cq-tv 52

THE JOURNAL OF

THE BRITISH AMATEUR TELEVISION

CLUB

THE BRITISH AMATEUR TELEVISION CLUB

CQ-TV, Journal of the British Amateur Television Club.

Editor: M.T.A. Salter, Grad. Brit. I.R.E., G3RJO/T.

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CQ-TV 52 is the second edition that I have had the privilige of editing, and I would like to take this oportunity of thanking John Tanner, on behalf of all readers of CQ-TV, for the work he has put in in producing the magazine ever since CQ-TV 35. The best I can hope for is to be able to produce a magazine up to the standard set in the past. May I also wish John luck with his new job as Hon. Sec.

With this edition of CQ-TV the B.A.T.C. enters its fifteenth year, a year which will also bring the next Convention of the club.... but more of that in CQ-TV 53.

It must however be rembered that no CQ-TV can appear without sufficient articles being submitted to the Editor. In the past most of the published articles have come from a small group of people, this is not because they are of the selectedelite, but because they were the only people to submit articles. I would, therefore, like to ask anyone who has a circuit or gadget in use in their rig, to remember that it may be of use to other members, and to let them know about it via CQ-TV.

So with the hope of seeing many new names in the list of contributors to CQ-TV, I wish all members a Happy and Prosperous New Year.

M.T.S.

Don Reid asks if anyone has his copy of:- IEE Proceedings on the 1952 Television Conference. This is a bound volume in dark green. If you have this please let me know. Ed.

Front Cover

shows Dave Buck (left) and Graham Hill (right) with a visitor on the B.A.T.C. stand at the Radio Communications Exhibition. Photo by Wireless World,

Radio Communications Exhibition.

The B.A.T.C. was once again represented at the Radio Communications Exhibition last year. David Buck, G3PJE/T looked after the stand which displayed a complete set of equipment for transmitting from the camera to transmitter - most of the units having been described in CQ-TV. However, perhaps the highlight of the stand was the demonstration of 'off-air' pictures from G3OUO/T and G3NDT/T. Tests before showed that signals from G3NDT/T were too weak to be much use - probably due to the large buildings near the Seymore Hall - so with special permission G3OUO/T was operated some of the time as G3NDT/T - hence the two call signs! Dave Mann's Vidicon camera and 100 watt transmitter performed excellently throughout the exhibition and many visitors saw their first 'off-air' amateur TV pictures. Even the signal from G3OUO/T was rather poor, and it was only with the assistance of an R.F. amplifier (CQ-TV 51) at the aerial and one at the bottom of the downlead that good pictures could be displayed. Apart from a lot of local interference the demonstration was a great success, due in no small part to the efforts of G3OUO/T & G3PJE/T, and also Messrs Pye Ltd. who loaned the receivers, and Messrs J.Beam aerials who loaned the aerial array.

G3NDT/T

CONVENTION

Advance Warning....

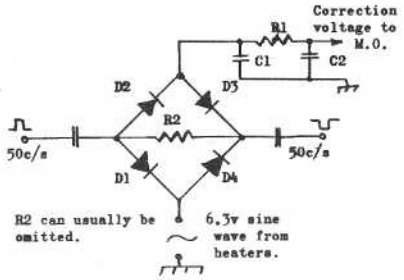
A Convention of the British Amateur Television Club will be held on September 12th, 1964 from 10 a.m. to 6 p.m. in London. More details to follow in CQ-TV 53.....

COUNTER DISCRIMINATORS

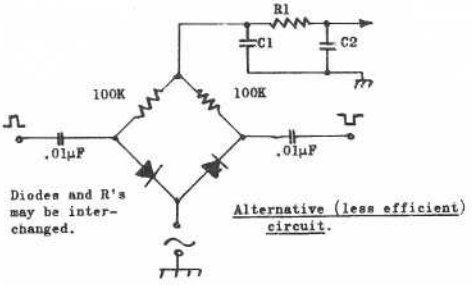
A Look at Mains Lock Circuits By Mike Barlow.

Member with more than a passing interest in niceties of electronics will already know that the same circuits are known by various names; modulators, detectors, peak rectifiers, stepping gates and discriminators are all the same thing; they are all clamp circuits! All depend on one element of the circuit being opened by one signal to permit a part of another signal to pass through. In the case of the counter discriminator, we want to lock the locally counted 50c/s pulses to the mains. The usual method is to use two or four diodes, and the problem is to remember which way round the diodes should be connected. If the circuit is considered as a clamp, which is familiar to all TV enthusiasts, then it is easy. Obviously we require one push-pull signal (usually the pulses) to clamp the other single ended one (usually the sine wave). When the pulses arrive, the diodes all open and the potential of the sine wave at that instant is transferred to the capacitor C1. If there is a phase error, then the sine wave will not be passing through zero when the pulses arrive. In this case C1 will charge up and this voltage can be used to control the master oscillator driving the counter chain. It is usual to add some smoothing (R1, C2) so that the master oscillator only responds to long-term changes in the sine-wave, say half a second or so. J. Howe and N. Parker Smith in the TV Soceity Journal Vol. 9 No.6 point out that if C1 is omitted, the effective value of R1 x C2 is increased by the ratio of the space-to-pulse duration.

