

M.H. Cox



C Q - T V 49

# THE BRITISH AMATEUR TELEVISION CLUB

CQ-TV

CQ-TV, Journal of the British Amateur Television Club.  
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Editor, J.E.Tanner, G3NDT/T.



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Committee:	I.M.Waters, G3KKD/T J.R.T.Royle, G3NOX/T G. Sharpley, G3LEE/T M. Lilley, B.Sc.(Eng)

John Ware has been interested in electronics as a hobby since building his first two valve radio in 1928. Television interest started with a 30 line receiver in 1933, and has continued ever since. In 1959 the Television Society made an award for the construction of a 405 line N.T.S.C. colour receiver by John - and in this year he joined B.A.T.C. He was responsible for organising the Colour Television demonstration at the 1961 Radio Hobbies Exhibition, and present work is towards the production of a colour camera and 625 line receiver. John Ware was elected Chairman at the last Convention, and has written the following letter to all members of the Club.

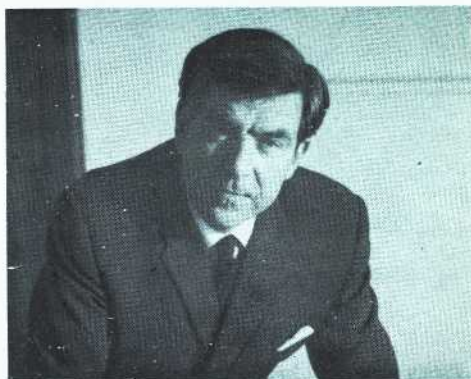
Dear Members -

My first letter as your Chairman is to be a simple message of three points only. These in order are; a) To record my appreciation of your confidence in my ability to serve the Club in this office.

May I say that I regard my election as Chairman of the B.A.T.C. as a considerable honour and promise to do whatever I can to foster the success of the Club.

On arrival at the last Convention about mid-day I had no idea what so ever that any member would think of proposing me for this office and so perhaps you will make allowance for any shortcomings that I may have made that afternoon whilst in a somewhat awe inspired frame of mind.

b) Immediately, I wish to offer the highest praise to my predecessor Grant Dixon who in a sense will always be regarded as one of the fathers of the Club. A man who has found time amid a life where all his patience is required in the work of his profession to foster our interests from



a handful of members to the present number in excess of 600. It is indeed a splendid chap who gave so much of his energies for such a very long period of years to deal with problems from ohms law to important policy matters of the Club with such excellent result.

c) Finally, I take the opportunity of saying that every member, wherever he may be has an open invitation to meet me, or to let me have any suggestion in the interests of the Club. Any proposals receive careful consideration by your committee and you can rely on me to ensure that your ideas are investigated and put to effect wherever practicable.

If there is any way at all that I may be of help to a member please do not hesitate to write or phone FLAXman 1412

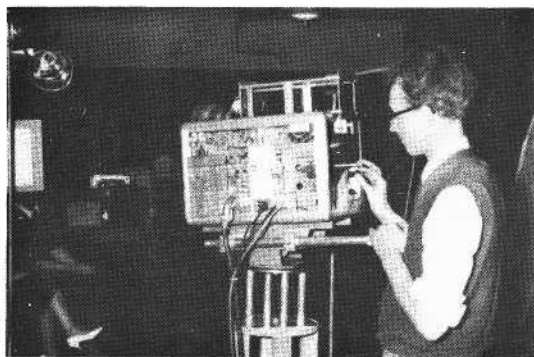
*Yours sincerely*  
*John Ware*

10, Gunter Grove S.W.10

The 1962 Convention was held in the Conway Hall, Red Lion Square, Holborn, London on Saturday, September 8th. Almost 200 members and visitors attended the Convention - more than ever before. The Hall opened at 10 a.m. and cameras, telecine equipment and slide scanners, transmitters and aerials all appeared in abundance. The coverage of Amateur Television fields of activity was certainly better this year, and some of the highlights are described below.

The introduction of short 'lectures' was highly successful - Our President opened these with a 15 minute Colour Television talk, followed by Ian Waters (G3KKD/T) on 70 cms Techniques and concluded by Mike Cox on Transistors in Pulse and Television circuits. This last one being illustrated by using a Flying Spot Scanner for circuit diagrams and a Vidicon camera to display oscilloscope waveforms on several 17" and 21" TV monitors round the hall - a novel and interesting use of home made equipment.

