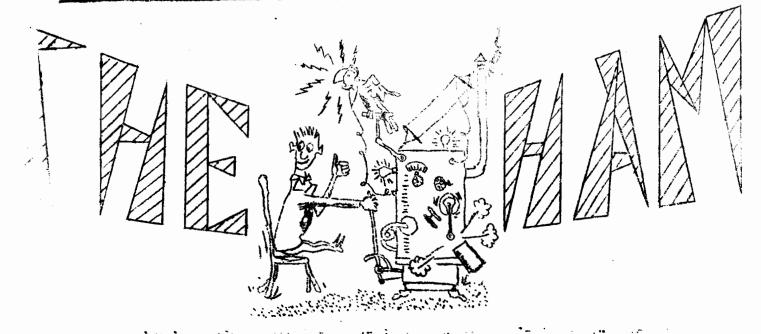
THE BI-TURMINAL MAGAZINE OF THE BRADFORD GRATMAR SCHOOL AMATEUR RADIO CLUB



Volume | Number 6

- 7 JUN **19**58

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Assistant Editors: R. L. Hodgson;

D. Noble:

A. M. Pomeret.

THE BRADFORD GRAMMAR SCHOOL AMATEUR RADIO CLUB,

THE GRAMMAR SCHOOL,

BRADFORD, 9

CURRENT NEWS

It is only a short time - or so it seems - since the last issue of this magazine was published, but here we are again, at the publication date and with no material, so the editorial staff had to set to once more to write the magazine. Please bear in mind over the summer holidays all that spare time before you, and you can write something for the magazine. I should like to suggest that various S.W.L.Ss start sending lists of stations heard and stations whose cards have been received to the editor so that a fladder can be organised, the competition to cease if reports dwindle too far, on finding the winner, or if someone gets a report from a station in Mars.....

Activity this term has so far been slight, but the chance offered by an amateur in Webes selling up was too good to miss, and 3 substantial orders have been sent in.

Soveral BGS stations have been active on the H.F. bands. Apart from the two 19 set PIRATES, G3MAL has been on 20, but has been welcomed back to the fold of Top Band on pulling down the H.F. band rig to fit a minature 807 (from Wales) as T.A. G3LWH has been giving 80 metres the onceover, with an 829B P.A. (on lean) and G3MAW has been on that DE band 160 metres, working the East coast with only 2 watts (approx.) input. On Phono. The fact that G3MAW was just South of Bridlington is, of course, only a minor consideration. The rig was a modified 18 set.

G3KEP and G3MAB were also working /P from the same area and G3LQJ/T was supposed to

be arround, but I don't think he was heard on the B.G.S./P net.

A very enjoyable visit was made to the ITA transmitter at Enley moor, on two occasions

to enable the whole club to go, on the last two Thursdays of the first half term.

The next D.F. contest will be held on the Saturday after the end of terms entry forms are included in this issue. It is announced that a new rule is included to the effect that Armitage (if he enters) must produce & demonstrate a working receiver several weeks before the date. It is pointed out to him that the rules do not state ".....and must construct the receiver on the site".

Well, I think that's about all, but let's have some more from you chaps.... and what about a Secretarie's report on exclusively club activities? This column is intended merely as a light hearted comment on general activities in and arround the district......

Sa 73 es benu later 5

David, G3MAW.

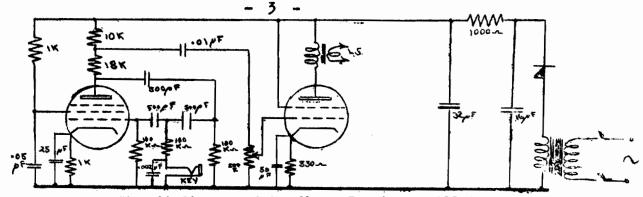
P.S. G3LZZ is going hi-fi - he's got a push-pull modulator, using a 616 pushing and pulling a 6V6 as the output stage.... Not to mention the carbon mic !