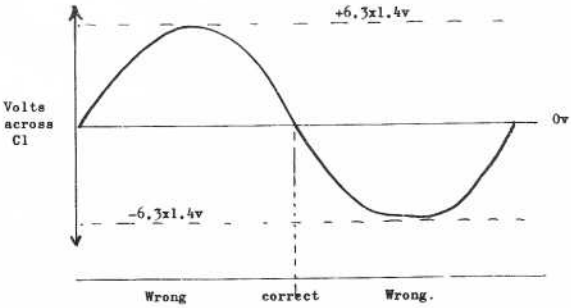
What happens if the diodes are reversed? The pulses must of course have larger amplitudes than the peak of the sinewave. Reversing the diodes changes the operation from using short pulses with large gaps to long pulses with short gaps. The discriminator will still work but does not have anywhere near such good discrimination and the counter will not lock. If two of the diodes are reversed, as in the G3KUJ circuit in CQ-TV 47, the discriminator does still work because D2 and D3 act as simple resistors, and can in fact be replaced by 100K or so each. Since C1 has to charge through the two 100K's in parallel, the correction voltage on C1 will not be so large but on the other hand there is some built-in smoothing.



Correct circuit.



Alternative (less efficient) circuit.



Timing of pulses.

Max output from discriminator before smoothing is ± 8.8volts.

Do you have a licence?

"I ave a licence since four years and ave not eard nothing"

Wireless World
20th August 1931.

LENSES AND AMATEUR TELEVISION

by C.G. Dixon.

Most people start their amateur television career withthe construction of a simple flying spot scanner in which a negative or other transparency is stuck on the face of the cathode ray tube. Soon, however, their thoughts turn to slide scanners and cameras, and as these involve the use of lenses, the purpose of this article is to try and throw some light onthis non-electronic subject.

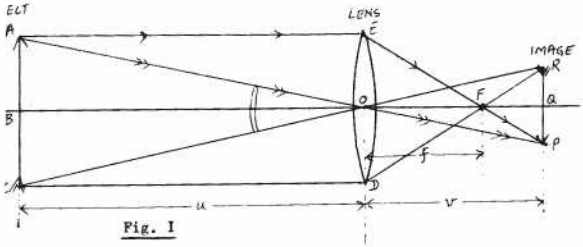


Fig. I

Let us take a BICONVEX lens as shown in fig.I and place an object (ABC) in front of it so that an image (PQR) is formed. The lines of the diagram represent a few of the rays of light which leave the object, pass through the lens and finally reach the image. Examining the diagram carefully, we notice that the rays which pass through O, the centre of the lens, are not bent by the lens; also, rays which strike the lens squarely ... such as AE or CD... are bent so as to pass through F which is called the focus of the lens. The distance OF is called the FOCAL LENGTH of the lens and this length is determined by the materials of the lens and the curvature of its faces. If PR represents the image on a vidicon faceplate, then clearly only those objects within the angle AOC will be within the picture. Actually, a camera is usually used on an object which is many times the focal length away from the lens; in these conditions the image is approximately at the focus of the lens. The angle of view of the lens is then given by the relationship:-

$$\tan\frac{\alpha}{2} = \frac{x}{2f}$$

where x is the width of the scanned area of the camera tube. See the table in fig.II. When an object is nearer the camera, the angle is slightly reduced as the vidicon must be moved back, away from the focus to get a clear picture. Figs. III and IV show that a wide angle lens is one which has a short focal length.

TABLE OF LENS ANGLES Assuming a width of scanned area of 13mm. and distant objects.

FOCAL LENGTH mm	FOCAL LENGTH inches	ANGLE
15	0·6	47°
25	1·0	29°
50	2·0	15°
75	3·0	10°

fig. II

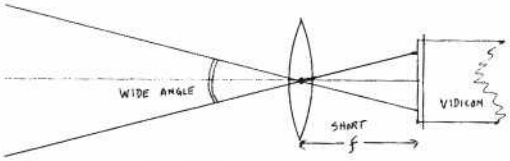


Fig. III

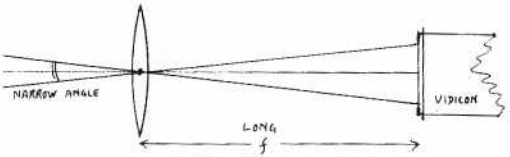


Fig. IV

These diagrams also show the important fact that when lenses of different focal lengths are used, say in a lens turret, they have to be mounted at their own focal length away from the vidicon faceplate. This is usually arranged by the manufacturer of the lens mount, but if an amateur is constructing his own lens systems it is a point worth noting. (N.B. The focal length of a lens may easily be found by focussing the image of a distant object on to a piece of paper and measuring the distance between the lens and the paper.)

Two useful facts to remember when dealing with lenses are .... 1.

$$\frac{1}{v} + \frac{1}{u} = \frac{1}{f}$$

2. $$\frac{\text{size of image}}{\text{size of object}} = \frac{v}{u}$$

where u = distance from lens to object, and v = distance from lens to image.

It follows from the first formula that if the object is brought closer, the image moves further away and it is usual to slide the vidicon backwards, although some lenses are made with focussing mounts in which the lens may be moved by rotation of a ring. If the object is put at twice the focal length away from the lens, the image will also be at a distance of 2f from the lens and will be the same size as the object. Taking an example of this.... if we had a vidicon with a 1" focal length lens, by making a movement of 1" available we can focus a clear picture of an object placed 2" in front of the lens and a postage stamp may be shown occupying the full TV screen. A very inexpensive way of getting a low power microscope.

