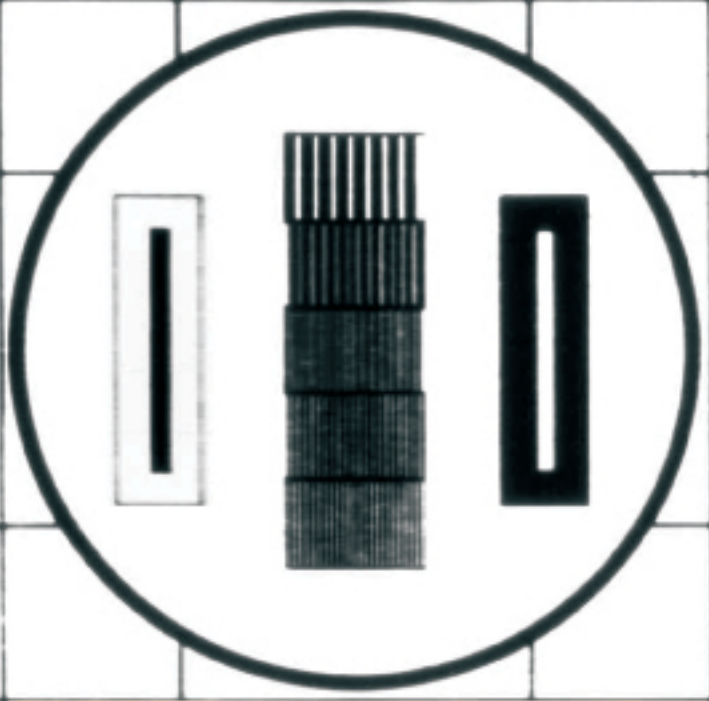

AMATEUR TELEVISION.

cq-tv 21

JOINING-UP-AGE EDITION

SPRING 1974

June 1964

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Fifth Year

At least five shillings per annum.

CQ-TV is published for the British Amateur Television Club at 29, Loftin Way, Chelmsford, Essex, and appears quarterly.

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

EDITORIAL

This is our 21st edition, and we may be said to have come of age. When the first edition came out in October 1949, no-one, least of all your Editor, thought that we would run to 21 editions. It seems we must be filling a long felt want, so we are celebrating with a slightly larger edition than usual; since this is even more expensive, a special word of thanks is due to those members who have generously added something to their subscript--ions.

Definitely of greatest importance is the news of the new **Vision** Licences, due to come into force as from June 1st. Details are given later, and members will agree that the GPO and the BSGB have done a great deal to remove the irksome restrictions previously included, and that the cost, at least if a sound licence is not also required, is reasonable. The removal of the Morse qualification will come as a boon to many members!

Practically every new member who joins asks for every available back copy to be sent to him, and in spite of some now out-of-date circuitry, the back copies appear to be of considerable value. We have recently taken to ordering about 50% more copies per edition to cover this point, but even so it is felt that more could be done to circulate information on amateur TV. We cannot at the moment afford to print a booklet giving basic circuits and the like, but we can prepare for one eventually. From this edition onwards, certain articles that can be incorporated in such a booklet will be given two page numberings, one for "CQ-TV" and one for the booklet. We therefore apologise in advance for unavoidable endings in the middle of sentences, etc, and hope that the general idea will meet with approval.

The Chelmsford meeting was most successful, with an attendance of 30. Mr.E.Hitchen of Marconi's gave a short talk on the Image Orthicon tube, and the functions of the various units in the camera chain. He then invited members to come and turn the knobs for themselves, which they did with considerable, if rather startling, effect. As the response was so encouraging, the Club hopes to hold a further meeting in London later in the year, and we should like to organise similar meetings in other parts of the country where membership is fairly large.

Due to the Domestic Changes at G3CVO next month, M.Barlow has taken the opportunity of resigning the post of Hon. Secretary of the Club; he will, of course, be remaining as Editor and General Man of CQ-TV. Mr. D.W.Wheele, G3AKJ, has very kindly offered to take over the post of Hon. Secretary, and in future please address all correspondence not directly concerned with CQ-TV, or money, to him. As G3CVO does not know his precise date of moving, correspondence for him should be addressed as below. To remind you, the present BATC officers are:

President: Sir Ernest Fisk.

Chairman: C.Grant Dixon, esq, M.A; 23 Wye St, Ross-on-Wye.

Hon. Sec: D.W.Wheele G3AKJ; 56 Burlington Gardens, Chadwell Heath, Essex. Tel. SEVen Kings 1051.

Hon. Treas; L.A.F.Stockley, G3EKE; 307 Norbury Avenue, SW16.

Hon. Editor: M.Barlow, G3CVO, B.A, Grad I.E.E, c/o Cheyne Cottage, Dukeswood Drive, Gerrards Cross, Bucks. (This edn. only).

Committee: I.Waters esq; 14, St Mary's St, Ely.
I.Macwhirter, B.Sc; 33 Burlington Rd, Withington, Manchester 20.
F.Rose, G3BLV, Grad.I.R.E, 16 North Bridge St, Sunderland.

Co-opted Members: K.Russell, esq. 85 Beaufort Rd, Southborne, Bournemouth. (See note on P5).
N.Harris, esq. 95 Fawe Park Rd, Putney, SW15 (dealing with monoscope enquiries).

Finally, with the summer season of TV demonstrations coming on, may we ask you to pass the good words around - and particularly to sign on as many new members as possible.

Kind regards to you all,

Yours sincerely,

M.Barlow, G3CVO

M.Barlow, Editor.

THE NEW AMATEUR TELEVISION TRANSMITTING LICENCE

Details of the new Amateur Television Transmitting Licence are now available from the Radio and Accommodation Dept, GPO St. Martins le Grand, London EC1. The cost is £2 per annum, and abridged details are given below.

The licensee is licensed to send (i) Vision signals; (ii) the callsign of the station by cw, mcw or phone; and (iii) to receive signals and messages from other amateur stations by any means.

The transmissions must be in the amateur bands in which tv is permitted (i.e 425Mc/s and higher frequencies), and must be under the licensee's supervision. Third-party, propaganda, copy-right material and objectionable material is forbidden.

A satisfactory method of frequency stabilisation shall be employed, and equipment shall be provided capable of verifying that the transmission is within an authorised band. Checks shall be made that no spurious emissions or interfering signals are being generated. A log, including the subject of transmission, shall be kept, and a receiver must be available on the transmission frequency.

Before and after each transmission, the call sign must be sent by mcw or phone on the vision channel, and also not less frequently than once every 10 minutes. A visual call-sign must also be transmitted at the beginning and end of each transmission, where scanning methods are used to generate the picture.

The licence does not authorise the sending of any message by phone, cw or mcw, nor the reception of broadcast sound or vision.

Considering one or two points in more detail, it will be seen that no sound channel has been allocated (unless a sound licence is held), and only the call-sign may be sent "soundwise". Just how this will work in practice remains to be seen, since for many experiments it is essential to be able to announce what is being done. The Club is pressing for permission to use phone on the vision channel (pertinent to the vision signals only, of course), and also to get a ruling on the use of intercarrier sound, etc. The satisfactory method of stabilisation presumably means anything that will hold the frequency constant to within 0.1%; this is well within the capabilities of resonant line circuits at 430Mc/s. Apparatus for band checking presumably means at least an absorption wavemeter with the band edges carefully checked; note that the exact frequency within the band is not asked for.

Present regulations state that normal G3+3 callsigns will be issued, /T; there is to be no reduction in cost if the sound licence is already held, since for some reason A5 and F5 modulation is considered something very special.

