallel data with handshaking.
TAPE	Modulated carrier. Fixed -9dBm, high impedance, unbalanced.

The Robot 3013 Phoneline Video transceiver is designed to interface with any personal computer and can become the nucleus of a sophisticated video data base. Capable of storing up to 48 images simultaneously, the 3013 can be computer controlled for remote operation, image processing, and image archiving applications. The smaller 3012 model is intended primarily for medical applications and operates in monochrome only.

Just in case you're wondering; I'm nothing to do with Robot, neither, for that matter, am I an active slow scanner. nevertheless I, as I'm sure you do, have a keen interest in anything to do with television, and I think that this system illustrates perfectly the mutual benefits gained from ideas and research by both amateurs and professionals alike. Well done Robot.

A 70CM COAXIAL COLINEAR

By Chris Lorek G4HCL

Although coaxial Colinear aerials are by no means new, and the author claims no originality for this design, the performance from such an aerial is excellent and, coupled with its ease of manufacture and cheapness, should find a home at most stations; if not for working the locals on 70cm ATV then for repeaters. Thanks to Chris (Editor of the Cambridgeshire Repeater Group Newsletter) for permission to reproduce this article from their issue number 9.

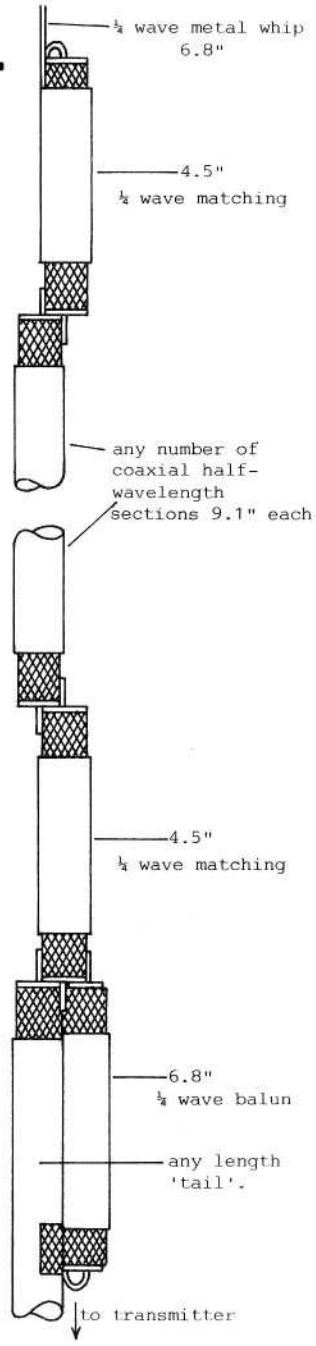
Got a bit of UR67 left from your last aerial job? Want to put it to good use and have some fun at the same time? Well this is for you!

The price of good colinear aerials is getting higher and higher all the time. The Jaybeam vertical fibreglass colinear for 70cm is now around £100! Very nice, but very expensive. This design has featured in many American publications in the past, but does not as yet seem to have been noticed very much in the UK.

The aerial described is a home-brew version of the basic technique used in commercial fibreglass colinears, it can be made as long or as short as you like (within limits of course), the longer you make it the more gain you can get. The dimensions given in the drawing have been calculated for a coaxial cable velocity factor of 0.67. If your coax is different from this, then first multiply the dimensions given by the velocity factor of your coax, then divide by 0.67.

DESCRIPTION

As the diagram illustrates; the aerial consists of a vertical radiating whip element at the top. This can be made from a stout piece of brass or copper wire or perhaps cut from an old mobile whip. The whip is coupled to the rest of the assembly by a quarter-wave matching section. This is followed by several sections which may comprise any number of COAXIAL half wavelengths (not wavelengths in free space). Try Four or six, seven is reckoned to be the limit for this form of construction. This is followed by another quarter-wave matching section then a quarter-wave