The light gathering power of a lens is measured by its "f number". If you see a lens advertised as "f 3.5 25mm focus", the latter information is the focal length and the former refers to its diameter.

$$\frac{\text{focal length}}{\text{diameter}} = 3.5 \text{ hence diameter}$$

equals $\frac{f}{3.5}$ which is often written as just f 3.5.

The smaller the f number, the larger is the diameter and the greater is the light gathering power of the lens. But the area of the lens is proportional to the square of the diameter and we eventually arrive at a series of f numbers, well know to photographers, in which a movement of one place down the series approximately doubles the light passing through the lens ..... see table in fig. V.

TABLE OF LENS STOPS

f number	Relative light gathering power
22	1
16	2
11	4
8	8
5·6	16
3·9	32
2·8	64
1·9	128
1·4	256
0·97	512

fig. V.

Special lenses include the TELEPHOTO and ZOOM types. A telephoto lens is one in which has a very long focal length and hence a narrow angle, the problem is to get a lens which is not too cumbersome for the camera. It is particularly important when using a lens turret to see that the telephoto lens is not so long that it is in the field of view of the wide angle lens! To get over this difficulty, the telephoto lenses are often made by combining a convex and a concave lens as shown in fig. V1. The rays of light from a distant object which normally meet at the focus of the lens are refracted by both lenses to meet at N. Producing the line RN back to S, we see that the ray appears to have been bent at S and PS is the effective position of the lens and PN its effective focal length. We have thus obtained a very long focal length lens withoft an unduly long physical length.

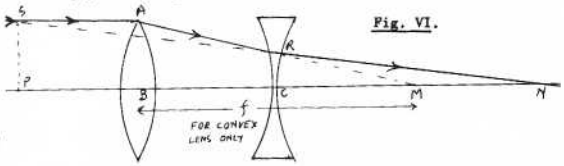


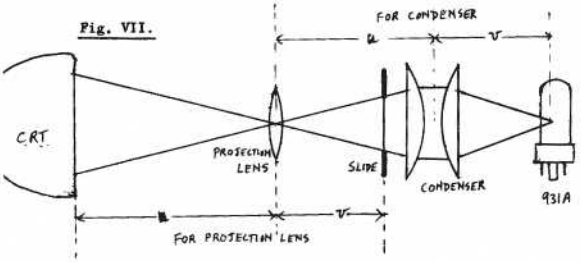
Fig. VI.

Zoom lenses are combinations of several lenses, two of which are movable. As they require precision engineering facilities they are beyond the scope of the average amateur. Zoom lenses for 16mm cine cameras are very expensive items; those for 8mm cine cameras are cheaper but they are not suitable for use with vidicons as they are designed to give a clear image only over the rather small picture area of the 8mm film.

Perhaps it would be helpful to mention that 16mm cine lenses(often described as "C mount") are very useful for vidicon cameras but the 8mm "D mount" lenses are not.

Turning now to the flying spot scanner, let us examine the use of lenses here. Basically the FSS is a slide projector working in reverse with the CRT occupying the position of the image usually seen on the screen, and the photocell occupying the "lamp house". John Tanner has pointed out that it is possible to purchase a simple slide projector quite cheaply (without lamp) and one of these may be used as ready-made optical system provided that the lens is moved forward slightly to accommodate the closer distance of the scanner CRT. The projection lens focusses an image of the scanning raster on to the slide and the lens formula given previously may be used to calculate the distances. Let us take an example where a 5FP7 or similar 5" tube is used to scan a standard 35mm film transparency. The diagonal of this transparency is 40mm, and that of the

Fig. VII.



scanning raster about 100mm. Let us assume that we have a lens of 2" focal length .....i.e. 50mm

From the magnification formula ... $\frac{v}{u} = \frac{40}{100}$

hence $v = \frac{4u}{10}$

putting this in the first formula .....

$$\frac{10}{4u} + \frac{1}{u} = \frac{1}{50}$$

$$\frac{10 + 4}{4u} = \frac{1}{50}$$

$u = 175\text{mm}$ or 17.5cms.

