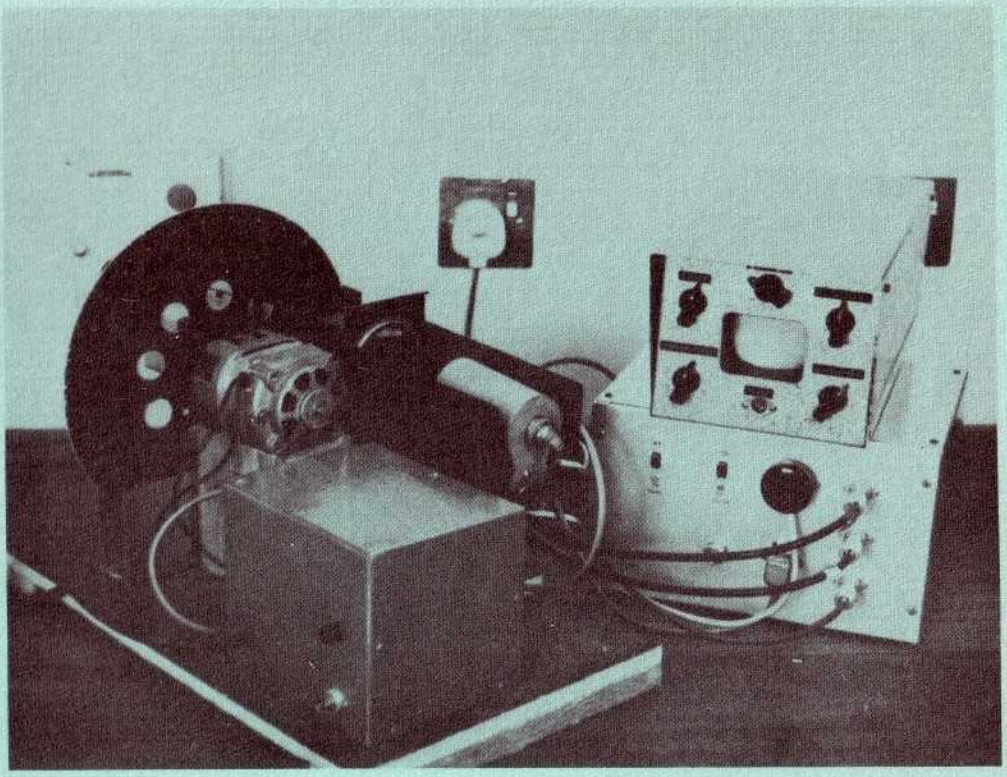

CQ — TV

THE JOURNAL OF

THE BRITISH AMATEUR

TELEVISION CLUB.

NOV 1974

No 88

THE BRITISH AMATEUR TELEVISION CLUB

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WHO TO WRITE TO

New Membership enquiries only should be addressed to Gordon Sharpley G6LEE/T, the Membership Secretary. Subscriptions and changes of address should be sent to Alan Pratt, the Treasurer. Please only address enquiries to the committee member most suitable.

C Q - T V is published quarterly by the British Amateur Television Club and is posted free to all members. Single copies are available from the Editor at 25p each; back numbers are also available to members at reduced prices.

Overseas members may have their copy of C Q - T V sent by air-mail, for a surcharge depending on their country. Details are available from the Treasurer.

Members wishing to have material published in C Q - T V should send the manuscript and drawings to the Editor; articles are invited on all subjects of interest to amateurs and should be of up to 5000 words; larger articles should be divided into convenient parts for publication in consecutive issues of the journal.

THE EDITOR

Andrew Hughes, 93 Fleetside, West Molesey, Surrey. KT8 0NQ Tel. 01-979 9983

CONTENTS

POSTBAG

P. Barker BRS34898 is a new slow scan member from Sunderland who claims more SSTV activity in his area "than anywhere in the world". He runs a Sommerkamp FRDX500, Trio JR310, a home made G3ZGO electrostatic monitor and an MK Products G3LIV electromagnetic monitor. Aerials are a 15 + 20m dipole at 33ft and a 6 element Yagi at 22ft. He suggests we print a list by countries of SSTV stations for each frequency. Anyone compiled one?

A. Jefford G8GON in Budleigh Salterton, Devon is at present constructing a camera and a QRO linear for 432, and would like to know if there are any other ATV enthusiasts in his area. Boasting what he calls the worlds worst location (any challengers) he only has line of sight across Lyme Bay to Portland and perhaps the Weymouth area. The serial is only 60ft. a.s.l. but has a masthead preamplifier. Since he will soon be on the air he needs someone to see his pictures as well as hear him. Any stations in the area, address is 8b The Lawn.

Eric Edwards of 27 Highmead, Penllwyn Pontllanfraith, Blackwood, Mon., S. Wales, has successfully built a 625 line vidicon camera, has started a second one and has built an A/B Mixer with inlay. However he has a problem which no one has been able to answer satisfactorily for him. With his camera and friends cameras they resolve say 100 lines on 625. On 405, they resolve say 400 lines. Why is this? How can they overcome it, as Eric for one would prefer to use 625. Anyone care to send in an answer?

PLEASE NOTE

Subscriptions are due on January 1st. 1975

PAY NOW

The Treasurers address is on page 1, prompt payment would be appreciated.

ANNOUNCEMENT

We are grateful to Ivan James, past President of B.A.T.C., who has donated a short 8mm colour film which he took at CAT-70 when the Club celebrated its 21st birthday. Anyone who wishes to view this film should contact Grant Dixon (address on page 1).

B.A.T.C. EQUIPMENT REGISTER

Some time ago B.A.T.C. started the Equipment Registry as a Club service designed to help co-ordinate the exchange of surplus equipment between members. Since then many have found the service to be extremely useful, both for second-hand gear, and for those out of the ordinary items, and it is proposed to continue the Registry for as long as it appears to be necessary.