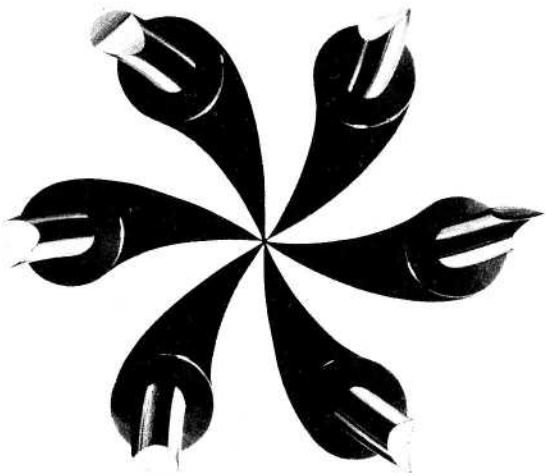
balun, the latter is connected to a short 'tail' of coax for connection to the feeder to the transceiver.

ASSEMBLY

First measure and cut all the coaxial sections to the dimensions shown, and strip one-and-a-half inches of the outer sheath from each end of each section, and from one end of the 'tail'. Next, tin about an inch of the braid (the 'bottom' inch next to the sheath) using a faily large soldering iron, being careful not to melt the dialectric insulation between the braid and inner conductor. When everything cools down, remove just over half an inch of the braid from each end of the sections, (except for the 'tail' where you are only preparing one end). If they have been carefully measured, the sections should match those shown on the drawing. Now cut through the centre insulation, just above the braid, to expose the inner conductor, in such a way that the sections, laid end-to-end have matching lengths of exposed centre conductor and braid (as shown). Tin the centre conductors, again taking care not to melt the insulation. Now the overall assembly can begin.

Start with the 'tail', assembling the quarter-wave matching section and quarter-wave balun. Note how the centre conductor of each end of the balun is shorted to the shield of the bottom quarter-wave section, and how a 'window' is cut in the outer sheath of the tail to accept the bottom end of the balun - the centre conductor of the balun being soldered to it. Set this assembly aside and work on the other matching section. Fold the centre conductor over at one end and solder it to the braid. Then solder the quarter-wave whip to this joint. Now solder the half-wave sections (however many you have made) centre conductors to braid as in the drawing. Solder the bottom quarter-wave section to one end of this series of half-wave sections and the top section to the other, and your aerial is finished.

Commercial versions are encapsulated in a fibreglass tube. These are available (at a price) from Jaybeam or Sandpiper Communications (advert in this issue), or you may like to drop into your nearest fishing tackle shop to see if they can supply large diameter fishing rod blanks that would be suitable. An alternative to these is plastic water pipe, although this may need further mechanical support to stop wobbling in the wind.



IN FRONT OF THE TUBE

Part 1

By Peter Delaney G8KZG

In most of the articles written for CQ-TV, and other television magazines, the accent is on the electronic side of the hobby. This includes the transmission, reception, generation and display of pictures - along with ways to modify them etc. There is, however, another technical aspect to a television system - the optics.

The optical system is the collection of bits of transparent material that sit in front of the television camera tube. It is clearly very important, for information lost at this stage cannot be corrected by any electronic processing later on. The picture quality can be limited by the optics - so care at this point is needed.

So what are these "bits of glass" for? Well, the most important is the lens. This is a shaped piece of glass, designed to bend the light to give a sharp picture on the camera tube target. Most of us have tried, at some time or another, to focus a spot of light with a magnifying glass - like the boy who burns paper by focussing the sun. When a distant source of light produces a sharp image on a screen, the distance from the lens to the screen is called the focal length (Fig 1). It would seem to be easy therefore to put a lens this far in front of the camera tube and get a good picture. Life is not that easy!

