CQ-TV

no 61

The Journal of the British Amateur Television Club

THE BRITISH AMATEUR TELEVISION CLUB

B.A.T.C. COMMITTEE MEMBERS

Hon. President	S.N. Watson	
Chairman	This position is in the process of re-election and we will introduce our new Chairman in the next CQ-TV.	
Hon. Treasurer	M.J. Sparrow G6KQJ/T G8ACB	White Orchard, 64, Showell Lane, Penn, Wolverhampton.
Hon. Secretary	D. Mann G6OUO/T G8ADM	67, West Hill, Wembly Park, Middlesex.
Hon. Secretary	N. Hampton G6OUH/T	19, Grove Crescent, Kingsbury, N.W.9.
Librarian	C.G. Dixon	Kyrles Cross, Peterstow, Ross on Wye, Herefordshire.
Hon. Editor	J.E. Noakes G6ABA/T G8APC	18, Dennis Road, East Molesey, Surrey.
Hon. Editor	A.M. Hughes	16, Wilton Grove, Wimbledon, S.W.19.
C. Lacaille		29, Sandall Close, Ealing, W.5.
M.H. Cox		135, Mortlake Road, Richmond, Surrey.
J.T. Lawrence GW6JGA/T		9 East Avenue, Bryn Newdd, Prestatyn, Flintshire, North Wales.
D.S. Reid		c/o Hon. Treasurer.
J. Royle G3NOX/T		Keepers Cottage, Duddenhoe End, Nr. Saffron Walden, Essex.
G. Sharpley G6LEE/T G3LEE		51, Ambleside Road, Flixton, Urmston, Lancashire.
I. Waters G6KKD/T		1, St. Audrey's Way, Lynn Road, Ely, Cambridgeshire.
S. Woodward G6AAZ/T		44 Winton Road, Reading, Berkshire.
B. Tebbutt		11, Revel Road, Wooburn Green, High Wycombe, Buckinghamshire.
C. Chivers		Mortimer Street, Trowbridge, Wiltshire.

INTRODUCTION

The club was founded in 1949 to inform, instruct and co-ordinate the activities of amateur radio enthusiasts experimenting with television transmission, and to liaise with other enthusisasts engaged on similar work overseas. The club is affiliated to the Radio Society of Great Britain, and has a membership of over 800 at the present time. Of these, about one third reside abroad; in particular, there is much amateur activity in Australia, Canada, France, the Netherlands, and the U.S.A.

Experiments carried out by BATC members have been mainly in two directions: R.F. and video. As few members have the resources to build both sorts of equipment, many have combined to form constructional groups, to hold lectures, and to take part in local exhibitions. There are local groups of this type in various places. The Hon. Secretary will be pleased to let you know the names and addresses of members in your district.

EDITORIAL

It is with many regrets that the committee accepted the resignation of John Ware from the position of Chairman. John has held this office for four years during which time he has devoted many hours to the activities of the British Amateur Television Club. Indeed it would be fairer to say that John gave some of his spare time to his other activities because he has contributed such a large proportion of his energy towards maintaining the club image and partisipation, in the true spirit of Amateur Radio.

The Club would like to thank you John for all you have done.

The cover photograph shows on the left our President, Neville Watson, together with John Ware taken at the 1966 Convention.

Reluctantly, the committee has accepted the resignations of three other members, Mike Cox, Charles Lacaille and Martin Lilley. Martin has to spend a large amount of his time overseas and has found it impossible to devote as much time to club activities as would be expected of a committee member. Mike and Charles, however, have agreed to remain on the committee, although not in the posts of Public Relations Officer and Hon. Editor. We are fortunate in having them as committee members because between them they have a wealth of knowledge of these two aspects of our club.

An election to provide a new Chairman is under way and we will introduce him in our next edition of CQ-TV.

The three committee members elected at the Convention are Andy Hughes, Bob Tebbut, and C. Chivers. Andy has bravely accepted the post of Hon. Editor left by the resignation of Charles Lacaille.