SHORTER NOTES:

SUBSCRIPTION reminders going out with this edition are for 3/- (at least), being just enough to pay for two more issues this year. Back copies of 19 and 20, and a few 18, are available from G3CVO at 1/6d each. Remember, subscriptions to G3EKE, please.

G3AKJ now has the Club posters and publicity stuff.

The feedback pair circuit of G5FNL and ZL1QS works just as well with a 6CH6 in the output stage.

G3CVO and Margaret wish to thank all members who have sent their good wishes. If you should be in Cambridge on July 24th....

A 16mm Simplex 50' magazine loading f2.6 cine camera with stop motion and vari speeds is available on loan for Club do's.

Back Copies of CQ-TV wanted. Any. Especially Nos 5, 7, 8 and 11 to complete set. G3AKJ or G3CVO.

Prize offered for first simple reliable 70cm tv transmitter design using easily obtained and not too expensive valves.

SALE to members only. Valves @ 7/6: 6L6 6F6 1622 RL12P35 CV85; @ 5/-: 9001 9002 9005 1T4 CV6 EF50 CV8 7193 884 35Z4 12J7 12K7 50L6 EB50 6N7 AD1 Th delay sw; @ 3/6: 954 955 957 6H6 SP61 SP41 43 6J5 VR55 VR56 EC52 76 6J7 ARP34 6Q7 6B8 CV89 6K7 all guaranteed mostly brand new; also 6v and 12v vibrators @ 6/-; B2 complete less p/pack £10; EMI 3" 4/1 CRT in Indicator case incl p/p as CRO needs overhauling £3-10-0; R1132 conv. to 90 Mcs band £2 buyer collect. G3CVO 29 Loftin Way Chelmsford Essex. Delivery erratic. P8 6v Vibrapack £2.

COMPLETE 5527 Camera chain for sale: camera, tripod and dolly, waveform generator, CCU and monitor, power supplies, cables and lighting gear: Bargain at £75. Reason for sale: Staticon gear being built. Apply Russell, 85 Beaufort Rd, West Southborne, Bournemouth.

Don't forget to look out for Pete Matthews's ATV exhibit at the Earls Court Radio show on the REME stand.

We still require photos for publicity use - please.

NOTICE: Due to pressure of work, Jim Russell has had to give up looking after the Staticon data. Could we have a volunteer to take over this post, please? Write G3CVO for details.

Use a Cossor or EMI 1CP1 1½" CRT for that timer monitor P4 last edn; price 39/6. Or STC VLS492AG. F.Lee has the data sheets. (Tnx, om).

BRAND NEW 5527 FOR SALE: F.Fielding, 42 Friern Pk, North Finchley, London N12.

5527 SWAP; TWO if necessary for Telecine amp with sweep and pulse cots, CRT but not projector. These tubes are also brand new. Write c/o G3CVO.

Wanted 75 - 100 ohm non-inductive pots. Dixon, 23 Wye St, Ross on Wye.

Heathkit Square Wave Generator 10cs-10kcs-100kcs 0-20V pp into 600 ohms. Offers to F.Gregory 56, Queens Rd, Hersham, Walton on Thames, Surrey. Special rate to BATCs.

J.Plowman G3AST finds the VCR517c OK for TV reception, and splendid for telecine.

931A wanted: Boyer, 11 Greenway, Campton, Shefford.

AMATEUR COLOUR TELEVISION

By C. Grant Dixon.

(Mr. Dixon has been a member of the BATC for some years, and in that time has been conspicuous for his work on Amateur Colour TV. Concentrating on the Field Sequential system for economy, first colour pictures from a live camera were transmitted on Christmas Day 1953. Mr. Dixon is also acting as co-ordinator for colour work, and any enquiries should be sent direct to him at 23 Wye St, Ross on Wye).

Several recent articles in "CQ-TV" and elsewhere have given the general outline of the writer's colour system, so that the present note does not seek to do more than indicate the modifications necessary to convert black and white tv to field sequential colour. Briefly, these are:

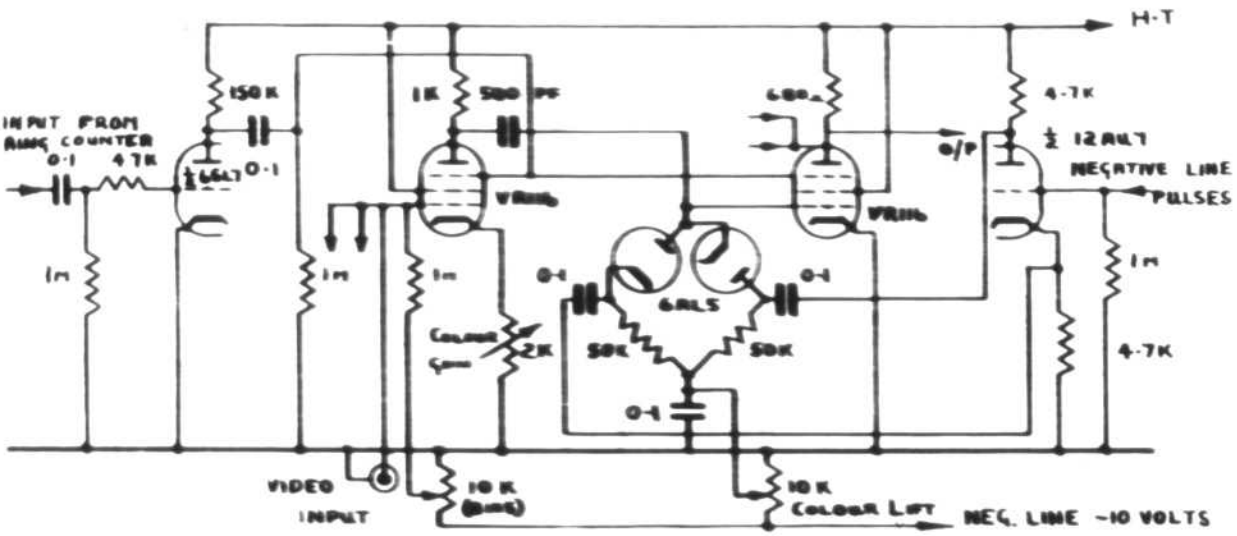
1. Frame frequency raised to at least 100 cps (to reduce colour flicker), preferably locked to the mains.
2. Line frequency increased to retain high definition consistent with the scanning power available. 15 kc/s line frequency is used by the author.
3. Rotating colour discs fitted to camera and monitor tubes.
4. Provision for synchronising these discs, and phasing them correctly.
5. The video signal to be gated in time sequence into three channels having independent gain and DC level controls (for colour balancing).
6. The receiving tube to be run at maximum brilliance to counteract the loss of light in the colour filters.
7. The video gain to be increased for the same reason, and also to counteract the shorter exposure time of the camera if this is a storage device.

The block diagram shows how some of these requirements have been met. Synchronous motors are used for the discs as the system is locked to the mains. The camera motor is run at fixed phase, and system colour phasing is achieved by using a variable 50 cps reference phase in the pulse timing unit. This is obtained from a 2" magslip transmitter. The monitor disc motor is phased by rotation of the motor casing in a simple mounting.