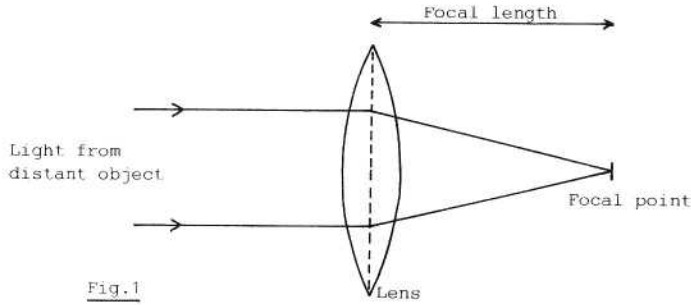


Fig.1

The problem comes from the fact that visible light is not a single wavelength, but a whole "band". The blue part of the spectrum is bent more than the red - in the same way that shaped drops of water cause a rainbow. As a result, only one part of the spectrum will be sharply in focus at a time.(Fig 2).

There is a way to cure this. By making the lens of two pieces of different type of glass, it can be arranged that the overall effect is to bend all colours by the same amount. The pair are known as an achromatic doublet (Fig 3). In practice, four pieces of glass are often used to achieve this effect in a lens. So what does that matter? Light is an electromagnetic wave, just like a radio or video signal. The radio wave passes along a cable, the light through glass. In either case, the wave is attenuated by the transmission

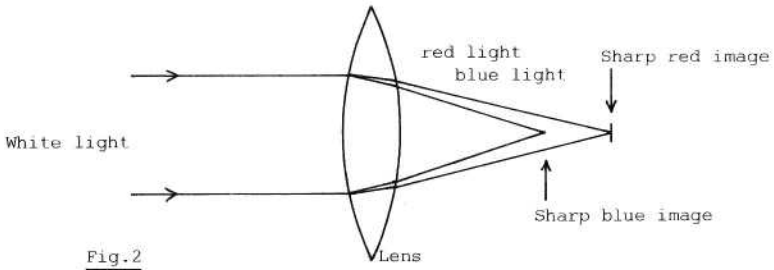


Fig.2

medium. Just as you don't put extra bits of coax in the aerial feed if you can help it, the extra bits of glass cause a greater loss of light before the camera tube. The only solution is to use more lighting, or a lens with a bigger diameter hole to let more light through. If you are looking to buy a lens at (say) a rally, then a general principle to be borne in mind is: the lower the "f" number, the larger the maximum aperture. For television, f/1.8 is a good value to aim at.

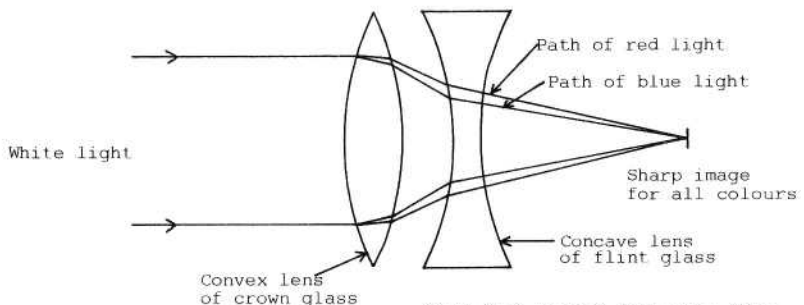


Fig.3

Having found a source of lenses, which then do you choose? The 'rule of thumb' is that the standard lens has a focal length equal to the picture diameter (e.g 25mm for 1" vidicons, 16mm for 2/3" tubes, or 50mm for 35mm film). If the focal length is less than the 'standard' value, it is a wide-angle lens (e.g. shows whole shack instead of only part of it), whereas if the focal length is larger than the 'standard', it is a telephoto lens (e.g. shows just test card from the same camera position as above). There is, however, another important consideration - the format the lens is designed to cover. If a lens designed to cover a small format is used on a larger one (e.g. a 2/3" format lens in front of a 1" tube), it will 'vignet' - certainly at wide aperture settings. Vignetting (Fig 4) is the shading of the picture toward the edges, and is particularly noticeable in the corners. The cheap wide-angle lens you get at a rally may not be such a bargain if in reality it is a standard lens for a smaller format. Buyer beware!

