



SPRAT

THE JOURNAL OF THE G-QRP CLUB

DEVOTED TO LOW POWER COMMUNICATION

ISSUE NR. 56

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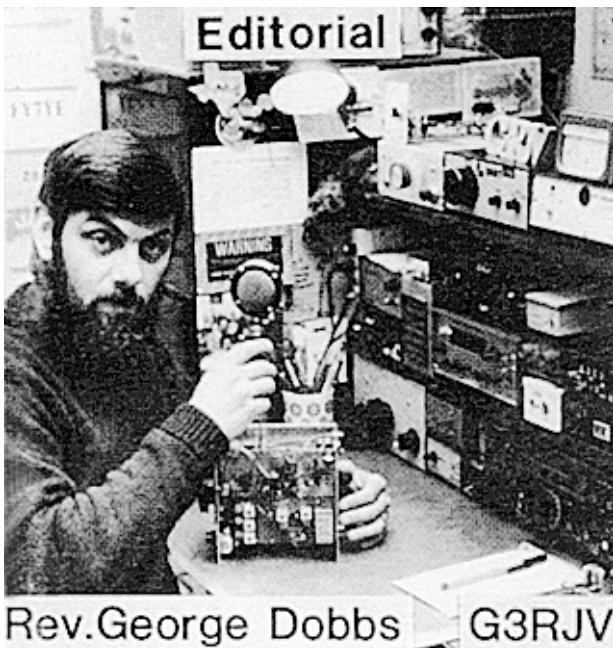
Photograph : Rochdale Coserver

G3RJV/A Operating from St. Aidan's Church Tower

POWER CHANGEOVER UNIT - UNO RECEIVER - VERSATILE VXO - IAMBIC KEYS KIT
DIODE MIXERS - DIODE TUNING - 14MHZ TRANSCEIVER - SWITCHED MULTI DIPOLES
THREE TRANSMITTER - BOTTLE BOOSTER - CLUB OPERATING CALENDAR FOR 1988
G3VTT IN OK - COALS TO NEWCASTLE - PW 2m CONTEST - COMMUNICATION FORUM
MILLIWATTING AND MICROWATTING IN THE 1990'S - SSB NEWS - VHF NEWS

JOURNAL OF THE G QRP CLUB

Editorial



Rev. George Dobbs G3RJV



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Dear Members,

Assuming all things to have gone according to plan, you will have had a bonus with this issue of SPRAT : our first MEMBERS HANDBOOK. At the beginning of the year I mentioned that previous year had left us with a financial surplus which we hoped to turn into membership services. The members handbook is an example. We hope you find it useful and welcome comments and suggestions. I hope that you will heat up the soldering iron on cold winter nights to come and perhaps share your projects and ideas with SPRAT readers. Don't forget the WINTER SPORTS ; I hope to see on the air then ; Dec. 26th to Jan 1st.

73 fer nw

G3RJV



THE G3RJV/A SPONSORED QRP DAY

Did you work G3RJV/A on his sponsored QRP Day on July 30th ? Well 46 members did. By the way that's the shack on the left ! The station was the Argonaut 509 at 2 watts out with the G4HYY Z Match (SPRAT 50) and the superb ERA BP34 Tunable Digital Audio Filter. Antennas were a full sized G5RV given by Ham Radio North West and a G4GKU Minibeam from the makers J&H Amateur Radio. The tower looked good with wires and a beam and rotator! Operation was gentle and mainly devoted to QRP two contact seeking and G4KKI took an afternoon session. A total of 72 QSOs were made of which 46 were two way QRP. The total could have been greater but QRP contacts were the aim and we spent a lot of time seeking them on the higher bands.

The whole event was great fun and money is still coming in. If you recall from the last SPRAT, the object is to raise some money to restore the fine Father Willis pipe organ at St. Aidan's Church. An historic instrument well worth saving. HAVE YOU SENT YOUR DONATION OR SPONSORSHIP MONEY YET ? My sincere thanks to all who helped or have sent donations. If you wish to add to the final total please send your donation to G3RJV and Make cheques out to "St. Aidan's P.C.C."

A shame to take that beam off a 100 foot tower that did not need planning permission!

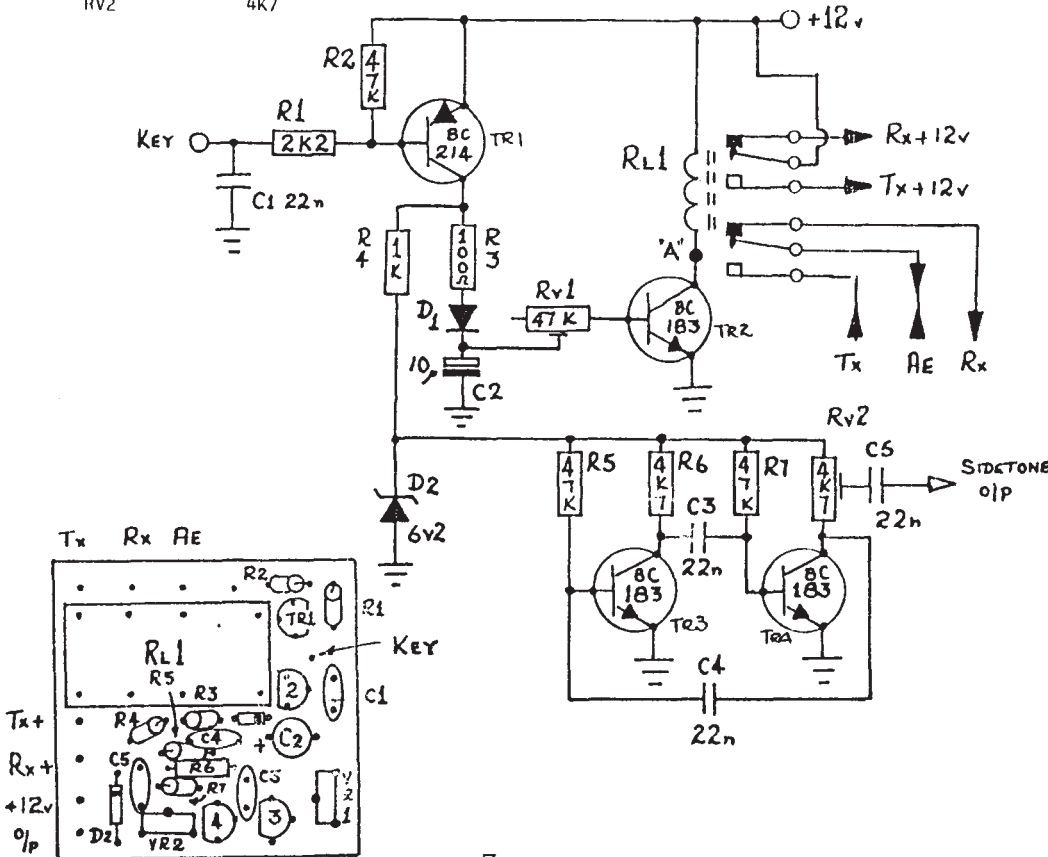
"ONER" AERIAL CHANGEOVER UNIT
G3R00

This addition to the "ONER" range of kits carries out the aerial changeover function and supplies positive supply on receive and positive supply on transmit. As well as this we have included sidetone on the board which can be used to drive your headphones while the receiver is muted.

When the key is depressed, TR1 turns on and the collector goes positive. This charges C2 via R3 and D1. R3 is present to limit the current through TR1 and is not strictly necessary. D1 is present to stop discharge of C2 via the multivibrator sidetone circuit. The charge in C2 turns on TR2 via RV1 and the relay is energised. At this same time the supply is routed to D2 via R4 and 6.2 (5.1) volts is supplied to the multivibrator circuit formed by TR3 and TR4. The frequency of oscillation is about 1 KHz and the output amplitude is adjustable by RV1 and will drive a high impedance pair of phones to uncomfortable amplitude.

