CQ-TV

no 62.

The Journal of the British Amateur Television Club

THE BRITISH AMATEUR TELEVISION CLUB

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FOR SALE

45 foot triangular lattice mast complete with fixings 8 over 8 element yagi aerial for 70 cms. 4 over 4 element yagi aerial for 2 metres. Three 3 inch image orthicon tube yokes (focus deflection alignment coils). C.D.R. mast rotator with control box. Please contact either Hon Secretary.

Our Chairman has held a leading position in the field of amateur television including many notable "firsts" in the twenty years or so during which he has been dabling in the art. He thought our members might be interested to know something of his background and so he wrote us this letter:

1, St. Andrey's Way,
Lynn Road, Ely,
Cambridgeshire.

I first took an interest in radio about 1940 when I swapped an airgun for a crystal set, but more to the point, my television interest began in 1945 when I started reading pre-war magazine articles and saw television sets in dealer's windows, showing programmes such as the Victory Parade. At the age of fifteen I joined Pye Limited as a Radio Engineer apprentice where I now work as a Professional T.V. Transmission Engineer. During 1949 I built my first television set out of several pre-war 5 inch sets found on a scrap dump. This was one of the first sets in Ely and followed this up by building a monoscope picture generator. I realised that I would not be satisfied until I had a real camera and so from 1951 about three years were spent building a "Photicon" Image Iconoscope camera chain. This was shown at various R.S.G.B. Exhibitions and the B.A.T.C. Dagenham Town Show. The "Photicon" camera was the second to be built in the United Kingdom, the first was a few months earlier by G2DUS/T.

March 1952 was eventful because it was then that I joined the B.A.T.C. following a meeting with Mike Barlow while he was in Cambridge. I became licenced as G3KKD/T in August 1955, this was changed to G6KKD/T in August 1964 and followed by the call G8ADE in September. A regular vision circuit was established with G2DUS/T from March 1956 to October 1959 using a 6J6 1 watt transmitter over a 37 mile path. The reward for pioneering this television link was the R.S.G.B. Courtney Price Trophy awarded jointly to G2DUS/T and myself.

Colour television transmissions by the B.B.C. towards the end of 1956 interested me enough to build a field sequential converter for the reception of these pictures.

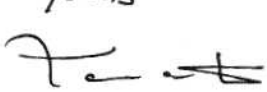
My present equipment consists of two cameras, one 3 inch image orthicon camera and one vidicon zoom camera, which together with a monoscope pattern generator provide the vision signals to a 4 channel A-B vision mixing unit having preview facilities. The pictures are displayed on two 14 inch monitors and are measured with 3 waveform monitors. Sound signals are provided by microphone, grams and tape and are mixed in a 2 channel audio mixing unit which has a volume meter indicating signal level. Receiving equipment is available for broad band T.V. signals and for communications purposes.

Two transmitters are used, the one for vision has a 4X150A grid modulated final amplifier running at 150 watts input for peak white, and the one for sound has a QQV06-40A grid modulated amplifier at 40 watts input. The transmitter outputs are combined to feed both signals to one 64 element aerial on a telescopic mast which can be elevated to 70 feet by a motor drive. A mast head pre-amplifier as described in CQ-TV and the R.S.G.B. Bulletin is used for reception.

My main interests lie with the East Anglian T.V. Net. This consists of G6REH/T, G6RGX/T, G6OAT/T, G6PGF/T, G6BBY/T, G3NOX/T etc.

It is with great interest and enthusiasm that I accept the position of Chairman.

Yours



Ian Waters

THEY SAY the average OM is one who lays down the law to his YF..... who in turn, starts working on all the amendments !

A NUVISTOR

HEAD AMPLIFIER.