From the above it might appear that the lenses from 35mm cameras might suit all the requirements for a t.v. lens. Whilst it is true they ARE colour corrected, and of sufficient size format to cover even 30mm plumbicon tubes,

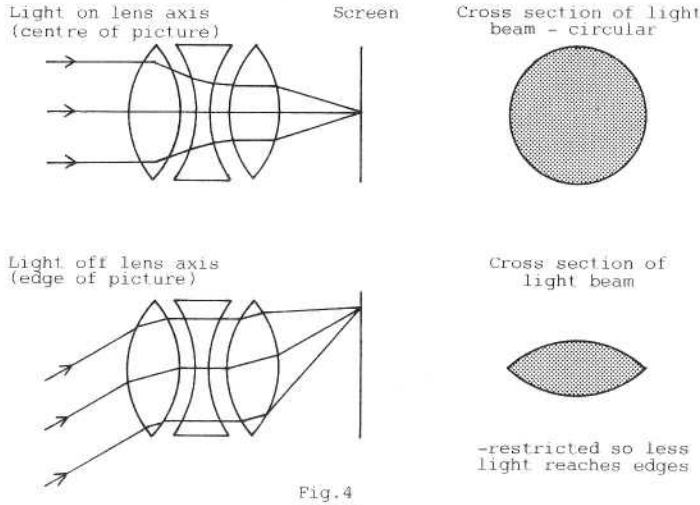


Fig.4

yet another factor comes into play. The lens designer making a lens for photographic use tries to make it capable of the best possible resolution. To do this there is some loss of contrast. This does not matter for photography, as the exposure time and development can compensate for the change in contrast. In television, however, the exposure time is fixed by the frame rate, and of course there is no development. Fortunately the designer of television lenses has a way out. The t.v. lens achieves maximum contrast at the expense of resolution. This is not such a disadvantage as you might imagine, because the resolution is limited by the television system. With a 625 line structure, even with 6MHz bandwidth, fine detail is lost - either between the lines, or by the system filters (intentional or otherwise). So,for the best results, you need a lens that is designed for television work, which covers the format you are using, or larger, and is corrected for colour.

In part two we will look at zoom lenses and filters.

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YOU'LL BE SURPRISED HOW MUCH THERE'S IN IT

SIMPLE, INEXPENSIVE PLATING METHODS FOR VHF AND UHF

By Robert D.Shriner WA0UZO

Some VHF and UHF circuit failures can be traced to oxidation of components, circuit-board foils, grounds and other conducting surfaces. Unprotected copper surfaces often fall victim to this naturally occurring process. As operating frequency increases, skin effect (the tendency for rf currents to flow nearer to the surface of a conductor) becomes more pronounced. Oxides that are of no consequence at audio or hf suddenly take on villainous significance! I have discovered a few situations where oxides had formed de facto semiconductors.

REMEDIES

I suppose that the best solution is to use components with pure gold leads but that is impractical. Pure silver is another expensive option. Electroplating systems offer the best industry compromise in terms of performance and cost, but the plating equipment may be too expensive for the home-construction enthusiast. Immersion plating techniques, however, when done carefully, can provide a workable alternative for the individual builder. The drawback is that the coat of plating material is thin and can be removed easily with light scratching.

Immersion silver plating on copper is, in my opinion, the easiest plating operation for the home-construction devotee. A similar process can be used to plate copper onto steel or iron with a hydrated copper sulphate (known in US drug stores as "blue vitrol" although an alternative should be available in the UK from chemists). Once this operation is complete, silver can be plated on the copper coating. Aluminium can be plated, but the process requires a skill level beyond that of the novice plater.

SURFACE CONSIDERATIONS

The surface to be plated must be thoroughly clean. To test for cleanliness, pour on a little water. If the water spreads evenly without beading or breaking, the surface is clean enough. If it beads or breaks, additional cleaning is called for. Muriatic acid, a diluted solution of hydrochloric acid, may be used to cleanse the surface. I suggest that you use a solution of no greater strength than 10%. As with all other chemicals mentioned in this article, PLEASE USE CAUTION and follow the directions on the containers. Once the surface has been polished with fine steel wool, use rubber gloves and small balls of cotton to apply the acid cleaner. After light rubbing, rinse the material under cold running water to remove any traces of the acid. Set it aside to dry and make absolutely sure that nothing comes in contact with the surface to be plated after it has been cleaned.

