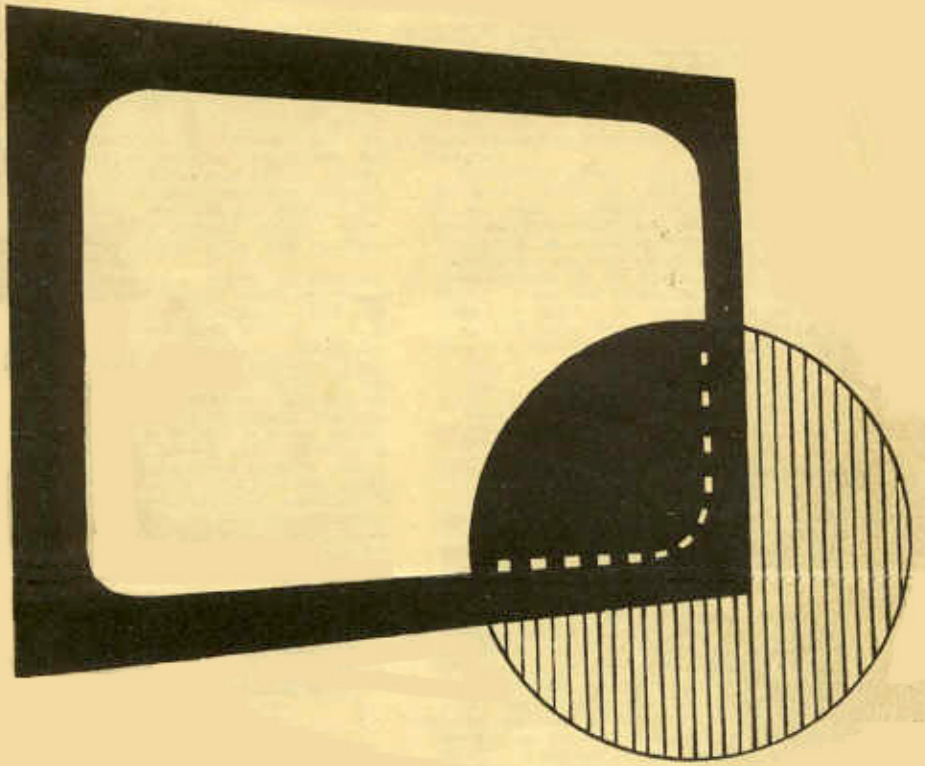


cq-tv

June 1953.
Five Shillings per annum.

CQ-TV

Number Seventeen
Fourth Year.

Published for the British
Amateur Television Club
at Cheyne Cottage,
Dukeswood Drive,
Gerrards Cross, Bucks.
Tel: 2935.

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

Editor's Note: June 1953

Summer is the season of outdoor shows, and members of the Club will be active with shows at Wisbech, March, Ely, and Dagenham. Already we have had reports of successful demonstrations at Ross-on-Wye and in Dublin. These shows act as a great stimulant, and are always well attended by the general public, but they do take time and trouble, if a good show is to be produced. With this in mind, the Club is building up a stock of display material, posters, and photographs. These are available to anyone who can use them, free of charge. However, the main thing is to have as much as possible of the details worked out beforehand, and with this in view, the efforts of the Dagenham and Romford group of the BATC are really first class. As far back as January, a mimeographed sheet went out to all the members of this group, giving details of the proposed plans for the year, and suggesting a date for a meeting. Since that time, regular meetings have been held, the various requirements have been worked out, and each member of the team knows exactly what he has volunteered to do, what he has to do it with, and when it must be ready. The 13 members have overhauled the existing equipment, rebuilt units, painted panels, built a new camera and a camera crane; transport is organised, the exact size of the studio, its location, its surroundings are known; the power requirements have been checked; a rota of shifts for the two-day show has been drawn up, and all the plans and arrangements have been double-checked to avoid mishaps. Last year 17,000 people attended the Dagenham Show, and the TV exhibit, with its team, worked like clockwork, carrying off a prize at the same time. For anyone wishing to see a display of teamwork, we can only say, come along to the Dagenham Town Hall grounds on August 29-30th, and see for yourself.

It is surprising how the amateur TV activity is distributed around the country. It is at its most active in the South East, mainly in and around London, perhaps because of the TV-mindedness of the public in this area. Elsewhere in the country we have numerous bright spots, but all on their own. Cheshire, for instance, has one of the highest concentrations of members of any county. Numerous units have been built, and there is at least one live camera and one transmitter in the area. Could not something on the lines of the Dagenham- S.E.Essex group be worked out? The same applies to the Midlands - many of the larger cities have 6 or 7 members capable of putting on a first-class demonstration of TV. We all appreciate that it takes time and effort to bring about these things, but amateur TV transmission is surely one place where many hands and heads make light work? It is not too late for 1953 yet, but it is time to start thinking about Exhibitions this winter, and next year.

As this is our Coronation Number, with a new cover design, with extra pages, it is only fitting that we should express in it the loyal greetings of all our members to Her Majesty. Although the Coronation is a predominantly British occasion, I am sure all our members, whatever their nationality, will join in wishing Her Majesty a long and joyous reign.

Yours sincerely,

Editor. M.Barlow.

THIS MONTH'S SHORT NOTES

Literal translation of our motto: "Semper Auditor Stum" is "Do we always have to LISTEN to the blighters??"
About a dozen copies of editions 14. 15 and 16 are available @ 1/6 ea from G3CVO.
Back Copies: the file now contains issues 1,2,5,6,7,9,10 and from 12 onwards. The file may be borrowed from G3CVO. Please do not keep it longer than one week. Please state whether the more recent editions are required when asking for the file.
Keep the Hon Sec informed if you want a camera tube; at the moment I have orders for 14 Vidicons @ £25, 9 Monoscopes @ £6, and 5 camera tubes at £10 or less, should they again become available. Also let me know if you are interested in a TV transmitting licence not involving a knowlege of Morse.
Remeber the Wisbech show on June 13th, and the Dagenham Town Fair on Aug 29-30th. It will soon be RSGB Showtime again, too....
Part 3 of the TV series appeared in the April 1953 "Bulletin". Subject: video amp timebases and power supplies.
The Editor wishes to acknowlege receipt, with thanks, of the Mohawk Journal, DL-QTC, Mullard Outlook - and a ticket for the Maltese National Lottery!
Congratulations to Tony Sale - now officially engaged, and due to be married on the 15th of August. Tony hopes to be living between Chelmsford and Southend.
Recommended: "The Video Handbook", by Schvega and Roche, publ. Boland and Boyce.
The Hon Treasurer G3EKE, 309 Norbury Ave, SW16 is handling all sales of notepaper, and membership certificates. There are no lapel badges left at the moment.
The Club is trying to build up some lecture tapes. Members wishing to swap tape are asked to use 7½" per sec twin track recording. We are expecting tapes from Alan Achurch, Russ Spera amongst others. The first lecture tape is being made by Grant Dixon; subject: "Colour TV".
RCA Review in March had a useful article on fan aerials. These are wideband devices very useful for TV. Cut one for 600 Mc/s and it will work from 400-900Mc/s, swr 1.2.
P.J.Robinson quotes prices of GEC blue tubes: E4205/E/7 £5-10-0; E4103/E/4 £5.
200' of 16mm film, "Amateur TV at the 1952 RSGB Exhibition" is available on loan to members with 16mm projectors (state type) or telecine units. This is a negative copy. We should be pleased to hear of other films available on TV matters.

CAMERA TUBE SITUATION: SALE OF REJECT STATICONS

Further details have now been received, and will be summarised. At the moment, no overseas orders can be dealt with, pending patent clarifications, and a condition of sale is no re-sale, and no export. At a later date some tubes may be available for export, but this is unlikely to apply to the USA. The data and circuits for the RCA 6198 Vidicon are equally applicable, but further data will be made available, either from the manufacturers or via the BATC. Coils will be available at normal cost, (about £40 including transformers), but coil data will be issued via the BATC. The tubes are type C931A, orthochromatic, and their life is governed by the degree of spottiness that the user can tolerate, as this increases with age. 2-300 hours may be expected, but no guarantee is given. Some C931B panchromatic tubes may be available later on. The monoscopes are mainly test card C or similar geometric pattern. Types C911 and 913 are interchangeable and magnetically focussed, C912 being electrostatically focussed and equivalent to the RCA 2F21. Data is to hand for the former but not the latter type (see RCA data). Delivery of a number of tubes can be made in about three weeks or so, but orders must be made on forms obtainable from the Hon Sec (and countersigned by a BATC officer). Payment with order, or on receipt of invoice. These order forms will be sent to all UK members who have sent in their names already, without further correspondence. Nett prices £25 for C931, £6 for C911 and C913, £7 for C912.