A GUIDE TO LEARNING MORSE By David M. Pratt, G3KEP.

Members who have recently taken the Radio Amateurs' Examination will busy practising their Morse sending and receiving for the September Test in Hull. It is necessary for those learning Morse to have a receiver of some kind capable of receiving 160 metro C.W. signals. Slow Morse transmissions will be radiated every week-day evening on 1.9 Me/s from 2100 BST until the beginning of September providing that there is sufficient demand for them. The candidate should not only listen to local stations or on 'close-circuit' for Morse practice as this is the easy way. It is recommended that some practice be done by listerication weaker and more distant stations on which there is accurate amount of QFM, so that when the licence is obtained the holder will be used to depring stations under the nore difficult conditions. A list of the more distant Slow Morse stations appears in the R.S.C.T. Bulletin from time to time.

No doubt soveral of you like the circuit diagram of the new Morse Practice Oscillators to be found at the School and at the Bradford Society. It consists of an ECSO physociality escillator, and the pentode section of an ECISC as sutput; the triede section of this values grounded as being unecessary. Any cutput valve could, of course, be used or, if the ware used, one would not be required, and the output could be taken directly from the A.F. coupling capacitor. The valve and components employed in the oscillator section are, newever, rather oritical, although my valve with characteristics similar to the 1780 can

be ared.



Circuit diagram of the Morse Pracice Oscillator described in this article,

The frequency of oscillation of this circuit is determined by the values of 3 and R, and can be salculated by the following fermula:-

f c.p.s. = $\frac{10^6}{2n \ C \ R \ /6}$

where C is in uF & R is in ohms.

Price

Volume I THE HAM Number 6

Fourpence EDITORIAL Biterminally

With the exams almost upon us, we feel that we must offer our best wishes to all who are taking G.C.E. this time. Do not spend too much time on Radio, but at the other extreme, do not overwork, as that is probably even worse.

The next D.F. contest will take place at the start of the Summer Holidays, the date is given elsewhere. This time the area covered will be much greater. Full details will be given later, but the idea is that the competitors meet at school and are escorted to the starting point which will be unknown until then. They must then locate the rather more distant transmitter. The only help given is that if you pass through: Harrogate, Skipton, Huddersfield or Leeds, you have gone too far. We have, however, had some maps printed so you won't get lost;

The transmitter will be rumning a higher power than before to a slightly better antenna so you may even here it more than fifty feet away. We also hope that the batteries will work this time,

Now that summer has arrived (?) we hope that many of you will get out and work /P a bit, even S.W.L/s. it is good fun and provides exercise and fresh air for more than just the fingers used to operate your rigs.

We would like, as G3MAW states in his Current News, to start a counties or countries ladder for S.W.L/s. in the Club. Please write down on a sheet of paper a list of the counties and countries from whom you have received QSL/s and hand it to any member of the editorial staff.

That is all this year, so good luck with exams and D.F. receivers, and very best 73.

John P. Stott

From the Post-bag.

(The Editor does not necessarily agree with opinions expressed by his correspondents)

Dear Sir,

I should like to point out that, re the objections which are being voiced to m y article, that the section concerned was never intended as anything but face tious and should suggest to the complainant that he looks to his own article. I should certainly like to see the prototype to which he refers, and possibly he could tell me from whence the Hivac C.R.T.s are available, and their price? Also he might care to prove information of the word 'desterfying' which he uses.

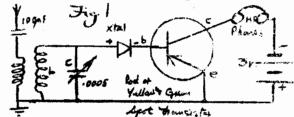
Yours faithfully, D. Noble, G3MAW.

THE USE OF TRANSISTORS - G3LZW
Part 3 Audio amplification

Members who are following this series will have seen how to make use of a transistor as a means of making a m.c. meter up to 50 times as sensitive as originally. It is now time to tume to audio amplification which is a function that transistors can perform very well.