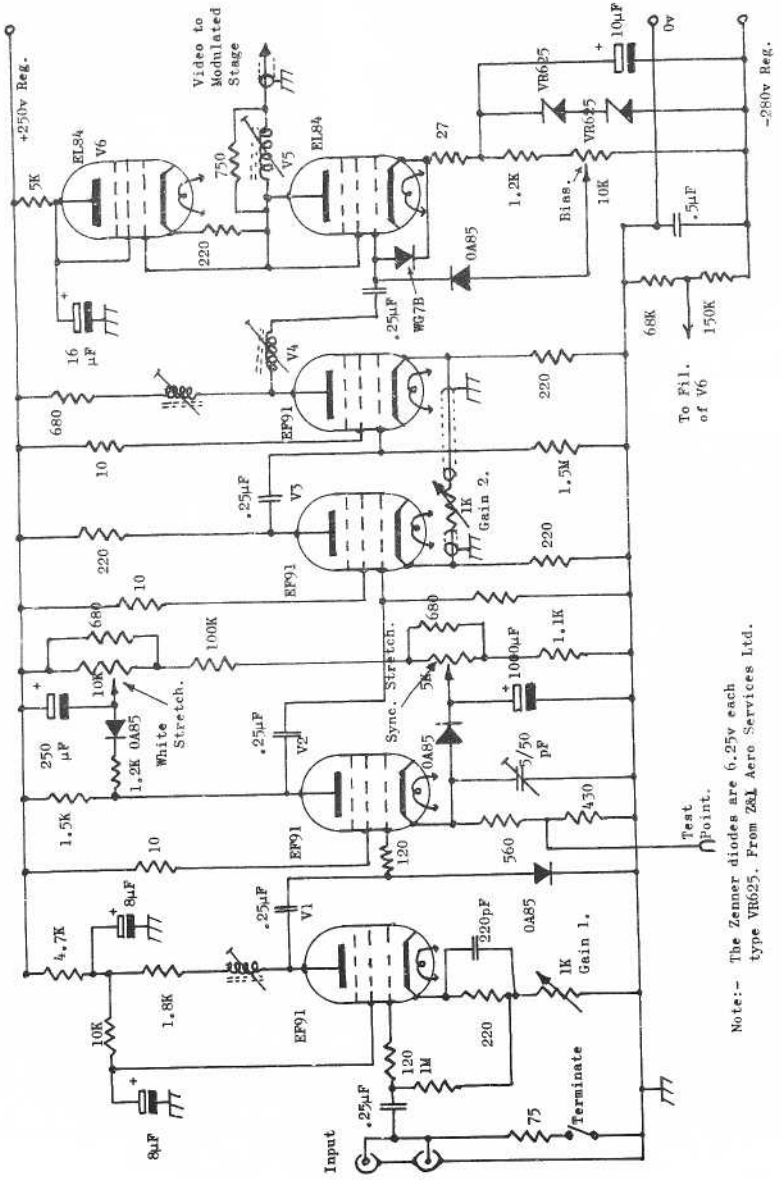
Thus the CRT must be placed 17.5cms from the lens and the slide must be placed 4/10 of this distance ... 7.0cms ... the other side of the lens.

In addition to the projection lens there will also be a "condenser" lens to concentrate all the light available on to the photocell. This lens must be large enough in area to cover the whole slide and it should make an image on the of the projection lens aperture (fig.V11). This ensures that all the light which goes through the transparency will reach the photocell. For this purpose a very short focal length lens must be used and,in practice, two or even three lenses are employed.

Finally, for those lucky members who possess Image Orthicon cameras, may I remind you of a suggestion which appeared in CQ-TV a little while ago; use a pinhole instead of a lens in bright sunlight and you will have the cheapest Zoom lens obtainable.

A QUALITY VISION MODULATOR

By A.P. Harding.



Note:- The Zenner diodes are 6.25v each type VR625. From Z&I Aero Services Ltd.

DESCRIPTION.

The Modulator accepts positive 1 Volt DAP signal. The output is in the region of 150 volts.

The first amplifier stage is operating with negative feedback in the cathode. The input may be either terminated or bridged as required. The control, "Gain 1", is adjusted to deliver 3 volts to the second stage.

Negative going video is DC restored on sync tips at the grid of V2. Again negative feedback is provided at the cathode of V2. The negative feedback is reduced during the sync period by the conduction of the OA85 diode. The actual level at which negative feedback is reduced is set by the sync level control. The gain is therefore increased during the sync period. The tap on the cathode load enables the gain to be set correctly. With the sync amplitude control set to zero, the gain of V1 is set to give 1 volt DAP at the test point in V2 cathode.

The pre-set capacitor in the cathode of V2 provides HF compensation.

The anode load of V2 is normally 670 ohms, (resistors 1.5K and 1.2K in parallel) since the diode is normally conducting. Adjusting the White Stretch Control causes the diode to turn off during the peak white portions of the signal, thus the anode load is increased to 1.5K during peak white periods.

From V2 the signal is passed to the variable gain stage, V3/V4. The gain control in this stage adjusts the level of the signal applied to the modulated stage.

The final stage is a shunt regulated amplifier with a fixed gain of 15. The maximum output is 150 volts hence the input is 10 volts.

The standing DC at the output should be negative with respect to earth by an amount determined by the Bias control. The bias adjustment is controlled in the following manner:- Sync bottom is taken as a reference point as this is constant and represents peak modulation (negative modulation). The modulator output voltage at this reference point must be such that the QQV06-40A grids are driven to a point which gives the required peak power output. The grids will be positive with respect to ground by an amount which is the sum of the drive and the modulation voltages. The voltage at the anode of V5 will therefore be negative with respect to ground (voltage at V5 anode = peak voltage at grid of QQV06-40A -amplitude of drive voltage) and all signal excursions must be negative going to give the required negative modulation.

This reference point is governed entirely by the current flowing in V5 and V6 and this in turn is controlled by the voltage on the grid of V5 at sync bottom. The signal is DC restored at the grid of V5 by the OA85 diode to a potential set by the 10K pot. Hence by adjusting this potential the bias applied to the QQV06-40A grids can be adjusted. This reference potential sets the peak output power and is independent of the depth of modulation, which is set by the gain control stages V3 and V4. This reference potential must be kept constant and independent of the supply voltages or changes in the current through V5 and V6, and for this reason the voltage is obtained from two Zener diodes in series in the cathode of V5.

The diode WG7B is included to prevent possible damage to the OA85 caused by reverse voltage transients which occur when switching on the HT.

The coil in the anode of V5 is to compensate for for the length of co-ax to the modulated stage.

SETTING UP

Apply sawtooth with syncs to the input of the modulator and check 0.7 volts of video and 0.3 volts of syncs.

Turn Sync Amplitude Control to zero. Connect an oscilloscope to test point in V2 cathode and adjust V1 gain to give 1 volt DAP at this point.