For the benefit of new members, or those who have not used the Registry before, this is how it works. A filing system is held by B.A.T.C., cross-referenced between two sections - "Wants" and "Surplus". Into the "Wants" section go details from the forms which members have filled in and into the "Surplus" section go similar details of all the equipment known to be available, either from members, or from manufacturers, tv companies etc. When a requirement matches an availability, the members are put in touch with each other and left to sort out the purchases themselves. Every effort is made to ensure that contacts are only made where the price asked equals the price offered and for this reason we ask you specially to fill in the "price" column in the form. If you're not sure, put e.g. "approx. £1", or give a range e.g. £25 to £35. But don't leave us in the dark, unless you want to get cross with us for offering you a £55 camera when you only wanted a £10 one!

Members will be expected to reimburse B.A.T.C. for any costs incurred, although these will be kept to a minimum. It would also be appreciated if a stamped addressed envelope were included with each form, or at least a stamp. The postage costs for the Registry over the last year have been phenomenal!

As soon as you have obtained the equipment you wanted, or sold your surplus gear, do please inform the Registry so that you can be removed from the file. Otherwise the system will grind to a halt. So do help us to help you.

Don't worry if your request seems to be for the most unlikely piece of gear; it may still be possible to find it. Perhaps from a Company, or from the fantastic hoards that some amateurs have stored away somewhere, thinking that no one will ever want their "rubbish".

This service is for surplus equipment not for new; the Club has always operated a Club Sales section and continues to do so for new gear. Yokes, lens mounts, tubes badges etc. are all available and are advertised in every issue of this magazine by Grant Dixon, the Club Sales Officer. Please continue to use this non-profit making service.

continued on page 8

B.A.T.C. EQUIPMENT REGISTER

MEMBER'S REQUIREMENTS

Name _____ **Address** _____

Call Sign _____ _____

Tel. No _____ _____

Please insert the following requirements in the Club Equipment Register:-

Maximum price I am prepared to pay.

I agree to inform the Registry when the above requirements cease and pay 10% of the purchase price to B.A.T.C.

MEMBER'S SURPLUS EQUIPMENT

Name _____ **Address** _____

Call Sign _____ _____

Tel. No _____ _____

Please insert the following equipment, which is surplus to my requirements, in the Club Equipment Registry:

Price required

Cut here

AMATEUR TV at STONELEIGH

J.L.Wood G6AHT'T

The annual Town and Country Festival held at the national agricultural centre near Kenilworth, Warwickshire over August Bank Holiday weekend had among the very many exhibits a large amateur radio and TV display.

The B.A.T.C. was well represented by Mike G6AHJ/T(G8DLX), Bill G3OXZ and John G6AHT/T(G3YQC). The TV display consisted of four closed circuit systems, one of which had the camera atop an adjacent building and mounted on a rotatable tripod, the camera could then be turned from inside the stand and consequently a large part of the show could be televised live.

A video tape recorder was also availsble and recordings were made on the first day of events in the grand ring, these included an army motorcycle display team, free fall parachutists and military bands. The recordings were then played back during the show. A tape of G6AHJ/T shack was also shown.

Among the static display was a 40w TV transmitter and modulator, a low power 2w TV transmitter, a home-made vidicon camera and a 3" image orthicon camera.

Slow scan was looked after by G3OXZ who brought along his Venus equipment, this created a lot of interest and was for many people their first look at SSTV. Several people were recorded live on slow scan (if they could be persuaded to keep still for seven seconds!) and some photos were also taken off the screen.

B.A.T.C. publications were on sale and we are also pleased to have enrolled some new members.

1974 BATC Convention.

Only once has B.A.T.C. left London for its Convention, for the famous CAT-70 in Cambridge, so this years expedition to Rugby was rather an experiment. In that only about 100 members attended, it was something of a disappointment: however, what happened in the Benn Memorial Day on September 28 th will make it a day to remember for those stalwarts who did attend.

"Monoculus" the B.A.T.C. outside broadcast van, having disgraced itself by getting stuck in the mud en route, proceeded to re-establish its good name by setting up its cameras around the hall and displaying some extremely good pictures. Joe Rose and his helpers allowed visitors a free run over the vehicle and fascinating it proved to be.

In the Hall, exhibition tables were taken by several members, and notable were Coventry Technical College with their microwave gear, Cyril Chivers with his fibre optics tv demonstration (by the way, Cyril wonders if anyone knows of a good very fast light-sensitive diode, let him know if you do) and Low Definition tv by D.B. Pitt. Slow Scan was also shown with participation by our own Grant Dixon, and fast scan had its fair share of space, G6AFF/T, G6KQJ/T, Mike Crampton and Arthur Critchley being among the demonstrators.

The Annual General Meeting was opened in the afternoon by a speech of welcome by Malcolm Sparrow G6KQJ/T, the retiring Chairman followed by Joe Rose G6STO/T who read the minutes of the previous A.G.M. Alan Pratt, the Treasurer, gave his financial report which confirmed the inflation we all know, but after his statement of account had been accepted he announced that he could keep the subscription at the present £1 for another two years; it may have to go up after that period though.

In his Chairman's report Malcolm Sparrow spoke of the problems on organising the Convention and justified the amount of publicity it had received; the press coverage was limited due to the expense, and that in C Q - T V had been governed by the early press date for the magazine. On the Licensing side, he pointed out the M.P.T. no longer existed, and the Home Office dealt with us. The 70cm allocation was now 432 MHz - 440 MHz and it was of interest to note that not only was 405 line equipment no longer manufactured but that one firm was also stopping making monochrome c.r.t.s! The 405 v 625 battle was decided! Welcoming the slow scan group, he recalled that the Club had fostered SSTV for up to 12 years, and would continue to do so. C Q - T V would publish slow scan articles, and here he made a plea for more written material from members for the journal The time lag between the Editor receiving an article and the printed word dropping through members' letterboxes was often long, nearly a year, but this was solely due to the production system

used and the fact that sometimes there was a backlog of articles waiting to be used. (Of course, sometimes the reverse applies and there are none in stock!) Malcolm concluded by mentioning the international enthusiasm fostered by the recent Contests and thanking all those responsible for helping make the Convention a success.