CURRENT LIST OF BRITISH AMATEUR TELEVISION STATIONS

Call	Location	Vision Freq/power	Sound freq/power	Operates	Standards
G2WJ/T Nr	Dunmow, Essex.	437Mc/s 5W		Sats 1800	200 line seq.
G3FNL/T	Upminster	445Mc/s 25W	-	-	405 interlace.
G5ZT/T	Plymouth	427Mc/s 5W	-	Evenings	200 seq.
G3BLV/T	Sunderland	20W	-	-	405 interlace.
G2DUS/T	Baldock	427 Mc/s 5W	-	-	200 seq
GI3FWF/T	Belfast	437.75Mc/s 40W 2350Mc/s ½W	1753 kc/s* 10W	-	405 interlace.
G3CTS/T**	S.London	429Mc/s 25W	425.5Mc/s 25W	-	405, 625 interl.
G3ACK+	Blyth	426Mc/s 50W	422.5Mc/s 25W	-	405 interlace.
G3CVO+	Gerrards X.	438.2Mc/s 6W	1805 kc/s 10W*** 145.1Mc/s 25W	Sun 1500	405 interlace
PAØZX	Groningen	145Mc/s 70W	3.5Mc/s	Sun 1500	312 seq.

Notes:

* This frequency was chosen before the new Top Band regulations came into force.

** Station of the Television Society. Sound and 625 facilities under construction.

*** Sound also being transmitted by pulse width modulation of sync pulses.

\+ Station under construction.

This list was correct on May 21st, 1953. Please let me have corrections and additions as soon as possible. I should like to make this a regular feature.

TV Skeds

Sats 3750 kc/s German Dutch and Belgian stations, with PAØZX. 1500.

Suns Ditto, British stations, G3CVO and anyone else who can, please. 1430.

Please let me know suggestions for 2m and Top Band skeds.

SHORTER NOTES

English Electric have a very nice pamphlet on a home-constructed TV set, using their T901 16" metal CRT. Ian Waters says that all Pye and Murphy sets tested will lock on a frame pulse as short as 3/4 of a line long. This means there is no need to re-insert pulses in the frame interval to stop line TB drift; result: a simpler pulse generator. Recommendddd for closed circuit work mainly. Has anyone a circuit for a small RF oscillator unit suitable for RF distribution to TV sets? Small transformers with extremely low interwinding capacities are now available @15/-. From?. Has anyone tried trailing-edge-of-the-line-sync-pulse width modulation for the sound channel? Ian Waters quotes a 7 kc/s upper frequency limit. All that is required at the receiver is a low-pass filter connected to the sync separator. Grant Dixon requires 5FP7s; we are always glad to hear of sources of CRTs., 931s, etc. "Wireless World" for January had a most useful curve of the number of turns required on standard Aladdin formers for a given frequency. "RCA Review" gave figures for the Tel Aviv - Haifa radio link on 250Mc/s; 50W to an 8 ele stack gave 2mV @ 5m, 1mV @ 8m, 500µV @ 25m and 300µV @ 50m. For an isolated array, the field strength E in µV per metre at a distance D miles is independent of frequency, and is given by $E = \frac{137000\sqrt{P}}{D}$ where P is the ERP, ie RF power o/p x antenna power gain. Actual results may be ± 5 dbs on this, depending on height of aerial, etc. "Electronics" for May 1953 gives details of a Raytheon grid controlled cw magnetron. This runs 50w at 2350 Mc/s and can be grid modulated with TV, or locked to a crystal drive. "Proc.I.R.E" for March 1953 p338 (6pp) Fisher on "Generation of Colour TV Signals". "Electronics" April 1953 p150: "A TV Matte Shot Mixer". Outputs from two cameras are superimposed non-translucently (!) as in trick photography.

AN ECONOMICAL TELEVISION WAVEFORM GENERATOR

By D.E.Radley, A.E.Sale, and M.W.S.Barlow.

(Here at last is a guaranteed,fool-proof, master pulse generator for either 200 line sequential or 405 line interlace working, using a minimum number of tubes and components, and requiring little setting up. The design is capable of further development, or of modification to other standards).

In many of the simpler pulse generators already described in these pages, simplicity was obtained at the cost of performance. Sync pulses did duty as blanking and clamping pulses, front porches were omitted, and so on. Whilst this is all very well in simple equipment, there comes a stage when further improvements cannot be made without building a proper pulse generator. The unit to be described gives outputs of mixed blanking and mixed sync at the 5V level; as described, the line frequency is crystal controlled, so that there may or may not be an interlace. If a strict interlace is required, an extra counter chain will be needed. The frame is locked to the mains. A complete BBC type of waveform is generated, although the values given are for 12500 cycles line frequency, giving a 250 line sequential picture. The corresponding values for 405 line working are: for 8 microseconds read 10, and for 13 read 16.5 microseconds throughout this article. The whole unit uses just four double triodes, three pentodes and a double diode; if the counter chain is incorporated, or if the unit is left free-running, the CO stage can be omitted.

The block diagram Fig 1. shows how the unit operates. The double triode V1 is a multivibrator running at 25 kc/s (20250 cs for 405 line), and this is locked to the crystal or the counter chain. This tube produces "half-line" pulses of 8 microseconds length. Part of the output is applied to V2, which is another multivib locked to the trailing edge of the pulses from V1; this tube generates line blanking pulses of 12.5 kc/s frequency and 13 microseconds duration, and because of the trailing edge trigger, these pulses are delayed 8 microseconds with respect to the V1 pulses. An additional delay of 8 microseconds in the feed from V1 ensures that every second half-line pulse applied to the diode gate V3 coincides with the arrival of a line blanking pulse from V2. The diode only gives out a pulse when both inputs are "live", and so the output from V3 consists of 12,5 kc/s 8 microsecond line blanking pulses.

In order to generate a front porch, these sync pulses must be delayed with respect to the blanking pulses from V2; in order to keep the phasing correct, both line and half-line feeds must be delayed by the same amount. For a BBC type waveform, this delay should be of 0.5 microseconds, but for amateur work it may be better to lengthen this slightly, perhaps to 1 microsecond.

Frame synchronising pulses are generated by V4 and V5, which are pentodes of the short suppressor-grid base type, such as VR116s or 6F33s. These are connected as a 50 cycle, 400 microsecond multivibrator between their control and screen grids. Line and half-line pulses, delayed by equal amounts as above, are fed into the suppressors, and the output from the common anode is then mixed sync. This is fed to a cathode follower. Frame blanking is generated by another VR116, V6, which is cut off by 350V of AC applied to an R-C network, and gives a 1400 microsecond frame blanking pulse on peaks. A lead from the screen of this tube supplies a 50 cycle lock to the frame sync generators, so that the leading edges of each are co-incident, whilst line blanking pulses are fed into the suppressor. The output from the anode goes to another cathode follower.