In order to reduce the load on our two over worked secretaries we have published details of items available through the Club but forgot to include in the list members' note paper and envelopes which are available as follows:-

Note paper headed Members Correspondence
15/- per 100 sheets inclusive of envelopes.
Note paper with your own address, price on application.

The Editors would be very pleased to receive any tips and hints you may find helpful. If they help you, they may help others. For each hint or tip printed the member will receiver one equipment badge.

Hon. Editors.

SLOW SCAN ON 20 METRES

Grant Dixon received these photos from Cop Macdonald. These show the results of some 20 metre slow scan tests carried out on June 19th and 20th. Cop has also sent us a reel of tape showing the highlights of these tests. It is recorded at 7½ inches per second using frequency modulation and 120 lines per picture as per Q.S.T. 1961.

These pictures were sent from Indiana on 20 metres by Don Miller W9NTP and received by VK3AHR in Melbourne, a distance of 9,000 miles.

This picture was also sent by W9NTP on 20 metres and has received by HC1WD in Quito, Ecuador.

POST BAG

Mike Barlow writes from Canada telling us of his work with C.B.C. Four types of colour camera just installed in three studios - three plumbicon, 4 plumbicon, 4 vidicon (telecine) and 1 I.O.+ 3 vidicon!

Emigrating? Mike Barlow would be pleased to help out any coming out to Canada. Write to 5052 Chestnut Ave, Pierrefonds, Montreal before you leave.....

Bill Still, VE2AZT also in Canada has built a ½" vidicon size 6" x 4" x 2"! and uses an 80' omni beam of 13dB gain, in a white and orange cylinder with a red warning light!

R.L. Carden of Sydney Australia is building a transistorised vidicon and has a vision mixer using multi-vibrator switching. He's also trying automatic mixing and fading.

G.V. Sulu VU2GV of Bangalor, India has written about the very considerable interest in amateur TV in his part of the world. A shortage of components is their biggest drawback, but nevertheless there is considerable interest. A local research institute is helping out by supplying some of its own design TV receivers to amateurs at reduced rates. Another BATC member, AV.R. Rao VU2BB is chairman of the local amateur TV group.

George Wilding has passed RAE - congratulations. Current equipment is a vidicon and a F.S.S.

G.S. Hiles is busy building a 405 transistorised vidicon that he can use in the classroom to assist lectures.

Peter Brisbar G3JHZ in Spain, has built a CCTV system around a vidicon camera, but cannot transmit whilst abroad.

D. Park G3MPS of Bridgewater Somerset has built a camera, hopes to be transmitting video soon. Nearest interested station is GW6OAJ/T in Monmouthshire.

ERRATA

In CQ-TV 59, the unijunction article, the text should read $V_P = u\ V_{BB} + V_D$.

where V_{BB} is the interbase voltage and u is the instrinsic stand off ratio.

In the table beneath Fig. IV the text should of course read 250c/s to 50c/s (÷5) and not (÷ 9). We should apologise to Mike Cox for having given his address as 135, Lower Richmond Road, it is 135, Mortlake Road, Richmond, Surrey.

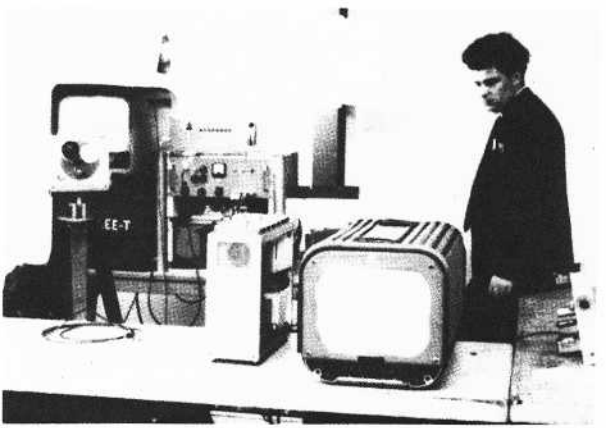
RADIO COMMUNICATIONS EXHIBITION

Mr. John Ware immediate past Chairman and Chairman of the Royal Television Society had a few minutes of Prince Philip's time as he toured the Exhibition.