Brian Kennedy, G6AGT/T, the retiring Contest Organiser gave a resume of his two years in office and told how the entries for the Contest he had worked on were gradually dropping, from a high three years ago to a low this year. The new Contest Organiser, he said, would need a lot more support from members if he was going to succeed in producing two Contests a year.

Bob Roberts G6NR the President then conducted the elections for the new committee. Half the old committee retired by rotation and some stood for re-election together with some new candidates from the floor. The new committee (see page 1 for full list) lost Messrs Cunningham and Kennedy and gained Messrs Critchley, Mitchell and Summers.

At the committee meeting held after the A.G.M. to elect officials, it was decided to co-opt Don Reid as Chairman and Geoff Smith as Contest Organiser. Other officials remained the same as previously, and you will find a list if their addresses on page 1 of this issue. It was also decided to honour the retiring Chairman Malcolm Sparrow G6KQJ/T by offering him Life Membership of B.A.T.C.

Letters to the Editor

Dear Sir,

In 1972 I proposed provisional standards for a revival of Low Definition TV, on the basis of "video tapes" made on a domestic tape recorder and exchanged through the post. Although these proposals were publicised, there may still be some interested readers of C Q - T V who have not seen them in print.

Here they are:

No. of lines	32
Line scan	vertically upwards
Frame scan	right to left
Aspect ratio	3 units high:2 units wide
Frame frequency	12.5 Hz
Recommended tape speed	7.5 (19cms) per sec.
Recommended tape tracks	(4) Video 1 & 4; Sound 2 & 3
Recommended tape tracks	(2) Video 1; Sound 2
Line sync pulses	Black or blacker than black
Tone polarity	White equals maximum EMF

These provisional standards seem to have been widely accepted as suitable, at least as a starting point in establishing compatibility of experimental work. Further to the above, the experience of the last two years suggests that a frame frequency tolerance of about $\pm$ 0.5 Hz and a line sync pulse level of about $\frac{1}{3}$ blacker than black are ressonable aims. Since pulse lengths of one picture element (0.052 millisecs) appear to give perfectly adequate results in practice, something of this order should be attempted, to preserve maximum picture information.

Yours

D.B. Pitt Nottingham.

Dear Sir,

Being a comparitively new member of B.A.T.C. I found the Convention (1974) extremely interesting, informative and friendly.

It may have been disappointing to some as the attendance was not as expected but then it is a great distance for some to travel, therefore I would like to make a constructive suggestion. That is, we should group ourselves for a meeting in our respective areas, say, South East England, South West, East Midlands, West Midlands, North East, North West and two areas of Scotland and Ireland. We could have our own meetings say every 6 months for informative discussions, exchange of articles etc. Then at the Convention we could probably arrange a meeting place for each area and group ourselves for transport arrangements to the Conventions of the future. From my observations it is difficult to find other members of any particular interests unless we meet more often in our respective areas. This would also encourage new members to join knowing they have a "centre" reasonably near their respective homes, but of course retain the same committee who could receive progress reports etc. from individual areas.

If you consider the contents of this letter worth publication at some time in the future it would be much appreciated to ascertain the kind of response we may receive.

Many thanks,

R.V. Mead Tech. (C.E.I.) A.M.S.E.R.T.
123 Prince Regent Lane,
Plaistow, London, E 13

Equipment Registry continued from page 3

Send your comments and suggestions for improvements to the address below, together with your completed forms.

B.A.T.C. Equipment Registry
A.R. Watson Esq.,
"Somerby View",
Bigby,
BARNETBY,
Lincs.

Telephone messages can be taken in the evenings if you wish for an estimate, or any enquiries you may have. The number is Searby 287 (065-262-287 on the STD system).

IN THE NEXT CQ-TV

A Modern Image Orthicon Camera Channel.
An Index of Technical Articles from past issues of C Q - T V.
More lists of B.A.T.C. Library material.

LOW DEFINITION TELEVISION

AN EXPERIMENTAL MECHANICAL SYSTEM

By D.C. Hodges G6MXY/T

It was decided amongst a few members of the Midland Video Club that a demonstration of a mechanical scanning system would be of interest! Memories were stretched, old books "dug out" and read until a working knowledge of the principles involved were aquired. This led to a discussion on how far to go on reproducing the system. The 30 line vertical scan was decided on as the basic method, with possibilities of transmitting a picture over the air if successful. With a mechanical "receiver" synchronism of the discs is the main problem, unless synchronous motors are used, in which case no "sync" pulses would be needed, but then Baird did not have the advantage of the National Grid. Most amateurs have a c.r.t. monitor, so a system was devised using disc scanning at the transmitter and c.r.t. monitors for reception.

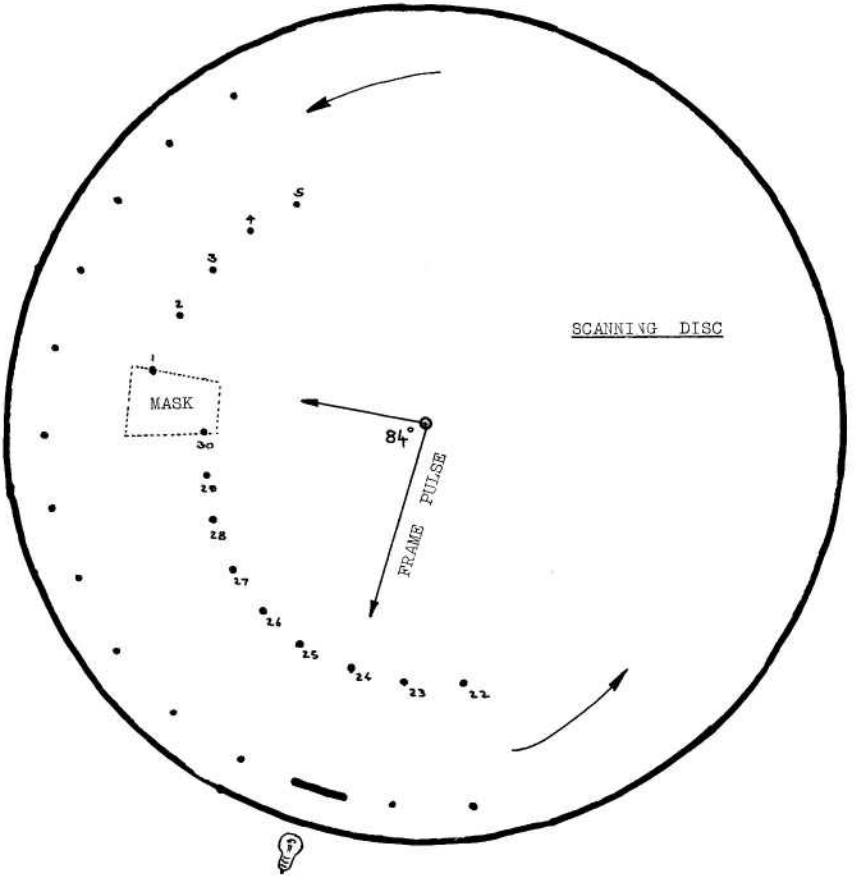
The system then would consist of a Nipkow dis driven at 3000r.p.m. giving 50 pictures/second, sync pulses being obtained from the disc, a photomultiplier to "look" at the scanned picture, and a video sync mixer. This would give a video signal suitable for a "modified" c.r.t. monitor, and easily transmitted. The line (vertical scan) will be 1.5 KHz and the "frame" being 50 Hz. This means the monitors line T.B. being altered to 1.5 KHz with a separate E.H.T. if line driven E.H.T. is fitted. It is also best to rotate the coils through 90 degrees to save a stiff neck!