The circuit

The circuit is pretty straightforward, although the cross-connections tend to make it look rather complex. The crystal oscillator stage may seem to have

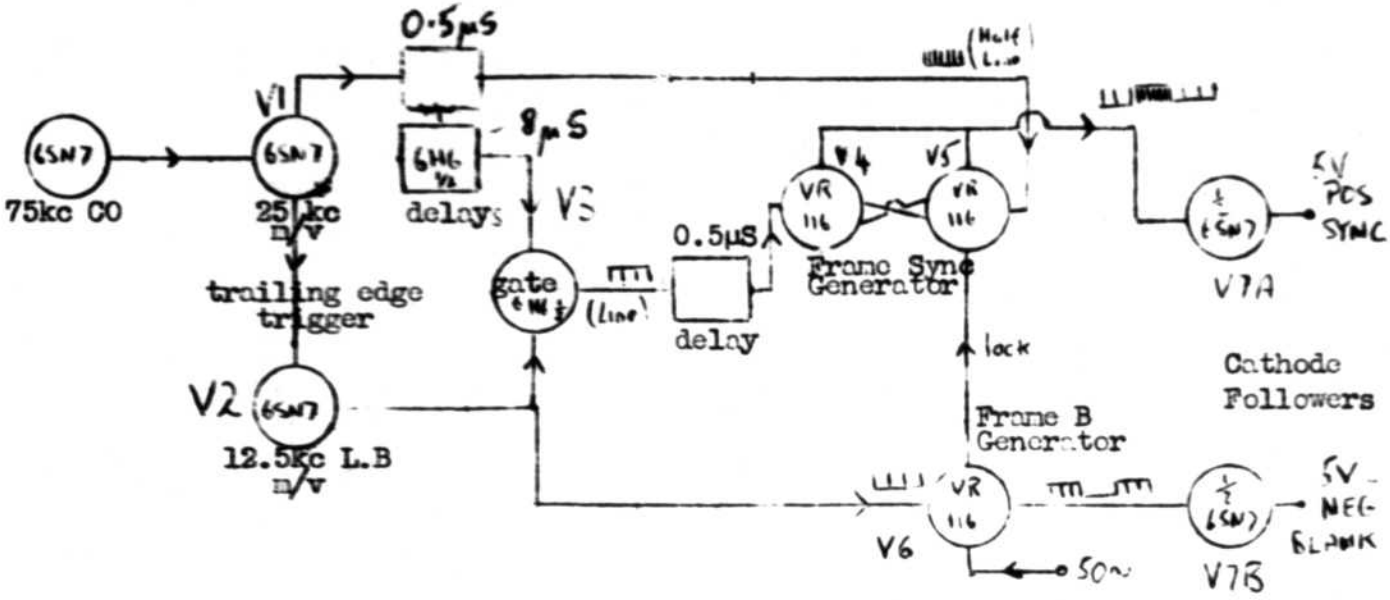
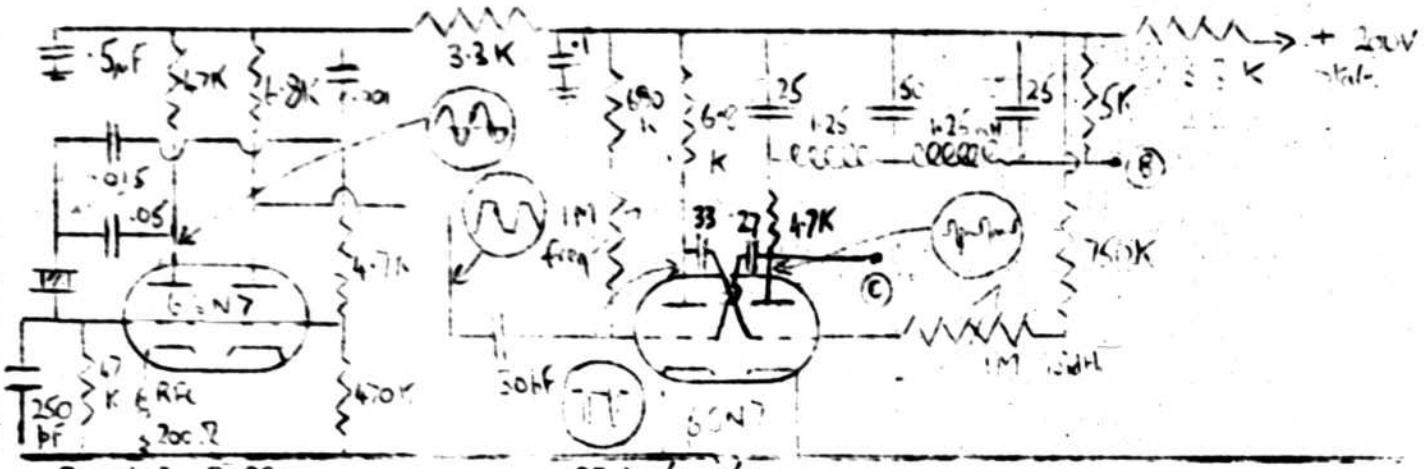


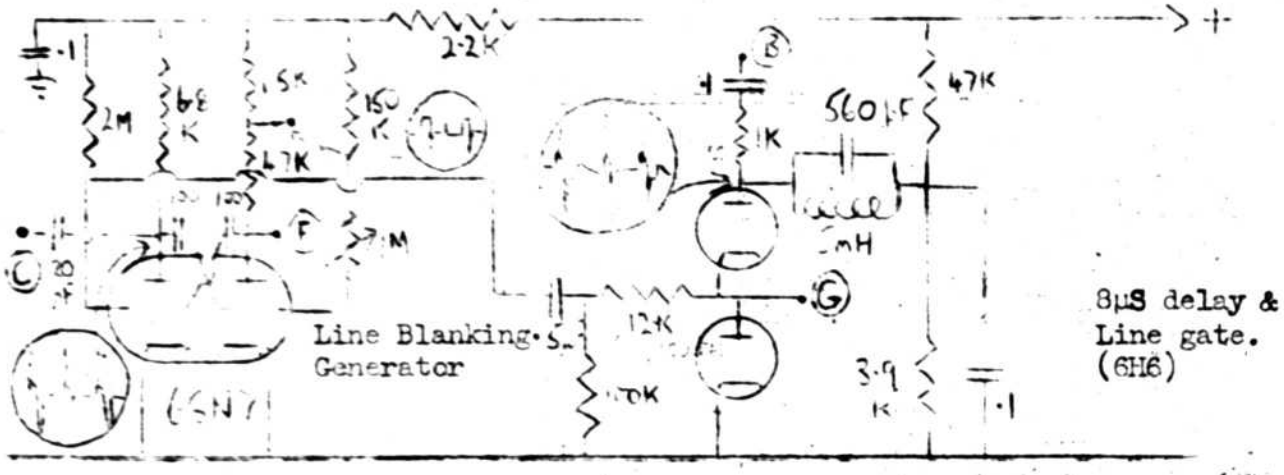
Figure 1. Block diagram of Pulse generator

some unnecessary components in it, but crystals of this frequency sometimes refuse to oscillate in standard circuits. There is no reason why a pentode stage should not be used in place of a 6SN7. The cathode RFC will be found to be a great help with "sticky" crystals.

V1 and V2 are straightforward multivibrators, the variable control giving some control over the pulse width. This control also affects the frequency, and it may be necessary to alter the fixed resistor(s) in the other grid lead. The 0.5μSec delays are introduced by suitable delay lines, which can be made up from the given values of components, or a surplus line can be tapped until a suitable delay is produced. The 8 microsecond delay cannot be produced by a delay line, as this would be a massive affair; instead, the tuned circuit-clipper V3 is used. Half-line pulses are fed into a tuned circuit consisting of a 5mH coil tuned by a 560pF condenser. The tuned circuit performs one damped cycle per pulse, the lower (negative) part of the waveform being selected and clipped by the diode. Alteration of the time constant of the L-C network will produce any desired delay. (It is also possible to produce this delay by differentiation of the half-line pulses, and selection and clipping of the trailing edge "blip". The net waveform, which becomes the line sync pulse, is not rectangular, but has a very straight leading edge).

To set the circuit correctly, first of all set the crystal oscillator and buffer stages in operation. V1 is now locked to the CO stage, and the pulse width adjusted to give a 5 to 1 space to mark ratio. V2 is now locked to V1, making sure that it is running at half the speed of V1, and its space/mark ratio is set to about 6 to 1. Make sure that V2 is triggering on the trailing edge of the V1 pulses. Now put the oscilloscope on to the screen of V4, and set the mark space ratio at 50 to 1 when locked to the mains. Similarly V6 is adjusted to give a 16 to 1 trace (alter the 100K resistor if necessary), and the lead from the screen of V6 is used to lock V4-5. Putting the scope onto the common anode lead of V4-5 should give no output waveform if everything is balanced, but a slight amount of unbalance will not matter. The line and half-line pulses, from the delay lines, are fed into the suppressors. If each is connected singly, the blocks of half-line pulses can be seen without the line pulses - check they are of opposite polarity. Any difference in the levels will be removed by the cathode follower stage. Although only one polarity of output is available from the cathode followers, opposite polarity o/p can be taken for short distances from the anode loads, as indicated.