Prince Philip was interested in the amateur television licence and John Ware G6RSA/T explained that it was a special experimental licence and that it cost the same as that used by the BBC, £2 a year.

NORTHERN AMATEUR RADIO SOCIETIES' CONVENTION

This photo shows the B.A.T.C. stand at the Northern Amateur Radio Societies' Convention held at Belle Vue, Manchester in September. The equipments displayed were Gordon Sharpley's vidicon camera and flying spot scanner and Tony Jaques' 70cm converter. Gordon Sharpley and Tony Jaques manned the stand. Tony Jaques is seen here with the equipment.



PHILIPS PROJECTION RECEIVER UNITS

Mr. D.V. Ryley has for disposal six projection units with tubes, E.H.T. units, various chassis, valves etc. and a V.H.F. tuner. Anyone interested please contact Mr. Ryley at this address:- Romans, London Road, Margaretting, Ingatestone, Essex.

EXCHANGE

Mr. J.A. Walton has an almost new MW6/2 projection C.R.T. with scan and focus coils, optical projector, base, two Fresnel screens plastic etched, two 27 KV regulated E.H.T. Generators complete with valves and one or two 931 A Photo Multiplier tubes. He would like to obtain vidicon coils and/or allied equipment in exchange.

Mr. Walton's address is:- 27, Hawthorn Road, Ribbleton, Preston, Lancs.

CONVENTION

1966.

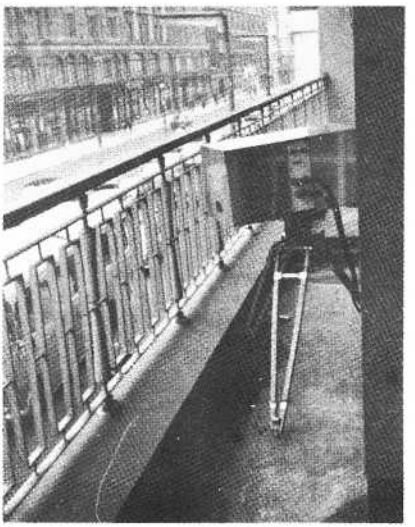
The president giving his opening address - seated - John Tanner, John Ware and Malcolm Sparrow.

At least 200 members and guests attended the 1966 B.A.T.C. convention on October 8th held, as in 1964, in the conference suite at 70, Brompton Road, London, S.W.1. Without doubt the main attraction of this year's convention was the display of amateur colour television. On exhibition was Mr. Cox's three vidicon colour camera which has given good colour pictures showing the scene outside No. 70. The output of Mike Bues's colour bar generator was being displayed on John Laurence's sequencial colour monitor. John Laurence was also demonstrating his colour flying spot scanner. Black and white television was not being ignored. Several cameras were on display including R.Field's vidicon, described in a previous edition of CQ-TV. Two other outstanding exhibits were Ian Water's combining unit and Gordon Sharpley's helical scan video tape recorder - on display was the mechanical hardware - the electronics is being built.

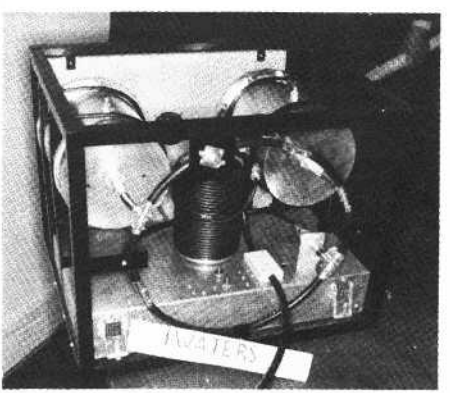
The bi-annual general meeting was held in the afternoon, the proceedings being opened by a speech from our President. The business included the election of officers and committee of the club. Those newly elected were Mr. A.M. Hughes, Mr. B. Tebbut and Mr. C. Chivers replacing the three retiring committee members, Mr. J. Ware, Mr. M. Cox, and Mr. M. Lilley. A round of thanks was recorded for the work undertaken on behalf of the Club.