As far as the equipment on show there is little doubt that Jeremy Royle's high power transmitter was one of the outstanding exhibits. This Tx is the one used to transmit pictures over the 200 mile path recently, and for the first G-PA0 TV contact. Ian Waters showed a 16 element stacked array, and Jeremy's transmitter was used to excite the array for demonstrations. From the Video side the outstanding feature was the increased use of transistors. John Jull (G3MHZ/T) showed a complete camera with viewfinder 100% transistorised. Mike Cox's equipment included the sync and waveform generators featured in the last edition of CQ-TV, as well as his Vidicon camera and Vision mixer. However, with transistors making Vidicon cameras smaller and smaller it was interesting to note the increase in interest with some of the larger and more complex camera tubes. Three 3" Image Orthicon cameras were on show by Jim Brett (G3MJZ/T), Terry Lane and John Tanner (G3NDT/T) - all shown working

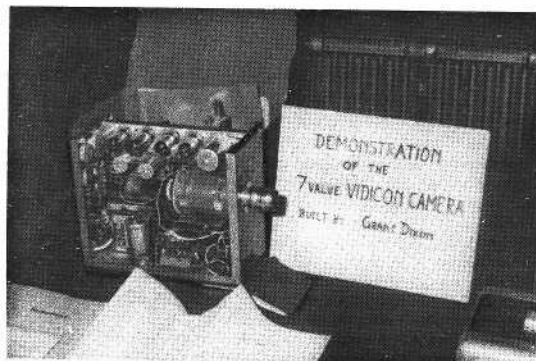


Bob Tebbutt with his Vidicon.

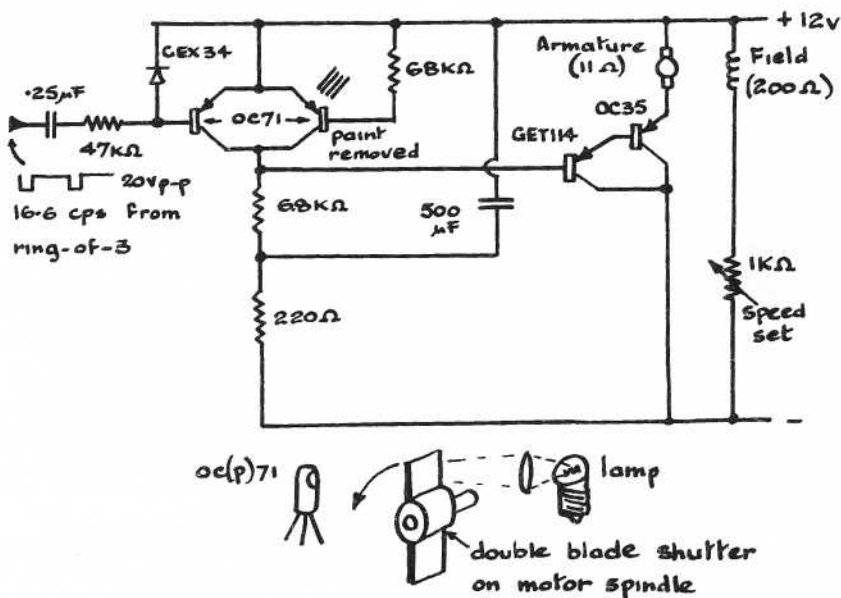
at some time during the day. Martin Lilley's 4 1/2" Image Orthicon camera had developed since the last Convention and was particularly interesting with its servo focus and lens change system. However, apart from the advantage of sensitivity it was obvious that Image Orthicon camera equipment demands too much physical effort to be taken to many demonstrations! There were several small Vidicon cameras - some operating as self contained units on a 'random interlace' basis, some using external sync. pulse generating equipment. Grant Dixon brought his version of the 7 Valve camera described in CQ-TV 47. Some mention should be made of Bob Tebbutt's display - once again we saw the telecine machine, but producing vastly improved pictures and also his new Vidicon camera sitting proudly on top of a superb home made 'pedestal' with pan & tilt head. Slow Scan was represented by John Plowman (G3AST) with his new FM/AM deluxe model - completed in the early hours of Saturday morning! Ian Waters showed his transmitter which used to run Matilda - and this was used on his small Vidicon camera to show a picture across the hall on 70 cms. No colour TV this year apart from John Tanner's camera - and this had the colour wheel removed!

Unfortunately it is impossible to mention all the items of equipment on show, but without the enthusiasm and cooperation of all those members who went to considerable trouble to bring items of equipment along the whole day would not have been the success it was. A special word of praise must be made for Don Reid who, as before, undertook the organisation. Also to the charming lady helpers who dealt with reception and refreshments so efficiently throughout the day, and Mr Harris who dealt with the power distribution. E.M.I. very kindly presented some most acceptable raffle prizes, as did Messrs Proops - the Convention ended at 7 pm. A report on the General Meeting appears elsewhere.