COMPONENTS

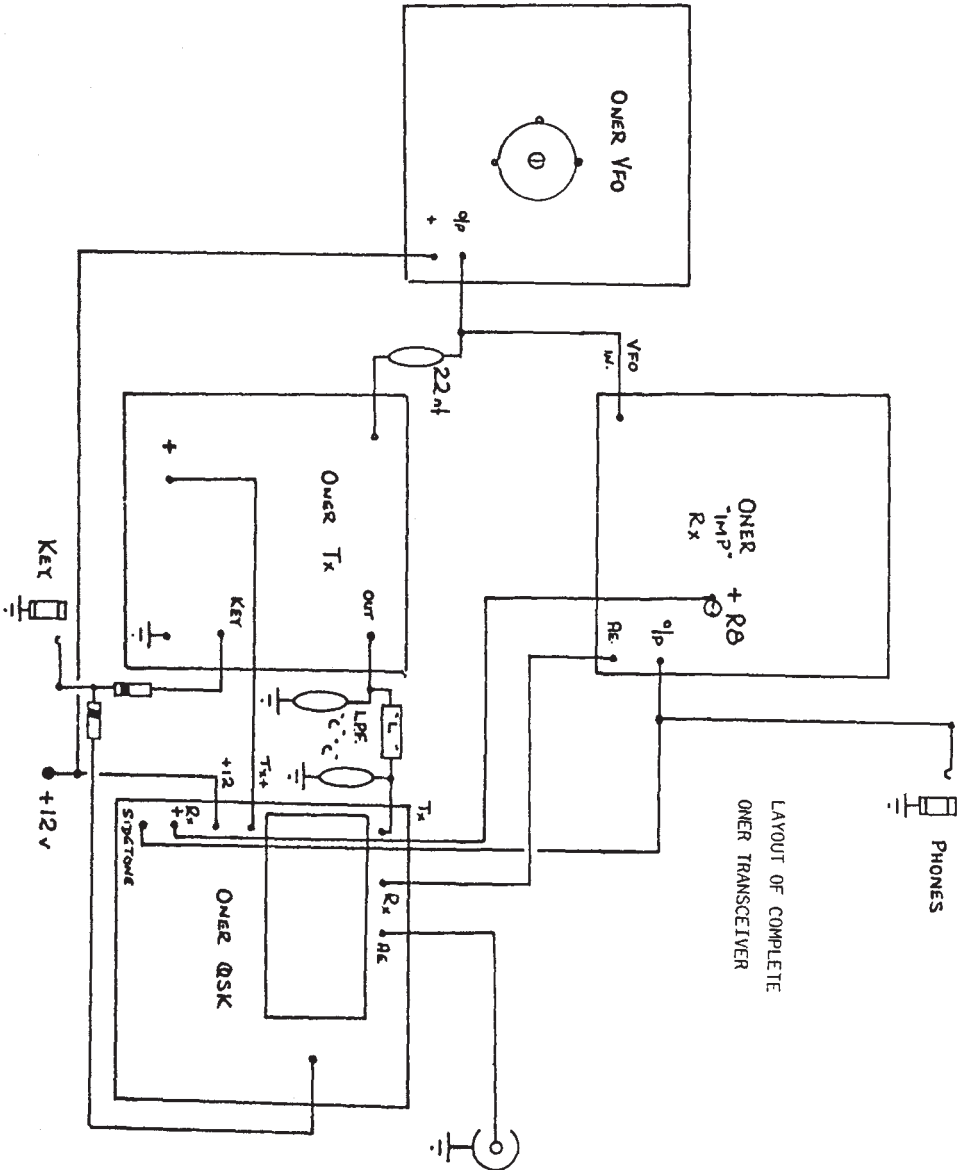
R1	2K2	TR1	BC214 or sim
R2, R5, R7	47K	TR2, TR3	
R3	100 OHMS	TR4	BC183
R4	1K	D1	1N4148
R6	4K7	D2	6V6 or 5V1
RV1	47K	Relay	2P 2W
RV2	4K7		



THE ONER TRANSCIEVER PROJECT.

The CHANGEOVER / SIDETONE BOARD completes the boards required for the complete ONER transceiver - All on ONE HIGH PRINTED CIRCUIT BOARDS.

The basic transmitter board is available in kit form from the club or from Kanga.
 The other boards : V.F.O., RECEIVER, and CHANGEOVER are available from KANGA PRODUCTS.



LAYOUT OF COMPLETE ONER TRANSCIEVER

THE UNO
FINBAR O'CONNOR EIOCF

Over the many years of SPRAT there have been quite a number of simple transmitter circuits, particularly two transistor types and occasionally single stage ones, provided their limitations are understood they can provide lots of fun and enjoyment. There is also to my mind a practical aspect. The more simple and straightforward the project the more likely it will be started and finished. With this in mind I offer fellow members of the club the UNO receiver. I have been fascinated for some time with the idea of a single stage RX. The UNO does work, but the construction does need a little thought, not that its unusual or difficult. To ensure it works first time make sure you follow the winding details on the toroidal core, get it wrong and the RX will play dead. It will just sit there and stare back at you and no end of the usual poking about with various capacitors and bits will launch it back to life. The RX works on the regenerative principal L2 and VC2 are the components to achieve this. As you can see VC2 is insulated from ground so is VC1 and VC3 and will probably prove to be the most difficult problem to overcome. VC1 though can be made a trimmer, it is in my UNO, and then adjusted to the required frequent using VC3 for bandspreading. My first UNO worked a treat built on vero board. When I made a lash up using vernier dials and with it spread out a bit more it howled and squealed and was totally unstable and unusable. Back I went to the vero board and added 2 more capacitors to tame it down and we now have a fine usable RX. If you don't have access to HI z phones a L1700 transformer can be installed and 8 ohm phones used. Using this receiver is fun and reminds me of my days as a radio officer in the Merchant Navy when we used the old Marconi Oceanspan transmitter. There were dials all over it, blue ones and red ones and white ones. One kept a chart of settings so as to know how to get back to the same set up in the event of changing frequency. One aimed for aerial amps and it was known for a heavy book to be put on the key to burn off the moisture on the aerial. What to joy to see the RF amp meter needle rise up. This strong element of hands on operation of radio equipment was normal then and the UNO operation reminds me of my sea time. You work at getting this RX to come to life but there is a definite feeling of really having wrung the signals out of the antenna, after all theres not much between your headphones and the antenna. I suppose you could say you're as close to the other station as anyone. You have done away with the input circuits, RF stages, detection stage and audio stages. Whewww!!!!

Now for the draw backs. The UNO does require a good antenna.... In other words, give it a chance and get plenty of wire up and if possible a good earth will help too. If you change the antenna length, even slightly you change the RX frequency, the same goes for VC4, antenna coupling, change it and you will have to re-set the main tuning trimmer. However under normal circumstances the antenna in use should remain the same and 500 pf for the antenna coupling seemed to work for me, but a trimmer could be used there instead, I would suggest you built the easy xtal osc as in Fig 3 and use it as a signal source for finding your favourite spot. That is provided you don't have a signal generator or a transmitter with a VF0. Keep the output from any of these generators as low as possible as its very easy to overload this kind of RX. The feedback capacitor VC2 is advanced until one notices the proper sound from CW stations, go on advancing VC2 and eventually the RX starts to howl. That fellow operator is too far, back off a bit. What you will find in practice is that there is an optimum setting for VC2 and you will know it from the way your RX works. For example, you have set up VC1 (main tuning) for 3550 KHz with VC3 half meshed advance VC2 to just get regeneration. Now start tuning HF ie. towards say 3560 KHz. You will find the RX becomes more sensitive as you go higher and higher in frequency. Stop and to back to mid position of VC3, now tune LF. What you will find is that the RX will drop out of regeneration as you progress LF. You can see the original setting of VC2 is not just right for tuning this portion of the band. Conversely advancing VC2 close to that howling position mentioned earlier means that when tuning HF, almost immediately the howling begins, tuning LF and the receiver is fine to down past 3500 KHz. So its a matter of setting it, just right, between these two spots. However knowing this, if one wants to sit on a frequency, say 3560 KHz one can hot up the RX with VC2 on that spot, ie. advancing to just below that howling level.

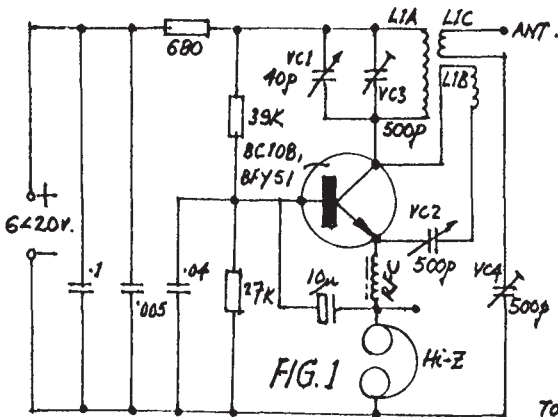


FIG. 1

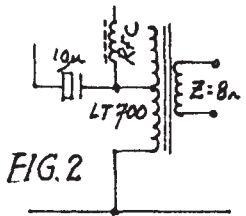


FIG. 2

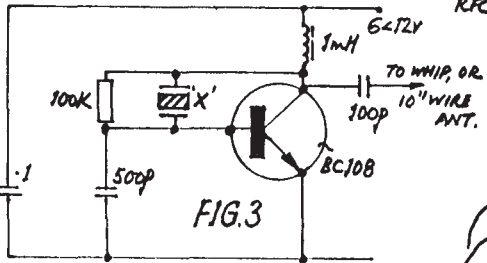


FIG. 3

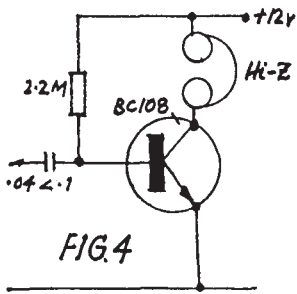


FIG. 4

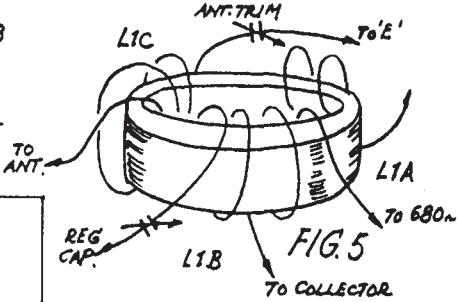


FIG. 5

"UNO" RX
FINBAR O'CONNOR ~ E1QCF ~ 208

- L1A ~ 34t 26 SWG
 - L1B ~ 6t 24 SWG
 - L1C ~ 9t 24 SWG
- } T50-2
- RFC: 10$\times 20$ μH , OR 6t 28 SWG ON FB.