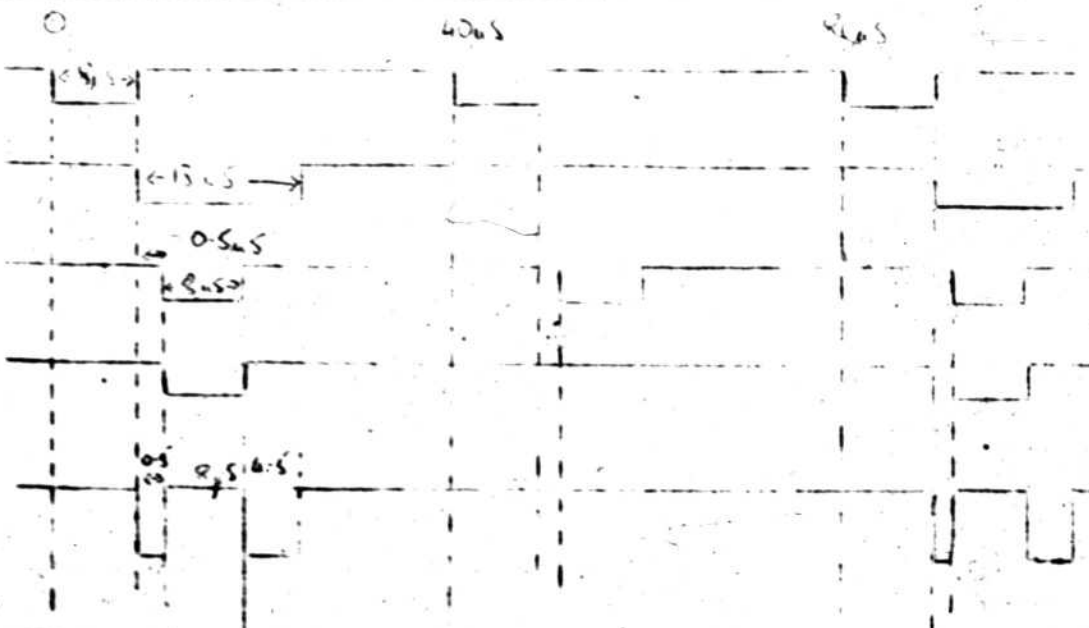
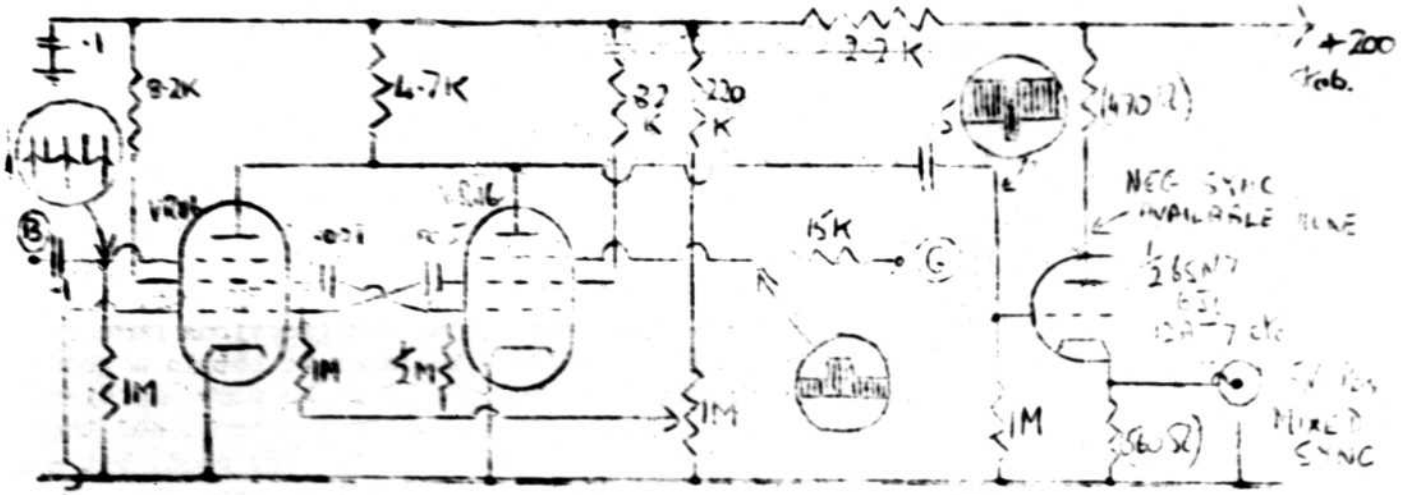
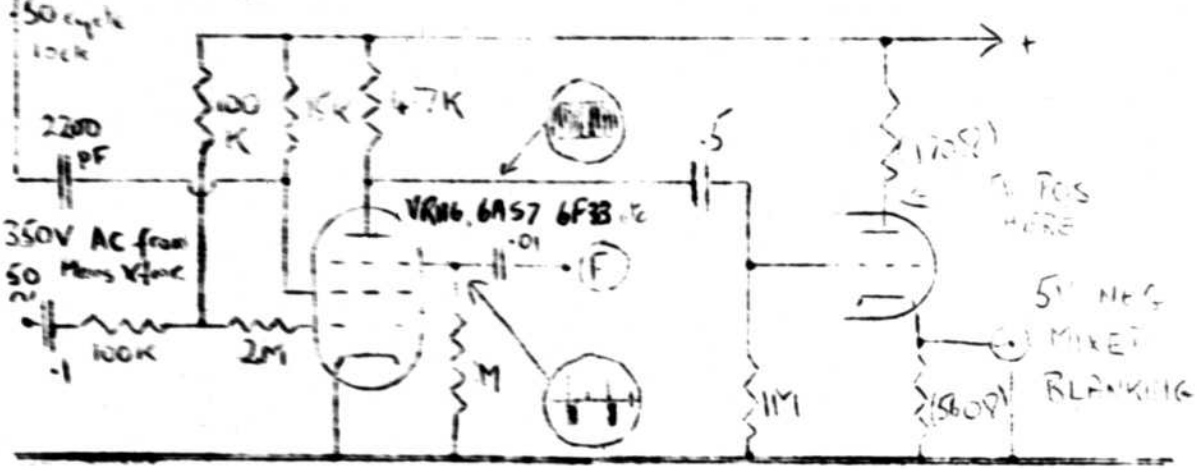


Figure 3: The phasing of the various pulses; the polarity and scale are not necessarily accurate.



Frame Sync switch and mixer. Cathode Follower

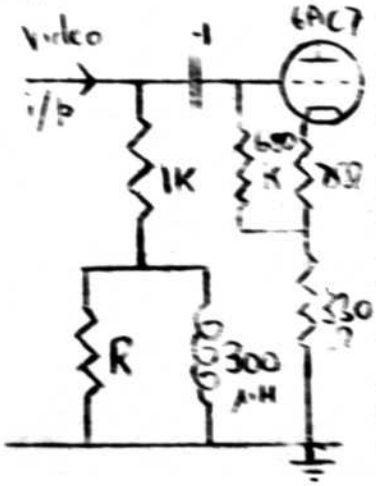


Frame Blanking Generator Cathode Follower

Figure 3: Circuit diagram of Simple Pulse Generator.

IMPROVING YOUR PICTURES

Having trouble clearing that last bit of distortion? Remember the ideal response for a telestill scanner amplifier is flat from 50 cps to 25 kc/s, and then steadily rising to 4 Mc/s. Excessive HF response (too much compensation, coupling/decoupling components too small) gives "snow", ie noise, and "ringing", ie oscillation, black after white. Excessive LF response, causes streaking. Anti-streak circuit, ex-Proc I.R.E, given at the left; adjust R to suit. Insufficient HF causes loss of fine detail; insufficient LF gives uneven shading to large patches of nominally the same shade. All the above faults can be corrected by paying attention to the time constants in the circuits.