J.E.T.





COLOUR WHEEL DRIVE CIRCUITGW3JGA/T

At GW3JGA/T a field sequential colour system is being developed. John Lawrence has sent in the following notes on progress so far, with particular reference to his system for motor speed control.

.....the monitor consists of a self contained unit built in a '62 type' indicator case. The tube is a MW6-2 projection type, running at 25KV, standard receiver line and field scan circuits are used, the tube is direct viewed through a 7", six section three colour disc, driven at 500 r.p.m. by a 24 volt blower type motor. The motor is phase locked by a photo-transistor pick up from the motor shaft to a pulse derived by a ring of three counter from the field sync. The pulses are compared timewise, and the current is D.C. amplified via a GET 114 and an OC35 transistor to feed the armature of the motor.

12 volts D.C. is provided from a bridge rectifier and an extra winding on the mains transformer. Normal unregulated power supplies are used for the scanning circuits, but a 250 volt stabilised line is provided for the video amplifiers and counter circuit.....

extract from a letter from  
GW3JGA/T

By Michael Cox

The circuit shows the transistorised Vision circuits of a camera control unit. (excluding head amplifier)

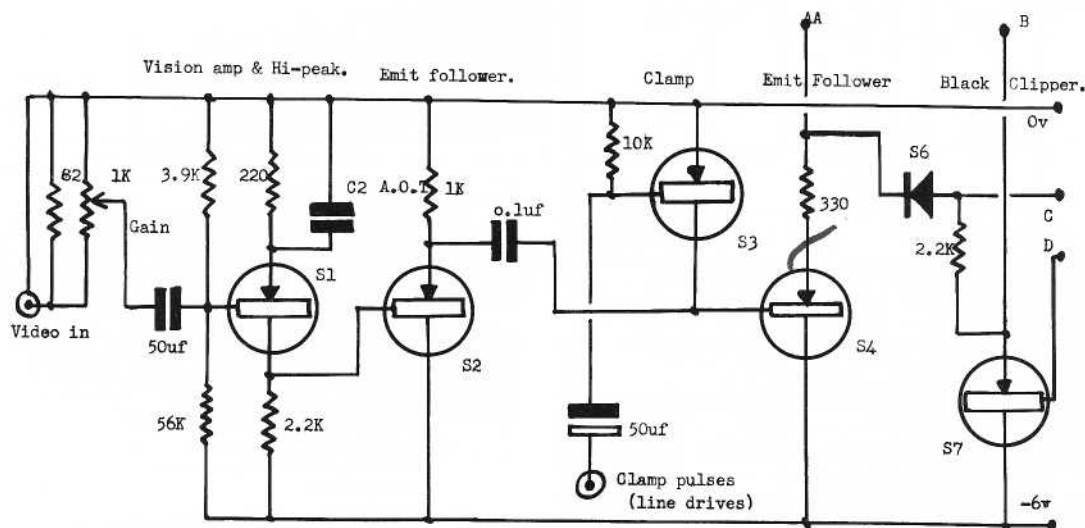
The signal from the head amplifier arrives at the gain control. This would normally be set by feeding 0.2uA of sawtooth current into the head amplifier and adjusting for 0.7 volts of vision signal at the channel output. Subsequent adjustments for light input being made to the Vidicon target control or lens aperture. The first stage is a conventional grounded emitter stage with an L.F. gain of around 10 and an H.F. gain determined by the value of C2, to further correct for the poor H.F. response of the Vidicon target load resistor. In the prototype, C2 was around .005uF

S2 is an emitter follower to give a low driving impedance to the clamp S3. If the waveform at C3 is negative going only with respect to black level and the level during beam blanking, then a single transistor may be used in its switching mode as an excellent clamp since the saturation resistance of an OC44 when turned on hard may be of the order of 10 ohms or so, which is far less than can be obtained with a four diode bridge.

Note that the circuit will not work as a back porch clamp, since the sync tips would take the collector of the transistor positive with respect to the base and the emitter would thereby clip the sync part of the waveform. It is possible that a symmetrical transistor would not suffer from this drawback.