The disc is marked out and drilled as accurately as possible, the 30 holes being at 12 degrees, 1/32" dia. and each being 1/32" in from the previous one. The disc was made 4.3/4" to the outer hole, giving a picture 1" wide approximately. A further row of 30 holes (not a spiral) was drilled at a radius of 5", the overall disc being 5.1/4" radius. This outer row of holes is for sync pulses, these being derived by looking at a pea lamp through the holes with a photodiode. This diode lamp system was set at 84 degrees to the picture area, the 24th. hole being elongated to give a frame pulse. The angle of the diode lamp system was made adjustable over a few degrees to "frame" the picture correctly. The output from the photodiode is added to the video waveform in the normal way.

Experiments have been made to construct a Kerr Gell, or a modified version of this as used by Baird to modulate the light from a projector lamp. If successful, a mirror drum will have to

be constructed to make a light intensity mechanical "monitor".

The definition of the system is of course rather poor! Baird's system with the disc running at 750 r.p.m. giving 12.1/2 pictures/second needed with a 50-50 aspect ratio 11.25 KHz. This was limited to the 9 KHz allowed to medium wave stations. The aspect ratio used by the Baird system was 7:3. The reasons for the use of a 50 pictures per second is of course to save many modifications to monitors, modulators, etc., but a complete mechanical system would make a very interesting project. Higher definition is quite practical though I doubt if the system will catch on.



FACSIMILE

Prof. Franco Fanti I1LCF

As new techniques become more commonly used among Radio Amateurs, radioteletype (RTTY) and Slow Scan Television (SSTV) are joined by Facsimile (FAX). I am looking forward, with my modest contribution, to showing techniques used and open up Facsimile as a "New Frontier" for amateurs.

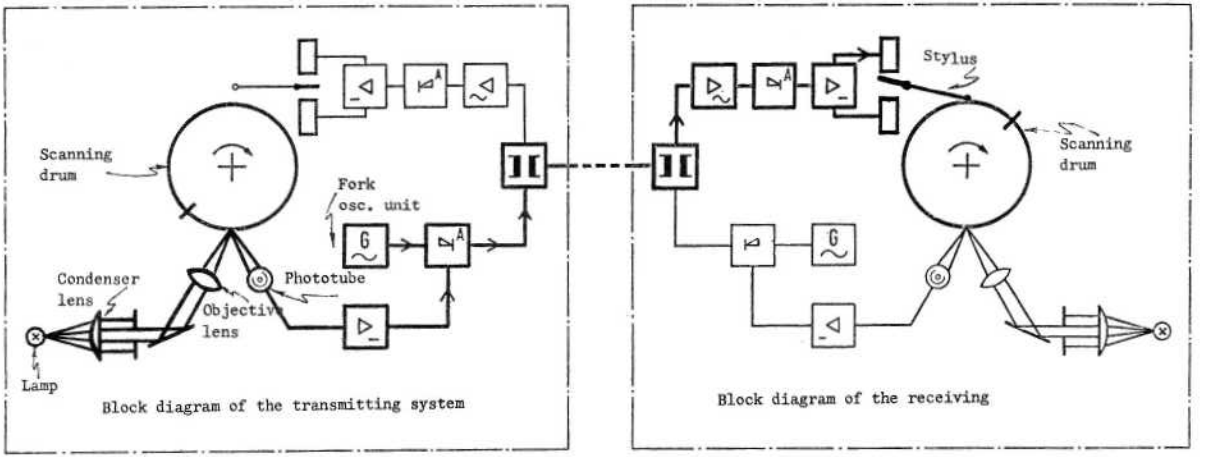
Initially, with other modes of transmission known to us, the new system may meet with distrust. But soon it will join with the other systems to become an accepted medium for transmitting.

It is obvious that Facsimile cannot be fully discussed in one article, but we can clarify what FAX is, provoke argument and examine those technical problems which are present.

I must first take the opportunity to distinguish between Facsimile and Photofacsimile. Facsimile is intended as a process whereby stationary graphics (diagrams, photographs) are converted to electric signals, transmitted by cable or radio to a receiver and then reproduced graphically exactly as the original. Photofacsimile is technically the same, but the received picture is reproduced on photographic paper or on a roll of film and gives much better results especially with the transmission of photographs or "halftones".

In Fig. 1 is a block diagram of the whole system, with greater detail in Figures 2 and 3. These represent what could be considered the standard mode of transmission.