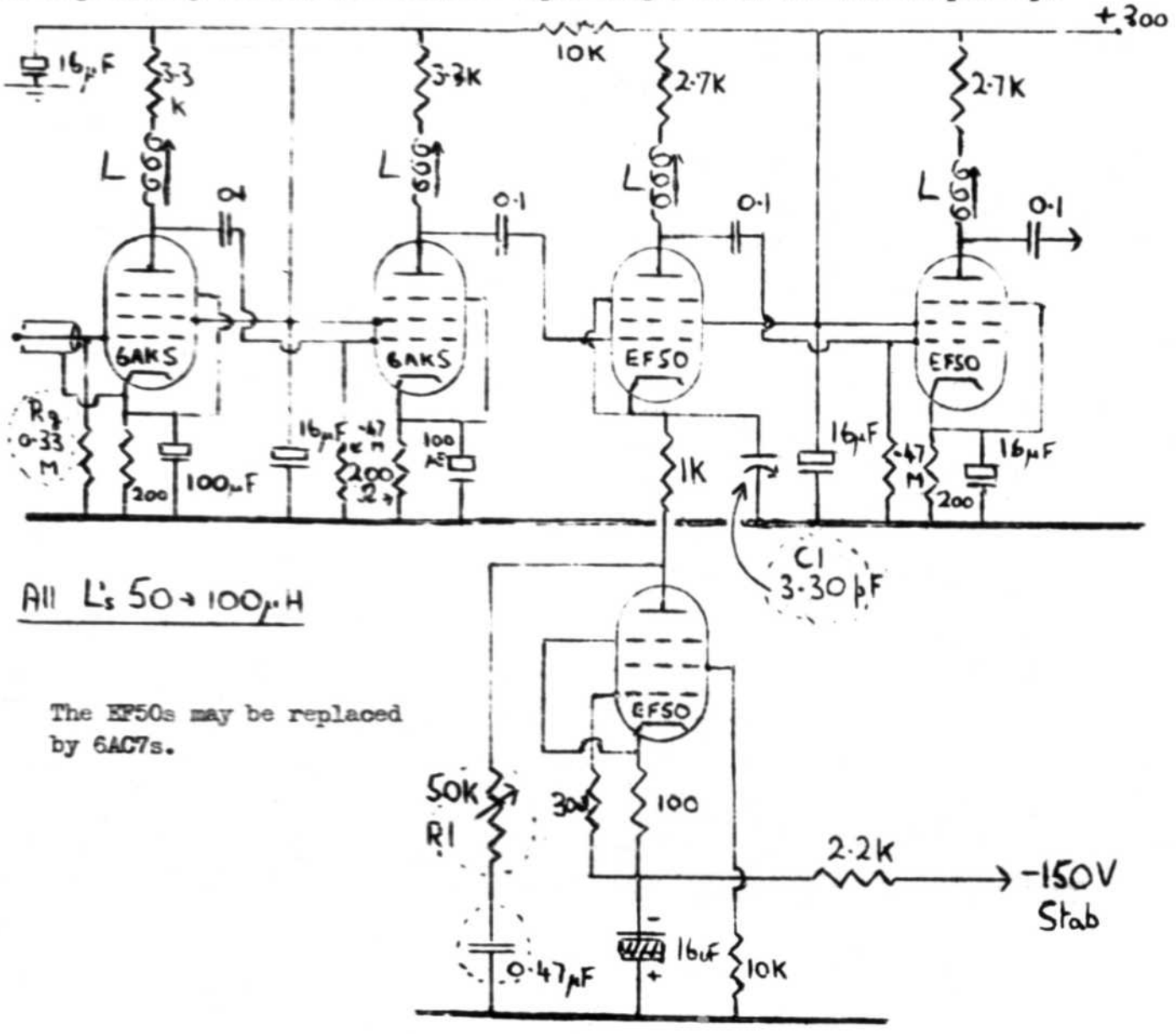
A generally noisy picture can also be caused by the use of excessive photocell volts, excessive amplifier gain, noisy resistors (use higher wattage types than really necessary), light getting into the optical system, or the wrong type of screen on the scanner tube.

Do not forget that a great improvement in picture quality is obtained by correct blanking and clamping of the various circuits.

SOME CAMERA PRE-AMPLIFIER CIRCUITS

At last we have managed to obtain a copy of the circuit that PAØZX and the Groningen group have been using in their 5527 camera. The results with this have been extremely good, approaching the quality attainable with much more expensive and complicated camera tubes. The difference in picture quality brought about by the use of this circuit, plus attention to correct blanking and clamping, has to be seen to be believed.

The circuit is based on one due to Barrett and Goodman in "Electronics" for June 1947, entitled "Simplified TV for Industry". Some modifications have been made - indicated by a ring around the component - in order to obtain a good frequency and phase response. The original values were found to be very unsatisfac-tory. PAØZX states that the adjustment of C1 and R1 is rather critical, and that R_g must be of the value specified. The signal to noise ratio is very good, but could be improved by the use of a cascode input stage, as in the Vidicon pre-amp.



The EF50s may be replaced by 6AC7s.

Figure 1. Recommended pre-amplifier for 5527 Iconoscope camera tubes (over)

The next two circuits apply to Vidicon tubes, specifically the RCA 6198, but equally applicable to the reject vidicons available in this country. A cascode pre-amp is used with a 6BQ7 tube, feeding a line amplifier designed to work into a 6CB6 as a video amplifier. With the gain control at minimum, and 0.2 microamps signal current input to the camera pre-amp, the output voltage is 0.25V peak to peak; at maximum gain, the same output is produced for a signal current of 0.015 microamperes.

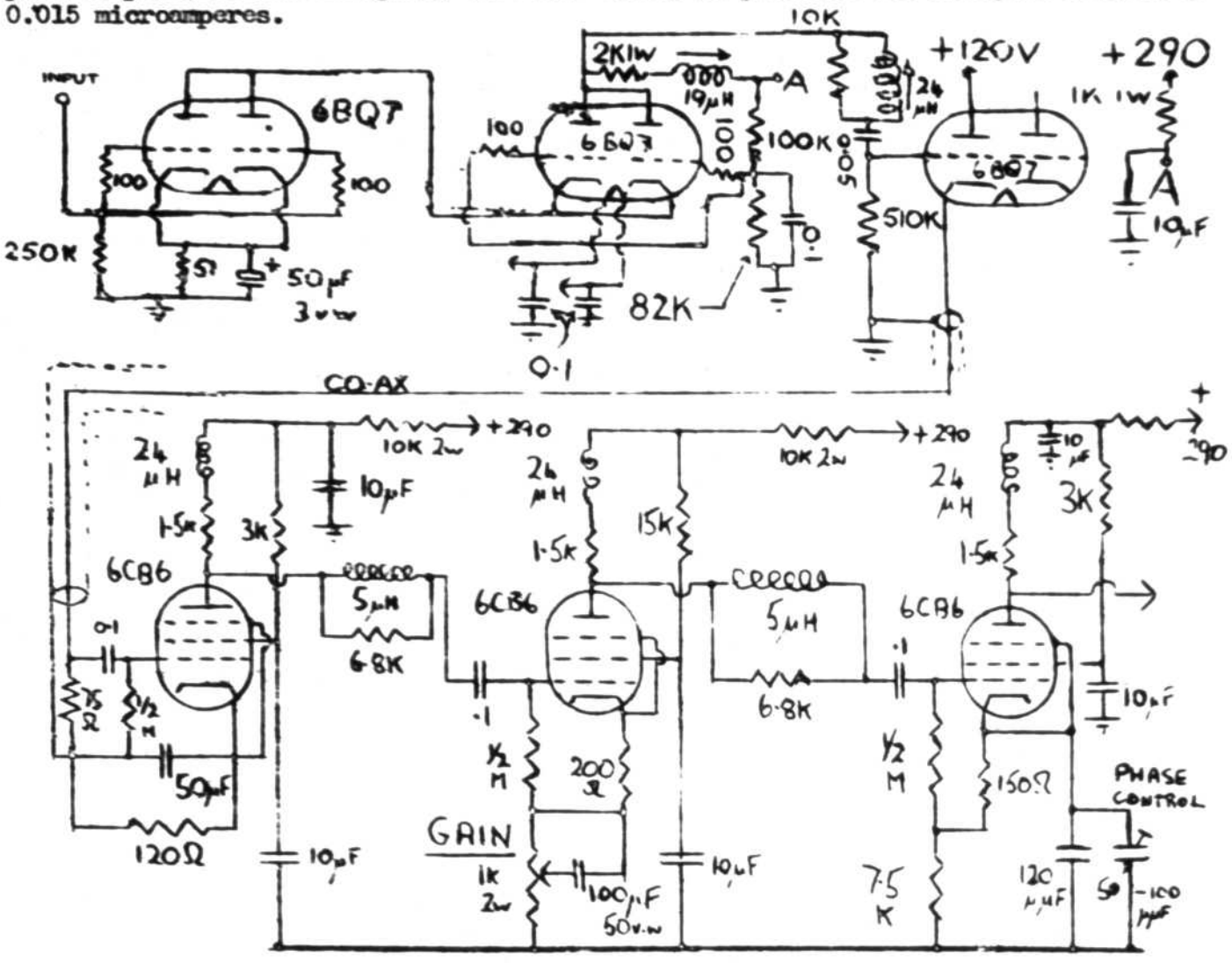


Figure 2. Recommended camera amplifier for type 6198 Vidicon tubes.