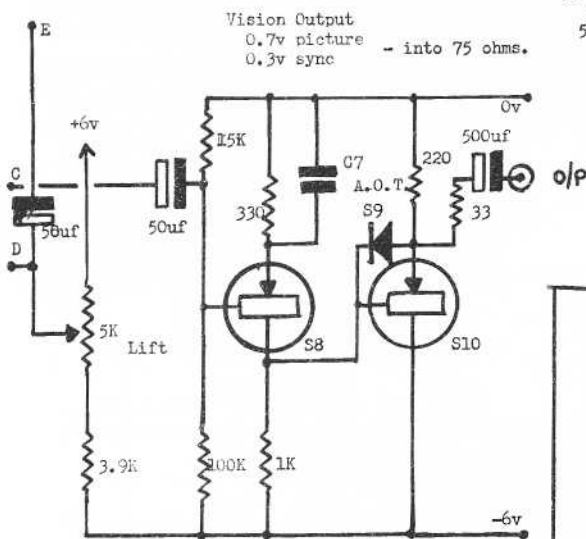
In order to achieve a high input impedance, an emitter follower is used to follow the clamp, even so the input impedance is of the order of 50 to 100K, which accounts for the large value of clamp coupling capacitor C3, and which in turn calls for a low source impedance, and a low clamp impedance if it is to have any clamping action at all.

The output from S4, which is still negative going, has a positive going blanking signal added to it by the clipper S5. The signal is clipped by S6, which takes its bias via the emitter follower S7 from the lift control. As a point of note, positive going sync signals from S11 are fed in at the base of S7 and are thus added to the blanked and clipped signal at the anode of S6. This now composite signal is amplified and phase inverted in S8 and is taken from the emitter follower S10 to the output. The 33 ohm series resistor is included to pad out the impedance of



the emitter follower to a nominal 75 ohms. If a high beta transistor is used it may be necessary to increase this value to make  $Z_{out}$  75 ohms.

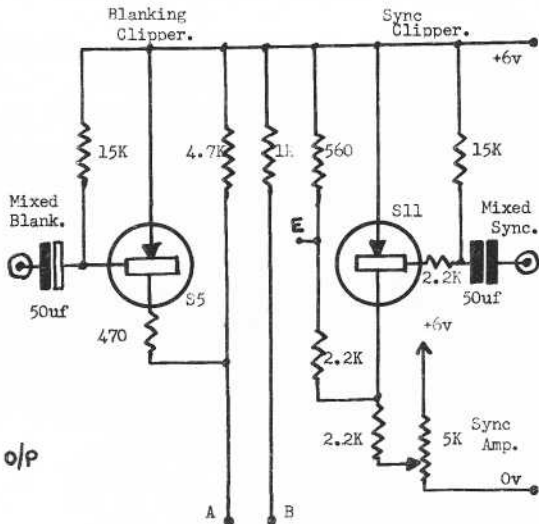
Low impedance power supplies are needed to ensure stability, and a good layout helps, as do some decoupling capacitors from the rails to earth. The prototype uses two 6 volt Zener diodes to stabilise the rails with 20uF and .1uF capacitors in parallel. The amplifier was built on a piece of Veroboard size 4.8 inches by 5.8 inches.



A.O.T. - Adjust on test.  
 S1,2,4,8. - OC170/171.  
 S3,5,7,11. - OC44.  
 S6,9. - OA45.  
 S10. - 2N711.

#### Proposed Formation of a New Group

Vic Cedar, 2A Convent Hill, Upper Norwood, London, S.E. 19, is very keen to form a B.A.T.C. group in South London area; will all those who are interested please write to Vic.



#### Dagenham Town Show, July 1962

Television Amateurs once again took part in the Dagenham Town Show with no less than two 3" Image Orthicon cameras, a 4½" Image Orthicon camera with a zoom lens, two Monoscope cameras and a flying spot scanner in operation.

A two studio set up was arranged - one for presentation, and the larger part of the stage used for interviews and musical shows which were presented at regular intervals.

The production technique was improved by the use of Inlay and Overlay controlled from the master vision switching panel. This panel also contained the straightforward vision mixer and provision for monitoring the inputs.

The pictures were previewed on 14" monitors and the final pictures displayed on 7 21" monitors. The display was organised and engineered by Martin Lilley (Hon Sec. of the group) who would like to thank all the other members for their cooperation and help in making the demonstration a success.