Let us start by examining Figure 2 which shows, in block form, the transmitter. A beam of light from the lamp at the top of the diagram is directed onto the side of a rotating drum, to which is fixed the picture to be transmitted. This beam of light is reflected according to the material on the drum - white will reflect all the light, black none and grey some proportion - through a lens and an apperture onto a photoelectric cell or a photomultiplier. An important part of the circuit is the Fork Oscillator Unit feeding the Bridge Modulator, for it has a second function. In this system of transmission, synchronising pulses, as in television, do not exist. One pulse - a start pulse - is used and this serves to position the scan in the centre of the drum. The scan should now remain synchronised throughout the period of transmission. The problem of achieving this is solved by using synchronous motors controlled by a very stable frequency signal from a crystal oscillator. Commercially the stability of the oscillator is



BLOCK DIAGRAM

FIGURE 1

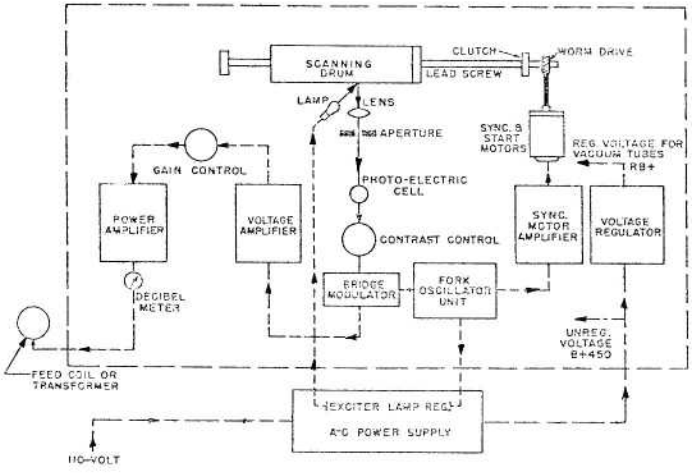


FIGURE 2

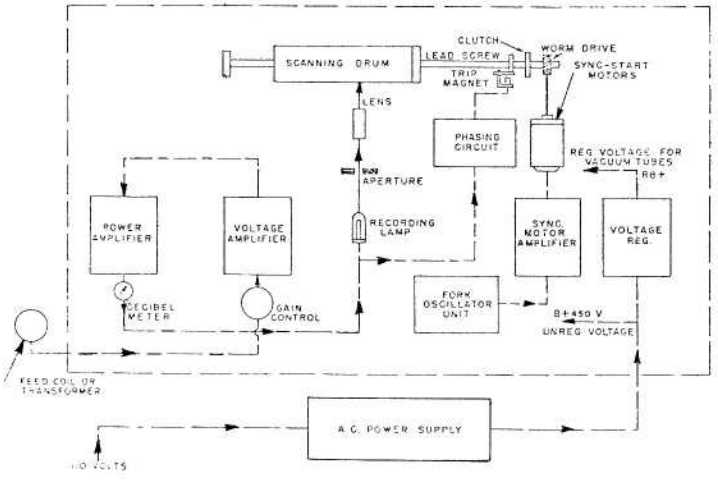


Figure 3 Receiving block diagram

usually 5 parts in 10^6. Hence the importance of the Fork Oscillator Unit.

Figure 3 is the block schematic of the receiver. The signal is received by cable or radio and amplified, applied to a lamp and the resulting beam focussed sharply onto the sensitive paper This is carried on a drum which rotates exactly as, and in synchronism with, the transmitter. As already defined, this is photofacsimile and since photographic paper is used the operation must be carried out in the dark. If for the lamp we substitute a pen, and use the electro-sensitive paper known as "Teledeltos" then we have facsimile - FAX.

The above is only a very simple description of the system, but then this article is only meant as an introduction to FAX. A deeper discussion could follow in further articles devoted to the subject.

You will see in Figure 4 a diagram of the transmitter in greater detail. This shows very clearly the formation of the image, and also the direction of rotation and movement of the drum. These are two very important elements and must be the same for all machines. By rotating the drum and at the same time moving the drum forward, a scan similar to television is achieved.

There is one other important thing to say and that is that the transmit and receive cylinders should have the same speed of rotation, and that this speed of rotation is the international one of 60 r.p.m. Higher speeds may be used but are multiples i.e. 120 r.p.m., 240 r.p.m. etc.

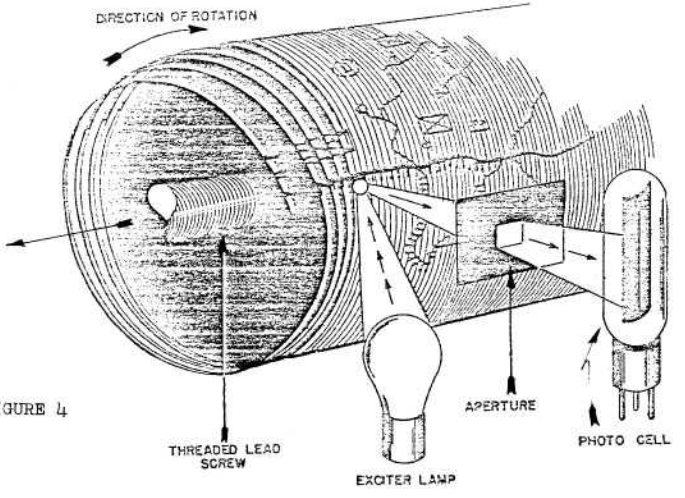


FIGURE 4

At this point you may be interested, but have an objection to make; are machines available on the market and if so, how much do they cost! The latter is particularly important in these times of financial stringency; no one wants to get interested and then find it is too expensive. In replying to this question it is first necessary to distinguish between

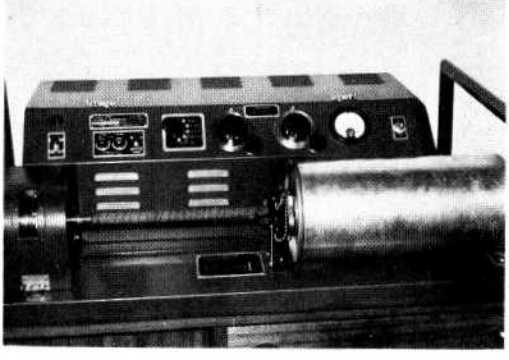
1) Surplus military equipment
2) Surplus civilian equipment
3) Reconditioned machinery.