Regarding operation with a transmitter, netting of the RX will require a low level of voltage to the test osc or TX. I needed to reduce my single stage TX supply to 4 volts before the UNO came unstuck from overloading. It is possible to stick on a single stage of audio, Fig 4, but its really not necessary and it takes away from the basic idea. I heard a PY at the top end of 80 meters recently on UNO and although I didn't understand much of what he said it was a great thrill all the same. I'm now working on coil details for 40 meters. The coil for this 80 meters covers from about 3 MHz to 4.2 MHz, so you can listen to aircraft frequency, like Shannon Air Radio, on 3016 KHz and Gander in Newfoundland who I heard at about 2300 GMT a number of weeks ago on their 3 KHz Volmet frequency.

I hope you get as much enjoyment from UNO as I did developing and using it. Long live simple ham radio!

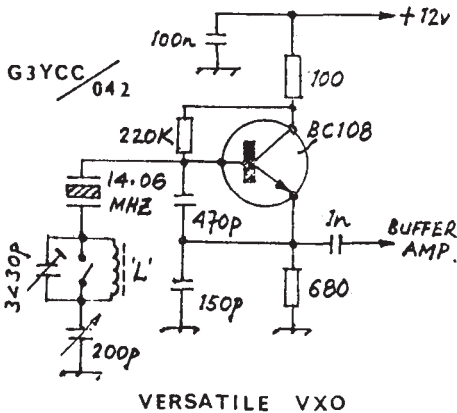
THE UNO ON 40 METRES : Finbar O'Connor EIOCF

The UNO can be made to go on 40m by replacing VC3 by a 80pF variable, in my case I used two trimmers of 40pF. Additionally VC1 needs to be reduced to about 10 (or 5) pF, the original 40pF gives too much bandwidth. Finally VC2 needs to be reduced to about 100pF or less - try different values. With the 80m VC2 value, the Rx takes off even with the minimum value presented by the 500pF variable, so its a matter of reducing the value until the required regenerative action occurs. These capacitive changes refer to the original coil which remains unchanged. VC4 could be reduced to a 40pF variable.

I used the simple audio amp, Fig.4, on 40m and the receiver worked a treat. I would suggest that one uses a small antenna with this configuration. Anything from 2 feet to about 15 feet is all that is required. I have re-examined the 80m set up in the light of the 40m with the UNO. My conclusions are that having tried the UNO as a one transistor RX, one should move to the 2 transistor version and reduce the antenna length to the minimum required.

Again only a few feet of antenna, rather than tens of feet and stick with a PP3 battery rather than a mains derived supply. The receiver will operate down to about 4 or 5 volts. The VK and JA stations I heard on 40m were a real uplift after all the mucking about with the circuit. There were nights when I stumbled down the shack stairs at 3am having been defeated in my efforts, vowing to chuck the lot in the bin and take up....well, anything other than amateur radio. Now I'm working on a VHF transmitter-it works but there have been a few problems recently and I'm looking the for'bin again...

A VERSATILE VXO
Frank Lee G3YCC



Some years ago I had a rig for /P use based on the SCD TX. This had limited frequency swing on 14MHz so this circuit was employed. L1 is wound on the ubiquitous 1/4" former with core : 22 turns of 26swg. the 3-30pf preset is a Beehive or similar trimmer. A 200pF (approx) was a scrap item. Very short wires go to the single pole switch which cuts out L1 and trimmer. By adjustment of the trimmer and L1, the required coverage can be achieved from the 14.060MHz crystal. I found with the switch open the coverage was 14.043 - 14.059 and when closed it was 14.060 - 14.065. More swing can be obtained but at the cost of stability, lack of drive and perhaps crystal damage.

WHY YOUR MEMBERSHIP MAY HAVE BEEN LATE! David, G4HYU, our Membership Secretary during his long continental holiday stayed with DK4UA (Rudi:2901). They both worked G3RJV/A using George's old Argonaut 515! David also visited DJ4SB, Gerd in Mannheim. Gerd runs and HW8 and a wire dipole with open feeders - most unusual in Germany. He is very interested in experimenting with reduced power via an attenuator down to uW levels.

MEMBERSHIP HANDBOOK CALLSIGN-NAME LISTING

Due to an error in communication, some joint husband wife memberships have not been recorded. Omitted from the listing are :

2008	G4GGR	
2777	G1J3W	Jo-Anna
3550	G0AQX	"
4575	G8WWO	Jennifer
3041	G1GZB	Val

IAMBIC KEYER

G3R00/G4ZQK

FEATURES

- Full Iambic operation
- Very compact
- Very low consumption, not worth including a power switch!
- Dot and dash memories
- Negative and positive solid state output keying
- Keying output up to 40 volts >100mA

Recently when talking to Jack G4ZQK he mentioned that he had a very neat little Iambic key PCB that he used. He has kindly allowed us to produce his board for club members.

The design is complex and we have not yet completely worked out the operation, this will be done on our next meeting! As we see it on the left hand side of the drawing Ic1 a and b form the dash memory, Ic1 c and d the dot memory, these are reset by Ic3 a and Ic3 d respectively. It would seem that Ic2 forms the dash and Ic5 forms the Iambic operation. Ic4 forms the clock and gating functions.

CONSTRUCTION

This board is very compact, and a fine iron and fine solder must be used to reduce the chance of solder bridges. Once the board is complete IT MUST BE VERY CAREFULLY CHECKED OVER FOR ANY BRIDGES AND THESE CLEARED. Connect a multimeter on its current ranges in series with the supply and connect supply, the current drawn should be less than 1 microamp.

Now remove supply and connect a miniature 12 volt bulb between the + and o/p terminals. Reconnect supply and using a fly lead connected to the negative terminal touch the dot terminal and the lamp will flash indicating keying. Now touch the dash terminal and the lamp will flash alternately indicating dash dot dash dot dash dot etc.

When connecting to the paddle convention dictates that the dot is formed by the thumb and the dash by the index finger of the right hand. We know of several people that did not realise this and taught themselves the other way around. This is fine but does cause problems when someone else uses your keyer!!