A Vidicon Head Amplifier by ON4RT

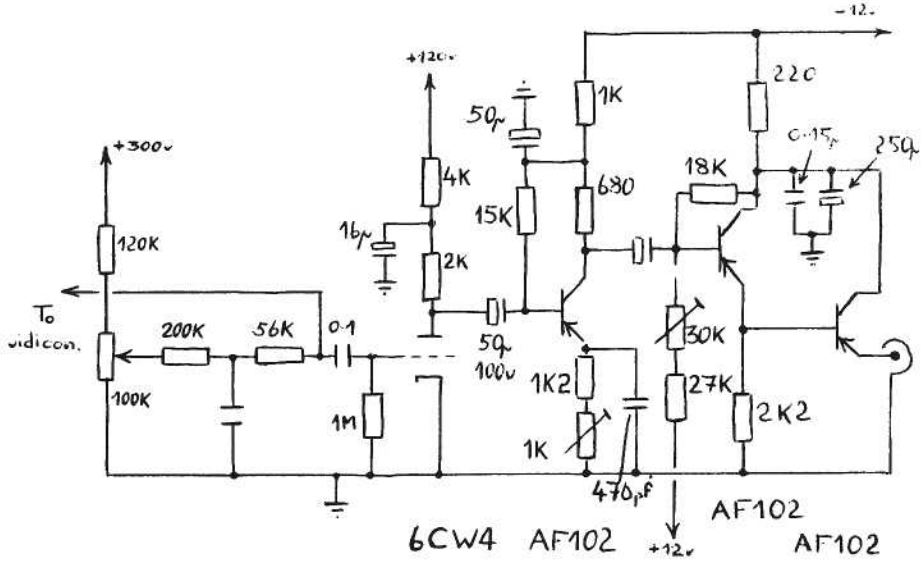
The signal current from a vidicon is so low that considerable amplification is necessary to provide a standard output level.

This circuit uses a 6CW4 nuvistor in the first stage. The signal current from the target flows through the 56KΩ resistor providing a voltage which varies with the illumination of the element being scanned. This voltage is applied to the grid of the 6CW4 via a 0.1μF capacitor. A transistor could be used here, but the expense would be considerably more than with the nuvistor, and, of course, the gain would be considerably less.

The cathode is connected directly to earth, and if hum is to be avoided, great care must be taken over this. A thick insulated lead should be used, and all earth connections made to this single wire, such that only one earth connection to the chassis is made.

The filament is fed by two wires, one of which must be joined to the common earth lead. The signal resistor can be increased to provide more gain, but this is at the expense of bandwidth. (The inverse also applies.) However, 56KΩ is the optimum. A later version has used peaking coils in the anode of the 6CW4, but if was necessary to shunt them with a 5KΩ resistor to prevent parasitic oscillations. However, bandwidth was increased well beyond 5 Mc/s.

The low impedance of the following transistor stage necessitates a very high value of coupling capacitor to prevent attenuation of low frequencies. Stray capacitances abound in a T.V. camera - from the tube itself, from wiring, the nuvistor etc., and since all are in parallel with the signal resistor, the net result is a severe loss of high frequencies. The first transistor is thus used as a hi-peaker, to make up some of these losses. This is done by using a large emilter resistor,



decoupled by a small capacitor. Thus feedback is high at low frequencies, but the small capacitor reduces this at higher frequencies, increasing the gain. The 1KΩ potentiometer provides a measure of control and allows one to set up the camera for optimum performance. Too much L.F. shows up as a grey shadow following a black to white transition (known as 'streaking') and too much H.F. will give a relief effect to the picture(known as 'ringing').

The two last transistors comprise an emitter follower, used to provide a very low output impedance. The video signal is carried to the C.C.U. by coaxial cable terminated in 75Ω this method reduces the effect of cable length on bandwidth.

The amplifier is as in the circuit diagram, but certain modifications tried recently by the author may be of interest. Another transistor after the hi-peaker raises the gain such that the amplifier provides a positive going 1 volt output. An emitter follower has been used after the 6CW4 to reduce its output impedance, and if the feedback is made independent of frequency, the linearity is improved.

At the moment, the author is experimenting with another nuvistor amplifier, with a bandwidth of 8 Mc/s and a gain of 60dB. This, it is hoped will be in use in an image orthicon camera to be shown at the International Convention at Knokke in September.