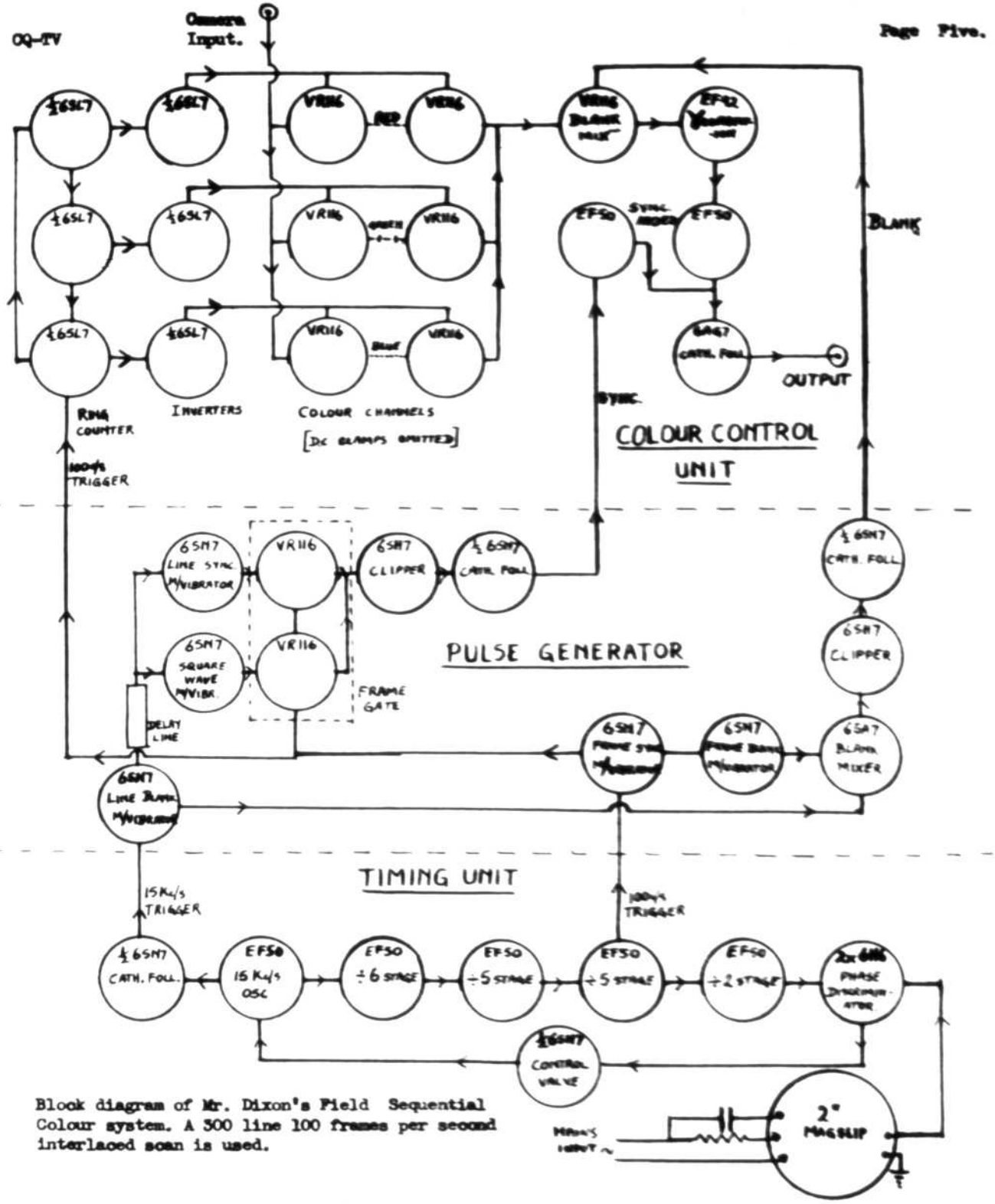
The speed fo the discs governs the number of sectors used; for 100 cps frame speed, a 6 sector disc runs at 1000 rpm, and a 12 sector disc at 500 rpm. The lower speed is used in the camera to avoid gyroscopic effects as the camera is moved. Speed reduction from the motor shaft must be through a non-slip device; the writer uses a chain drive, but this is noisy and a toothed rubber belt would be much better.

The sequence gate that splits the video signal consists of a ring counter triggered from the frame pulse, each unit giving a 1:2 mark-space ratio. The video signal is fed to the grids of three 6F32s in parallel, each feeding a separate 6F32 with its suppressor fed from the ring counter; the anodes of these second 6F32s are commoned. There are thus three separate channels for the video signals. Some economy in valves should be possible here in due course. The circuit shows any one of the three channels.

The colour filters used (Strand Electric stage lighting filters) absorb some 75% of the light. The Mullard MW13/55 5" tube run at 10kV gives a good picture.

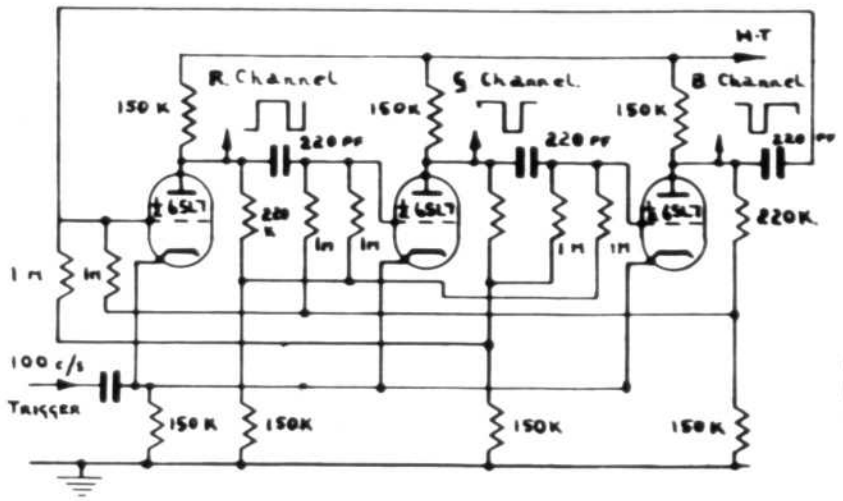


Circuit diagram of any one of the three identical colour channels. The commoned input and output leads are indicated by arrows. Note that line sync pulses are used for clamping; during the line sync period, the grid potential of the right-hand VR116 is the same as the potential of the slider on the "Colour Lift" potentiometer.



Block diagram of Mr. Dixon's Field Sequential Colour system. A 500 line 100 frames per second interlaced scan is used.

Future work is contemplated in the direction of improved definition, a reduction in audible noise at camera and receiver, improved colour rendering, a reduction in the number of valves in use, and the construction of a colour slide scanner (using electronic switching of three photocells rather than rotating discs). An eye is also being kept on ways of converting amateur CTV signals to the simultaneous signals likely to be adopted for broadcasting in this country. The writer would very much like to hear from other members interested in amateur CTV, with a view to exchanging notes and helpful hints. Private demonstrations at Ross can be arranged.



References:

"Colour Television". CQ-TV No. 4 P9.
"Colour Corner". CQ-TV No.11 P10.
"Amateur Colour Television". Practical Television, May 1954 P559-563.
Wireless World, April 1954.
Proc. I.R.E March 1953 P338 and P544.
June 1953 P730.
July 1953 P839.
January 1954.

Circuit of the ring counter used by Grant Dixon. Each anode in turn gives a 1:2 mark/space pulse output which is used to switch the colour channels in turn. MMB/SN

USEFUL INFORMATION DEPARTMENT:

Flying Spot Scanner tubes types 5FP7 and 3FP7.