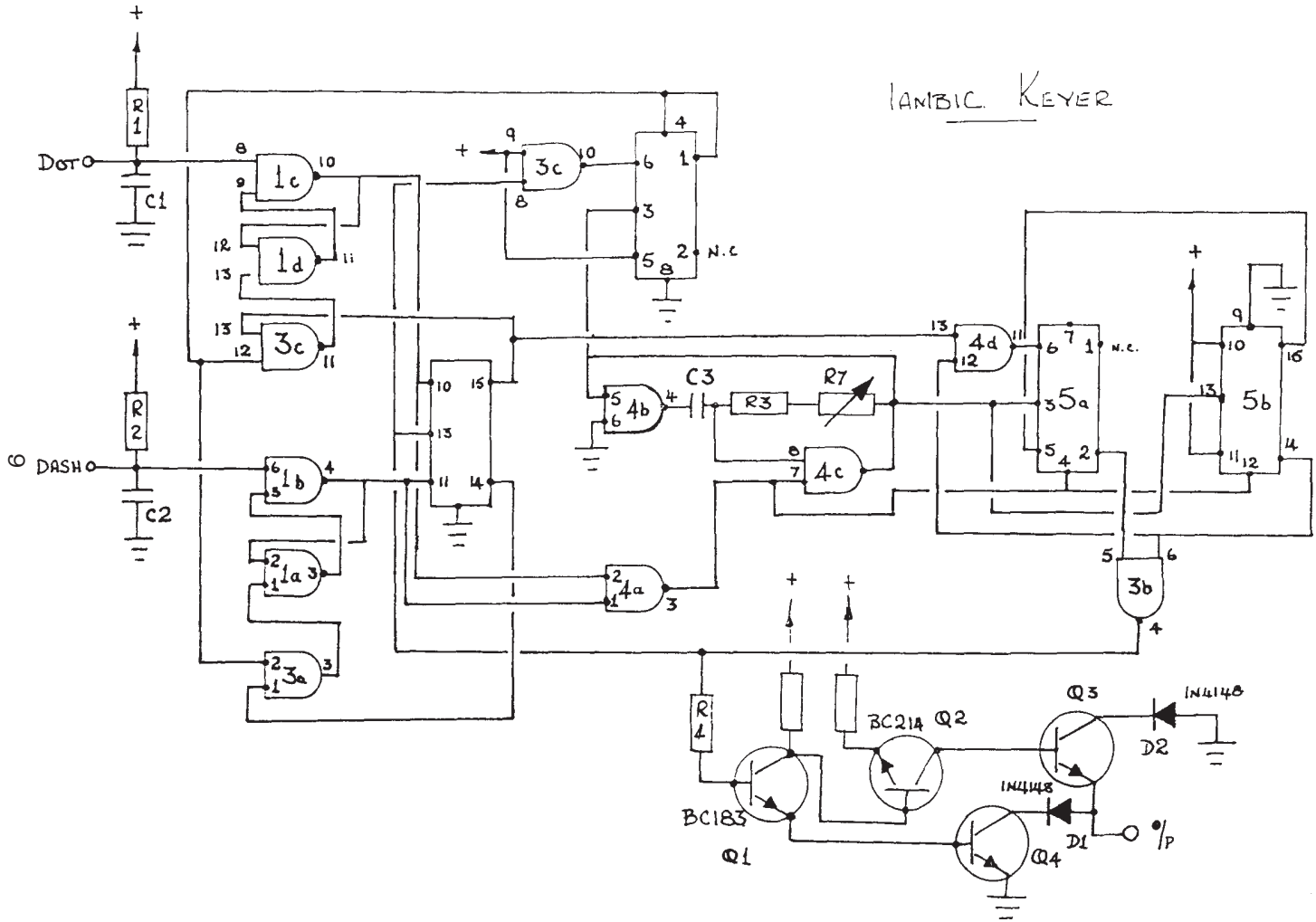
Components for IAMBIC KEYER

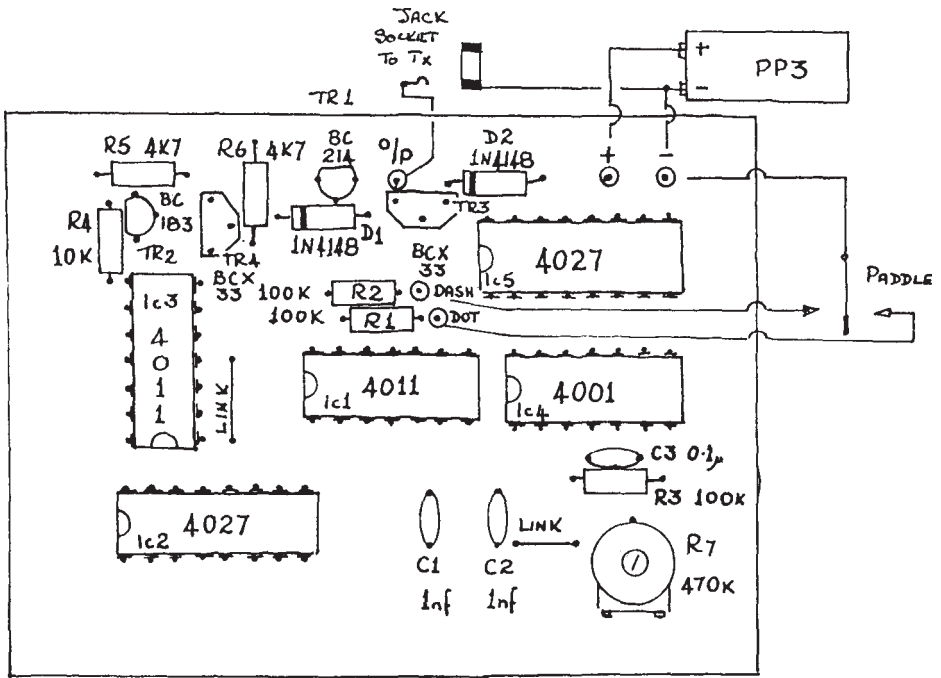
PART	VALUE	PART	VALUE
R1,2,3	100K.....	TR1	BC214.....
R4	10K.....	TR2	BC 183.....
R5,6	4k7.....	TR3,4	BCX33.....
R7	470K LIN PRESET.....	IC1,3	4001.....
C1,2	100F (0.001 OR 102)....	IC2,5	4027.....
C3	1000F (0.1 or 104)....	IC4	4001.....
14 WAY SOCKETS.....		16 WAY SOCKETS.....	

The Kit of parts is available from
KANGA PRODUCTS
3 Limes Road
Folkestone
Kent
CT19 4AU

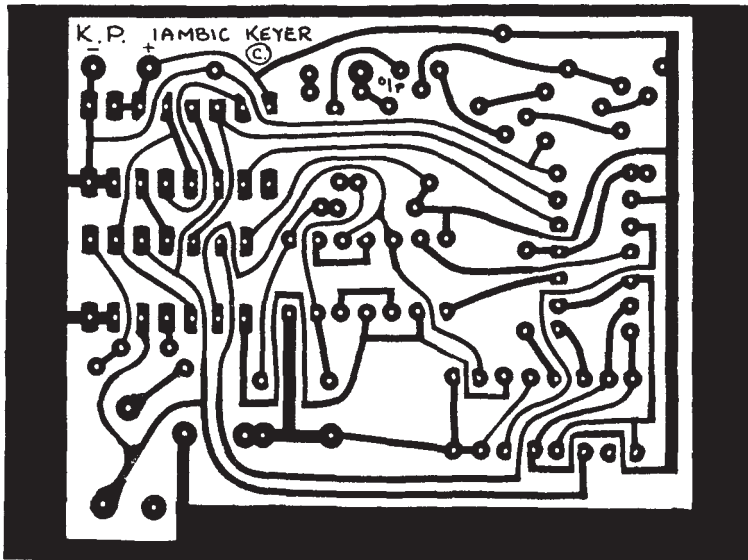
For 12.45 plus 85p postage and packing

LAMBIC KEYSER





IAMBIC KEYSER



HOME BREW DIODE MIXERS
Robert van der Zaal PA3BHK

In direct conversion receivers factory made Schottky Diode mixers like the SML 1 and the MD108 are commonly used. Although they are very reliable devices, they have one disadvantage : they are too expensive for a students purse. So I looked for an alternative and found from some Dutch magazines, that it was possible to make them. Klass, PAOKSB, gave his view on the subject in ELECTRON magazine (1) and the local amateur radio magazine at the university suggested practical methods (2).

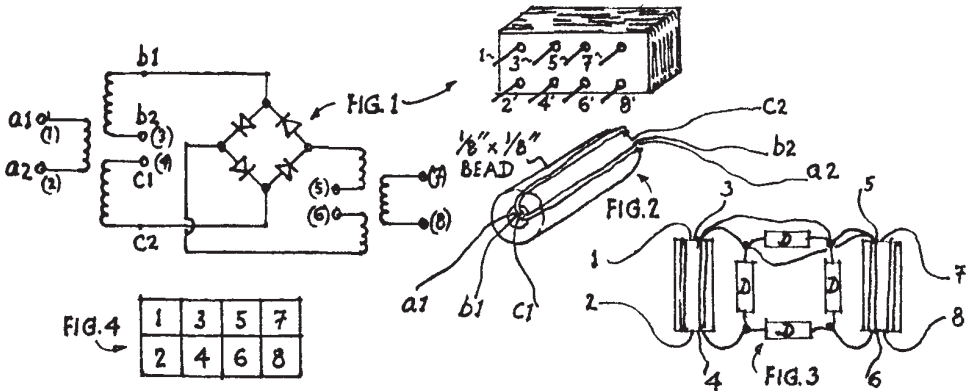
Opening a factory made mixer shows two small transformers and four diode as in the circuit of Fig.1. The diodes are Schottky Diodes, like BA481 (Philips) and HP2800. The transformers are wound on small ferrite beads. So any handy amateur can build such a device, perhaps not as small but certainly as useful.

The transformers are as shown in Fig.2. Carefully twist three lengths of 30 swg, or thinner, enamelled wire, each about 3" long and make two or three trifilar windings. The four diodes are soldered in a "square ring". If the mixer is to be used below 30MHz and Schottky Diodes are not available, ordinary switching diodes like the 1N4148 perform well - perhaps even to 50MHz. Fig.3. shows the set up and Fig.4. a possible board layout to mount the mixer. The numbers in Figs 3 and 4 refer to the numbers in brackets of Fig.1. If pins are soldered through the board of Fig.4, the mixer can be compatible with factory made devices. But when the mixer is to be used on a PCB, the transformers can be soldered in the PCB with the diodes resting on the ferrite beads as in Fig.3.

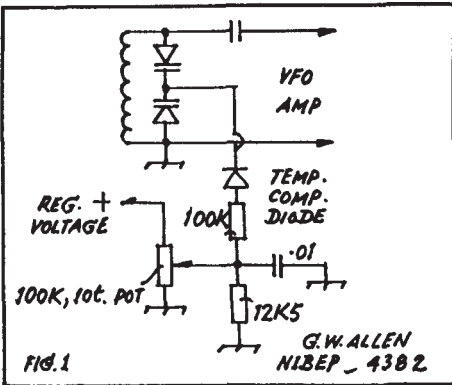
I use homebrew mixers in several circuits. One serves me very well in a 2w converter (144 - 28MHz). Another is used in a universal unit for a DSB/CW transceiver which only needs a local oscillator, a PA and (for VHF) a pre-amp. This unit has been tried on 145MHz with a small xtal transmitter as L.O. driving about 50mW in the mixer, resulting in a QSO over about a mile with the HF end of the mixer connected to the 9el. yagi.

Now the unit is used in a 20m transceiver. The DSB was heard by an amateur half a mile away, with the mixer connected directly to a G5RV antenna. No QSO was made on 20m because the station only had a piece of wire (few feet indoors) as an aerial. But I heard myself via 2m FM, so the first cross band contact was made. Hopefully the 20m rig will be finished this summer, so I will be able to work other members during short skip openings.