THE BRITISH AMATEUR ELECTRONICS CLUB

Since its conception, the British Amateur Television Club has helped its members in the pursuance of television as a hobby. When it was started, television was considered to be beyond the reach of amateurs, but now the B.A.T.C. has proved what can be done to help amateurs, who show by their enthusiasm and ingenuity that they, in their own way, can further the interests of television.

However, television is only one aspect of the vast and interesting field of electronics. To cater for the amateur interested in all branches of electronics, the British Amateur Electronics Club was started. The B.A.E.C. (no connection with any other Club!) is open to all who are interested in electronics as a hobby, and through its Newsletters keeps its members informed, and enables them to exchange ideas. They give particular consideration to those members who cannot attend their meetings in Penarth, Glam. (where it was started) and encourages them in a practical way to start their own Electronics Groups.

At the meetings held in Penarth, the members use test equipment to experiment with all types of electronic devices and designs and make electronic games which the public use during Penarth Holiday Week in aid of charity. They also show technical films which not only help considerably in understanding how electronic devices work, but also show how they are made and the industrial applications.

The membership fee of the British Amateur Electronics Club is 10/- per year, and if any reader would like full details of the B.A.E.C. would they please write to Cyril Bogod, "Dickens", 26 Forrest Road, PENARTH, Glam.

'TELE' SCOPE.

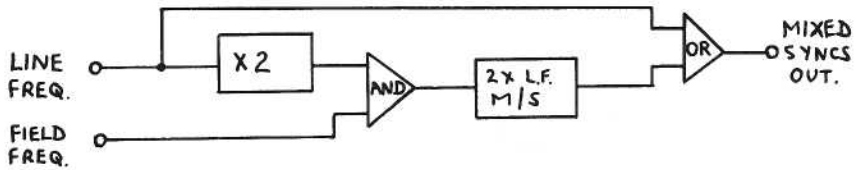
Dave Bloxham has undertaken a large project in trying to combine amatuer astronomy with closed circuit television. It seems to me that people are always trying to do the impossible, and in some cases achieving their ambitions. The photograph shows the telescope, but when it was taken the CC-TV camera had not been fitted. As the telescope is of the Newtonian type it will be necessary to use a prism to direct the light into the camera. The storage property of the vidicon tube will help to cope with low light levels but there will be some loss in the prism.

Dave writes to say that before any serious observations can be made he has to construct a clockwork drive to trim the telescope against the earth's rotation.

Field Interlace Again

We would like to hear from any members who may have used this technique.

Hon. Editors.