Several lectures were given after the general meeting. Mike Cox spoke about his colour camera, Ian Water described his combining unit. The Goon Hilly Tracking Station was described by Tony Spittle and Trevor Wiltshire showed how ring counters can be applied to field dividers in pulse generators.

Our thanks are due to Mike Cox who organised the convention, to A.B.C. television who lent us two colour monitors and to the young ladies who so ably managed the very good refreshments.

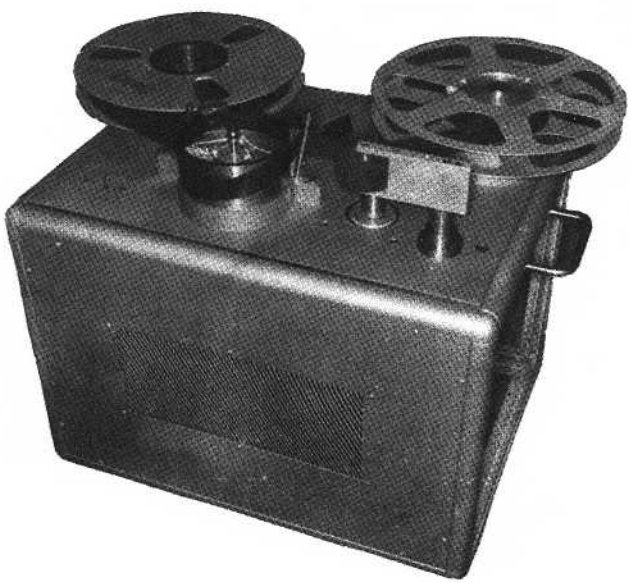


Mike Cox's colour camera operating on the balcony of 70, Brompton Road.



Ian Waters' Combining Unit.

The general meeting in progress.



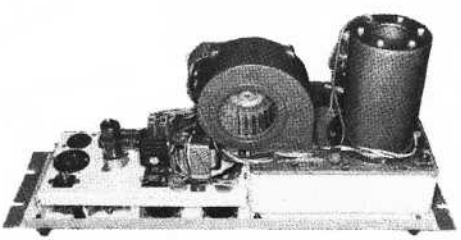
Gordon Sharpley's helican scan video tape recorder.

earch for equipment at the "Junk Sale".

One interesting item seen in the car park of the Convention was a clover leaf aerial for 70cm.

It was made by Malcolm Sparrow and is a scaled version of the 2 meter clover leaf aerial which appeared in the R.S.G.B. Bulletin about June 1964. Contacts have been had with GW3RBM of Wrexham at 5 & 7 and GW8ACG/P near Flint 5 & 8. Mobile working with locals has resulted in reports of 5 & 9 with a small amount of fast flutter, almost negligable.

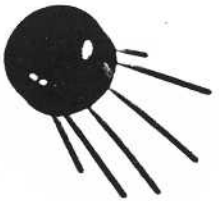
CONVENTION, 1966.



John Noakes' power amplifier for 70cm using a 4 x 150 A air cooled tetrode.

TRY INTEGRATED CIRCUITS

Says Mike Barlow.



So you have only just finished stocking up on transistors, and have loads of - ugh - VALVES still cluttering up the joint? Call the dustman, ma, for you may be about to scrap your transistors. Great Scott, they are so LARGE, and need messy things like feedback resistors, and they drift with heat, and they cost about five bob each in any useful type. Now along comes the IC or integrated circuit; not much larger than a small transistor and containing several transistors and resistors in one epoxy-coated package. Until recently these have been expensive £30 or so EACH. That was in 1960. Last year they averaged £1 and now we have three economy type Fairchild types at just 7/6 or so for the two smaller ones and twice that for the bigger one. The smaller ones contain three or four transistors, and the bigger has no less than 14 plus 17 resistors; how's that for a bargain? (Yes you can use some of the sections independently).