Turn the Bias Control to MAX and check that the modulated stage is cut off after removing the modulating signal. Reduce the bias until anode current rises to about 150mA. Connect saw-tooth again to the input and check with the oscilloscope on the modulator output. Adjust the second gain control to give approx 50 volts output. If any crushing is observed, adjust bias slightly.

Connect scope to output probe of TX and adjust the Bias Control until syncs are just beginning to crush as the final anode current rises. Stop at this point. Now adjust the sync amplitude to the required ratio. Finally, adjust the White Stretch Control to obtain a linear sawtooth output.

NOTES.

This modulator was designed to modulate a QQV06-40A, but the output is quite high and may well be applied to a 4X150A, the outputlevel should be sufficient to fully modulate the 4X150A. Typical modulation characteristics of the 4X150A with between 600 and 1200 volts on the anode are; grid voltage at bottom of sync -155 volts and peak white -80 volts (pos. mod.)

No tests have been made to check the operation of the modulator with positive modulation, and therefore no recommendations can be made and it will have to be left to experimentation.

One final point. The writer has made use of information provided by the designers of this amplifier and would like to state that this is a development from an earlier amplifier which was made up from circuitry published in several issues of CQ-TV. This earlier unit was found inadequate for proper use and was developed by the staff of the Cyprus Broadcasting Corporation into the present design by them for low power tests on Channel E6. An amplifier of this design is now in use on the equipment built by the writer and associate, and has proved to be of excellent quality. The peaking coils in our amplifier were of the order 40µH., but these were used as they were to hand and other values have not as yet been tried.

If suitable gear is available, the amplifier can be made to produce a good response up to 5Mc/s.

CAN YOU HELP?

Mr. B. Senior would like to hear from anyone who has a service manual for:- Marconi L67 R/T unit .... made by B.C.C. for Marconi.

--------oOo--------

A wide range of electronic components including various types of camera tube deflection components are available, through the club, from T.J.Sas & Son Ltd. All enquiries must be made via the B.A.T.C.

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FROM THE B.A.T.C. MAILBAG.

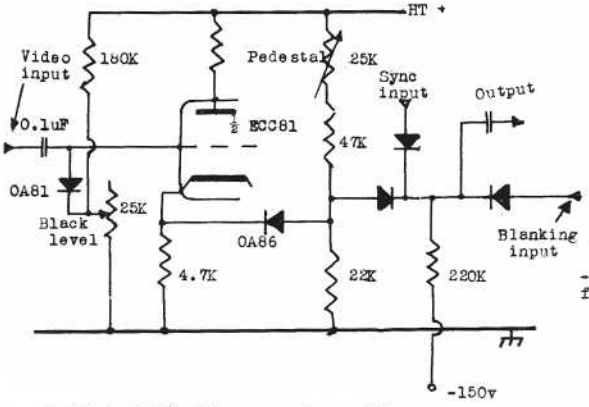
This has nothing to do with the Great Train Robbery, but is a selection of useful circuits, modifications to items described in CQ-TV and any other items of interest. If you have any items for this section please let the Editor have details.

NOTES ON THE G3KOK/T VISION PROCESSING AMP

By Warren Jacobs VK6WJ/T.

The circuit shows a simple but worthwhile addition to the vision processing amplifier as described in CQ-TV 38 by G3KOK/T. In the original circuit peak blacks had to be set up above blanking level by the pedestal control and it was possible to come right down to blanking level, making it difficult to produce a good dark background for captions. The extra diode should be, for best results, a switching diode such as the OA86 or OA47. The original pedestal control now controls black level and the new pedestal control is set to give the required amount of pedestal with the black level control set at minimum.

This circuit works well and permits the crushing of the blacks or the whole signal for that matter, and still maintain a pedestal on the output waveform. If a white clipper is required, then just reverse the OA86 diode.



Modified G3KOK/T vision processing amplifier.

A COMPLETE INTERLACED PULSE GENERATOR.

L.W. Barnes (GW3PCZ/T) who has built the above S.P.G. described in CQ-TV 47 sends in the following notes which may be of use to anyone contemplating building this comprehensive generator.

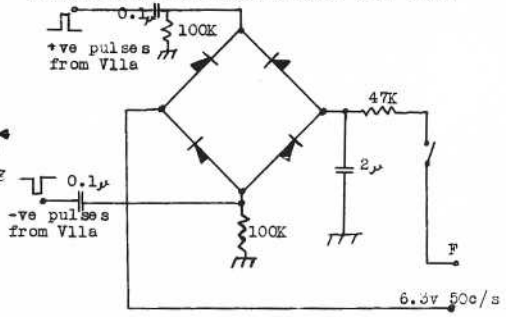
1) 56K resistor from V6 anode to earth, should be from V5 anode to earth.

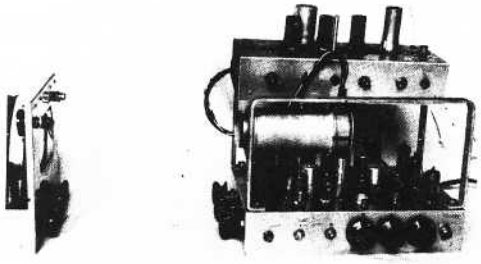
2) The 0.01uF capacitor at V10 grid should be removed as V2 grid is connected to V10 grid direct.

3) 0.1uF capacitor at V7 anode should be removed since it is provided at V9 grid, V7 anode should also feed field drive clipper.