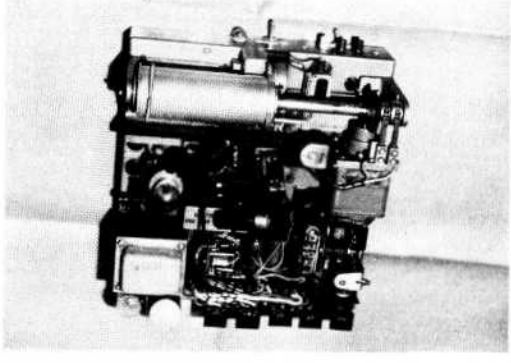
Military equipment is almost exclusively American, and principally TXC. These are World War 2 vintage, but constructed particularly well. Their price varies about 100 dollars but transport can double this by reason of the weight of the machine. The first photo is of my TXC machine and you can clearly see the rotating cylinder.

Civilian equipment is represented chiefly by three makes; Western Union, Creed (similar to W.U. but constructed under licence in Great Britain with some modifications) and Siemens. Prices for W.U. and Creed are of the order of 30-40 dollars, those of Siemens generally cost more. The second photo is of my Creed TR 100/1 but with its covers removed to show the "works".

Reconditioned machines are available, those withdrawn from use and rebuilt, and some are still of interest. They go for a good price - and by good I mean 1000 dollars. That's a lot of money! Too much for most radio amateurs, so I suggest you look for Western Union, Creed and Siemens.

I must emphasise that the difference between surplus military equipment and reconditioned equipment is that the latter is immediately useable whilst the former may need modification or repair. My suggested choice of machine is based on the fact that any modifications necessary would not be long or difficult.





Before the conclusion of this first article I would like to give you two important facts to think about.

As well as international standards it really is necessary for all amateurs to consider that a common language should be used for communicating. Second it is possible all over Europe to receive very strong signals, suitable for testing and setting up, from stations at Bracknell and Rome.

STATION	CALL SIGN	TIMES	FREQUENCIES	POWER
ROME, ITALY	IMB51	00.00-24.00	4,777.5 KHz	
ROME, ITALY	IMB55	00.00-24.00	8,146.6 KHz	5kW
ROME, ITALY	IMB56	06.00-20.30	13,600.0 KHz	
BRACKNELL, U.K.	GFA21	00.00-24.00	3,289.5 KHz	
BRACKNELL, U.K.	GFA22	18.00-06.00	4,610.0 KHz	
BRACKNELL, U.K.	GFA23	00.00-24.00	8,040.0 KHz	7kW
BRACKNELL, U.K.	GFA24	00.00-24.00	11,086.5 KHz	
BRACKNELL, U.K.	GFA25	06.00-18.00	14,582.5 KHz	

Common standards: F4 emission white + 400 Hz, black - 400 Hz. Drum speed 120, Index of co-operation 576

I N T E R N A T I O N A L F A C S I M I L E

S T A N D A R D

Equipment characteristics for the standardization of international transmission by FACSIMILE

The facsimile equipment used for international facsimile transmission should be standardized as follows:

1 DRUM SPEED

60 - 90 - 120 - 240 revolutions per minute

If speeds greater than 120 r.p.m. are used, they should be multiples of 60 r.p.m.

2 DIAMETER OF DRUM

152mm. In the case of flat-bed scanners this will be length of the scanning line (including the dead sector) divided by

3 INDEX OF CO-OPERATION

576 for minimum black or white picture elements of 0.4mm and
288 for minimum picture elements of 0.7mm

4 LENGTH OF DRUM

The length of the drum should be at least 550mm

5 SCANNING DENSITY

Scanning density = $\frac{\text{Index of co-operation}}{\text{Diameter of drum}}$

It is approximately : 4 lines per mm for index 576
2 lines per mm for index 288

6 DIRECTION OF SCANNING

At the transmitter, the plane (developed in the case of drum transmitter) of the message area is scanned along lines running from left to right commencing in the left hand corner at the bottom and this is equivalent of scanning over a left hand helix.

7 DEAD SECTOR

4.5% $\pm$ 0.5% of the length of the scanning line. The signal transmitted during the passage of the dead sector should correspond to white but it is permitted that a black pulse be transmitted within and not exceeding one half length of the dead sector.

8 SELECTION OF INDEX OF CO-OPERATION

A five second transmission of alternating black and white signal at
300 Hz for index 576
675 Hz for index 288
The envelopes of the signals transmitted will be roughly rectangular

9 SYNCHRONIZATION

The scanning speed should be maintained within 5 part in 10^6 of the normal value

10 STARTING RECORDERS

Recorders should be designed to start upon receipt of either the index selection signal or the phasing signal and no special signal for starting will be transmitted.

11 PHASING

A 30 second transmission of alternating white and black signal at the following frequencies:

1 Hz for speed of 60 r.p.m.
1.5 Hz for speed of 90 r.p.m.
2 Hz for speed of 120 r.p.m.

12 ADJUSTMENT OF RECORDING LEVELS

Adjustment of recording level when used should be effected by reference to phasing signal

13 STOPPING RECORDERS

A 5 second transmission of alternating black and white signals at 450 Hz followed by 10 seconds of signals corresponding to continuous black

14 MODULATION CHARACTERISTICS

AM Ammplitude Modulation

The maximum amplitude of the carrying frequency should correspond to the transmission of signal black. Value of the carrying frequency: 1800 Hz

FM Modulation by frequency deviation

Value of central frequency : 1900 Hz
Value of frequency for black : 1500 Hz
Value of frequency for white : 2300 Hz

The frequency for black and white should not vary by over 8 Hz over a period of 30 s. and by more than 16 Hz over a period of 15 minutes.

15 LEVELS OF SIGNALS IN CASE OF AM

Receiving equipment should accept any level between +5 db and -20 db, zero reference level corresponding to a power of one milliwatt dissipated in a resistence of 600 ohms.

16 CONTRAST RATIO

Contrast ratio for picture signals and control signals will be the same for any transmission and will be between 12 and 25 db.