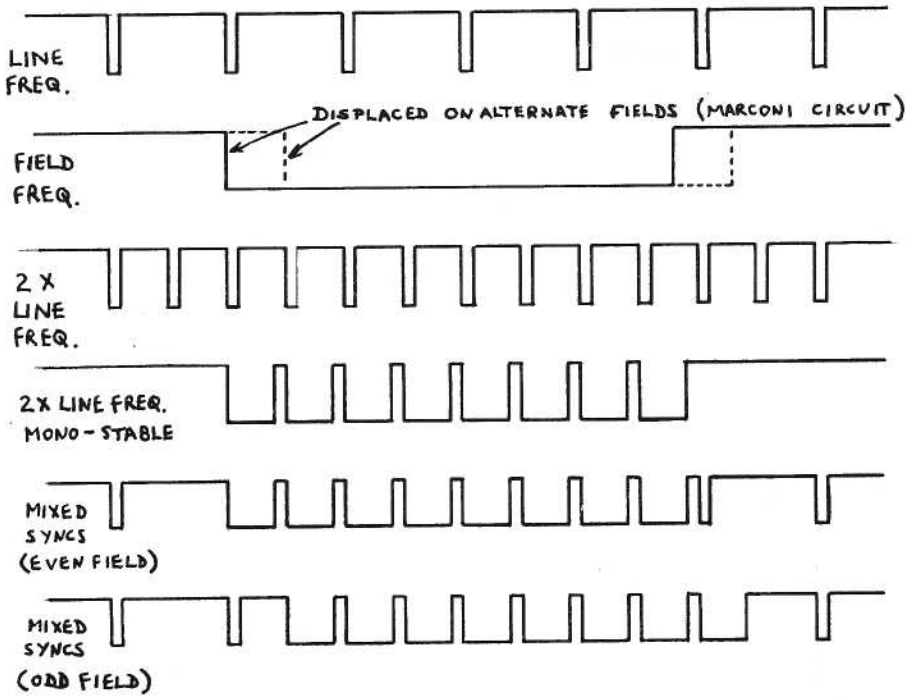


We have received a letter from Dave Bridgen VP8GB/T telling us of his progress with the Field Interlace Circuit in CQ-TV and that he did start building the circuit some time ago. Another application of the gating technique used in the Field Interlace Circuit is suggested by Dave.

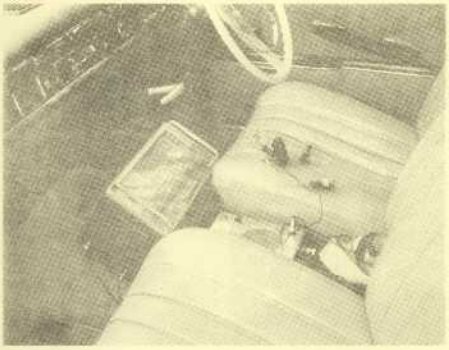
In some sync pulse generators (e.g. CQ-TV 32) the mixed sync waveform has the leading edge of the field sync pulses coincident with the trailing edge of the line sync pulses when of course both the leading edges should be coincident.

Dave has sketched out his proposed circuit in block form. The AND gate could of course be fed from both outputs of the 1:1 line frequency multivibrator instead of using a X2 circuit. The twice line frequency mono-stable multivibrator is triggered during the field pulse by the twice line pulses from the AND gate and its pulse width is adjusted to give output pulses of 40 uS duration.

The field pulse should be 350 to 380uS long in order to give eight broad pulses in the field sync interval.



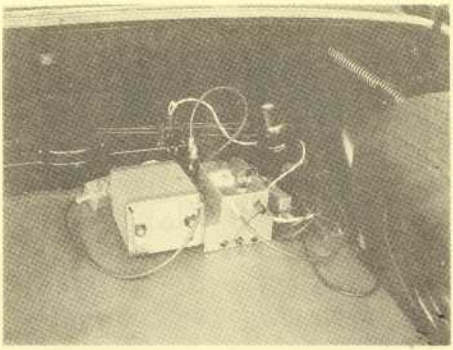
70cm MOBILE



These photographs show the mobile set up as used by our treasurer Malcolm Sparrow, G6KQJ/T; G8ACB. The aerial clips onto the window and is a scaled down version of the 2 meter clover leaf as published in the R.S.G.B. Bulletin of August 1964. The transmitter is a 10 watt 2 meter Withers unit followed by a Varactor Tripler which feeds the aerial. For the receiver, a transistorised converter feeds the EC10 receiver which acts as a tuneable I.F. amplifier.

Results achieved have been quite good, depending on the local terrain. Local stations have been Q5 up to about 10 miles and the best DX so far is GW8-ACG/P near Flint from the Wolverhampton area.

The transmitter, A.E. Change over relay, Transistor Converter and inverter power supply are housed in the boot of the car while the EC10 and controls for TX/RX etc. are located between the front seats.



FOR SALE.

Transformer

350Ov 10mA 6v 10a
350/250-0-250/350v 200mA
4v 2a 5v 2a

Monitor

Metal case. Uses 6 inch VCR97 c.r.t. One volt video input 230v 26 watts ac only. Almost complete, all parts supplied.

Wire recorder deck

78 r.p.m. heavy aluminium drum, 24 i.p.s. Two motors and crystal pick up.

1154 Transmitter

With internal, incomplete power supply.

Aluminium Case

Grey painted with grille (loudspeaker or cooling), and access lid. Size 12½ inches x 11 inches.

Offers for the above to:

Cyril Stanners,
37, Raymond Road,
Langley Village,
Nr. Slough,
Bucks.

READ

CQ-TV

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AMATEUR TELEVISION ACTIVITIES