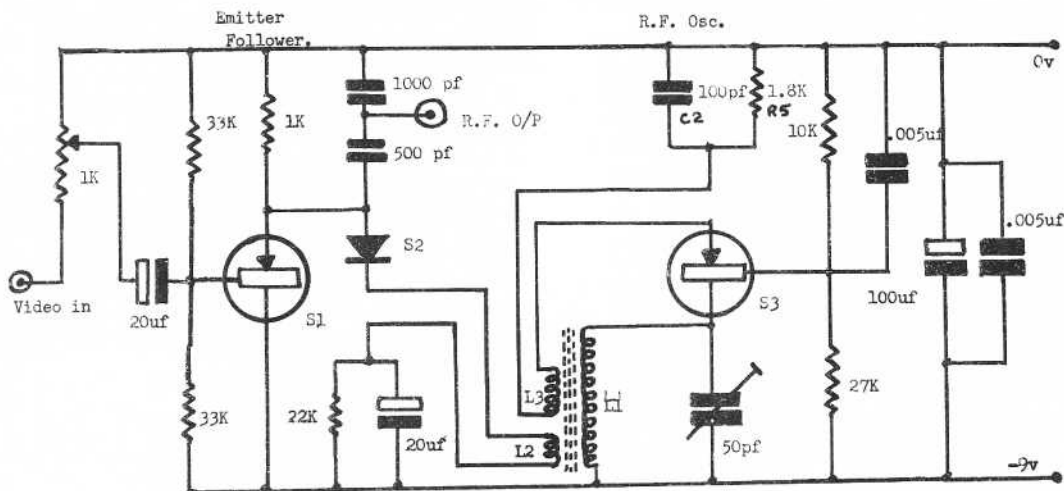
Front Cover shows Terry Lane (right) looking on while Mike Chaney operates Terry's 3" Image Orthicon camera at the convention. In the background Grant Dixon talks to Ivan James.

# A TRANSISTOR R.F. UNIT

By M. B. Brown, G3KUJ

To enable domestic receivers to be fed with video without the usual rather bulky R.F. Modulator this small battery operated unit was built into a  $\frac{1}{2}$  by  $\frac{3}{8}$  by 2" Eddystone die-cast box. The unit uses two OC170 transistors and a diode type OA47 - the circuitry and the battery supply all fit into the one box.

acteristic of the diode is used to effect the modulation - the modulated signal passing via a small capacitor to the output socket. Modulation depth depends on the setting of the input gain control and the coupling of L3 with L2. Initially the input level is adjusted at the same time as varying the coupling of L3/L1 for best results.



A modulated output on any channel in band one can be obtained, with sufficient R.F. output to feed several receivers from a suitable splitting network. Total power consumption 5mA @ 9 v. Circuit.

Composite video is fed straight to the gain control and then to the base of S1 which is an emitter follower. S3 is a grounded base type oscillator covering all band one. The R.F. out from the oscillator is taken from the winding L3 on the coil to the cathode of the diode S2 - the anode of this diode taken to the emitter of S1. The diode is biased in a forward direction by ret returning the remote end of L3 to -ve rail through R5 decoupled by C2. The non-linear transfer char-

Insufficient coupling causes white crushing, over coupling crushing syncs. Once the correct position has been found the windings should be cemented firmly in place. (this correct position is seen when increasing gain control crushes syncs and whites at the same time) The unit is designed to work with the usual 1 volt of input, but there is sufficient gain in hand to operate with the video input 12dB down. Measured frequency response shows the unit to be less than 3dB down at 5Mc/s. As a final comment - the unit may be used with sound input, and although never tried, altering the input circuit to a higher impedance should allow a crystal pick up to operate direct into a TV set!

Convention, 1962. Report on the General Meeting of the Club held during that afternoon of September 8th.

The Chairman of the Club opened the meeting at 2.30 and proceeded with his report on the two years since the last Convention. This was followed by the Treasurer and Editor, however, the important part of the meeting was the approval of the Proposed Constitution sent out with CQ-TV after the 1960 Convention. Some discussion on the proposed constitution resulted and with minor modifications the Constitution was approved. (A copy of this will be included with CQ-TV 50)

Following the official business came the time when the Officers and Committee stood down after their turn of duty. Our President then took the Chair and called for nominations for Chairman. John Ware was nominated together with Grant Dixon, and after a vote John Ware was duly elected and took over the meeting. The other officers were returned unopposed and the committee nominations were also accepted without vote as the numbers were within the terms accepted in the Constitution. Votes of thanks were then given for the retiring Chairman and committee members, and Grant Dixon was coopted on to the Committee.

This is a brief report on the proceedings - for further details members are asked to contact Don Reid.

#### Mullard Technical Communications

Grant Dixon holds the Club copies - 1 to 51 except for 31,32,33,35 & 50. These are available to members wanting to borrow them,  
C.G.Dixon, Kyrle's Cross,  
Peterstow, Ross-on-Wye.

#### Printed Circuits

Arthur Critchley has sent in the following information on how to make your own printed boards quickly and easily.

- 1) Drill holes in the copper clad board with No 55 drill where required.
- 2) Paint with thinned down matt black cellulose the parts where conductors are wanted
- 3) Place the whole board in a solution of Ferric Chloride -  $\text{FeCl}_3$  - obtained from the local chemist and dissolved in 6 parts water to 1 of  $\text{FeCl}_3$  by weight. Leave in solution about  $\frac{1}{2}$  hour.
- 4) After etching wash well in clean water
- 5) Remove cellulose with thinners - leaving one completed printed board!