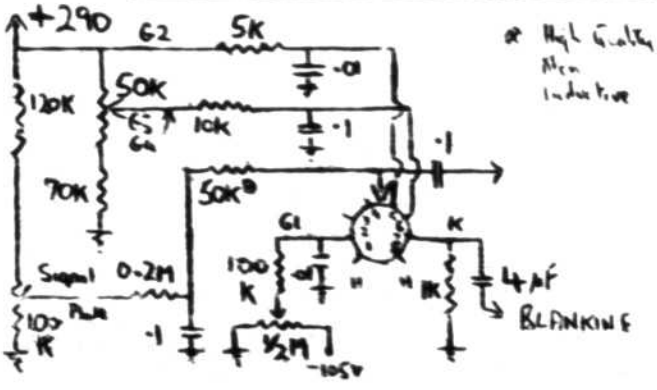


Fig 3; DC supplies to 6198 tube.

The last circuit gives details of the DC supplies required by the 6198, and presumably by the British tube as well. The differences between the two types of tube are very small.

Thanks are due to OH2NL, Jim Russell and, of course, RCA, for the data given here.

Articles on vidicon circuits will be published in these pages as often as they become available, so send in your own data as soon as possible.

A CONVERTER FOR THE RECEPTION OF 70 CM TELEVISION SIGNALS Pt 1.

By M.Barlow, G3GVO.

From the list given in this edition, it is obvious that before long a large number of members will be within the service area of one or more amateur transmitters. As all these stations are using standards of transmission that make the use of domestic TV receivers possible for the resolution of the picture, all that is required to receive these transmissions is a small converter, changing the incoming signals down to a frequency suitable for feeding straight in to the aerial sockets on the set. In some cases, where the sound channel is 3,5Mc/s lower than the vision channel, both sound and vision will be received on the domestic set in the normal manner.

Standard communication practice at these frequencies - around 430 Mc/s - is to use a crystal controlled local oscillator in the converter, on the grounds of high stability, and to tune the IF channel to cover the range required. Now, many TV sets do not have a variable tuning facility, so that one crystal is required for each 70cm signal it is required to receive. This may be satisfactory for those who are in range of only one transmitter, and in that case they would be advised to look up the construction of G2DD's little converter in the Short Wave Magazine recently. The alternative is to keep the IF fixed, and to build a very stable local oscillator. Fortunately, the large bandwidth of the TV signal eases the oscillator stability requirements considerably; the unit described drifts about 5kc/s in half an hour, and this has no effect on the TV signals. Over short periods, the stability is sufficient to receive cw signals on the 70 cm band, but the unit is not really designed for this type of application.

The oscillator stage is the vital part of the converter, and care taken with it will be well repaid. The oscillator frequency may depend on several factors, one of which may be whether a suitable valve is to hand. However, the IF is fixed at the frequency of the local BBC channel, 45Mc/s for London, for instance. The oscillator injection must be 45 Mc/s lower than the desired reception frequency; there is no point in using 45 Mc/s more than the desired carrier, as this merely increases the required oscillator frequency, and thus decreases its stability. In the London area, TV activity is mainly between 429 and 445 Mc/s, with sound and cw stations concentrated between 432 and 436 Mc/s. If we consider a band from 427 to 447 Mc/s, then, the oscillator injection must lie between 382 and 402 Mc/s (for a 45 Mc/s IF).

It is possible to run the oscillator direct on 382 Mc/s, using suitable tubes (6J6, 955, etc) and resonant chamber, line or trough circuits ("pot" oscs.). Now, if the oscillator is coupled tightly to the mixer line, some of the incoming signal will be lost in the oscillator circuit. Also, all the oscillator hash, harmonics and general noise will be fed into the mixer, and the Q of the mixer will be lowered - which may or may not be important. Therefore it is usual to couple the oscillator rather loosely to the mixer. To give the same amount of injection, this means that the oscillator must be run at a higher power, which produces heat and harmonics, and a general loss of stability. Another important point is that the lower the frequency of the oscillator, the greater its intrinsic stability, since variations in electrode spacing and in the measurements of the actual tuned circuit, due to changes in temperature, and the like, have a proportionately smaller effect on the frequency of oscillation. In the long run, therefore, it is better to run the oscillator at low power and at a low frequency, and to use an extra stage to multiply and amplify the injection to the required degree. Direct injection of a lower frequency, relying on the oscillator harmonics to do the necessary beating, is very unsatisfactory, as a large part of the crystal mixer

current is due to the fundamental component of the injection; the crystal becomes saturated with useless current, and is no longer working at the best point of its characteristic.

The physical construction of any converter for this band must be as rigid as possible. Thick brass is ideal, although aluminium will do; the prototype was actually made in a stout baking tin, mainly to see how efficient the converter would be if made as simply and as cheaply as possible. Similarly, the various tuned circuits have been made from tinplate or plain copper sheet, and the whole converter was then checked against a similar tunable converter constructed by G2WJ, but this converter used silver-plated coaxial mixer and High-Q circuits, and was very robustly constructed. The comparison was interesting, as giving an idea of the difficulty of building really good converters for 70cms. The prototype unit was inferior to the 2WJ converter by no less than 30 dBs; this means that 2WJ's converter is still better than the prototype even when connected to a dipole, the other being connected to a 64 element stack! This tremendous difference between two converters, identical in circuitry, explains why results on 70 cms can be so perplexing. The prototype converter is perfectly satisfactory for monitoring TV transmissions, and should give a reasonable picture up to 5 miles or so from a strong transmitter. Attention to detail will allow a signal 30dBs lower than this to be resolved, however. The G3CVO tunable converter is slightly (10dBs) down on the G2DD crystal-controlled converter; it seems probable that the mixer circuit is the inefficient part, for the crystal current in all three converters is very similar, but both G2DD and G3CVO use a flat plate mixer, whilst G2WJ has a coaxial mixer. No doubt a trough mixer would be an improvement on the flat line. As a matter of interest, G2WJ's tunable converter is only 5 dBs worse than his crystal controlled one, which must be one of the most sensitive converters in existence.

(To be continued).

- -

HOW TO RUN AN EXHIBITION.....!

The following are extracts from mimeographed sheets circulated amongst the members of the Dagenham and Romford group of the BATC.