The simplest application is to render a crystal set more sensitive, and this circuit requires a minimum number of components. (N.B. a similar circuit was given in a previous

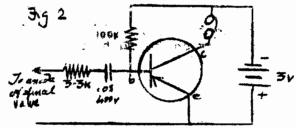
"Ham" but a number of important errors were made and should be watched for)



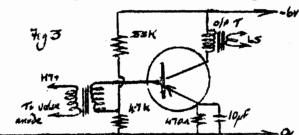
The slight negative bias required on the base of the transistor is provided by the rectified signal the system is so efficient that given a good signal the set will run a loudspeaker connected with its output transfermer where the fones are. Selectivity will of course be lacking, but Home, Light. Third, and Luxemburg come through at reasonable speaker level.

For coupling a transistor O.P. stage to a valve circuit eg a 1-valver, the following circuit may be cheaply constructed. The phones in the original circuit are disconnected and a 10K resistor put in place of them. The anode is then connected to the base of the transistor as shown.

The O.P. stage can also be coupled to the valve circuit more efficiently by use of a transformer with a very high primary impedance & notion see: impedance. An intervalve transformer connected backwards way round would do. The 470 ohm gives safety from "thermal runaway" and the 33K & 4.7K give the excess neg bias needed to counteract the pos. bias effect of the 470 ohm.



Should it be necessary to couple a transistor O.P. stage to a previous transistor like the one in fig. 2, the circuit of fig. 2 may be repeated with 10uF poplacing the .05 uF & 3.3K and connection being made to the previous collector fed with "H.T." by



would also prove useful as a gramophone amplifier, the pickup boing connected into the 10 uf condenser, but a stal P.U. might prove troublesome due to its high impedance.

From these hints & kinks on transistor audio work, it should be possible to improve your battery receivers etc greatly & it will be noticed that all steps to keep costs down have

been taken & should enable those with small funds to have a go. For the more ambitious, more expensive circuits are published by Mullard Ltd and these will undoubtedly give better results - but costs are high. The final article of the series will be concerned with simple R.F. & oscillator applications of transistors.

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THE NEXT VOLUME OF THE HAM WITH HAVE 12 PAGES PER ISSUE PROVIDING SUFFICIENT MATERIAL

SUITABLE FOR PUBLICATION IS RECEIVED BY THE EDITOR BY THE END OF TERM

TOP BAND TRANSMITTER by David Noble, G3MAW

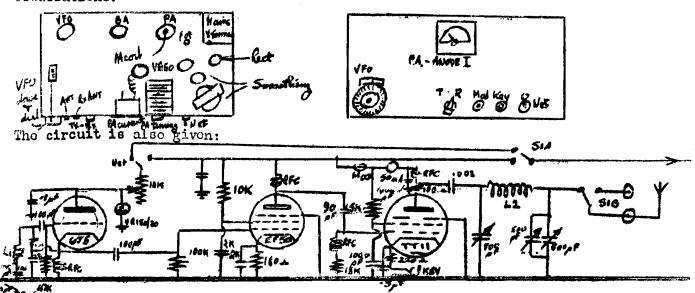
The transmitter design following was recently built by myself and is used at my QTH. It is designed for Top Band, and although a slight variation in the coils will enable it to be used, say, on 80 metres, it is pointed out that the considerably-more-than-10-watts input possible (NOT, please note, PERMISSIBLE) enables one to have as much pushing power as anyone clse on top band. It is also suggested that if it is used on 80 or 40 (due to the difficulties in constructing a stable Vfo on the fundamental frequency, it is not recommended to use the rig on higher frequencies) a 6V6, 6F6 (KT63), 6K6 or similar valve be used in place of the TT11 P.A., as this is only rated to 2 Mc/s without neutralisation.

The rig contains 6J5 (605, 604 are suitable other valves) FFO, EF50 (or any high-gain pentede, a 6AG7 is the valve) B.A.,

and TT11 (or 6V6) P.A.