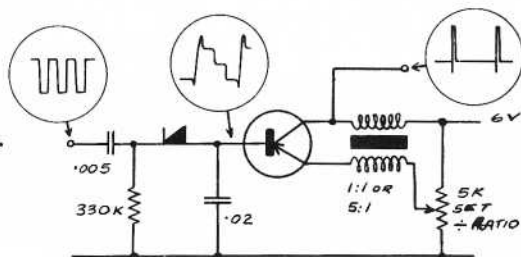
Editors note: we hope to publish some master plans for printed board construction of some CQ-TV circuits later.

#### BOOK REVIEW

Principles of Colour Television, by G.N.Patchett.  
Published by Norman Price at sixteen shillings.  
104 pages - 40 illustrations in colour.

First impressions of the book are that the cost is excessive for what seems little more than a booklet. However, deeper investigation reveals that the book does in fact fill in a much neglected gap in available literature. Without delving deeply into circuitry or mathematics the author explains the basic requirements of Colour Television developing the subject from simple field sequential systems to the N.T.S.C. and SECAM systems. The basic ideas of studio and receiving equipment are covered and the book ends with a review of the present position.

The book is excellent for providing a basic knowledge before a more specialised study is undertaken. It is also recommended as a source of information for any members contemplating talks to other Groups, or for reference when attempting to explain principles of colour. However, at 16/- it is an expensive source of 'interest' material without the more detailed circuitry desired by most of those who would consider buying such a book.  
J.E.T.



This circuit for a blocking oscillator counter was sent in by a member some time ago - the editor apologises that apart from the circuit the remainder of the contribution has been mislaid. However - perhaps the member concerned would be good enough to accept my apologies - perhaps he could drop me a card. J.E.T.



# WHAT THE OTHER CHAP IS DOING

compiled by D.S.Reid.

Mike Barlow, our founder, came over from Montreal in July, and made a lightning tour of the country. He met many old BATC friends, and asks me to send his apologies and kind regards to all those he was unable to visit. Another visitor was Don Miller, W9NTP, of Waldron, Indiana; he paid visits to several members throughout England, and was particularly impressed with the station at G3NOX/T. Don was also able to see the radio telescope at Jodrell Bank.

Pete Johnson is settling in now, in Dublin, and is in touch with Bill Stapleton. Pete asks, as a matter of interest - how much would life membership cost? This has not yet been considered; is anyone else interested? Stuart Hughes has now left the R.A.F., has built a stereo tape recorder and intends to proceed to amateur TV later this year; he is a member of the Cambridge group. Another member of this group, David Neech, has built up the 6 over 6 slot fed array described in No. 46, and reports good results.

John Simkins (home town Birmingham) is now studying at Sheffield University, and is keen to hear from any members in Sheffield. Clive Collins is in Switzerland for a few months; he has started work on the construction of the camera described in No. 47. Following the success of his 405 line vidicon camera coupled to an astronomical telescope, Keith Miller of Edinburgh is now re-building on 625 line

standards, and improving the gain and bandwidth. He estimated that the job will take about two years; good luck, om. David Blake, G3MWV, of Cromer, Norfolk, has built a FSS using a 931A, taking syncs from his TV receiver; his next objective is a vidicon camera. T. Leighfield G3KEU of Eastleigh, Hants. is building a FSS; his ultimate aim is a transmitter for live transmission. Derek Holding, G3KRS/T, of Twickenham, has tested his FSS on closed circuit and is working on his transmitter. He hopes to transmit pictures (200 line sequential) by November and is very anxious to hear from anyone who could receive him. Derek is also developing transistor pulse circuits, and has arrived at a satisfactory design.

Martin Coyne, Castlereagh, Eire, has completed a FSS and contemplates construction of the camera described in No. 47. Another member working on a FSS is J.J. Smith of Leyton, E.10; he uses a 5FP7 scanner. This type of scanner tube is also employed by Stan Pollitt, of Chorley, Lancs.; although very short of spare time, he has almost completed his scanner, to Bill Still's design. Lawrence Woolf G3RAX/T of Wimbledon, S.W. 19 has built a converter (March R.S.G.B. Bulletin design) and a 6J6 transmitter using a 4 over 4 slot aerial. He

hopes to be active on 70 cm by the end of the year; a scanner will form his picture source.