17 FACSIMILE TRANSMISSION OF METEOROLOGICAL CHARTS OVER RADIO CIRCUITS

When frequency modulation of the sub-carrier is employed for the facsimile transmission of meteorological charts over radio circuits, the following characteristics should be used:

Centre frequency	1900 Hz
Frequency corresponding to black	1500 Hz
Frequency corresponding to white	2300 Hz

When direct frequency modulation (FSK) is employed for the facsimile transmission of meteorological charts over radio circuits, the following characteristics apply:

Decametric waves (3 MHz - 30 MHz)

Centre frequency	f_o
Frequency corresponding to black	f_o - 400 Hz
Frequency corresponding to white	f_o + 400 Hz

Kilometric waves (30 KHz - 300 KHz)

Centre frequency	f_o
Frequency corresponding to black	f_o - 150 Hz
Frequency corresponding to white	f_o + 150 Hz

CIRCUIT NOTEBOOK No19

J. Lawrence GW6JGA'T

LOW FREQUENCY OSCILLATOR USING THE 7413 SCHMITT TRIGGER I.C.

The 7413 Schmitt Trigger I.C. contains two 4 input NAND Schmitt Trigger Gates. One of these connected as shown in Fig. 1a provides a simple oscillator and is useful for a clock oscillator where high stability is not required. The oscillator can be gated on and off by connecting one of the gate inputs to the appropriate logic level. More details of this circuit are given in the appropriate Texas Instruments Application Report.

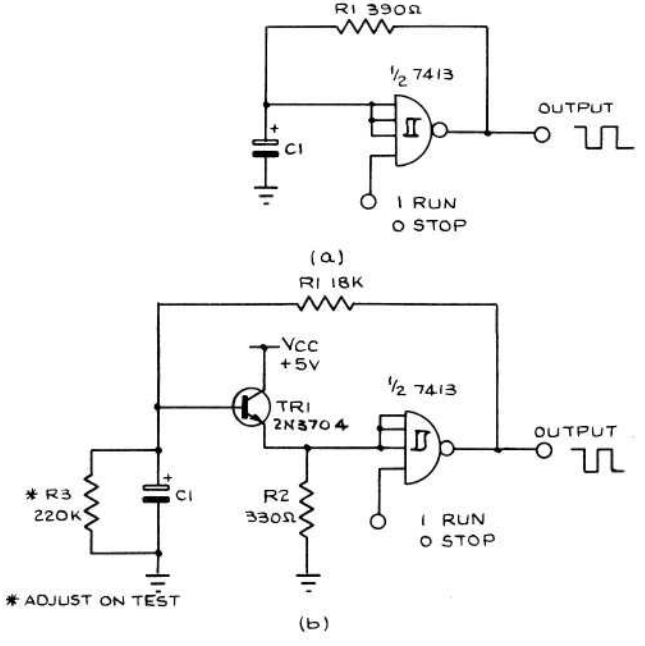


FIG. 1

For low frequencies, the value of C1 becomes inconveniently large (in excess of 1000uF for 1 Hz) and the circuit shown in Fig. 1b overcomes this problems.

In this arrangement the input current of the gate is buffered by the emitter follower Tr1 thus allowing a much lower value of C1 to be used. The mark/space ratio of the output waveform can be adjusted by changing the value of R3.

The value of C1 for a frequency of 1 Hz is now approximately 10uF and the gating facility is still available.

REFERENCE

"Characteristics and Applications of the SN741 3N Dual Schmitt Trigger".
Applications Report B81. 10p from Texas Instruments Ltd., Manton Lane, Bedford.

More Scan Generators

As a post-script to the series on Field and Slow Scan scanning generators, here is a circuit by M. Hadley which appears in "Circuit Ideas" p.18 of March 1974 Wireless World, and is reproduced with the Editors kind permission. Fig. 2.

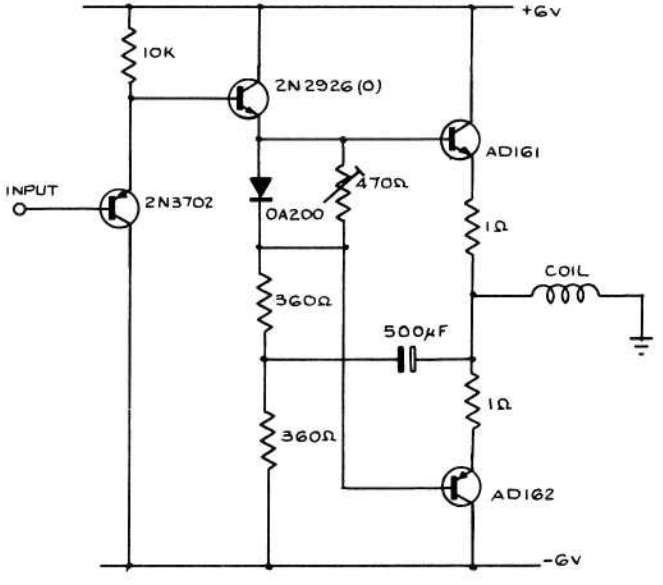


FIG. 2

The circuit was developed for use in S.S. equipment and is designed to operate from a Unijunction sawtooth oscillator. The Amplifier provides a high input impedance and delivers sufficient current to drive deflection coils having a resistance of about 5 ohms. The diode and variable resistance provide slight forward bias for the output pair and is adjusted for minimum cross-over distortion.

For those wishing to experiment with Unijunction sawtooth oscillators, suitable references are given below.

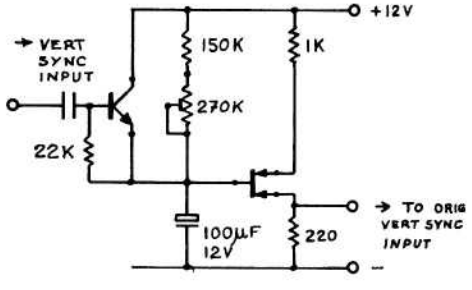
"Unijunction Transistor Timers and Oscillators" Motorola Application Note AN 294
Available free from Semicomps Ltd., No. 5 Northfield Industrial Estate, Beresford Avenue, Wembley, Middlesex.