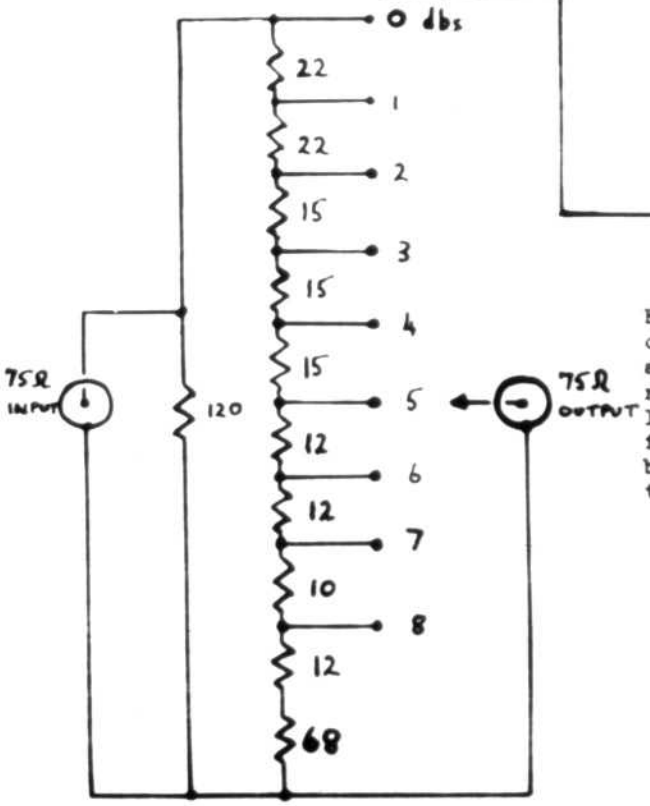
	Htr.	Va max	Vg c/o	V_{a_1}	V_{a_2}	V_{a_3}	Ibeam	Deflectn.	Focus Coil	Useful diam
5FP7	6.3v	7.7kV	-45	250	4kV	-	200µA	38°	400 amp-turns	4.25"
3FP7	6.3v	4.4kV	-60	575	2kV	4kV	150µA	250&180V/inch.	-	2.75"

	Rad. of Curv.	O/A L	O/A diam
5FP7	24"	11¼"	5"
3FP7 &5CP1	8"	10"	3"

Base Connx	1	2	3	4	5	6	7	8	9	10	11	12
5FP7		-	H	G_2	-	G_1	-	K	H			
3FP7 &5CP1	H	K	G	ic	A_1	X	X	A_2	Y	Y	-	H

The P7 double layer screen has spectral output peaks at 4400A (blue) and 5600A (yellow). The grain is rather coarse for flying spot use, and as large a scanning area as possible should be used.
Other American phosphor numbers suitable for FSS are P2 - 4 - 7 - 11 and 15.

A VERY USEFUL ATTENUATOR



Ever felt the need for a calibrated attenuator? This one will give 8db or more in 1 db steps, is flat to at least 8 Mc/s, and is for 75 ohm lines. Use 2% resistors, or selected 5% if possible, keep the leads short and SCREEN the whole unit in a tight fitting can. More attenuation can be introduced by tapping the bottom two resistors, keeping the total resistance in the chain constant.

THIS MONTH'S COVER is by Asst. Editor Derrick Nudds, who, with Fred Steed, does most of the drawings in CQ-TV. The bars are in 0.5Mc/s steps from 0.5 to 2.5 Mc/s, and there is plenty of room to add your own callsign. No contrast bars have been included as these will not reproduce in the printing. Space has been left for any such additions.

AN ECONOMICAL COUNTER CIRCUIT

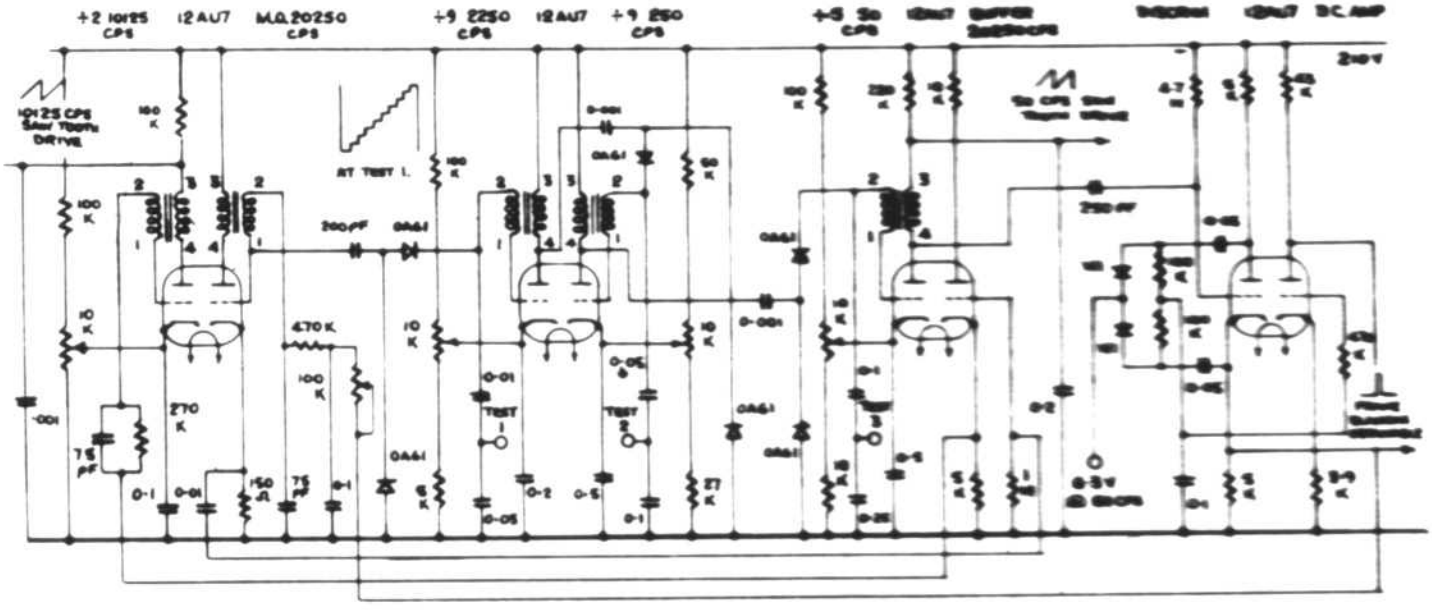


Figure 4/5

Figure 4/5 shows a typical blocking oscillator counter built by J.Russell of Southborne. Its main features are its small size - it will fit comfortably on a chassis 10" x 4½" - and low HT consumption, only 25mA at 250 volts. The transformers are from an APN4 unit. Line and frame scan drives and frame blanking are taken from the indicated points; line blanking can be derived from the differentiated line scan waveform at the anode of the line output stage (not shown), and fed with the frame blanking to the blanking mixer. The width of the frame blanking pulse depends on the time constant C1-R1 in the grid circuit of the frame blanking generator. The buffer stage at 20250 cps was found necessary in spite of the cathode output from the Master Oscillator, since the slightest amount of feedback here causes jitter on the picture. 12AU7s are shown, but 12AT7s will do as well - or 6SN7s - with perhaps a few component changes. In order to check the counting, test points are provided; at these a staircase waveform is produced, which can be monitored with a simple CRO such as that described in Chapter 7 (see also "CQ-TV" Number 20).

It will be noted that as a complete pulse generator, this unit does not provide sync pulses. It is very handy, however, for use where closed circuit systems only are in use, when the monitor timebases will lock to the blanking pulses quite satisfactorily. The blanking pulses on both line and frame start at the beginning of flyback, and can be made as wide or just wider than the duration of flyback. As a counter alone, the unit is very satisfactory, and can be incorporated in any form of complete pulse generator. The HT supply to it should be stabilised; two VR105s in series, giving 210V, are sufficient.

Figure 4/6* shows a complete 405 line pulse generator built by J.Mason, ZL1JS, of Auckland, N.Z. The master oscillator on 20250 cps is a multivibrator stabilised with a resonant tuned circuit in one anode. Multivibrator staircase counters with diode isolating stages are used to count down by 9,9 and 5 to give a local 50 cycle signal. This is passed to one half of a double-triode which feeds the discriminator diodes. Apart from the details of the circuit, the counter section operates in exactly the same way as the previous counter.