Probably the least expensive silverplating solution is discarded fixing solution used in developing black-and-white photographic film. You can probably obtain this from a local photographic studio. Some fixing solutions make better plating agents than others. You may have to try different sources before you find one that will work satisfactorily. Or if you choose, you may purchase a silver-plating solution from a chemical supplier.

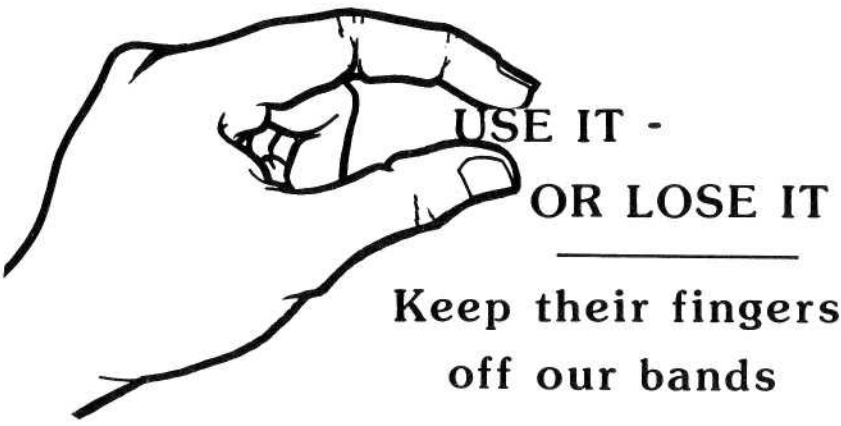
Make sure that your hands are clean and avoid touching the surface that is to be plated. Pour a small amount of the plating solution into two containers. Use a steel-wool pad dipped in the first container to polish lightly the surface to be plated. This will further clean the surface and leave a bit of the plating on the material. Immerse the material in the second container or use a cotton swab to spread the solution evenly over the surface. You should now have a uniform layer of silver on the copper. Thoroughly wash the surface to remove all traces of the plating solution by holding the plated surface under running water for several minutes. Next, carefully dry the surface with a soft cotton cloth. Do not allow any sharp object to come into contact with the newly plated surface. The silver plating is thin and not very durable if left exposed. However, the layer is adequate for surfaces not subjected to handling. Don't worry if the plating discolours, because silver changes into silver oxide, which is a good conductor at vhf and uhf. Do not try to protect the plated surface by spraying it with paint or lacquer: This will destroy the effectiveness. Once the surface is plated, do not touch it with your fingers, because the body oils left behind in the fingerprint will destroy the plating. This will degrade the performance at vhf or uhf.

Really, the only question left is whether a particular surface should be plated. Why risk finding out later that you should have plated it initially? I've never enjoyed taking a piece of equipment apart to fix something that was not done right in the first place.

NOTE

There is a general belief that the Q of a silver-plated inductor or conductor is higher than that of a plain conductor. This appears to be true at vhf or higher, but in the hf range and lower (owing to greater "skin-effect" penetration) there was no discernible difference in the unloaded Q readings obtained with a specified coil during ARRL lab tests. However, even an hf-band inductor looks nicer when silver plated, and is less prone to severe oxidation than an equivalent inductor made from bare copper wire or tubing.

Grateful thanks to the ARRL for permission to reproduce this article, which first appeared in QST Magazine in November 1981.