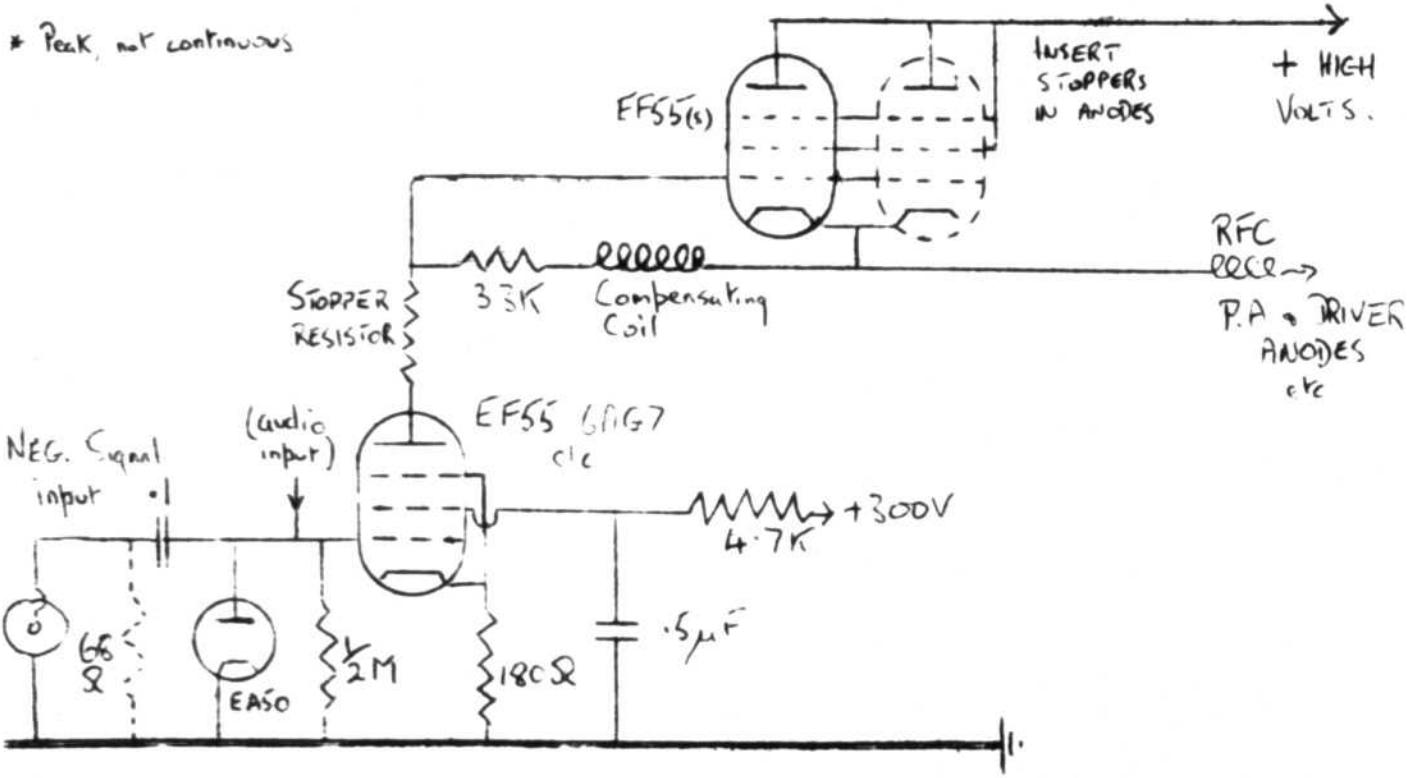
"The position regarding equipment is exactly as we left it last August. One camera, one telestill unit, pulser and power supplies, all very bulky and needing a redesign. I would like to know if members are willing to get down to work..... The attached list gives an outline of our proposals for future work...If you have gear already, let me know, and we'll arrange things to suit your gear. It will help immensely if we (standardise).....I shall be contacting each member individually in a few days time to note your ideas and suggestions, and we can then fix a date for a meeting. There are about a dozen of us now, and ... we require Chassis bashers, provided with materials and plans, to do (metalwork)..case finishers, to paint, polish and label...and circuit wirers to do wiring-up...no need to get it to work.". A list of existing and proposed equipment follows. Feb 1953.

"A general meeting will be held.... to meet each other and discuss suggested plans and duties. Primarily, we would like to form a TV exhibit which could be brought into action promptly and efficiently with any required degree of complexity. Our main exhibit this year will be the Town Show 29-30th August". March 20th.

"Progress report (May 15th): Sound: Bill Hall is providing ....amplifier... mixer...cable; vision: (the new camera) is nearly complete; major job is to build a regulated power supply; Sid Wilson is busy with interlace generator, mixing and distribution circuits; Telestills: Eddie Barrall has a complete unit with its own monitor....Ron Oakley completing his...; Power: Jimmy Brett has built a motor-driven ½ton camera crane..Admin: 40' x 30' space booked..General: Ian Waters as spare...!"

A BOOTSTRAP MODULATOR FOR TV WORK AT 430 MC/S

In "CQ-TV" No. 14 a circuit for a bootstrap modulator was given in basic outline, and it was mentioned that this type of modulator was used in the RCA portable TV camera equipment. ROBERT TORRENS, GI3FWF/T, has tried the circuit with his 8012 rig, and is very pleased with it. The circuit shown is in use at G3CVO, and the following points will be of interest. The unit is built on a small chassis which rests alongside the 70cm PA chassis. Three EF55s are used in the video modulator, but 6AG7s would do as well. One of these is a straightforward video amp stage, whilst the other two are strapped in parallel as triodes. In this way, a PA plus driver current of 90 mA can be handled; if smaller PA currents are required, one of the EF55s can be omitted. It is not easy to use the EF55s as pentodes, as the screens will require feeding from cathode followers. All electrodes require stoppers and the LT to the EF55s is best left floating, in order to avoid heater-cathode breakdown. Alternatively, if a separate supply is available for the two control EF55s, their heater line can be joined to a suitable HT potential; it may be advisable to use a low capacity transformer for the job. Also on the chassis are a DC restorer (used in preference to a line by line clamp so that only a composite video signal need be fed into the modulator) and, not shown, a Z77 (6AM6) crystal mic input amp for announcing the callsign on the vision channel. (Read your licence!). This tube has a 470K anode load, and the audio is taken off through a 47K resistor and 0.1µF condenser in series straight on to the grid of the first EF55.



The 3.3K resistor between grid and cathode of the EF55(s) is a critical component. It can be shunt compensated with a small coil in the usual way. Robert Torrens used a triode connected 807 with between 1.5K (too low) and 6.8K (too high) when modulating the 500V supply to the 8012s, with a 6AG7 video amp. The pulse response was particularly good. Robert also quotes the following figures that may be useful: 807 heater/cath capacity 25 pF; average mains transformer heater to primary capacity 0.0007 mfd, with core, 0.001 mfd.

Mr A.E.Sale developed the above circuit.

"WHAT THE OTHER CHAP IS DOING....."

Frank Lee, of Beverley, E.Yorks, has been busy with exams, but has managed to complete the fully-regulated power supplies; he uses surplus high-cycle Xfmrs for LT, and will be glad to oblige with details. John Watts of Clevedon, Somerset, is ready to test the CPS camera, and offers his CPS frame coil jig to anyone interested. John is also hoping to get a vidicon. The comparison should be very interesting, on. Ian Wilson G3BHH of Durham City reports illness and lack of activity his end, but he hopes to pick up again now. Tony Sale has been busy with his new camera amplifier, but has also had Other Things to think about! Jack Hargreaves G5VO has moved house, and so has been off the air for some time.

Down in New Zealand, Ted Carpenter has contacted Graham Goodger, but as they are 400 miles apart, they are not too happy about TV QSOs! They complain that the cost of components out there makes TV work prohibitive (931s @ £3-10-0, etc). Ted is also short of a suitable scanning tube, but has a good supply of 6AC7s and 6SN7s. At Ross on Wye, Grant Dixon showed his monochrome telestill unit, and the practically completed colour camera. This is mounted on a small tripod, with the power supply at the bottom. The camera is in a case about 18"sq by 3' long, and contains a 3" monochrome viewfinder with fitted enlarging lens. The camera tube is mounted on some "surplus" toy railway track for focussing. The disc runs in an airtight chamber, driven by some small gauge bicycle chain. The control rack fits in a standard 19" frame, and is about 4' high. Plug in to the mains, switch on, and colour pictures..... A very nice job of work, especially considering the lack of workshop facilities and general assistance there. 1800 visitors came to the show, and Grant made the acquaintance of several interested parties, including the Man from the Local Cable Works! Grant says that another TV station is under construction in the South West.

G3AHF at Weaverham has also just moved, and has had to leave a lot of his gear in his workshop 3 miles from home. William is rebuilding at present. From Nottingham, R.F.E.O'Connor writes that he has been experimenting with 4' x 3' TV for three years, and hopes to let us have a few notes. Robert Buchanan of Newark cannot afford a vidicon, so is squeezing the telestill unit. Also, he found the interlace with the G3ETI interlace generator erratic, and is building his own version. Flip-flops throughout, except in the divider chain; he has also built Tony Sale's DB scope unit to check results. (HOW do you get that timebase linear?). R.Wilkes has his telestill unit under test, and hopes to get a monoscope going as well. He has the tape-recorder bug, and wants to contact BATCs in the Blackpool area.