The pulse shaper unit demonstrates one way of producing the correct pulses. Since the line blanking pulses occur before the line sync (to give a front porch) these are generated first. The line blanking pulses are then integrated to a sawtooth shape, and fed to the grid of the line sync pulse generator. This valve is cut-off until the input voltage exceeds a certain value, and the width of the front porch can thus be easily adjusted. Frame sync and blanking are produced by ringing two tuned circuits tuned to 700 cps (c. 1400 microseconds) and 2500 cps (400 microseconds). These circuits

*First described in "CQ-TV" Number 18.

Considering the block diagram of Fig 1/3 in detail, we may further simplify it by including the "Sync" unit with the "Camera" unit. In fact, it soon becomes apparent that a complete amateur TV unit can be extremely simple. However, most of us will start with something simple, but will wish the simple units to be useful as the basis of a more complicated arrangement later on. In order that a suitable design can be evolved, we must consider the whole system as it may finally be, even if initially the functions of some units are combined for economy. Figure 1/5 shows the complete transmitter "blown up" to its most complete form.

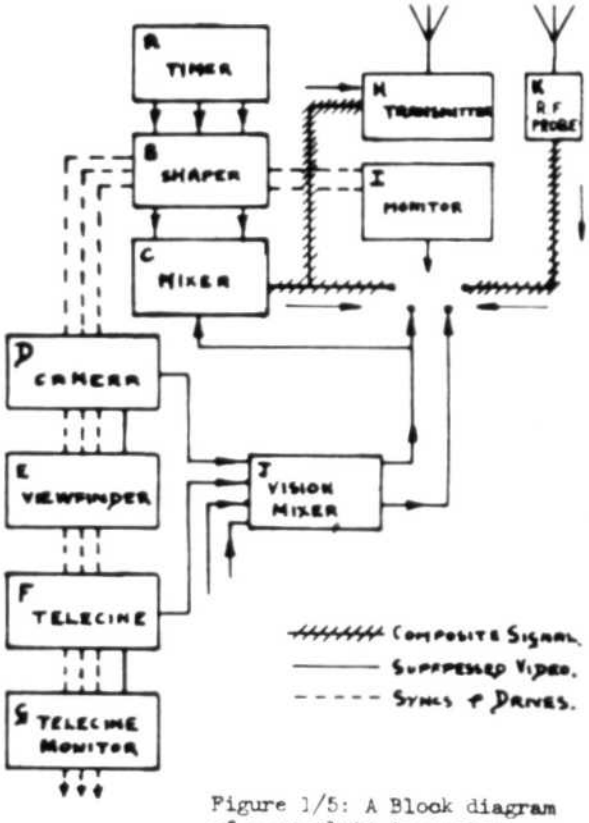


Figure 1/5: A Block diagram of a complete tv system.

Units A and B form the "Sync" block of Fig 1/3; units D and E, or F and G, are the "Camera"; unit C is the mixer for combining the sync, video and blanking signals. Unit H represents "Drive, Power Amplifier, and Modulator" (the RF group). Units I, J and K are additions, being the monitor, vision mixer, and RF probe respectively. In sequential systems, the timer unit A will not be needed; for closed circuit work, units H and K will not be required. For single picture sources, unit J is not needed, and for many purposes unit I can replace E or G. In the complete unit, though, A provides timing pulses at frame frequency (50cs) line frequency (10125 cs) and twice line frequency (20250 cs). These are fed into the shaper unit, B, which gives the correct pulses out for all purposes. Units C, D, E, F and G are self explanatory. Unit J takes in several vision inputs (say from 4 cameras) and gives an output to C and also an output to the monitor I for pre-view purposes. The monitor can be switched to show Picture (from the vision mixer), Pre-view (from any one of the inputs to the vision mixer), Line (the output from unit C) and Transmission (the signal picked up by the RF monitor unit K).

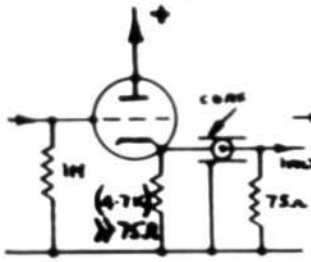


Fig 1/6

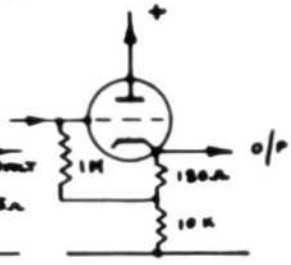
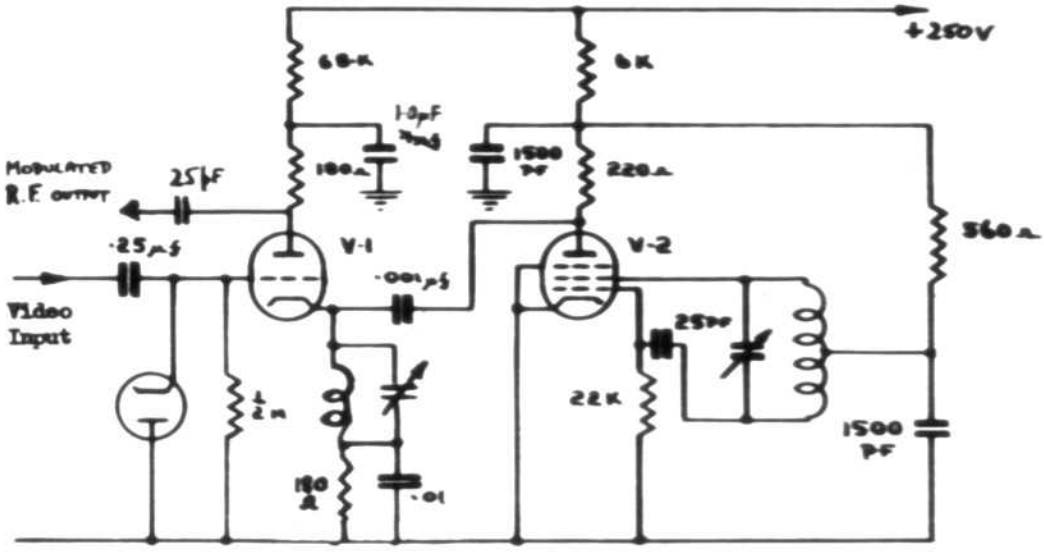


Fig 1/7

Since all the equipment must run in synch-ronism, it is clear that all units must be fed with sync pulses of some sort. Pulses, however, cannot be sent down any old wire like DC or LF signals. A sharp, flat-topped pulse contains a very large number of harmonics of the pulse repetition frequency (P.R.F), and the natural inductance, resistance and capacitance of a long lead will upset the balance of these. The result is that the pulse arriving at the far end of the line may bear little resemblance to the pulse that started out. To prevent this happening, the cable must be treated as a transmission line; that is to say it must be accurately matched to the output impedance of the driving circuit, and the input impedance of the driven circuit (for max power transfer); it must be accurately terminated to prevent reflections occurring at the ends; and it should be protected and screened to prevent radiation from, and pickup in the cable run. The usual coaxial cable used has an impedance of about 75 ohms. To obtain an output impedance of this order in the driving circuit, the last stage must be a cathode follower (transformers are quite out of it, due to the wide frequency response needed). The far end of the cable must be terminated in a 75 ohm resistor - see Fig 1/6. This resistor is in effect the cathode bias resistor of the valve, and as it is less than that normally required by the valve, the HT to the valve must be reduced to avoid overheating. For one half of a 12AT7, the HT should be not more than 180 volts. It is best to have as large a signal as possible in the cable to overcome stray noise and hum signals, but this is restricted by the current swing of the valve through a load of only 75 ohms. For the standard output level of 1 volt, this is a swing of 13 mA, which is just within the capability of a 12AT7 at 180V H.T. If the cathode load is increased as in Fig 1/7, a bigger voltage output is obtained (up to about 95% of the input) but as it is no longer matched to the cable, severe distortions will occur in the cable unless this is very short - say a few feet maximum.