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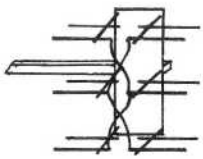

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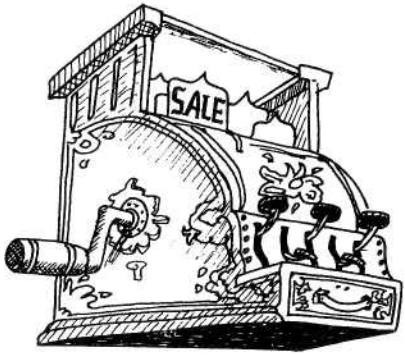

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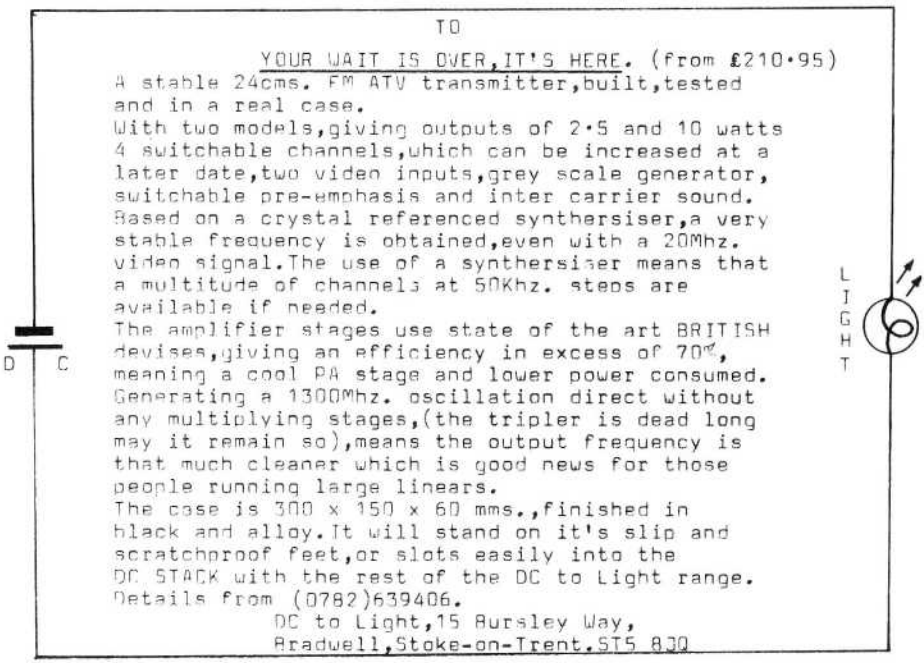
D.Anderson G6YBC, 5 Birchfield Avenue, Atherton, Nr.Manchester, Lancs M29 0HR. Tel: Atherton 891140

WANTED FOR GRUNDIG SVR 4004 VCR: video head and drum assembly, will consider scrap machine if heads OK. Also loan of a manual for Sony camera type VCK-2400ACE, will pay all postage.
George Mayo G4EUF. Carlton House, Broad Lane, Markfield, Leicester LE6 0TB. Tel: 0530 242378

IS THERE ANY MEMBER INTERESTED in constructing for me a slow-scan transmitting unit (camera etc) of basic design, for a fee to be arranged?
Please phone Paul.Stenfalt on 01 777 8665

EMI VALVE SPG in green case, wanted for collection. PYE 11" black monitors - circa 1970. PAL DECODERS, rack mount, Cox preferred. CAPSTAN servo amp for U-matic use with TBC. NEUTRAL density filters for EMI 2001's. REMOTE CONTROL panel (iris and lift) for Pye Mk7 camera. The above for my amateur outside broadcast van which I hope to display at the May BATC rally.
Brian Summers G8GQS. Please phone 0427 616210 and leave your number, I will ring back at the weekend.



VINTAGE RADIO & T.V.

Mr.Journeaux, owner of the Journeaux Historic Wireless Collection, has recently joined the BATC. Aparently there are so many items in the collection now that they have to be kept in three houses. Every copy of Wireless World is included in the collection as are many other old magazines, and Mr.Journeaux has kindly offered to help members with information from back issues.