Alan Bird, Wembley, Middlesex, is anxious to contact any other members in his district. His scanner employs an MW22-6, a 931A and a video amplifier composed of EF80, 6F60, EF80 and ECC82. The main snag is caused by the long persistence of the scanning CRT, causing afterglow troubles. In later experiments, he has been trying live scanning with a 5FP7 running at 5 KV; quite good results have been obtained with subjects up to 5' away. A 3FP7 telecine is now under construction.

Dave Quigley, G3PRI/T, Isle of Wight (at present in Germany) has built his experimental 70 cm aerial; the main element is a folded dipole with a large circular mesh reflector behind it. Alan Sherman, who now lives in Chelmsford, is pressing on with his vidicon

camera, and has obtained signals from it. He intends to re-build his CRO. Malcolm Burrell of Ilford is starting with a FSS unit, using a 5FP7 as his scanner tube.

R.J. Tarr, G3PUR/T, of Worthing, has been active on 70 cm since March. He runs 2.5 watts to a QQV06/40 as a tripler, feeding via UR 21 cable a 16 element stack about 50' above sea level. He is primarily interested in the R.F. side, so will use a pattern generator as his video source. Deryck Aldridge's camera is now in action (in Newcastle) and his next step is to build a viewfinder to fix on top of the camera, and a camera pedestal. He has been experimenting with transistors and has built a step counter which operates satisfactorily. This will be used as the basis of his transistor sync pulse generator.

Ian Kennedy sends some very welcome news from Salisbury, Southern Rhodesia. His licence ZELBC/T is the first and so far, the only, amateur vision transmitting licence in the country. He has been sending tone on 432 Mc/s to a fellow enthusiast three miles away; ERP is 60 watts from a QQV03-20A tripler with corner reflector. His FSS and 5527 camera will be the source of video signals. News from A.P. Harding in Cyprus next: working with a friend, he has built a 20 watt transmitter, which employs grid modulation. The transmitter performed well when tested in conjunction with a professional camera as the video source. The next step is to build a camera. All circuits for the transmitter and modulator were taken from old issues of the R.S.G.B. Bulletin.

Mel Shadbolt W4KYQ, Dakota City, is the Editor of a new amateur TV publication entitled ATV EXPERIMENTER. It is published bimonthly and the subscription rates are \$1 a year, from 73 Magazine Co., 1379 East 15th Street, Brooklyn 30, N.Y., U.S.A.

David Page has returned to Australia from England, and taken back some government surplus gear with him. Alan Jenkins of Datchet Bucks. has quite a lot of test gear, and is constructing a CRO ; he is interested in slow scan TV. J.A. Cusdin has completed the pulse generator shown in No.32, and the VSB mixer in No. 38, with a triode amplifier for sync and blanking inputs ; both units perform well, when checked on the CRO. He is well under way with the timer unit described in No. 41, and aims at the construction of a monoscope ultimately. Dave Quarrington of Strood, Kent, has started work on the seven valve camera shown in No. 47.

Bob Mangold K3BWW of Pittsburgh is very busy working for his Ph.D., but is slowly pressing forward with his new image orthicon camera and viewfinder, to replace his present equipment. His new sync generator using 22 valves does a better job than the 65 valve one which is being replaced. Bob's next item-a fully transistorized power supply for the camera chain. H.G. Niles, K6LDV, of Palmdale California is building a transistorized camera, and promises more news in due course.

David Mann, G3OUO/T of London, N.W. 9, visited N. Hampton, G3OUH/T was most impressed with the quality of the pictures which were being received from L.V. Dent, G3GDR/T in Abbots Langley, 15 miles away. The path seems a very good one. Peter Hayes, Aberdeen, has his transistor vidicon camera in action ; he uses OC170 and OC171 in the video side ; green spot transistors in the SPG ; and V15/10P and OC72 types in the scanner. He is very keen to hear from other members building transistor vidicon cameras. Tony Spittle, of Pinner, Middlesex, is another member using transistors- this time, for a slow scan pulse generator. He is running his scan tube at 12 KV ; the slow scan monitor will be a 5FP7. He is anxious to hear from any other members in his area who are working on similar projects. G.S. Chatley, G3LOS/T, Cheshunt, Herts., is thinking about a transistor vidicon camera, and asks if anyone can recommend suitable transistors for line and field output. He would like to form a local group, and is on the air regularly.

Tony Brown, of Biggleswade, Beds., is in touch with the Cambridge group. He is building himself a large aerial array ; two 8'6" railway sleepers and a 22' telegraph pole from the basis. The slot array is mounted on an aluminium tube, which can be rotated by a motor. The aerial design is based on the article in CQ-TV 46. Brian Alderson G3KJX, of Northallerton Yorkshire, and L. Hutton G3ILD in Darlington, Co. Durham, are 19 miles apart, and busy at work on vision equipment with the intention of exchanging video signals before Christmas. G3ILD, whose interest was aroused by reception of signals from G3NOX/T ( 200 miles ! ), is building a camera.