- 1) K. Spaargaren, PAOKSB, RINGMODULATOREN MET SILICUMDIODES
ELECTRON. August 1978
- 2) J. Frankot, PA0JGF, SCHOTTKY RINGMIXER (woor zelfbouw)
TWEENTE BEAM. February 1984



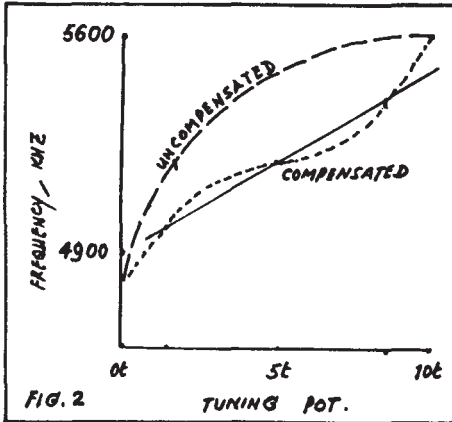
~ ROBERT VAN DER ZAAL ~ PA3BHK ~



TOWARD A MORE LINEAR DIODE TUNING

George W. Allen N1BEP

A more linear tuning range for VFOs can be realized using tuning diodes by means of the following circuit. Values are determined experimentally, but start with the values shown.



The centre portion of the tuning range can be made much more linear, as shown in the graphs. Linearity was improved from 2.7% to 0.5% at 5MHz with a reduction in coverage from 760kHz to 460kHz.

Temperature compensation can be improved with a series diode, as shown.

REF: Motorola RF Device Data, 1983.

14MHz VXO Transceiver Miguel Molina EA3FHC

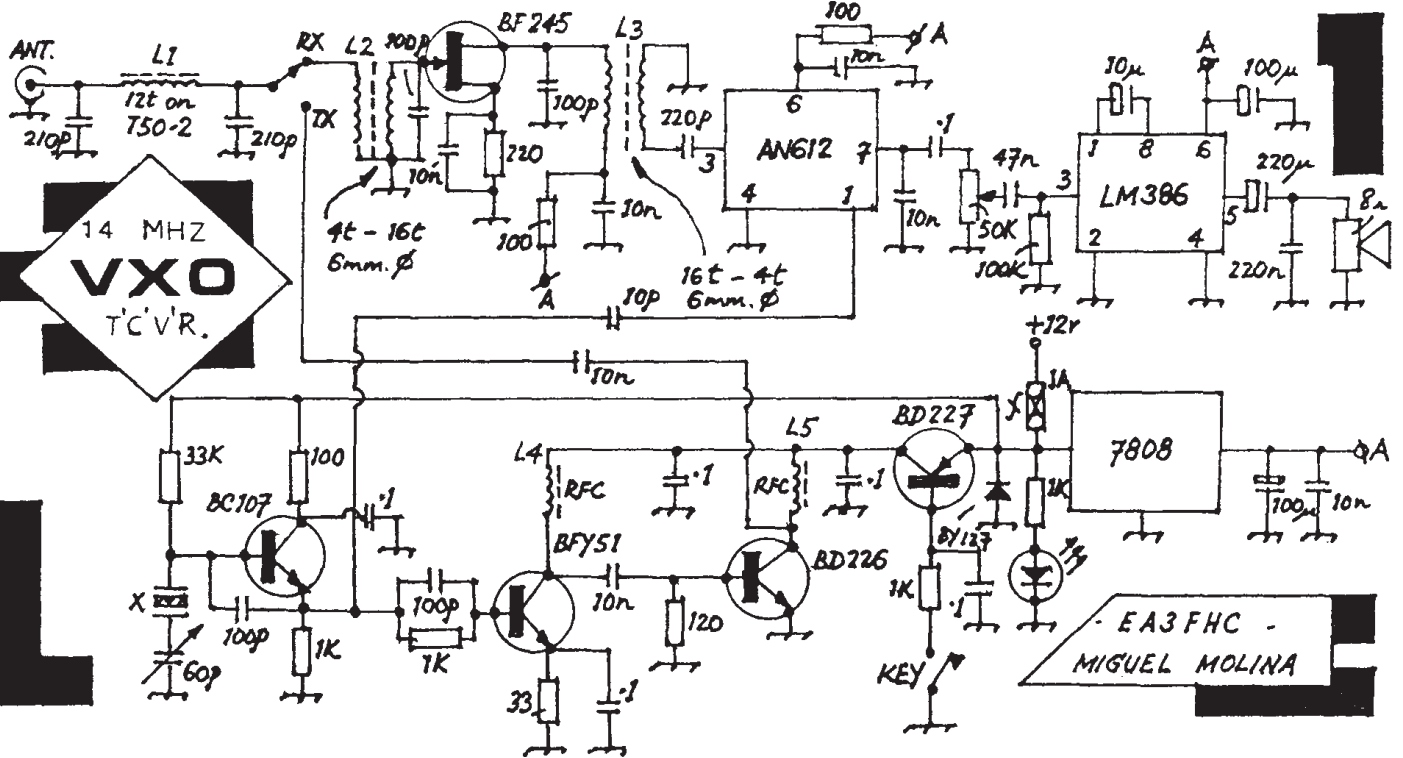
This transceiver is not original as many of you will see. The Transmitter section is based on the OXO and gives me about 1 to 1.5 watts on 14MHz. The receiver section is similar to a design from EA2BIU, but with some changes. I used it in my TOP40 design but this time I have not simplified the audio filter, sidetone and automatic TR. I have also changed the 40673 for the cheaper BF245. In fact the transmitter and receiver section are independent, so if you have a little transmitter like the ONER, OXO, STX etc, it could be used with the receiver.

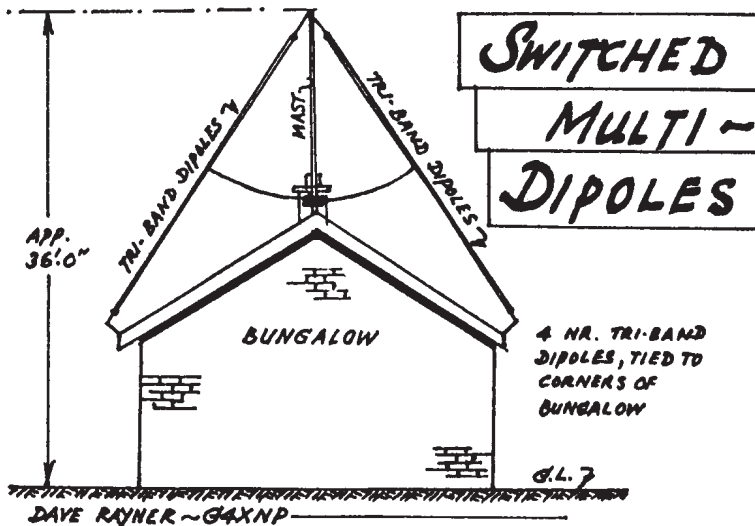
The circuit is easily converted to other bands. If 40-80-160 are tried the BF245 stage could be omitted. I have noticed that on these bands an RF amplifier only means problems such as cross modulation or overloading. Contacts all over Europe, and a couple of USA stations, were made during the first month of use.

NOTE TO UK READERS: The AN612 mixer IC can be obtained from: P.M. Components Ltd. Selectron House, Springhead Road, Gravesend, Kent. DA11 8HD (0474)60521 at 2.15 + VAT + 1.00 postage.

FOR SALE: Heath HW-9 Transceiver, all band options 80-10m, plus 1W9 Wattmeter and HFT9 Antenna Tuner. Mint condition. £240 onb. G6GIC 01-302-0059.

WANTED: UNUSED MLX SSB BOARDS. Please contact G3RJV (0706) 31812

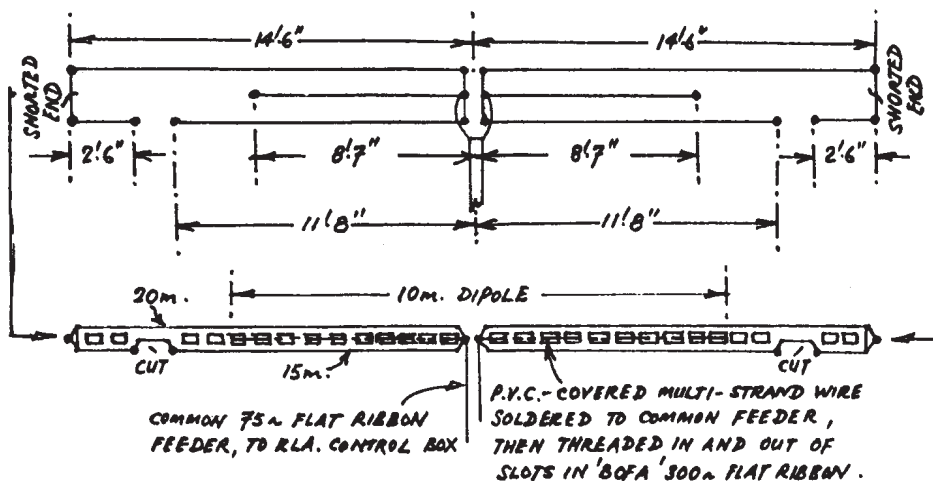




This is basically the sloping dipole system of Chris Page, G4BUE, but with each set of 3 dipoles to each corner of my bungalow.