Any member who has anything which could be of interest to the collection is asked to write or telephone details please to:

Mr.H.H.Journeaux,
7 Blair Avenue,
Parkstone,
Poole,
Dorset BH14 0DA

THE JOURNEAUX HISTORIC WIRELESS COLLECTION

In 1970 Mr. Journeaux of Poole, Dorset, received a bequest of a large number of early wireless receivers, all in a very poor condition, with the hope that they would be eventually be restored to full working order.
During the next few years the story of the bequest and subsequent restoration was reported in the local press, radio and television.
This resulted in further donations of Vintage Wireless Equipment, including a large quantity of early Wireless books and magazines etc. It was therefore decided to incorporate everything into a historic wireless collection to include all items of Wireless History from 1900 to 1940. This has since grown into one of the largest private wireless collections in the country and now includes over 800 radios, televisions and related items, together with a reference library of 2000 wireless books and 3000 wireless magazines.
It is eventually hoped the whole collection will be on permanent display to the public. Until then most items are available on free loan for exhibition or research purposes.

TELEPHONE PARKSTONE (0202) 748072.

HAVE YOU PAID YOUR SUBSCRIPTION?

If not, see 'NEWS ROUNDUP' for details

BATC LIBRARY

The BATC library, though not huge, may well contain that article or paper that you have been searching for.

A duplicated list of the libraries contents is available to members upon receipt of a stamped addressed envelope, or you may send or telephone your specific requests for information. Should the material required not be to hand the librarian will try to obtain it for you.

At present the library contains a large number of manuals for Marconi, Pye, E.M.I. etc., broadcast equipment, back-issues of CQ-TV, A5, Der TV Amateur etc., and a vast amount of Mullard publication notes. There are some historically interesting letters and photographs from the very early days of the Club. Also included are some (mostly early) audio tapes and lectures which are available for loan.

Paul Marshall, G8MJW. Fern House, Church Road, Harby, Nottinghamshire NG23 7ED. Tel: 0522 703348.

There are a number of video tapes available for free loan to groups and societies. The tapes include BATC demonstrations and exhibitions, programmes on ATV plus a good selection of material from other countries showing how they operate amateur television and demonstrating ATV repeaters.

If you have any ideas or material for future programmes, Trevor Brown would be pleased to hear from you.

Trevor Brown G8CJS, 25 Gainsbro Drive, Adel, Leeds LS16 7PF. Tel: 0532 670115

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The Electrocraft Dynamic Noise Reducer is designed basically for use with Video Tape Recorders to improve the quality of sound on playback, but is suitable for any audio system requiring a reduction of background noise.

For example, the unit has been used on outside broadcast operations to reduce the level of wind noise and other background noises before recording. An ideal noise reducing unit for "U-Matic, VHC, Betamax, etc, VTRS.

Compact Vision Mixers
Type VMC-81

The Electrocraft compact mixer VMC-81 is a professional approach to providing a versatile mixer for the small 2 camera television unit such as the home user, amateur theatre groups, compact educational unit and so on.

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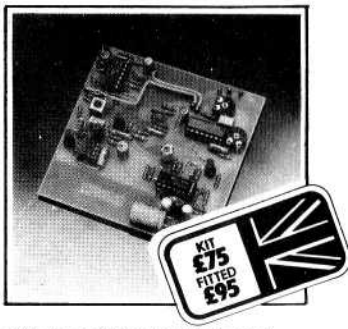
Type 284

The Electrocraft PCB Type 284 has been designed to synchronise the circuits of the BBC Computer to an external reference signal, which can be of either Mixed Syncs or Composite Video. The PCB is mounted inside the computer,



with the minimum number of connections to the computer PCB and without the need to cut PCB Tracks. The power supply requirement taken from the computer's own circuitry requires only 30mA from the ±5V. rails, so does not inhibit the use of computer peripherals.

Send for details:

ELECTRO CRAFT

Electrocraft Consultants Limited, Liss Mill, Liss, Hampshire GU33 7BD
Telephone: Liss (0730) 893444/892742 Telex: 86134

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Also with the 1W FMTV TX and the 1W to 10W PA you can have 10W of 23/24cm FMTV (and sound) on the air for £119.90 + postage.

Kits include PCB, instructions and all on-board components but exclude external hardware eg box, sockets, meters, heatsinks etc.

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