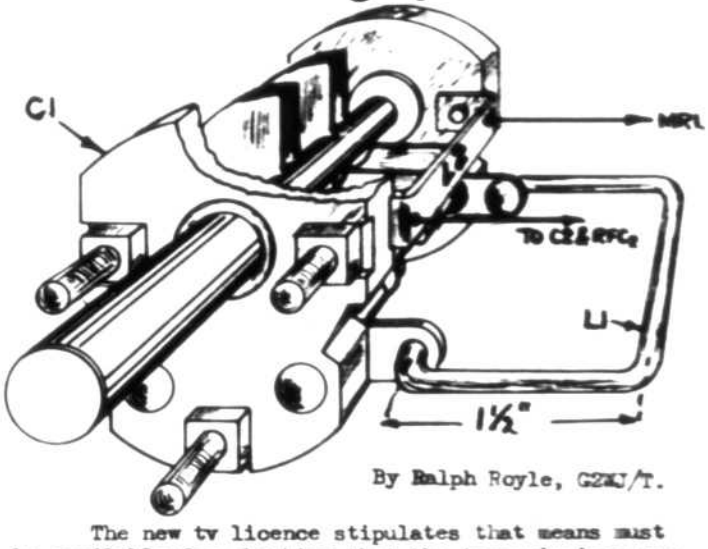
A SIMPLE RF DISTRIBUTION UNIT FOR FEEDING DOMESTIC TV SETS



"Electronics" for January 1954 gives complete circuitry for a simple vidicon camera run entirely from the power supplies of a standard TV receiver. Although some of the circuits are rather specialised, readers may be interested in the transmitter section shown above.

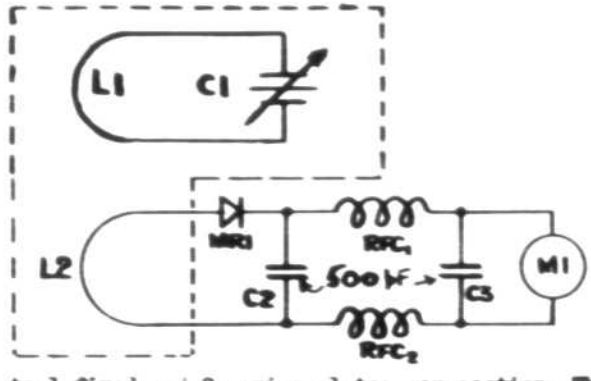
A positive going signal of one to five volts amplitude is DC restored and applied to the grid of the modulator tube, a triode. (A 6U8/ECF82 was used in the original). A pentode oscillator operates on the desired TV channel, and the output is stated to be of the order of 150 millivolts. The unit appears to be ideal for feeding TV sets from local picture sources, and is highly economical. The coils can be wound on Aladdin formers as for normal TV rx work.

For the checking of transmitters:



By Ralph Royle, G2MJ/T.

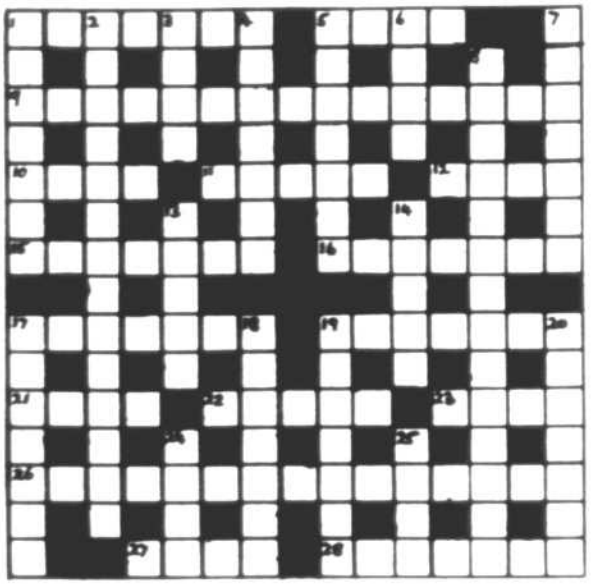
The new tv licence stipulates that means must be available for checking that the transmissions are taking place within the amateur bands, i.e 425–455 Mc/s in the 70cm band. This little absorption wavemeter will do just that. A 1½" long loop of wire is rigidly soldered to the tags on a small split stator condenser (eg Jackson Bros C808 7+7pF). This is cut



down to 1 fixed and 2 moving plates per section. The supporting bar is used as the pickup loop, and feeds the crystal as shown. Almost any small crystal will do, wire ended for convenience. The meter reading will depend on the transmitter power, a 500 μA meter being a useful all-round value. As shown, the unit covers about 250 - 500 Mcs, and is extremely useful for checking multiplier operation as well. If less coverage is required, the number of condenser plates can be reduced, or the spacing increased. The wavemeter must of course be calibrated against a known transmitter before use.

CQ-TV CELEBRATION CROSSWORD

We offer no prizes for the first correct solution; the majority of the answers have a radio or tv sense, and we think this puzzle is quite difficult. MBG.



1. Give the girl her net back, and she'll be radiant (7). 5. This information sticks (4). 9. Current antithesis of a round-the-world trip (5,10). 10. Your HT short? (4). 11. Penny in the containers holds the cables (5). 12. Cinderella's pickup (4). 15. Cooks out of phase (3,4). 16. Suspicious character is mixed up, but won't admit it (6). 17. Sharpshooting multivibrator (3,4). 19. A come-hither cable? (7). 21. Journey ends in a fall (4). 22. One and a thousandth make mother go both ways from first father!(5). 23. Weighed by the thousand?(4). 26. Often very personal; use the handbook (15). 27. Just one on the table for a test (4). 28. Undisturbed air (7).

Down

1. Railwayman's nightmare!(1,1,5). 2. These instructions practically cause chaos (3,11). 3. Tuning signal as good mixed up (4). 4. Charge for this at once (7). 5. Ages for counting (7). 6. A ray falls from the transformer input; very proper (4). 7. Tame gun increase (7). 8. Clearly seen mountain-top? (4,10). 13. 15 across of these are a nuisance, but you need one to get there (5). 14. His wound is after nothing, but highly prized (5). 17. Illus--ory scene often seen (7). 18. Little heat finishes young Edward; Garden of Eden stuff. (7). 19. In here for the secret session (7). 20. Caribbean TV?(4,3). 24. In favour, by all accounts. (4). 25. Briefly made from Caesium and Aluminium (2-2).

G2WJ/T

For long a familiar call-sign in these pages, and recently becoming still more familiar on TV screens, G2WJ/T is, without doubt, the most advanced amateur tv station in this country, if not in the world, at this moment. Picturesquely situated in a 500 year old thatched cottage in the heart of rural Essex, G2WJ/T is very much a family-run affair. Ralph Royle, G2WJ, has been an active amateur since the early 1920s, when he was one of the first amateur stations to contact the Antipodes; since then he has been very active on all amateur bands, and in recent years has put up a terrific score on the V.H.F.s.

Elder son Jeremy is the TV enthusiast, who, with the enthusiastic encouragement of the rest of the family, has built a complete Photicon camera and control unit. Julian, his brother, is not so keen on radio or tv, but is a past master at installing house wiring, workshop power points, and studio lighting! Can any other "ham" family beat that for a combination?