A neon stabiliser (VR150/50), mains transformer & rectifier, resistors, condenders, R.F. chokes, coils, etc. are also required, not to mention a strong metal chassis a must in transmitter construction.

Sketches of the layout of the proto-type are given, but this is only a rough guide: keep A.C. fields well away from the V.F.O. and grid-leads, and don't put your P.A. or other high-power R.F. fields near lower-power ones or you will have parasitic capillations.



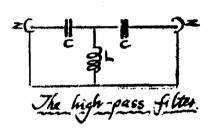
Start by cutting out the chassis, and nounting the bigger items in place. Then assemble the power supply: test for sparks with a screwdriver If all is well, wire up the heaters with twisted loads, and construct the VFO. It all is well, when this is finished and connected to the H.T., it will be possible to find the signal from this with the aid of your B.F.O. If the note varies with the tuning of the VFO dial, that's it: if it varies whether or not, you've got '3MAW's sideband by mistake. Adjust the condensers so that the VFO swing just covers the band, then wire in the BA and the PA.

Switch the device to 'transmit', remove the aerial, put the 1000 pF condenser to 'max' and tune the 500 pF for a dip in the meter reading. (remember to short out both key jack and mod. socket) If you get a dip, all is 0.K.; find a clear spot on the band, stick your VFO on it with the aid of your BFO, tune for the dip, and continue until, on the dip, the meter reads a current indicating that there is 10 watts input to the P.A. Insert a key and send your call-sign, and away you go.

RADIO AND TELEVISION INTERFERENCE

by David M. Pratt, G3KEP

If interference is being caused to a signal higher in frequency to the transmitter, and the transmitter is operating correctly, it can issually be cured by the insertion of a high-pass filter in the receiver or a low-pass filter in the transmitter aerial lead. On the other hand, if the transmission is causing interference to a lower frequency, the reverse applies. Most anateur interference is to television, and if a pi-network type of circuit is employed, this should reduce T.V.I. as a pi-network is in itself a low-pass filter. However this alone may not be sufficient to eliminate the T.V.I. entirely, and a high-pass filter fitted to the television receiver may also be necessary. This passes everything higher than a certain frequency, and attenuates anything lower.



As the highest anateur frequency lower than tolevision is 36 Mc/s, a filter of this kind could be designed to have a cut-off frequency of, say, 35 Mc/s.

The values of C and L would be 56 pF and 0.18 uH for an impodance of 80 ohms. Those values are found from the following formula:

$$G = 2(\frac{1}{4ptfZ}) \qquad L = \frac{Z}{4ptf}$$

A CHEAP COMMUNICATIONS SUPERHET.

After one year's operation at GOLO, on a TRF receiver, it was felt that something more ambitious should be constructed to bring in the DX. On hand were the TRF components, and it was decided to build a conventional superhet., making use of "surplus" components. The market is such at present that the total cost of the RX, excepting power-pack, was under £5.

Broadly speaking, all Superhot. circuits are the same. The particular one used was based on that in the "Donce" handbook, a 2/6 leaflet containing their cotl data and recommended circuits. This circuit uses BoA valves, and it was decided to cut costs immediately by the ampleyment of Octal based valves. The cheapest available line-up was 6K7, 6K8, 6K7, 6Q7, 6V6 (27/6). 465 kc/s. was chosen as the IF, this giving high IF gain, with, on Top Band, no difficulty with images. The tree Dence Coils, each covering from 3.0 to 1.6 Mc/s., were purchased, together with the BoA bases for them (12/-).

At the 'front-end', a 500 pF three-gang variable capacitor was employed, to give coverage of the whole range from "80" to #160" but, for the actual bands, spreading was achieved by parallel-mounted 75 pF capacitors, similarly three-ganged. G3LQJ's heart was broken by having to spend 7/6 on the large capacitor, but the situation was redeemed when the small one was constructed from a double gang and a single from Dale Street for 2/-, thring, incidentally, is by means of two excellent slow motion dials from the same spot costing 3/11 each.