R.H.Sheppard, our whaling friend, writes that his telecine unit runs very satisfactorily - at 25 pictures per sec ONLY! - and he is modulating a QY3-125 final stage on 62 Mc/s! This gives him bags of Kilowatts, and the whales don't seem to mind. The sound goes out in the trawler band - all this only in the Antarctic, of course! The "Balaena" often docks in Newcastle, and OM Sheppard hopes to meet some of the lads next time he is in. The film scanner uses a Premier timebase for a Cintel 3.5MVLAX, which, of course, is an improvement on the 5FP7 used beforehand. 931A and the usual headlamp... pulse generator uses 3 6F32s, 17 6SN7s (!), and 5 6AC7s. A 6F32 transitron LC oscillator at 21250 cycles is controlled by a 6F32 reactance valve from the discriminator o/p. The divider chain uses 5 6SN7s dividing by only 3 per stage in the interests of stability. This must amaze the whales, whatever else happens...!

N.Harris, of SW13, is working on a telestill unit.....W.Worthington has

NEW MEMBERS THIS QUARTER

Dennis Barnes	G2CNT	12, Sunnyside, Meadowlands, Cambridge.
Ted Carpenter		124, Oakdale Rd, Mount Roskill, Auckland, S3, N.Zealand.
D.J.Crowe		7, Crondall Grove, Liverpool 15.
R.W.Johnson	4025300 Cpl,	210, Ellington Ave, RAF MQ, Beaconside, Stafford.
B.A.Bernon		27 Grafton Rd, Rosenheath, Wellington C4, New Zealand.
R.Yates	BRS14356	28, Dainler Rd, Yardley Wood, Birmingham 14.
J.G.Assenheim	BRS9330	154, Hedge Lane, Palmers Green, N13.
H.Heath	G2AOK	Church St, Stow-on-the-Wold, Glos.
W.J.Allisett		"Springbank", Les Ozouets Rd, St Peter Port, Guernsey, C.I.
K.Burge		Money Hill Parade, Rickmansworth, Herts. Tel 4469.
S.Roberts	GW4NZ	29, Chestnut Rd, Cimla Neath, Glamorgan.
E.S.Stainthorpe		42, Hill Court Drive, Bramley, Leeds.
V.H.Slang		8, Cambridge Rd, Southall, Middx, and Portland House,(225) 32 Highland Grove, Worksop, Notts.
Heinz Richter		Guntering, Post Hechendorf, Pilsensee, Obb., Germany.
D.Morris		19, Upland Rd, Upton, Wirral, Ches.
E.Bosloper	PAØUR	Goudenregenstraat 23, Leeuwarden, Netherlands.
S.Wilson		40 Canon Avenue, Chadwell Heath, Essex.

Changes of Address: D.W.White, 24, Orrell St, Higher Openshaw, Manchester 11; Ron Oakley, 69 Naseby Rd, Dagenham, Essex; P.W.Winsford G4DC, 22 Forge Rd, Three Bridges, Crawley, Sussex; R.Halls G3EIW, 129 Brewery Rd, SE18; Wm Howarth G3AHF, Fir Grove, Weaverham, Ches; W.A.Wemyss, 24 West Drayton Park Ave, West Drayton, Middx; Brian Ellis GM3GUC, 262 Colinton Rd, Edinburgh 11; J.Hargreaves G5VO Derby House, Bempton Yorks.

his on final test....P.J.Robinson at Worthing with G3FRG hope to have pictures on the air from 35mm stills soon....Sandy Wemyss reports that he is still on 450Mc modulator design,,but for telemetry. He says that Les Coote G3AHB (Slough) is really having fun winding CPS coils. Eddie Barrall G2BCB of Colchester has the 70 cm gear all complete, and is building a telestill unit, to be used at the Dagenham show first. Jeff Jeffries G8PX, at Oxford, now gets 22db over the noise at G4AP, 25 m away, using a CV53 PA. On the books are a new rig with a QQE06/40 and a bigger aerial. The video amp progresses. R.Yates of Birmingham has teamed up with G3DFL and the lads, so we shall expect Things. G3CVO has been busy on the RF and pulse generator sides (see articles asstd). Tests with G3GDR indicate the 6t helical array is better than 4 stacked $3\lambda/2$ 5^{0} fan dipoles....or are they matched? Tests will continue throughout July and August. As this goes to press, we have no news of the Dublin show, for which the whole of that 35mm film scanner and pulse generator, mentioned in the "Shorts" page last time, was shipped over, plus spare cameras, publicity material, etc. We hope the EI lads will now get down to it.

Alan Achurch is getting down to an overhaul now that the Natal summer has gone. He expects to resume TV transmissions shortly. Borje Cederqvist OH2NL is having a Vidicon if it can be arranged. He is rebuilding the LF band rig, and is available on 20m. Heinz Richter is paying a visit to this country during the summer, and hopes to meet some of us. Hendrik de Waard is coming too. He reports that the new camera is nearly complete, but that one of their two 5527s has gone flat after only 20 hrs use, whilst the other has done well over 1000 hrs. The new camera and 70cm tx are being fitted into a van, with a petrol generator supply, for relaying pictures back to the main 2m tx. They hope to televise as they drive round Groningen. Russ Spera and Eddie Collins write in with news from the USA; the AATS now has 48 members, and are to publish "A5". Best DX W6VSV-TV (Berkeley) with 100m range 50W on 70cms. We hope to give fuller details in the next edition. Meantime, Russ hopes to be in the U.K this September.

INDEX TO FOURTH YEAR EDITIONS OF CQ-TV: DEC 1952 to OCT 1953

Number 15, Dec 1952

Editorial: TV Standards.
The BATC at the 1952 RSGB Exhibition.
A 70 cm TV transmitter. Robert Torrens, GI3FWF/T.
Some Facts about Resonant Lines at VHF.
G3CTS/T: The Television Society's Transmitter.
Improving Your Pictures.
L.F EHT Units. D.P.Bishop. (Reprint).
Correspondence Column.
What the Other Chap is doing...

Number 16, March 1953

Editorial: Camera tubes; Committee.
Camera Tube Announcement.
Telecine Scanning. G.Short and F.Rose, G3BLV/T.
A Simple Sequential Scan Pulse Generator. A.E.Sale.
A comparison of the E4205E7 with the ACR1.
News from Overseas.
A Modulator For Use With Double Tetrode PAs. R.Grubb, G3FNL/T.
Useful Circuits Section: A simple pulse generator; a cheap EHT source.
What the Other Chap is doing...

Number 17, June 1953

Editorial: Public Shows.
Sale of Reject Staticons, further news.
List of British Amateur TV Stations.
An Economical Television Waveform Generator. D.E.Radley, A.E.Sale, M.Barlow.
Improving your pictures.
Some Camera Pre-amplifier Circuits.
A Converter for 70cm TV signals. M.Barlow, G3CVO.
A Bootstrap Modulator for 70 cm TV Work. R.Torrens, A.E.Sale.
What the Other Chap is doing...

Number 18, October 1953

Editorial: Licences.
Some Thoughts on Counting Circuits. M.Barlow, G3CVO.
A 405-line Pulse Generator. J.Mason, ZL1GS.
The 832 as a Straight PA on 70 cms. G.M.King, G3MY.
Improving the 5527. Hendrik de Waard, PAØZX.
What the Other Chap is doing...
Insert: Index and Useful Data Sheet.

Nos 15 and 16 have pink covers; No. 17 has the bright yellow block-printed cover, whilst No. 18 has the first of the new light blue covers.
Since edition No. 1, there have been 8 articles on cameras, 10 on Flying Spot work, 14 on pulse generation, 8 on 70 cm gear, 5 on modulators, 24 on miscellaneous technical subjects, and 17 on general TV subjects.
At this moment we have 3 Photicons, 7 CPS Emitrons and 17 5527s in the Club; 22 Staticons are on order. There are 8 licensed TV stations at present, all on 70cms.

REMEMBER: G3CVO IS NOW AT 29, LOFTIN WAY, CHELMSFORD, ESSEX. (No telephone).