An article in "Electronics World" for March 1966 entitled "Using New Low-Cost Integrated Circuits" gives hints on how these ICs may be used in computers, pulse generators, counters and so on. Figure 1 shows the internal circuits of the three IC's. To confuse you, the pin numbers on the base are show anticlockwise from the top; luckily this is still clockwise from the bottom in the usual valvebase manner. The IC's we bought recently had a small flat on the case instead of the paint spot opposite pin 8. Those white numbers in black circles on the circuit refer to the input and output capabilities of the units; for instance, the 914 drives (16), but the buffer 900 only needs (6). Therefore you can drive 2 900s from one 914 and still have (4) left over(which might be used to drive a 923 with one left over). Saves a lot of calculation of impedences and currents etc.

Figure 2 shows the 914 used as a "black box" in various ways; you can of course use two 900s to get more output - one 900 will put 1 volt into 75 ohms from a 3 volt HT rail! The 923 is a full-counting flip-flop, which should be ideal for miniature sync generators, counters etc.

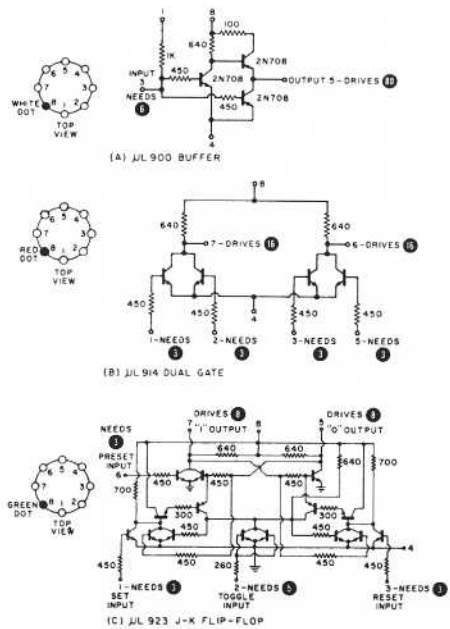


Fig. 1. Internal circuit of the three IC's described in text.

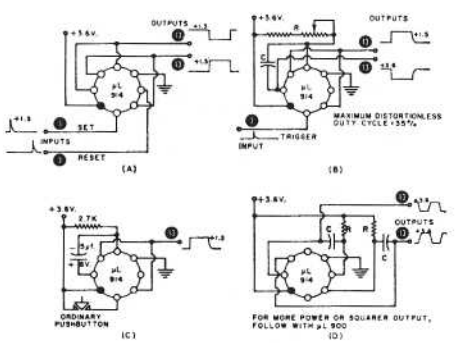


Fig. 2 (A) Set-reset flip-flop, latch, or memory. (B) Monostable, delay, or gate generator. (C) Bounceless, noiseless push-button. (D) Astable oscillator or square-wave generator.

Perhaps the most unexpected use of the 914 is as a DC to 7Mc/s video amp (or IF amp, product detector, sine wave oscillator, etc.) Figure 4 shows some of these arrangements, the point here being that the IC forms a"long-tailed pair" amplifier (as at A) with very evenly matched sides. Consequently the IC is quite stable with temperature and voltage. Texas Instruments and others make similar units; one TI IC has a voltage gain of 2300 and a DC to 30Mc/s bandwidth - but it is not in quite the same economy class.

For further information contact your local Fairchild agent - don't forget to ask for the reprint - or write directly to Fairchild Semiconductors, PO.Box 1058, Mountain View, California 94040.