Mrs. Royle, Ralph's charming and talented wife, is the Chief Receptionist for the large number of visitors who find their way out to Great Canfield. Her conducted tours of her lovely home (and her delicious cooking!) are not easily forgotten. Here is a most delightful family, and we are very pleased to have them all in the BATC.

MORE TECHNICAL:

The Photicon camera, head amplifier, time bases and heater transformer are mounted in a box some 24" x 12" x 10" on a tripod made of "Gascoigne" parts. A 21 way cable connects to the camera control unit, enough cable being available to enable the camera to go out and about in the house and garden. A 12 tube pulse generator (sequential at the moment, but BBC sync can be used) and a 9 valve mixer and shading generator are in the CCU. 1 volt of composite signal is fed out at 75 ohms to the monitor and modulator.

The monitor uses a 9" CRT, and can show local video, RF video (from a probe in the aerial feed) or BBC video, in any combination with local sync, RF sync, or BBC sync, thus enabling rapid checks of faults to be made. The modulator uses an EF50 6AG7 6AG7 lineup, DC restored at the final grid. The last 6AG7 is a cathode follower connected to the grid of the RF PA stage.

The transmitter has been especially designed for tv use; an 8070 crystal is multiplied up: EF50 (24Mc/s), QV04/7 (72Mc/s), QV04/7 (145Mc/s), 832 (145Mc/s), QV06/40 (430Mc/s), QV06/40 P.A. The PA runs at 40 watts input and gives 20 watts output peak white. Series tuned circuits are used in the PA and driver stages; the screens are fed from an ST240/80 Stabilivolt. The aerial is an 8 element stack with reflector, giving a reliable all-weather range of some 40 miles. Ralph is always prepared to beam a signal in any requested direction.

WHAT THE OTHER MAN IS DOING:

By Angus MacSnackinbrackett.

Not so much room this month, so stand by for some potted reports.

E.W.Fry of Windsor has just moved house, and now has room to build a telestill unit. F.Lee is now at St. Albans where he hopes to get G2WJ's signals, and to really get organised. C.H.Banthorpe is due to move to Northwood, where he too will be looking for G2WJ. CHB says that G3CTS still has its teething troubles but that some rather sinusoidal test bars have been transmitted; these were picked up by G2WJ, but so far no pictures have been put on the air; freq. 427 Mcs, remember. J.Anglin G4GZ now has a Staticon, and finds the electrode structure is loose in the envelope; this seems a common fault, om, and may cause microphony. Doug Wheele has had the camera running for a show given to the Romford Radio Club, but has not yet had a chance to rebuild and improve it.

New member G.R.Goldsmith of Jersey is an ex EMI man now running a radio business. He has a pulse generator and RF unit built up, and is now hoping for a monoscope. D.Hooper G3ICU (NW10) sends a photo of his callsign transmitted over a closed circuit. He now has a Staticon, and hopes to repeat the performance with live pictures over the air. He is using 1.4kV only on the 5FP7 PS scanner; 1.4kV transformer @ 21/- Smiths of Lisle St, also gives -520V for the 931A chain. Incidentally, Dave uses FP5 film, f8 at 4 feet for pictures on a VCR97. He also suggests the R33 Mk iii (525Mcs) should come down to 435Mcs nicely. G.Higgins of Bradford also has a 5FP7 scanner on the way, 405 line standards, switchable to 200 line for comparisons.

Tony Sale of Rayleigh is rebuilding the 5527 Iconoscope camera in an ultra small space. A 405 line pulser using only 4 valves altogether was built; this used a sine wave oscillator with phase shifts to introduce the delays, and various levels of clipping to get the pulse widths. It is not very satisfactory due to jitter, however, and Tony is being a glutton and adding two more valves.. A bash-bash 8012 oscillator driving an 8012 PA is planned for giving G2WJ something to Think about!

M.Barlow G3CVO has been turning out the shack and installing all the gear in a wardrobe lined with wire netting in case of TVI! This has meant a great deal of rebuilding and miniaturising of the gear both RF and video, but time has been found to build a good scope amplifier, and to incorporate a Line Strobe unit. This takes 50 cs in, develops a trigger which fires a phantastron delay. This in turn triggers the scope running at Line frequency. Result: any ONE line in the picture is displayed. Details follow in CQ-TV in due course. Grant Dixon has been appearing in print in practically every newspaper in the West of England, besides WW, RSGB Bulletin and Practical TV. He is busy removing valves from his 50 tube control gear; an improved scope is under construction, and he passes on a wrinkle concerning video sweep generators. Use U laminations driven with pure 50cs, and bridge the ends of the U with a small piece of Ferroxcube rod, the oscillator coil being wound onto this.... Simple eh? He suggests the oscillators be in the 50 Mcs region. Grant has finally saved up for an MW13/22 tube as a colour monitor. He has been televising the flowers in the garden in full colour, but results as yet are not up to BBC standards!

Jeremy Royle at G2WJ/T has built a new modul-ator using EF55s and 6AG7s. This gives an 80 volt swing flat to 3 Mc/s and should fully modulate the QQE06/40. An even bigger aerial is now installed, consisting of four bays of the 8 element array shown in CQ-TV No 19 - a total of 64 elements! Ralph reminds us that the 105 unit is still the best 70 cm foundation receiver unit.

The Weybridge group are now well advanced with the Staticon equipment, but we have no further details. As mentioned on P5, Jim Russell has had to give up the Staticon chair due to pressure of work. He managed to make most of the camera, including a very fine professional type of case, but has had to put the whole lot aside for the time being. Many thanks for your past help, Jim.

Pete Matthews will again be at the REME stand at the Radio Show this year. He seems to spend much of his time at Arborfield building ATV equipment, and reports that his show this year should be much more complete than last. He travels about the country a fair amount, but has yet to meet a "live" BATC! Look him up at Earls Court, men.

Overseas news comes from Piketburg, C.P where F.Visser is on a farm 100 miles N of Cape Town. He can work the Cape on 2m but so far has not attempted VHF TV. He enquires whther image oths are available; well, om, we haven't pressed the point after the experiences with the CPS tubes. The coil winding and general control circuitry is extremely complex, and doesn't compare with the Staticon or 5527. He also asks if anyone in SA can lend him a complete file of CQ-TV (Try ZS6GX - Ed.). From France we have had no news, but assume that the Eurovision

NEW MEMBERS:

THIS MONTH'S NEW MEMBERS:

K.C.Atkins	Holmdale Cottage, South St, Litlington, Cambs.
H.Burton ZL2APC	16 McIntyre Ave, Wellington N.Z.
B.Butcher	c/o Rectory Cottage, West Hanningfield, Chelmsford, Essex.
E.Cornelius VK6EC	NBS Transmitter 6WA, Wagin, West Australia.
F.C.Cox.	4 Ravens Close, Enfield, Middx.
M.Doland	24 Bishops Pk Rd, Norbury SW16.
C.H.Edlin G3QC	113 Russell Drive, Woolaton, Nottingham.
Dub Egbert W9NB3H-TV	Ingalls, Kansas, USA.
G.Goldsmith	Gorey, Jersey, C.I.
R.Greene ZL2ACE	7 Levy St, Wellington C4, N.Z.
T.Houseman	28 Gilbert St, Alvaston, Derby.
K.Hughes	100 Swiss Ave, Chelmsford, Essex.
L.B.Leith ZL2LC	c/o CAA, Shelly Bay, Wellington, New Zealand.
H.Manoochehri	20 Goldlay Ave, Chelmsford.
D.Nudds	116 Bishop Rd, Chelmsford.
I.Scott	62 Selbourne Rd, Southgate N14.
C.Stanford	24 Hunts Ave, Writtle, Essex.
J.B.Wood	15 Belgrave Close, Chelmsford.
P.W.Wright	111 Hall Ave, Rushden, Northants.
D.Reid	15 Millbrook Lane, Eccleston, St. Helens, Lancs.
J.E.Howell W4SOD-TV	604 Carthage Rd, Lumberton, N.C, USA.
L.H.Daish G2FGD	Sidholme, Bracken Lane, Shirley Warren Southampton. (317).