4) Diodes in locking bridge are connected wrong, should be as shown below.

GW3PCZ/T used line blocking oscillator transformers from Peto Scott projection televisions in the divider chain. Counter trimmers were increased to 200pF from 33pF.





Left.

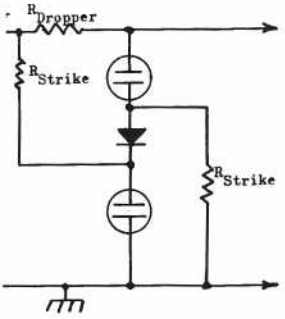
G3LEE COLOUR F.S.S.

The unit containing the MW13-35 scanning tube is on the left. The colour transparency is stuck to the faceplate. The horizontal tube on the R.H. chassis contains the 6095 red channel cell, its amplifier is on the upper chassis. The 931A's in the blue and green channels are hidden behind the red cell at the front of the chassis. The three knobs on the front are the cell gain controls. On the side are the pre-set streak controls and the colour lift knobs. The output is 0.7v R.G.B. non-comp.

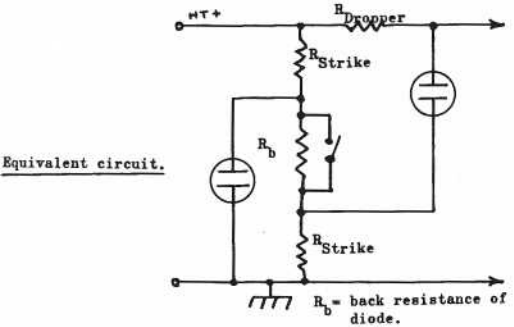
See What The Other Chap Is Doing.

USEFUL CIRCUIT By Mike Barlow.

Sometimes it would be nice to run two neons or Zener diodes in series, but there is insufficient voltage available to strike the neons initially. The circuit shown does this rather nicely. With the diode not conducting, and the neons passing no current, almost the whole input voltage is applied across both neons. Not until both have struck will the diode conduct and restore the circuit to its normal operating condition. The diode must be chosen to stand a back voltage equal to the drop across the neon series dropper resistor, and it must pass a current equal to the maximum neon current.



Practical circuit



Equivalent circuit.

1964

SUBSCRIPTIONS

PLEASE NOTE THAT ALL SUBSCRIPTIONS ARE NOW DUE.

FOR DISPOSAL.

I.A.Jackson of 19, Bowen Road, Rugby, Warwicks. has for disposal several 7BP7 CRT's together with scan and focus coils. All enquiries please to Mr. Jackson.

Notes on the G5CVO Timer Unit By Mike Barlow

It is gratifying to note that several members have had success with this unit. On the other hand some have found it to be a real dog; it may be that in these cases some component is not exactly what it was thought to be. In CQ-TV 47 Deryck Aldridge gives a list of modifications that worked with his unit. Mike Barlow has tried them in the original model and comments as follows:

Thermionic diodes will of course give flatter steps than leaky old crystal diodes. You must select your diodes to give the least possible slope so that there is plenty of difference between the correct step and the next - i.e the adjusting control is not too sharp. I found OA86s quite OK for my counts of 5,7,5 and 3. Either R or C can be varied to control the count; it depends on space and components available. Do bear in mind thermal coefficient problems, though, or your count may vary as it warms up. The unit should not need readjustment once set-up unless you change standards. If any one counter is touchy, look at the step shape; if OK look for thermal problems; if OK use a new tube as the one you have may be older than you think and sensitive to heater volt variations.

The prototype unit comes into lock from cold and holds over about 75% of the range of the 100K frequency pot. Deryck's point is quite correct about the 50c/s jittering the last counter, but I repeat it is no problem on the prototype. I any case you can always go to FREE RUN if in doubt.

The AFC circuit seems quite OK; it worked less well when the 6.3V input was reduced, nor did increasing the source impedance of the 6.3V improve it. Nor did replacing the 100Ks in the bridge by two more diodes. A voltmeter on the anode of the control valve should show some 10 to 20V variation as the field pulses slip through lock. At lock, the volts should be the same as at FREE RUN.

The amount of smoothing required on the AFC depends on how spongy a lock you like. o.5/330K is quite enough for me and takes about half a second to pull in. 3M instead caused a very long swing through lock. Note that your 0.5mfd MUST be a good one, no leakage at all. Also in the G5CVO circuit there is a little extra smoothing due to the umpteen ohms and 0.001 on the MO grid. This capacitor, like all the charging Cs, must be of the same temperature coefficient as the count adjusting control. If in doubt, use silver mica. The same applies to the small coupling capacitors between counters; ceramic ones may not be good enough. A tuned circuit can be used in either anode of the MO to improve stability in the FREE position. A few mH (old RF choke) tuned by enough C to make it resonate (look with the scope) will do; leave the R in circuit in series with the LC. An improved genlock performance can be obtained by removing the 33K and 0.002 to ground from the anode of V6B. Do not pass the feed to the Field Blanking Generator through S1B, but take it direct. Join V6B anode via the now clear S1B to 100K and 0.05mfd in series to the left-hand grid of V5. This gives improved field locking to external syncs. -M.B

CQ-TV 51. Errata:- In figure 2 of the article on "A Transistorised Low Noise R.F. amplifier for the 70cm Band" the 820 ohm bias resistor should have been shown going to the emitter side of the 1000pF input decoupling capacitor and not to the input side as shown.