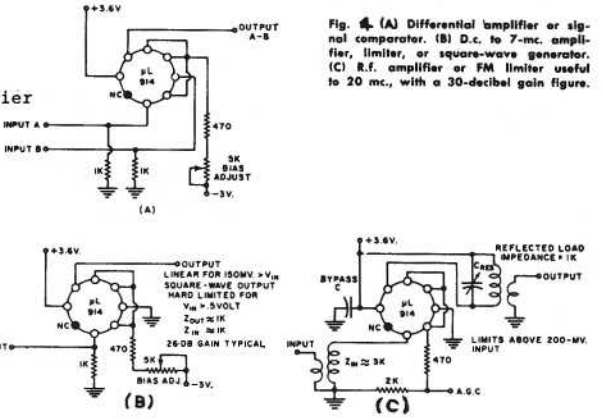


Fig. 4. (A) Differential amplifier or signal comparator. (B) D.c. to 7-mc. amplifier, limiter, or square-wave generator. (C) R.f. amplifier or FM limiter useful to 20 mc., with a 30-decibel gain figure.

AN INTERLACED TIMING GENERATOR

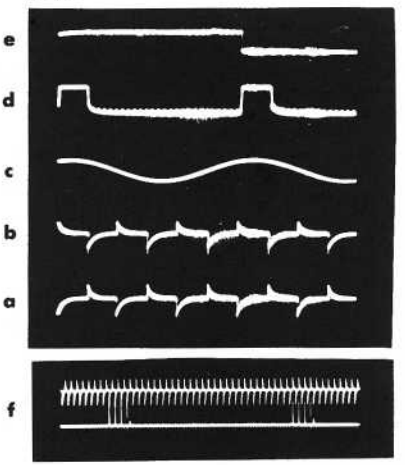
This is an extension to Mr. Ellis' discription of 'A Field Interlace system for closed-circuit Television' which appeared in the Marconi Review and in CQTV 59.

Perhaps it is helpful to emphasis two things here. This system sets out to produce an odd number of lines per complete frame, whether it be 405, 403, 401, or 407 etc. The circuit gives line and frame timing pulses, not mixed syncs or mixed blanking; further circuitry is required to make it into an "S.P.G.".

Figure 3: We make line pulses (a) and half-line pulses (b); we take 50c/s mains (c) and shape it (d). This opens one gate which selects the nearest available line pulses and another gate which selects the nearest half-line pulses. We also divide 50c/s by two with a bistable (e) and use this to inhibit alternately one, then the other, of these gates. Figure 3 (f) shows the added output of these two gates and on the figure the line timing pulses are also shown so that you can see the change of timing. In this figure the frame repetition frequency is greatly speeded up for clarity. We use the first (or any) pulse of each group to trigger the frame monostable.

Line multivibrator runs at 10.125 Kc/s and produces two square waves, one the inverse of the other. It follows that the leading edges of these two waves are half-a-line displaced. The output shapers produce sharp pulses which is necessary to avoid confusion at the gates.

Fig. 3



50c/s Shaper gives out a sharp pulse (rather than the square pulse shown in the photographs, which came from the collector) again helping in the later stages.

Bistable In figure 3 (e) this should be shown triggering off the trailing edge (or spike) of the 50c/s.

Gates The 15K/5.6K chain may have to be adjusted to cut off the negative edges of the line and half-line timing firmly.

Monostable This is included to step up the pulses leaving the gates, which are only one volt or so high, to a good swing. This mono may be set to give frame sync or blanking by appropriate selection of C,R.