"The How and Why of Unijunction Transistors" Texas Instruments Application Report CA 68.
20p from Texas Instruments Ltd., Manton Lane Bedford.

ERRATA

Notes on Slow Scan Monitors
C Q - T V No. 87

It is regretted that the right hand diagram on page 26 was incorrectly reproduced. The following is correct, and we apologise for any inconvenience caused to members by this error.



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Bucks.
HP13 5LS Tel. 0494-31951

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100 x 2SC373 (sim BC167, BC307) 5p each.

WANTED

1 x 74128 TTL IC
1 or more MC1351 IC
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R. Leyland ZL1TRM
113 Orakei Road,
Auckland 5
New Zealand. Tel. Auckland 549488

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WANTED

Circuit diagram/handbook for Pye Picture monitor 842822/02
J.B. Procter G8AWN
Crag House
Snowdon,
Otley, West Yorkshire.
LS21 2NH

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TCE 2000 series colour tv spares. Panels - eht, chroma IF etc. Mains transformer, scan & conv. coil £4 each.
Decca CTV19 etc. IF & audio panels £2.50 ea. Mains transformer, vid/chroma panel £5 each Scan Coils £4.
Various Phillips G8 part S.A.E.
Carriage at cost.

WANTED

Suitable lens for 9677 vidicon, Soligor F1.9 25mm or similar for P.E. camera.
A. Jefford,
8b The Lawn,
Budleigh Salterton,
Devon.

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Home-made 625 line S.P.G., outputs 2 volt p-p. Mixed sync & Mixed blanking and 1v p-p Mixed sync. 240v ac supply, all transistor, locked to mains or free run £5.
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Catworth,
Hunts. Tel. Bythorn 391

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Will deliver in London area.
Dave Wilson
70 Morshead Road,
Maida Vale,
London W9 1LG

.....

WANTED

3FP7, 3JP7 or 3BP7 tube, also camera or bits and pieces. Have for swop 4 x 150s and sockets, crystals, RTTY gear inc. printers etc. plus all other bits and pieces.
J. Brown G3LPB
1 Silverdale Road,
Falmouth,
Cornwall.

.....

THANKS

To the members who helped me probably the most South West slow scanner in G Land, will not mention their calls, they know, at least I can join the net, 73s and thanks chaps!

.....

FOR SALE

Just a few Pye Lynx transistorised cameras, in various states of repair. Complete with vidicon but no lens. Prefer buyers to collect or inspect, but for full details ring Malcolm Sparrow on Wombourne 3037 (STD 09077) between 10am and 10pm. Prices around £30 according to condition.

.....

FOR SALE

Peto Scott broadcast vidicon channel with vidicon lens and circuit. Needs attention. Mains Transformer has one shorted turn, work needed on timebases (no S.P.G.). Includes electronic viewfinder and cables. Heavy £15

Pye 5 ins valve monitor. Working 18 months ago. CRT a bit astigmatic, photostat circuit £5

Pye vidicon camera control unit, 405 line (blocking oscillator dividers). Working 2 years ago. NO camera head photostat circuit £8

Projection tv equipment. Four optical boxes, two long throw. Five MW6/2s (one striped). One Peto Scott 405 scan chassis working 18 months ago. One non-working incomplete scan chassis. Two eht chassis working 18 months ago, possibly a third could be made from the non-working scan chassis. Circuit and gen on working scan chassis and book on projection tv optical setting up. Optics could benefit from cleaning £12 o.n.o.

Pye monitor colour decoder panels. One chrominance panel, one PAL filter and delay panel (no luminance delay line). Unused since purchase from Manor Supplies. Some circuit info. £12

Mullard high speed valve tester, working, huge selection of cards (but NOT EF80). Handbook but no circuit, odd spots of rust. £20 o.n.o.

P. Bolton G6AGK/T
32 Fakenham Road,
Tittleshall,
Kings Lynn, Norfolk.

.....

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C.A. Blaker
22 The Firs,
Bell Bar,
Hatfield, Herts.
9AL 6DG

.....

WANTED

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Also address of Loewe Opta Factory.
J.K. Wood Jnr.
17576 Pinedale Avenue,
Fontana,
California 92335, U.S.A.

.....

FOR SALE

Slow Scan Television tubes. 5 inch long persistance tube, mechanically and electrically equivalent to 5FP7A except slightly longer persistance, orange afterglow, therefore no filter required. £5 each
Will dispatch if necessary
M.J. Sparrow
64 Showell Lane
Penn, Wolverhampton,
Staffordshire.

.....

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I.B. Daniels G6AGA/T
71 Firsby Avenue,
Shirley,
Croydon CRo 8TP
Tel. 01-656 5285

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Marconi Mk 1 or II Picture & Waveform Monitor. Need not be working but must be clean and complete.

FOR SALE

Marconi Burst Gate Generator £2
Northeastern Model 148 Spectrum Analyser £30
G. Trice G6SXX/T
11 Tabors Avenue,
Great Baddow,
Chelmsford, Essex. Tel. Chelmsworth 72138

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WANTED

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Peterstow,
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Z607 Filter board £2.00

Z608 Video board including 2 delay lines £2.00

Z610 L.F. Osc board £3.00 including 2 x SGS 17122X, 2 x BSY56, 2 x MP 8112

Z611 control board £2.50

Z612 translator board £2.00

Regulator board £1.00

Z615 Audio preamp (stereo) and pulse amp board £2.00

Z616 Audio in/out (mic) remote select board £2.50

Z617 Rectifier board £1.50 (including choke)

PMT Tubes including CA3018 amps and Z619 sockets (2) two £10.00

F.S.S. tube, scan coils, focus mag, base, LDR beam limit, hardware £7.50

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PUBLICATIONS

Slow Scan Television By B.J. Arnold G3RHI published by B.A.T.C. 2nd Ed. 35p
Slow Scan Television Handbook By Don Miller W9NTP & Ralph Taggart WB8DQT £2.00 + 20p p&p
Please send orders to:
B.A.T.C.
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