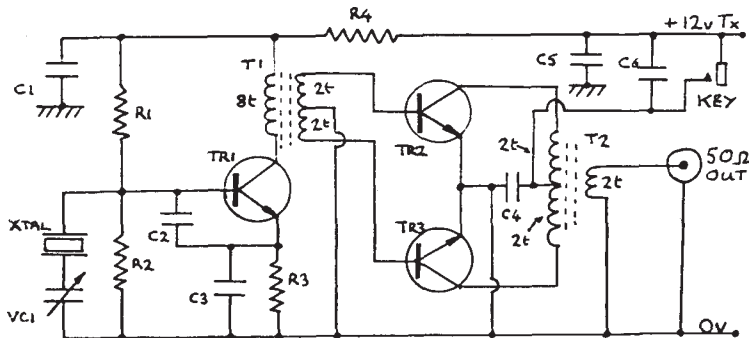
75 ohm flat twin feeders to relay control box on chimney with control going to shack in roof space. Top of pole about 36 feet above ground.

"Schematic" Diagram showing construction of dipoles for 10,15,20m
Lengths from G4BUE article on slopers



Cut BOFA Feeder as Shown : Short and Solder ends

The 10m dipole is plastic covered multistrand wire soldered to common feeder and threaded in and out of the slots in the BOFA 300 ohm Flat Ribbon feeder.



THE THREE TRANSMITTER
Paul Money G4UVA

The design for this rig came about because I bought a bag of BFY51's and also I liked the idea of using a push-pull output to keep second harmonics down, so just using an ATU should be OK.

The circuit is built on a small double-sided PCB with one side as ground plane and all connections made to it. The other side is etched as shown. I find centre punching through a copy of the pattern best and for this I use the end of an old dart, then drill where marked with a 1mm bit and clean off the burrs. Draw the pattern with a pcb pen and cover the ground plane with waterproof tape. The board is etched and after washing off countersink all holes on groundplane side with a 5mm drill.

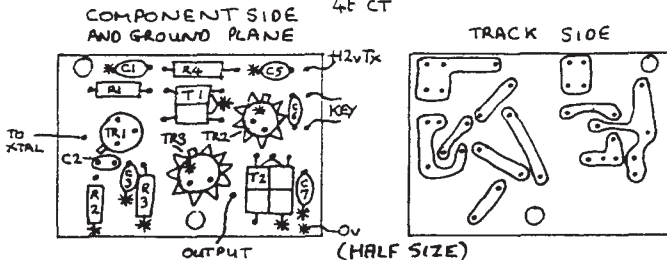
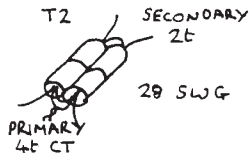
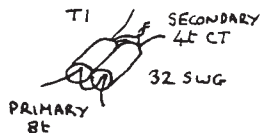
Coils are wound as shown. I used two ferrite beads for T1 and square core from J. Birkett for T2 but four ferrite beads should do the job.

All components can then be put on to the board plus two clip-on heatsinks on TR2 and TR3. A crystal socket is used for ease of crystal changing. VC1 is panel mounted. No output filter other than the ATU is used.

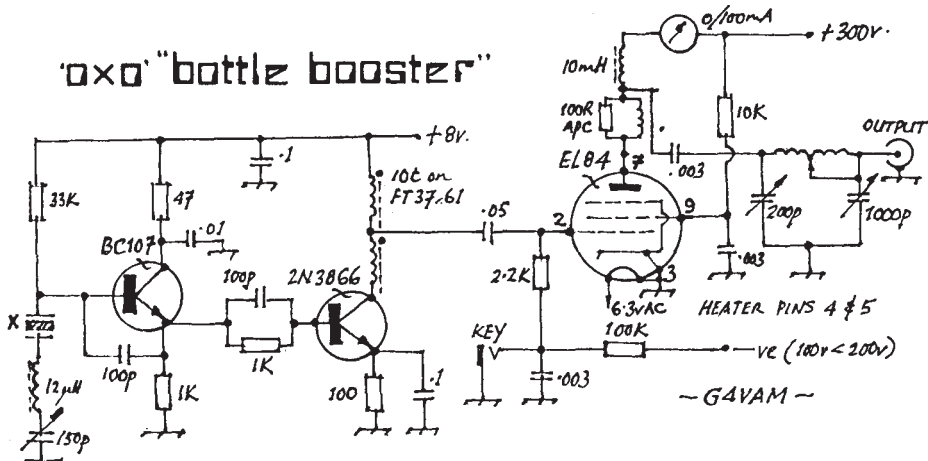
The transmitter is for 90m and gives 1 watt output, more could be obtained but the 1w level is maintained in the interests of TR2 and TR3. It should be possible to work other bands if C2 and C3 in the oscillator are changed to suit the frequency. T and T2 should work for 160m or 40m but this has not been tried.

G4UVA **THE THREE** FOR 80M
COMPONENT LIST

R1	10K	C1	0.1μF	T1	2 FERRITE BEADS
R2	4K7	C2	68 pF		SIDE BY SIDE OR
R3	150R	C3	390 pF		BALUN CORE
R4	180R	C4	0.1μF	T2	4 FERRITE BEADS
VC1	60pF	C5	0.1μF		AS BELOW OR
TR1,2,3.	BFY 51	C6	0.1μF		SQUARE BLOCK CORE
					(SURPLUS TYPE)



'OXO' bottle booster



OXO BOTTLE BOOSTER Paul Harrison G4VAM

This circuit was used at G4VAM to give 3 to 5 watts out on 80m, 40m and 30m and 3 watts out on 20m. The 8 volts for the OXO was derived from rectified and smoothed LT. The broadband transformer in the prototype was wound on a surplus toroid, the FT37-61 is a suggestion. All values were optimised by experimentation. The circuit was later developed into:



THE QRP ARCI FALL QSO PARTY

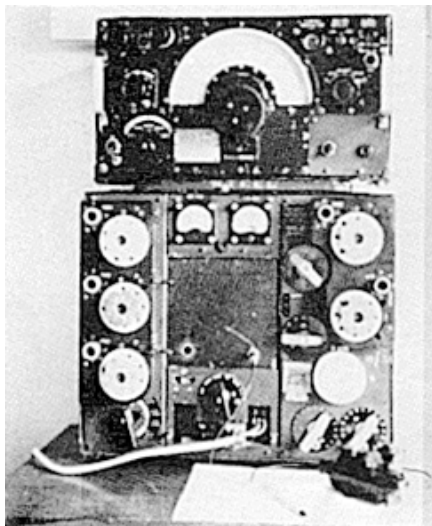
24 hours maximum between 1200z 8 October and 2400z 9 October on 6 - 160m CW. Exchange is RST, State/Province/country (SPC) and (members) club number or (non-members) output power. QSOs with members 5 points, non-members in different continent 4 points and in same continent 2 points. Multiplier is total of SPC on all bands and bonus is +2000 for homebrew TX, +3000 for homebrew RX and +5000 for homebrew TCVR used. Power supply multiplier of x1 for commercial power, x1.5 battery power and x2 for solar/natural power. Power multiplier is x10 for less than 1w out, x7 for 1-5w. Over 5w is check log only. Score is QSO points x SPC x power mult. x power supply mult. + bonus. In addition any 2-5 members can enter a team, the team score being the total of that teams points. Team captain to send calls of team members to K5VOL prior to contest. Single or all band entries. Summary sheet and logs to be post marked within 30 days of contest and sent to Red Reynolds, K5VOL, 835 Surryse Rd., LAKE ZURICH, IL 60047, USA.

THE QRP ARCI HOLIDAY SPIRITS HOMEBREW SPRINT

Between 2000z and 2400z 11 December 1988 on 6-160m CW. Exchange RST with suffix of /HB or /C for homebrew or commercial rig, State/Province/country, and members give Club number and non-members output power. Same scoring as for the Fall QSO Party above without bonus for homebrew equipment. Class 1 for all homebrew gear and Class 2 for mixed commercial and homebrew gear, a minimum of a homebrew TX or RX must be used. All commercial gear entries will be used as check logs. Logs and summary sheet within 30 days to K5VOL, address above.

THE QRP ARCI WINTER FIRESIDE SPRINT

Between 2000 and 2400z 15 January 1989 on 6-160m SSB. Exchange and scoring as per the Fall QSO Party above but without bonus for homebrew equipment and power multiplier of x10 for up to 2w PEP, x7 for 2-10w and over 10w is a check log. Logs and summary sheet to K5VOL within 30 days.



No - not the RAF Museum, but G3DOP on QRP ! John has replaced the pa valves in his WW2 T1154 with a single 6V6 and runs this famous wartime transmitter at 2 watts, receiving on the companion R1155 receiver, which was kindly loaned by Nor, GM3RKO. From top to bottom : Receiver R1155, Transmitter T1154, and complete the outfit, aircraft key Type F. We believe another member, G3HKD, also has an 1154 working on QRP. Full article in Morsum Magnificat soon.