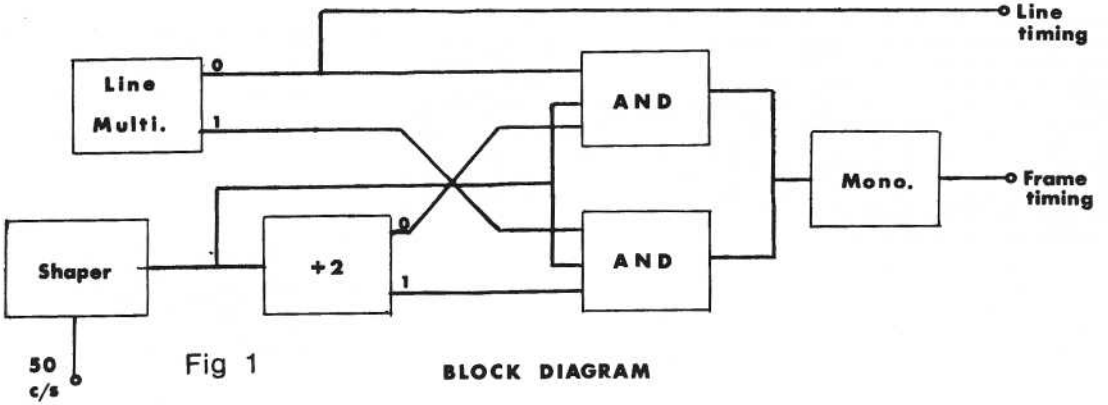


Fig 1 BLOCK DIAGRAM

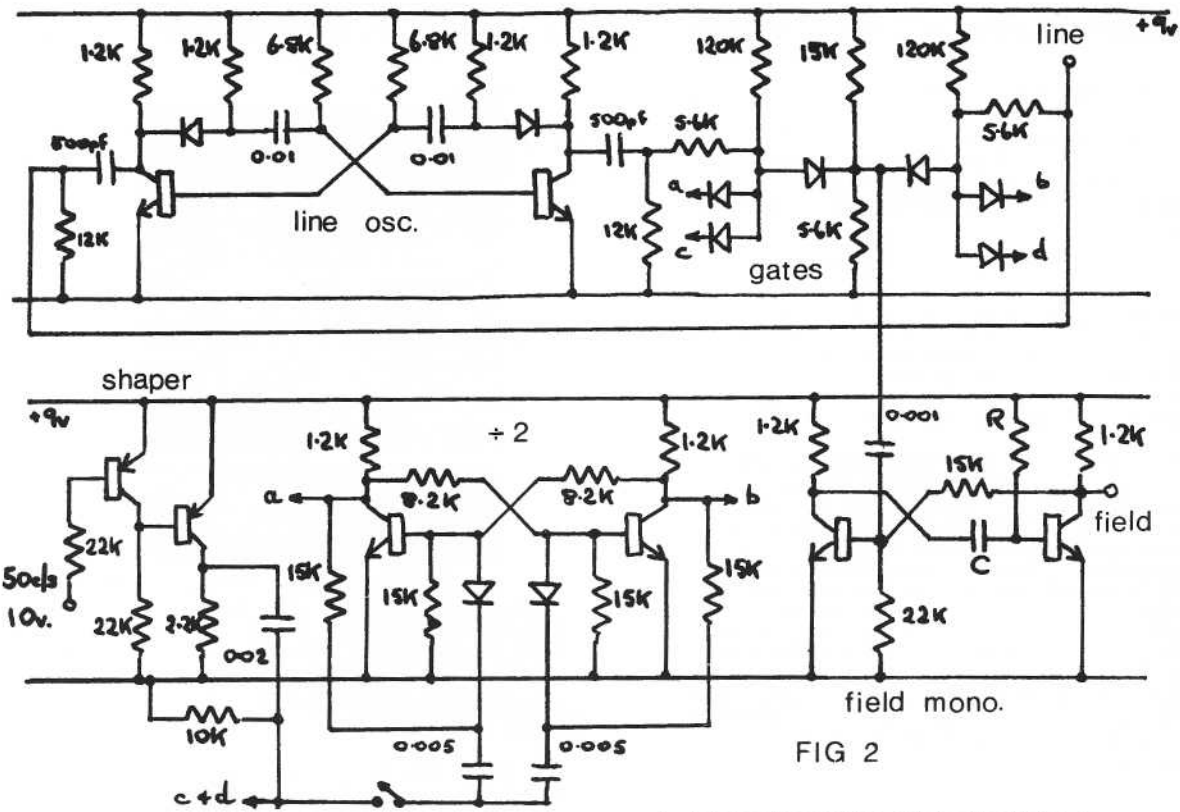


FIG 2

The transistors in all but the 50c/s shaper should be medium speed (switching) transistors with a gain of at least 20 when running a 1 milliamp. The 50c/s shaper may use slower types. Those used in the circuit built were BSY26 and those in the shaper, OC201.