WHAT THE OTHER CHAP IS DOING

By Dave Mann G3OUO/T

Now that Don Reid has had to give up compiling this column Dave Mann, G3OUO/T has taken over. However, any items of news or interest sent in to any committee member will be passed on - so keep the news up to date by letting us know what YOU are doing.... Ed.

There has been much activity since this column last appeared in CQ-TV 50 - a particularly large increase in the 70 cms activity brought about largely by the appearance on the surplus market of a batch of U.H.F. Television tuners easily tuned down to cover the amateur band. On the video side the 7 Valve Camera has proved a very popular design and many of these have been completed, with more under construction.

During the summer Ed Tilton of the A.R.R.L. visited England and met Gordon Sharpley, G3LEE, and John Tanner, G3NDT/T. He was followed later in the year by Mel Shaddolt, WØKYQ, editor of 'A.T.V. Experimenter' who managed to visit several B.A.T.C. members including G3OUO/T, G3NOX/T and G3NDT/T who were all able to show local and received pictures. After exchanging some interesting notes on amateur TV, WØKYQ went to visit Jean Riches and the amateur TV group in Geneva before returning to the U.S.A.

From Lancashire G3LJO/T reports 70 cms contacts with G3ILX, G4CJ and G3FKP. His equipment consists of a F.S.S. and Vidicon camera, the transmitter running about 20 watts from a QQV06-40a tripler to a 6/6 slot at 30 ft. Two 446a amplifiers head the tunable receiver. Skeds are kept on 70 cms with GW3JGA/T and G3EKP but no luck yet. G3IJO/T also reports that Alan Smith of Boulton-le-Sands is almost ready for TV reception, and G3RFL is preparing for A.T.V. F.Higgins of Colne has an S.P.S. operating and the Vidicon damera is under construction. G3MHZ/T, John Jull, is now a father and time for B.A.T.C. activities is rather short, but Gordon Sharpley, G3LEE/T has recently moved to a better Q.T.H. and is keeping the ball rolling helped by G3KCB, 05IG, G3OTA and G3EKP. Gordon's transmitter now uses a 4X150a, but suffers from a mechanically and electrically noisy blower motor! Repairs are in hand in between time spent on the colour flying spot scanner which is now giving quite fair pictures.

G30S (Lincolnshire) met G3REH/T and G3NDT/T at the Stradishall Mobile Rally in the summer and since then has started constructing a Vidicon camera - he won the tube in a raffle! From further north Brian Alderson, G3KJC/T reports two way TV contacts with G3IID/T and G2RDQ/T. He has heard G3NOX/T on the modified U.H.F. tuner! Brian's vision equipment consists of a test waveform generator and F.S.S. with the Vidicon camera almost complete. A 40 ele. stack is also being made to replace the 6/6 slot. Another note from Brian suggests that stands from old hairdressing machines can often be obtained for next to nothing and are easily converted into camera dollies!! G.S.Hiles is one of several experimenting with video tape recorders and more news is awaited with interest. A.M.Dix and J.F.MacMahan are both building the 7 Valve camera, while Dave Huck, G3PJE/T has completed an all transistor camera which he showed to G3NDT/T who paid a visit recently. Results are promising and Dave will write it up for CQ-TV when complete. Many visitors to the Radio Hobbies Exhibition were shown the camera, although the usual exhibition snags prevented a working demonstration.

From the Midlands Peter Pushworth reports that he is now licensed G3RYB/T and is running about 26 watts on 70 cms. He has taken pictures from G3MXW/T and G3NOX/T has been heard. A Vidicon camera is nearing completion. Ernie Foulds, G3MXW/T has sent pictures to G3NOX/T and also G3PGF/T who recorded the pictures on film and sent them back later!

Jeremy Royle, G3NOX/T, has recently added some 23 cms equipment to the station and on 15 September made a two way sound QSO with F8MX/A near Dieppe. Very strong signals were exchanged using a 3CX100A5 tripler in the Tx and an A2521 in the Rx. On 70 cms he has had TV QSOs with G3IID/T and PAØCOB. Other additions to the station are a F.S.S. and the transistor pre-amplifier described by G3OUO/T in CQ-TV 51

G3PGF/T near Newmarket has been recording the transmissions from several amateur TV stations on 9.5mm. film and re-transmitting them back again a week or so later. A recent TV-DX contact with G3MXW/T in Birmingham was sucessfully telerecorded. G3KKD/T in Ely was one of many surprised to see his own pictures coming back. Ian has been working on the TV Tx by adding a 4X150a stage to run 150 watts. He has also built the transistor pre-amp with the idea of using it as a mast-head pre-amplifier when a suitable relay control system has been worked out. Tom Rudderham has been in touch with Ian Waters and besides receiving pictures has started construction of a F.S.S. with a Vidicon in mind for the future.