The chassis used was 13" x 10". This allows space for a separate BFO unit, employing a 6SN7 and a Denco BFO pack, and also for a Power-pack, which has yet to be included

as all Powor-packs used are external at present.

The results are quite adequate. The set was completed on Dec 26th last and the first station heard was an OK.,,, with whom QSO was immediately established. Performance is first—chass on 1.8 and 3.5 Me/s, but not for 14 Me/s. at which frequency many other stations audible locally were missed. This is not surprising, in view of there being one RF and one IF stage only. However, this is being tackled at present by the construction of an RF unit, using Dence coild to cover 22 - 12 Me/s with an IF feeding into the input of the main receiver at 2Me/s.

The complete circuit diagram of this communications receiver appears operite: - Ed.

N.B. THE EDITOR IS RESPONSIBLE FOR MATERIAL WHICH APPEARS IN THE HAM. SO AS NOT TO CAUSE HIM ANY UNNECESSARY WORK, ARTICLES INTENDED FOR PUBLICATION SHOULD BE SUBMITTED ON A SINGLE SIDE OF FOOLSCAP SHEETS WITH CORRECT GRAMMAR AND PUNCTUATION, AND TYPE. WRITTEN IF POSSIBLE. THE EDITOR CANNOT ACCEPT RESPONSIBILITY FOR MISTAKES CAUSED BY UNINTELLIGIBLE WRITING.

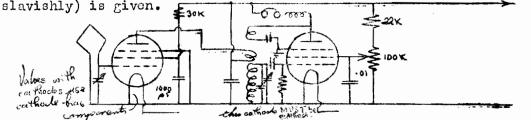
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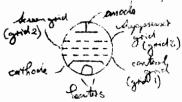
DIRECTION FINDING

The next D.F. competition will be held on the first Caturday after breaking up. in order not to interfere with the exams. and to allow competitors a little time to construct equipment. The use of intermittent modulation on the carrier will give competitors using superhet. receivers with A.V.C. and tuning indicators a much better chance; what price the modification of a domestic battery portable & the addition of a DM70?

The party will meet at the school gates, & further details are withheld to minimise the danger of a security leak.

It is suggested that the RF stages of a receiver would operate more efficiently & give better results if a pentede is used. It should be remembered that the best of triodes needs neutralizing at such frequencies (and also that the prototype design was merely a suggestion) and the use of a pontode R.F. amplifier will give higher gain. A suggested repeat SUGGESTED (and I accept no responsibility for any lack of efficiency, reminding you that this is one again merely a Suggestion which need not be followed too



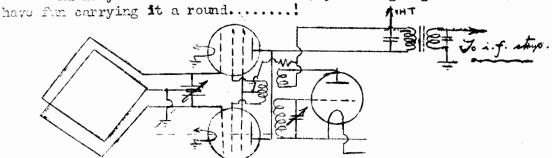


Alternatively the screen grid could, to save components, be connected to the H.T.

line. This does not, of course, preclude using a triode detector stage, using circuits similar to those pinned up in the Radio Club room.

Op, if you want to do some really ambitious & worthwhile experimenting, what about a superhet. with a balanced input circuit? The balanced circuit is the job for a frame acrial, and even if it doesn't work the description should impress people.

And if you build all that lot in, you are going to



Or perhaps you will decide to do it the easy way and employ an unmodified 1155N. Either way, good luck in you experimenting, good fun, and with a receiver like that you deserve to win - if you get it built!

73 os gud luck.

PRUTH AND FICTION

Submitted by Graham F. Firth

reproduced by kind permission of Short Wave Magazine

Sprog's (RAF. term for beginner) Guide for the beginner.

This short article is addressed mainly to the beginner to Amateur Radio and I hope it will be of some use.

Following on Mr. Formfret's R & S codes, here is the T code:

T1 to T7 are hardly over used

T8 - I do not wish to work you

- Same as RSqv,

T shall be es

Other important abreviations are:-FB - could U please lend mo.....?