Norris Simpson W6LYS of Azusa, California sends news of ATV activity on the west coast of the USA ; the most active amateurs besides W6LYS are Ron Olney W6VCF ; Bill Michaels W6DYB ; Don Roelands W6TXG and Hank Canvil W6IWA. Excellent pictures have been received by W6LYS from W6VCF, 40 miles away ; the input power is 50 watts on 435 Mc/s. FM sound is also being transmitted, on 439.5 Mc/s. Norris has a vidicon camera three quarters complete ; his video source at present is a 35 mm slide scanner, using a 10BP4 CRT and a 931A. He has exchanged pictures with W6DYB in Wilmington, 50 miles distant, running at 25 watts. Finally, W6LYS mentions that the most successful antenna he has used has been the 32 element colinear broadside combination array, with screen reflectors. The gain is about 18 dB and side lobes are at a minimum.

Finally, news from Dennis Wheaton VK2AWW/T - he has moved house to St. Marys, 30 miles west of Sydney at the foot of the Blue Mountains. The location appears good for VHF, and Dennis has installed a workshop. The most important news item is that, as from January 1964, the 432 Mc/s band will replace the 288 Mc/s band which is at present allocated for amateur TV. The new band is 20 Mc/s wide compared with 8 Mc/s and the regulation concerning side band suppression will therefore be relaxed. Another good feature is that BATC circuits for 70 cm work will become of use to our members in Australia. Tom Elliott, VK2ET, is making up a vidicon camera chain ; he intends to fire up on 430 Mc/s, being 30 miles from VK2AWW/T. P. Fawcett VK3APF of Shepparton Victoria is about to build a vidicon chain. VK5ZEY/T in South Australia is active on 288 Mc/s, 625 line to CCIR standards. He employs a QQEO6/40, and signals have been received 10 miles from his omnidirectional aerial. The South Australian Institute of Technology station VK5SM/T has a TV transmitter on 288 Mc/s using a QQEO6/40. From West Australia we hear of the formation of the Western Video Transmission Club VK6WV/T. Dennis asks if we have heard the one about the nuclear scientist who put a potato in a reactor and finished up with fission chips. He closes by wishing a Merry Xmas to all members, and I would like to finish this news column in the same way - a Merry Xmas and a Happy New Year to our members throughout the world.

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#### CQ-TV Copies on Loan

Will all members who have borrowed back copies of CQ-TV from the Hon. Sec. please return the copies as soon as possible ; there is now quite a waiting list for some issues.

\* \* \* \* \*

List of New Members for CQ-TV 49

J.A. Adshead, 24 Sinderland Road, Broadheath, Altrincham, Manchester.  
 B. Alderson, G3KJX, 43 Brompton Road, Northallerton, Yorkshire.  
 T. Barnes, 11 Henry Frederick Avenue, Netherton, Huddersfield, Yorkshire.  
 A.K. Barnes, 21 St. Peter's Avenue, Woodford New Road, London, E. 17.  
 N. Beresford, 11 Hillwood Avenue, Higher Crumpsall, Manchester, 8.  
 D.G. Blake, G3MWV, The Flat, 9 Mount Street, Cromer, Norfolk.  
 M.J. Brice, 95 Ashcombe Road, Dorking, Surrey.  
 J. Carney, 39 Blenheim Crescent, Luton, Beds.  
 L. Ciantar, ZBL8B, 6 Blossom Junction, Santa Lucia, Malta.  
 J.S.J. Craig, Cauldwell, Marle Green, Horam, East Sussex.  
 M. Day, 145 Creek Street, Deptford, London, S.E.8.  
 M. Evans, 7 Dalby Grove, off Turncroft Lane, Stockport, Cheshire.  
 S.A. Floyd, G3KXQ, 14 Westbourne Grove, Westcliff-on-Sea, Essex.  
 C. Gammans, 14 Mermaid House, Bazely Street, Poplar, London, E. 14.  
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Weston-Super-Mare In September John Tanner, assisted by B.A.T.C. members from the Bristol area arranged a demonstration at the R.S.G.B. O.R.M. at the Grand Atlantic Hotel. One camera was used to cover the proceedings with pictures displayed on T.V. sets loaned by a local dealer. The problems of setting up a short notice demonstration were relieved by arranging all the control apparatus in a van with camera cable, mains and R.F. out connected up on the site. In the evening the camera was used to give close up pictures during the lecture on transistor mobile power supplies. It was found particularly useful in displaying oscilloscope traces.

G3RES/T