Changes of Address:

W.Bartholomew G8CK 19 Norwich Way, Croxley Green, Herts; 4025300 Cpl R.Johnson, 8 AMQ, RAF Sandwich, Kent; Dr. H.de Waard PA0ZI, c/o Lindman, St. Erik-gatan 88, Stockholm Va, Sweden; M.Barlow, c/o Cheyne Cottage, Dukeswood Drive, Gerrards Cross, Bucks; E.W.Fry, 15 Duncroft, Manor Farm Estate, Windsor, Berks; Frank Lee, 11 Abbey View Rd, St. Albans, Herts.

relay has been keeping the lads busy. Pat Lebail FSHK has been doing a lot of work on perfecting interlacing (NTF 819 line standards do not use equalising pulses) and recommends: a sync sep that lets NO line pulses through to the frame TB (use a pentode since C_{g-g} in a triode lets a trickle of line through); shield all frame TB components, particularly the valves; use a fast acting FTB eg Blocking osc; bypass the FTB amp anode to ground with a small condenser, say .01; with high Z frame coils, return them to HT+ and not earth.

Eric Cornelius writes from Wagin, West Australia to say that the 625 line pulser is now completed, and that both a 5527 and a Static -on are on order. The gear is being built into "Marconi-type suitcases"; main trouble is still absolute lack of picture tubes to see results upon! Good work, Eric. Graham Goodger ZL2RP is busy with exams, but hopes to have his telestill scanner in action shortly. He asks about coils for the 5FP7; since it is running at normal CRT voltages, and has a normal deflection angle (38°), a standard set of coils and scan circuits will do very nicely. Graham reports that Pye's gave a good show during the Royal Tour, but that no public service is contemplated for some time.

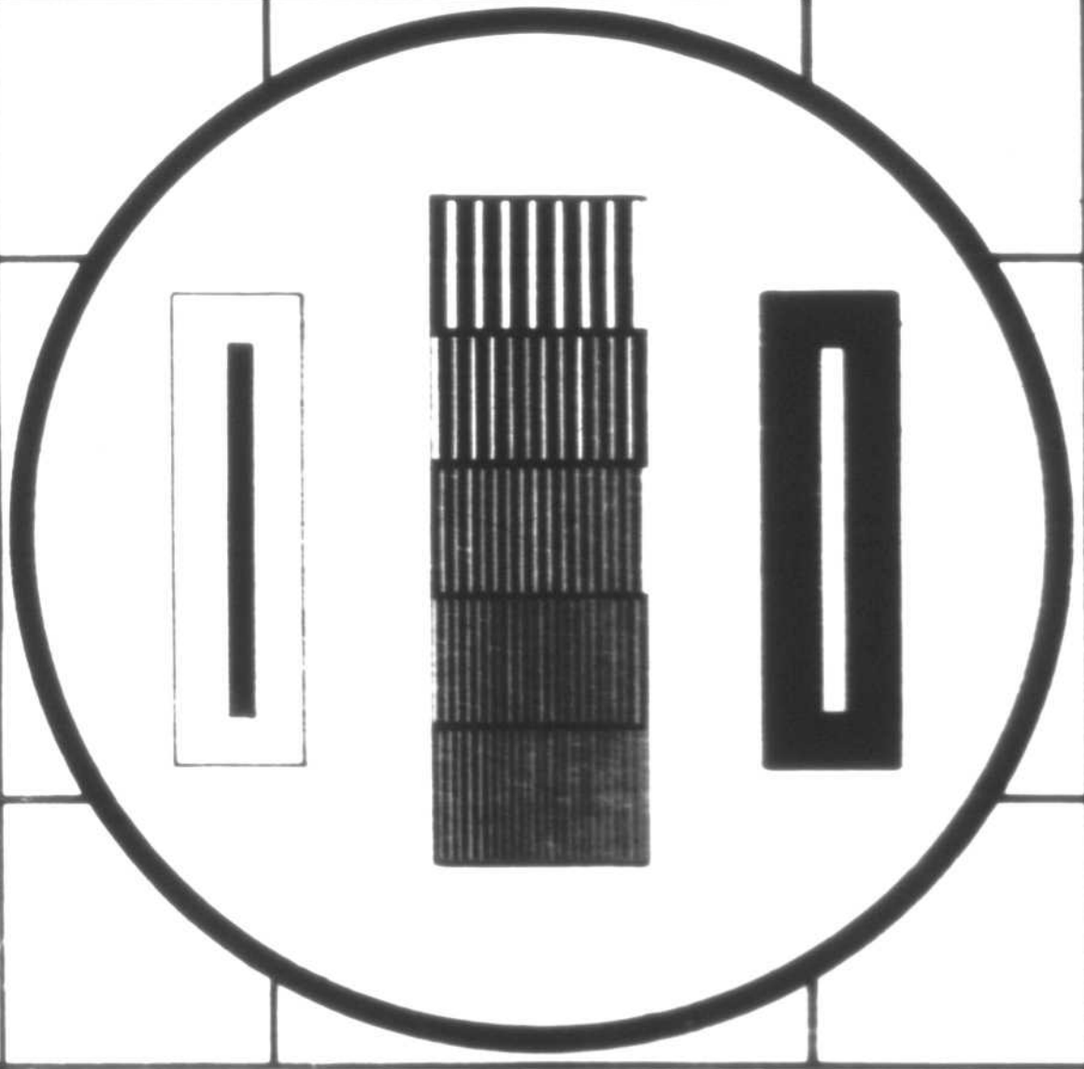
Heinz Richter writes from Germany to say that his unit is progressing slowly. He hopes to send us some photos later. German amateurs are now permitted to send tv on 445 Mc/s, sound anywhere in the 70cm band. No charge, of course, and the DLs are trying standardise on a sound channel 5.5Mc/s below the vision so that normal tv sets can be used with con-verters. Bill Stapleton in Dublin has a couple of 5FP7s he'd swap for some scan coils and FHFE.T unit. Dub Egbert and Joe Howell are both AATC members hoping tp put 5527s onto 70cms with about 50 watts. No extra fee is charged over there, of course. Let's have plenty of news, men.

LA6QB says that the Norwegian Post Office will not issue tv licences, although some years ago LA4KA and LA3YA did some closed circuit work. In Italy, I1BBE reports that the new licences have not yet been issued, but will presumably cover tv transmission in the 70cm band with no trouble. Camera tubes are quite unobtainable, and FSS is the order of the day. I1AAP and I1BIH managed a low def-inition disc scanned QSO on 2m last year.

Back home again, R.W.Johnson at Sandwich wants a VCR139A cheap to comp-lete a 'scope he is making. He asks if anyone has tried the MW6/2 projection CRT at reduced volts as a viewfinder? Has anyone coilwinding data for its 5/8" neck? Two 12" CRTs have turned up, and the new pulser (blocking oscs and cath follower isolators) progresses slowly.

Can we close this Bumper Edition by reminding you that your subs keep us going - and it is back to the smaller edition next time! - and we do appreciate comments and news items. Here's one you might think about: design a 70cm tv tx using a minimum number of easily found valves. Need not be crystal controlled, suggested valves are 12AT7, 6J6, CV53, CV90, CV82, 3B/25M, QQe03/20 and QQE 06/40. Keep the price below £5 if you can.

Remember CQ-TV No. 22 will not be ready until October at the earliest!



AMATEUR TELEVISION.