OM - I have forgotten your name.

R - if U think I bothered to take that gen on Ur rig.

K - my wrist is tired.

QRX - XYL QRM

Hi - I hope my last remark did not offend.

I can't think of anything to say.

And now for those who have built Mr. Hodgson's receiver, here are some checks for determining the band you are on:-

Unnodulated carriers running continuously, with a separation of about 10 kc., and spasmodically modulated with unintelligible gibberish, probably about shoals or kippers.

50m. Modulated carriess continuously modulated with intelligible gibberish, Several hundred OW signals at every point on the dial.

40n. Super QRO stations giving interesting output statistics of factories in 'Onsk', 'Tonsk' and 'Plonsksk'.

20m. FB dx all the time !!!!! (Except when you are on.)

10m. They say it has been open.

2m. Motor ignition and trolley buses all SQ.

70cm. One QSO per annum.

I hope these will help you in your Short Wave Listening.

TOP BAND CONTESTS

3rd Contest - 2nd March, 1958

G3LZW 27 points **G3MAW** 21 points G3MAB 19 points

5th April 1958 4th Contest -

No logs received

5th Contest. -4th May 1958

No logs received

6th Contest - 8th June, 1958

No logs received

Up to present, top band contests have been held on alternate first Saturdays and Sundays of each month. The sunday evening seems to the most popular, and Britsh 160 metre activity seems greatest. Contests will, therefore, be held in future on the first Sunday of each Month from 7 pm to 9 pm after which thore will be a sked. on 1.9 Mc/s to discuss results. The next contests will, therefore, be held on

SUNDAY, 6th JULY, SUNDAY, AUGUST. 3rd SUNDAY, SEPTEMBER, 1958 7th

Logs should reach the organiser, David M. Fratt, within 14 days after each contest. and should be set out in the following manners

TIME GMT - STN. WORKED - HIS RST - MY RST - NAME - QTH - POINTS CLAIMED All contacts must be on C.W. using standard(non-Contest)procedure. Points may only be claimed if the log entry can be filled in completely.

Points will be scored as follows: B.G.S. Members _ 3 points

Other stations within 10 miles radius of GEMHB

4 points Other English stations points

Stations other then English Stations

4 ti T t t t t

	# 11 73		11 22	747
DIRECTION	-	FINDING		CONTEST
	26th	JULY,	1958	

PRIZE: ASSORTED COMPONENTS PRESENTED (OFFICIALLY) BY

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ADDRESS TELEPHONE (if any)

Signed____

ASSEMBLY POINT: Outside B.G.S. nain gates at 9 a.n.

FREQUENCY: 1901 Kc/s EMISSION: Interupted M.C.W. on 10 ninutes CALL_SIGN: G3MHB/P in every quarter of an hour.

(Power input = 7 watts)

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Charge: 2d. per line (op part of a line)

This form should be completed and returned to David Noble

For office use: lines @ 2d./line. Charge

G.O.E. I would like to offer my best wishes to all readers of this magazine who will be taking examinations in July.

David M. Pratt

DATES TO REMEMBER: This "HAM" published. 7th June .. • • National Field Day St. Bede's G.S. Playing Fields. 7-8th -. . 17th -B.A.R.S. - BCI & TVI - lecture by G.P.O. B.A.R.S. Oscillator discussion (which VFO is best) 1st July G.C.E. Examinations commence. 7th July ... • • Top band contest 6th July ... • • End of torn & Noxt "HAM" deadline. 25th July ... • • D/F Competition. 26th July ... Top Band contost 3rd August • • R.A.E.N. Activity in the area commences. 1st Soptember Top band contest 7th September National R.A.E.N. Rally. (details next "Ham") 28th Septomber

THE HAM is printed and published for the Bradford Grammar School Anat ur Radio Club on the Saturday following the beginning of each half-term by David M. Phatt, GKEP 27. Woodlands Grave, Cottingley, Birkley, Yorkshire.