CLUB OPERATING CALENDAR FOR 1988

- 1st January Last day of 1988 Winter Sports
- 21/22 January G/OK QRP weekend. Work OKs as follows
- 0600-0700 3560
 0800-0900 3560
 0900-1100 10106
 1100-1400 14060 (Note 1)
 1400-1600 10106
 1600-1700 7030
 2100-2400 3560
- Note 1. If open try 18,21,24 or 28 KHz on the hour and half hour. Logs to G8PG. certificates.
- 15th February Logs for G4DQP and Chelmsley Trophies to be in (Chelmsley rules in SPRAT No.41)
- 12/18 June Summer Ramble. Maximum activity on all QRP frequencies, especially on QRP DAY, 17 June. Suffolk Trophy for best log on 17th June. Entries in by 17th July. (Rules : SPRAT 50)
- 1/8 October Difficult Locations Week. Stations from areas indicated use around 3560 or 7030 with plenty of CQ calls. Please move other QRP work off these frequencies for the period. Certificates for best difficult location logs. Operation as follows:
- | | |
|------------------------|------------------------|
| 1 Oct : all EI/GI | 5 Oct : Northern GM |
| 2 Oct : Northern GM | 6 Oct : All GW |
| 3 Oct : All GW | 7 Oct : EI/GI/GD/GU/GJ |
| 4 Oct : EI/GI/GD/GU/GJ | 8 Oct : Northern GM |
- Logs to G8PG by October 30th
- 26 December to 1 Jan 90 Winter Sports. This year SPECIAL 1.8MHz PERIODS on 29th and 30th December, 2200-0100 and 0400-0600 gmt with special reference to 1815, 1850, 1900KHz. Otherwise maximum activity on all QRP frequencies. G4DQP Trophy for the most outstanding achievement + certificates
 Logs to G8PG by February 15th 1990

A QRP VISIT TO OK
COLIN TURNER G3VTT/OK8AFI

If you want to experience a beautiful country with charming people, an orderly way of life, the finest hospitality and the very best of Amateur Radio with the Old Ham Spirit, try Czechoslovakia!

It all started last year when Petr OK1CZ came to stay with me for a couple of days. I had thought many times about our friends Petr and Pavel OK2BMA in Czechoslovakia. Looking at the map it did not seem too far from West Germany, but being the other side of the Iron Curtain I never dreamed I would ever go there. As I spoke to Petr I realised a visit was possible and slowly the plans for the trip evolved. I had to say 'adios amigo' to my old friend Chris G4BUE as once again he jetted across the Atlantic to Dayton, N4AR, and beyond and turn my thoughts to the East.

The airfare was cheap - only #125. The visa was #20 and there was a Czechoslovak Government regulation that I had to exchange about #10 for each day of stay in the country. On the whole the trip was very inexpensive as indeed trips beyond 'the Curtain' are. On the outgoing flight on a CSA Tupolev 154 Russian airliner, I had the thrill of passing over G2HKU's QTH on the Isle of Sheppey! I have seen his island from both sides at 30,000 feet! Landing at Prague I had to clear quite a few immigration and customs facilities and finally I met Petr waiting for me in the main hall with just a few steps to his waiting car which was the inevitable Skoda. (Do not believe the stories you hear in the UK about Skoda's, they are trusty, cheap to run and whilst a bit spartan they do the job of transportation very well).

Prague is a beautiful city, largely untouched by wartime bombing, full of old buildings, churches and museums. Petr has a fine QTH on a hill with a super view across the city from his balcony. He has a top floor flat with a large shack in the basement which is cool and comfortable. I was alarmed to find how far Petr had to run upstairs to answer the telephone if he is on the air. This accounted for the breathless conversations he has had with me when I telephone him, (sorry Mate), after running up three flights of stairs. Yes you can telephone Prague very easily, check your phone book, it is not very expensive either.

Petr has a good antenna system consisting of a set of dipoles which run from the top of a chimney mast to the garden either side of the house, and in the case of the 160m dipole, across the street to a lampost. He has a 'text bopok' W8JK 2 element beam for 14 and 21 Mhz strung between two blocks of flats which can be operated on 80 and 40m by an ingenious relay system on the garage roof. There is also a G3LDO beam for 21 Mhz on the balcony. In the shack I found Petr's new transceiver, an FT 101E, bought on the last trip to the UK, and the famous AR88 transceiver which he has used as a 1 watt all band transceiver for many years. There was plenty of other homebrew equipment around and the inevitable Russian surplus.

One of the things I had come to Prague to see was Russian radio equipment. I had been taking a course in Russian at evening classes thinking that it may help in Czechoslovakia, it did to some extent as some Czech words sound Russian but are spelt using Latin or Roman letters, and I am always interested in the technology coming from behind the Curtain. As predicted the Russian surplus gear is well built, simple and reliable. I was most surprised to find a surplus shop in downtown Prague selling surplus. Visitors to my shack will find a 5 amp RF Ammeter made in the Soviet Union but of course I do not have enough RF power available to drive it to full deflection!

Apart from the trips to the city centre on the regular efficient trams and using the Metro, which was spotless, we went to churches, restaurants and museums. Blanka, Petr's XYL, could not join us for a few days as she was away, so we lived like two tourists eating in Yugoslavian, Czech, and Russian restaurants. I was able to try out my Russian and obtain a menu for my Russian class in the process.

Petra had also arranged an internal air flight for us to Bratislava to see Pavel OK2BMA and we took a Tupovlev 134 there early one morning. We then took two trains and a tram to Pavels flat in the area of Gottwaldov, to the North, which once again is in a most picturesque part of the country although much more hilly than Prague. Pavel was delighted to see us and we proceeded to spend an evening with him and Tonda OK2PEX in which we ended up in a Moravian restaurant. I am sorry to admit I got a little drunk but honour was restored when I presented the chef with a G QRP badge for his efforts, sang some folk songs, and gave a speech about International Amateur Radio friendship. actually we all got drunk and the wine helped with translations. It is a wonderful wine they well in Czechoslovakia! Seriously I must say I found the hospitality most touching and I was overwhelmed by the friendliness of all I met. The next day saw Petr, Pavel and I walking 3000ft up in the Boskady Mountains which we all thought was a good way of getting rid of our hangovers! Singing as we walked I was also able to try out my newly acquired walking boots bought in Prague for a mere fraction of the price here in England. Pavel arranged for me to see the OK2KRT Radio Club and for a tour through the mountains in a little FIAT 850.

Pavel showed me the famous HW8B, his homemade Heathkit, his various QRP projects, and his main receiver. The receiver covered all bands and consisted of a wartime German EL10 rx as a tunable IF with a converter. The basic EL10 covered the longwave beacon band and had a low IF and hence good selectivity and had been modified to cover 160m. This is a normal receiver modification to a surplus set in Czechoslovakia and Pavel had done it when he was a novice. He had also made a valve converter ahead of the EL10 and put the two units in a box; you can see it behind my back in both the photographs. The final receiver sounds good and the UB5's and UA6's sound even louder! Selectivity sounded more than adequate for normal operation. Pavel also has an HW32 for 20m which we used to work a G back in Maidstone to say hello to those at home.

After saying a very sorry goodbye Petr and I flew back to Prague on a Yak 40 from Bratislava. (I am sure Chris G4BUE will be pleased to know I got 9 new 'spots' in OK and was able to 'deck' two of them, the Yak and the Tu 134, as he will tell you I am an avid aircraft fan. (He hates them).

When we got back to Prague I was finally able to get my OK8AFT call sign and go on the air the day before I left. It was worth it as I made 60 QSO's in under 24 hours with the last QSO being QD5LX. I was able to tell US friends I was operating from the heart of Europe and yes it was really me Colin G3VTT with the Iron Curtain Call.

Well that is rather a short precis of my trip. If you want to know more and hear all of the stories then you may be lucky to see my slides the next time I go to George G3RJV's or give a talk at one of the radio clubs. Would I go back again? You Bet! If you want real Ham radio the place is OK!

Finally my sincere thanks to all my friends in Czechoslovakia, Nashledanou, tesi me, ahoj.



OK1CZ and G3VTT



OK2BMA and G3VTT

COALS TO NEWCASTLE
Bob Brown NM7M
504 Channel View Dr., Anacortes, WA 98221

"The sunspots are coming! The sunspots are coming!"; that's the cry these days here in the US with the arrival of Cycle 22. And by the pace and quality of the dx that's being worked, there's no doubt about it. Indeed, the speculation at the moment is whether this cycle will be better than Cycle 19, the biggest one in recorded history which peaked in '58 during the IGY. And just about everyone who has an idea on the subject is putting it in writing. For my part, I have to heed the words of NOAA in Boulder; they may not be the only game in town, as we say, but I have to respect their experience.

So what are they saying at the moment? The latest word in July '88 predicts a steady rise in the sunspot count and solar flux, at least in the next 6 months or so, the SSN reaching about 165 +/-40 and the flux about 205 +/-30 by the start of '89. After that, the predictions start to get "iffy", with the peak in the cycle in the '90 - '91 range. Better we should follow the cycle a bit further before getting too involved in the questions of when the peak will occur and the corresponding SSN.

In the meantime, DXing is a day-to-day business, requiring that we keep our ears to the bands to monitor "reality" as well as follow what the sun is doing we can gaze into our own crystal ball and play a hunch or two about 27-day recurrences. That means we keep track of the solar flux on 10.7 cm, as given to us by the Dominion Observatory in Ottawa, and the A-index from NOAA in Boulder or one's national geomagnetic observatory. I add that latter point as the number of magnetic stations in Europe is many times what we have in the States; we only hear of the indices from Boulder via the WWV broadcasts but maybe you can get the same information in the U.K. by radio or a simple phone call to Greenwich.