An interesting refinement is the S.P.S.T. switch at the bistable. By halting that action of the bistable the timing pulses given out immediately become uninterlaced; each new field beginning exactly similar to its predecessor. This should show up on monitors as an immediate halving in lines.

A.K. Barns.

CLUB STANDARDS

On the video side, the standards recommended are such that a normal domestic TV set can be used as a monitor, with waveforms similar to BBC-ITA. For interchangeability, members are recommended to arrange all video outputs at the one volt level, whites positive syncs negative; pulses at the two volt level negative going with all signals at 75 ohm impedance. Belling-Lee plugs and sockets are preferred.

SLOW-SCAN PICTURE TRANSMISSION

Another branch of the hobby has become popular: slow-scan television. The line and frame rates (25 c/s and one frame in 5 seconds) are sufficiently slow to permit pictures to be tape-recorded or transmitted, using band widths of the order of three or four kc/s only.

TRANSMITTING LICENCE

On the radio side, the experimenter must hold a GPO amateur vision licence, costing £2 per annum, but not requiring a knowledge of morse. Operation is permitted in the 70 cm band and on shorter wave-lengths. Full details can be obtained from the GPO Radio Branch, St. Martins le Grand, London, E.C.1.

BACK COPIES OF CQ-TV

ONLY The following issues of CQ-TV are still available from the Hon.Sec. at 2/- each.

Nos. 40, 48, 49, 55, 56, 57, 59, and 60.

Most issues are available on loan from the Librarian.

MEMBERSHIP BOOK

Each member should have received a list of members with CQ-TV 59, if this has not been received please notify the Hon. Sec.

The Club Publications

Slow Scan Television
J.A. Plowman
An Introduction to Amateur Television
M. Barlow

Are now out of print.

R.S.G.B. CALL BOOK 1967

The latest edition of the R.S.G.B. Call Book lists the names and addresses of all the radio and television amateurs in the British Isles and is available from R.S.G.B. Headquarters, 28 Little Russell St., London W.C.1. for 6/6d. post paid.

CAMERA COMPONENTS

Vidicons

Separate mesh type, manufacturers rejects, unused £10, post paid.

Monoscopes

Manufacturers rejects £7 10s. p.p.

Vidicon Scan and Focus Coils

Suitable for transistor cameras complete, ex-stock £4 5s. p.p.

Suitable for valve cameras complete, to order £5 5s. p.p.

Vidicon Bases

Moulded ex-stock 17/6.p.p.
Paxolin 5/-

"C" Mounts 8/6.

Badges

Lapel Badges 3/6 p.p.
" " with call sign 5/- p.p.
Equipment Badges, self adhesive plastic approx. 3" x 1½" 1/- p.p.

U.H.F. TRANSISTOR TUNERS (As advertised in Wireless World)

These may be modified to cover the 70cm band by adding a small 2.7pf ceramic capacitor across each tuning gang and adjusting the trimmers for optimum performance. It should be possible to extend the tuning range down to 420Mc/s.

U.H.F. Tuners

Sold out, but 70cm conversion details for valve tuners available.

All the above components are available from the Hon. Sec. Cash with order.

FOR SALE

Philips 25 K.V. projection EHT Unit.Contact Arthur Critchley at 70 Sussex Road, Ickenham Uxbridge, Middlesex. Tel: RUI 9148

READ

CQ-TV

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AMATEUR TELEVISION ACTIVITIES