Paul Fletcher of Lowestoft is now G3SFI/T and will soon be on the air with his 4X150a Tx for vision, using a QQV02-6 for sound. A F.S.S. provides the pictures which are transmitted via a 8/8 slot at 36 feet. G3PJE/T is one of the nearest stations to G3SFI/T, and is already active, a 4X150a stage having recently been added to the Tx, and the Vidicon camera souped up. G3LQR regularly takes pictures from G3PJE/T. The East Anglia stations are occasionally able to contact the London area stations when conditions lift on the band. In the London area activity continues to increase. G3OPB/T in Epsom has sent pictures from his recently acquired 5527 camera to G3GDR/T, OUO/T, NDT/T, MSN/T, RAK/T and G3MOS. The

camera is shortly due for a rebuild to try to reduce the noise and improve the sensitivity. G3NDT/T and G3OUO/T can operate duplex TV and various experimental relay transmissions have been made. Most of the London stations use the 2N1742 pre-amp in front of modified U.H.F. tuners. G3OUO/T sent pictures to G3REH/T (84 miles) recently, and has also sent pictures to G3RGX/T and G3PGF/T. Norwood Technical College have added a two stack 32 element array on a rotator and hope to start tests again soon. G3RJO/T looks after the college station, G3CTS/T. G3RNK/T of Wembley hopes to come on the air soon with a F.S.S.

GW3PCZ/T reports from North Wales with the news that he is on 70 cms using a QQV06-40. Transmissions are of test patterns only at the moment using Mike Barlow's S.P.G. with the heart of the processing amplifier based on the G3KOK/T 3 diode pulse mixer from CQ-TV. A F.S.S. is under construction and tests on R.F. are planned with GW3PKH/T and GW3JGA/T. D.B.Williams would like to contact others interested in DX-TV reception. (letters will be forwarded. Ed.) John Lawrence paid a flying visit to London recently and visited G3NDT/T to discuss colour. GW3JGA/T has a sequential to simultaneous colour convertor and operates a sequential drum type monitor as well as a shadow mask type monitor. A general purpose colour bar generator is the only picture source at the moment although a colour slide scanner is planned. On 70 cms GW3JGA/T is rather poorly sited, although GW3PCZ/T is a very strong signal. In South Wales the Pontypool Amateur Television Club has been formed with Grant Dixon as Chairman and A.Davies as Hon. Sec. Any others interested should contact A.Davies, 2 Abernaunt Rd, Markham, Blackwood, Mon. Bristol Technical College is transmitting television under the call sign G5FT/T using a Vidicon camera and medium power Tx. Further tests await the arrival of a better aerial array. G3CLZ in Swindon would like to hear from any others interested in microwave links. In Felton, near Bristol, Laurence Ogborne has completed a Vidicon camera and is sorting out the snags. Rodney Staines, G3RES/T, Bristol, is putting the finishing touches to the Tx, having completed an excellent compact transistor Vidicon camera in conjunction with G3KUJ.

News now from the U.S.A. where W7FEN has a slow scan camera working and is building 6 metre equipment to Tx and Rx slow scan. He would like to exchange slow scan tapes and contact others interested on 20m ssb. W3AEH is one of our new members and has three cameras in various states of construction or modification. Other work is in the S.S.T.V. and recording field. An interesting letter from K4VGN queries some of the labels used on circuits in CQ-TV. For the benefit of others not familier with this, H.T. or H.T. rail refers to the B+ supply for anodes (plates) The ATV Experimenter has published a dictionary of TV terms including most of those used in CQ-TV.

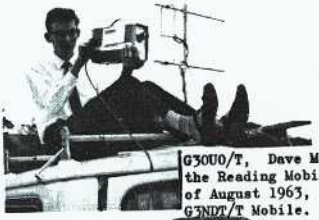
Arnold Cook of Western Australia has just finished a major building project which left little time for Amateur TV. However, a 625 line S.P.G. is complete and a camera started. Dave Quigley, DL2PB/G3PRI/T is building a 100 watt TV Tx and the 7 valve camera - he returns to the U.K. in February. In Holland Tj de Vries has been experimenting with a 5527 camera and with an Image Iconoscope, and has built a transistor Tv Rx, although the scan outputs use valves. He reports that PAØSW transmits TV, and PAØCOB is also active constructing a Vidicon camera as is PAØZR.

L.B.D'Alton has been working on ATV at University College, Dublin, in conjunction with Jim Lacy. He sends the following notes about the first EI amateur television transmission. His station, EL4AJ radiated live and film pictures over ½ mile to the stand at the Scientific and Technical Exhibition in Dublin. The transmissions were for 6 hours a day between the 22 to 25 Oct. The transmitter which was built at the College had an output of 25 watts peak on 432 Mc/s and operated on 625 lines, negative mod. A commercial camera was used, although their own S.P.G. and camera is now under construction.

The following is a list of Mobile Rallies being organised by the R.S.G.B. this year:

5 April - Texas Instruments, Bedford.
24 May - U.S.A.F. Weathersfield. Essex
13 Sept- Woburn Abbey, Bletchley, Bucks

Last year several demonstrations were given at mobile rallies including the Stradishall Rally where G3REH/T and G3NDT/T operated TV mobile, and pictures were received from G3NOX/T and G3PGF/T at the rally. On the way home G3NDT/T operated mobile and visited G3NOX/T, making what may well have been the first two way TV QSO while mobile while travelling. 240 volts of Nife cells gave the power while G3OUO/T, OUH/T, PJE/T and Dave King gave the effort! Any members planning demonstrations at rallies are asked to send details to the Club for publication - they provide an excellent meeting point for BATC members during the summer months.



G3OUO/T, Dave Mann operates the camera at the Reading Mobile Rally, on the 11th of August 1963, sitting on top of G3NDT/T Mobile.
Camera: EMI 8.
Tx: QQV03-20A tripler.

That's about all for this time - news for the next edition to the Hon. Secretary or Editor please, as soon as possible. G3OUO/T.

CQ-TV