In my correspondence with a number of G's, I've heard of occasions when they've actually called Boulder by telephone in the off-hours and got a quick reading of solar conditions. The cheaper way to do that is listen to the 10 kW signal that WWV puts out on 5, 10, 15 and 20 MHz. But from the U.K., that's a 7500 km path, not exactly a short haul on 5 MHz but within reason on 15 MHz. So when does one listen for the signals, giving the flux and A-indices at 18 minutes after each hour? If there is some "institutional memory" within your local ham club, you can quiz the Old Timers and heed what they say. Lacking that, you can make an educated guess using considerations based on signal loss in the D-region. Thus, in the months toward the end of '88 and into 89, you'd expect to hear WWV on 5 and 10 mhz when there's darkness on most of the the path, say 23-08 GMT.

For 15 MHz, it's another matter as the ionosphere must support propagation at the higher frequency. For that, one needs a MUF or even better, a MUF/signal strength program to find the times to put one's ear to the receiver and hear WWV.. If you have a computer and the proper program, you'll find that, using the predicted SSN's, the 15 MHz signals from WWV should be getting to the UK around 14-19 GMT.

Before leaving this subject, it should be noted that such computer programs prove quite helpful in DXing, say looking for the openings for the "New Ones" that the DX bulletins mention, as well as checking out strategies for contests. In that connection, the best programs I've come across have their origin in the U.K., thanks to the efforts of Raymond Fricker of the BBC External Services. However, maybe my circle of acquaintance is too small but I have yet to encounter any hams from the U.K. who are aware of his work. So if you have a computer and are interested in a BASIC listing of a good MUF program, drop me a line and we'll get something together. Now maybe you understand why the title of this article is "Coals of Newcastle"!

PRACTICAL WIRELESS 144MHz QRP CONTEST 1988
STEVE HARTLEY GMOFUW

For the last three years I have taken part in the PW QRP contest from the top of Portsdown Hill using a Mizuho MX-2 with 200mW into a variety of antennas. None of the combinations brought any "prize winning" results but all three days were really enjoyable occasions. Since last year I have moved to the west coast of Scotland and in the process I acquired an FT-290. The improvement in equipment and the proximity of some largish hills gave me extra enthusiasm for this year's event.

The first thing to consider was the site. A quick scan of a local map revealed no easily accessible high spots like Portsdown which has a good road along it with numerous parking spots for the "mobile shack". Obviously this year I was going to be truly "/P"! Opposite my home QTH is a range of hills which form one side of the Garnock Valley, the highest point being the Hill of Stake at some 500m ASL. I decided that this would be my contest site.

The next thing to consider was the equipment. I had the FT-290 but I wasn't sure how long the Ni-cads would last under field conditions. To be on the safe side I decided to take along a spare set of ordinary HPiils just in case. The antenna was an easy choice, I only have one, an MET 7 element yagi but what was I going to mount it on? Previously I had strapped a rounded length of 2x2 to the car and used that but this year I wouldn't have the car. In true G-QRP-C style I set about looking for bits and pieces to make a portable mast. a length of all tube, a broom handle, some scraps of wood and a few guy lines from an old tent and Hey Presto! (construction details to follow.)

I awoke that Sunday hardly daring to open the curtains but my fears were unfounded, the sun was trying to shine. Only a haze of mist and low cloud stopped it being a beautiful morning. It was eight o'clock when I left the car and set off walking giving me two hours to get to the site and set up shop. As I began the climb the only sound to be heard was a cuckoo calling out. It soon became obvious that it was going to be hard work reaching the top, I discovered that the hillside was criss-crossed with gullies and ditches so the trek across the heather was a slow zig-zag. I was certainly glad of the low cloud cover to keep the temperature down!" By the time I reached the top of the Hill of Stake the contest was under way. I got the antenna up and tuned as quickly as possible. I'd missed the first half an hour but at least I had made it!

First contact was to the north of Scotland, and the second. The atmosphere was much more relaxed than I was used to with stations exchanging details of exact locations, the weather and what was around on the band. A far cry from "You're 59002 I08LXX good luck in the contest." Turning the beam to the south showed what I'd read was true, no-one beams north until they have run out of southern squares! The first CQ call to the north brought in LA5XAA with a 55 report, one of the high spots of the contest for me. The day progressed and eventually a few G's were worked and the GI and EI stations seemed glad to return my CQ's. Into the afternoon things slowed down a bit so I switched to the key and worked GM30AV in Glasgow, not the way to win contests but it passed the time! The key came in handy a bit later when GMOFRT appeared in the "rare" square I087. He caused quite a pile up by running full power "to give points away" and my CW was picked out and a fine report returned.

Later in the day the contacts became more local and by five o'clock it was time to call it a day. The contest still had an hour to run but I wasn't going to win any prizes by hanging on to the death so I closed down and bid farewell to the Hill of Stake with 72 contacts, 20 locator squares and a raging suntan for my troubles. On the way back the ditches seemed wider than ever, the heather deeper and coarser and wild grouse scared me more than I scared them! When I eventually reached the path back to the car park the cuckoo was still calling. Was he trying to, tell me something?

Looking at previous results my score should put me about half way up the list this year which is a vast improvement on my past efforts. I shall be active again next year but maybe from a different site. I would encourage all our members with a VHF capability to have go next year and "take to the hills!" A SUGGESTION: How about a club trophy for the highest placed member? There is not a lot for the club VHFers on the trophy scene.

SSB NEWS Ian Keyser G3R00

Ian Keyser G3R00, Rosemount, Church Whitfield, Dover, Kent

Well not the mail that I expected and those letters I did receive were all in favour of my comments about QSL's, perhaps not so avidly as myself but never the less in agreement.

The Sunday net is useless for me, what with the rotary net and the European QRM it is hopeless. Two weeks ago I could not even get into the rotary net!! If we could change it to a weekday I am sure that life would be better, even in the early evening, perhaps some of you have a weekday sked, if so let us know and we could call in. Brian G4MLI (1388) feels the same and will try and join in at another time, down there in Cornwall has had the same problem as here...Europe!

A letter from John, G3INZ. (My first QSO on the Oner transceiver), saying that after 36 years of amateur radio the award bug has bitten, please look out for him and QSL!

The award bug hit John C4XVE (3145) some time back because he is up to 139 club members confirmed, however he takes the award manager to task and says why does the G-QRP club need QSL confirmation (Gus, please note!!)

A long letter from Angie (4260) She works 2 metres with 8 watts PEP into a 4 ele Yagi at 10 feet....but she is 450ft ASL, it helps! During the big lift in November she managed OK (J0-70) on CW and several DL's on SSB.

On HF Angie is using a TS130V mainly on 10m SSB with best Dx a 4X4 at 57. She is looking forward to her first QRP VL/ZL QSO. She also finds that in pile-up the statement QRP will often catch the Dx stations imagination. She also makes the observation that it is hardly worth calling immediately the Dx station stops transmitting but it is best to wait five seconds or so as then the main rush of calls has been completed. I also practice this but I will only ever call into a pile-up two or three times, I would rather search the band away from the usual 'Dx' frequencies as rich takings can then be had in relative peace.

Finally a big log from Jack, G0IW0. He uses 2 watts from an Argo 509 into a G5RV with open wire feeders direct to the ATU. (That's what I call a doublet). Operating mainly early morning (0900z) his log contains some very nice QSO. 4X6TW, 5I. UA9MWR, 5S. AA2W, 5Z. CN8KT, 5S VE3LGC WEAK. SORAS 5S. EABAGO 5S.... plus many others. If just goes to show what can be done with a couple of watts on 14 and 21 KHz.

That's the lot for this time, please keep the letters coming and what about a mid week sked?

SPECIAL CLUB OFFER - LIMITED STOCKS

We have managed to secure a small stock of crystal filters to offer to club members only. One (of each) per member only please.

YF - 90F : 9MHz, 6 Pole, 2.4kHz SSB (stock about 20)

TF90H600 : 9MHz, 10 Pole, 600Hz CW (stock only 8)

EITHER FILTER AT £15 each from G3RJV

Please enclose a SAE with your order, Cheques: G QRP CLUB plus your number.

WANTED: Argonaut 515 or 509 Please ring G0FT0 (0204) 657410

GOOD NEWS

Thanks to Ed Wetherhold, W3NQN, the club has been able to import a good stock of the 88mH inductor stacks to build the range of famous W3NQN Passive Filters. The less good news is that HM Customs and Excise made us pay quite a lot of duty on the parcels but they are still good value. Our special thanks to W3NQN who sent them at no gain to himself. Details of what is available will be found in the MEMBERS HANDBOOK.

John Beech G8SEQ 124, Belgrave Road, Wyken, Coventry CV2 5BH (0203)617367

First my apologies to those of you who have purchased Tx Boards for the "White Rose Project". There are some mistakes in the artwork, which meant that the early boards need modification get them to work. The corrections are as follows:

- 1) The schematic is correct except for the omission of two decoupling capacitors on the 12 V supply rail. They are included in the layout.
- 2) There are two DC blocking capacitors missing from the layout. One should be inserted between the P.A. Transistor collector & the output circuit. The other is between the mixer output & the 50 MHz pre-amp stage. To rectify some minor surgery is necessary; cut the tracks & solder the capacitors on the underside of the board (which incidentally is why they got left off the overlay!)
- 3) Two emitter by-pass capacitors are missing from the layout. These form the potentiometer tap on the pre-amps which control the gain of these stages. Very low gain results if they are missing. Again the remedy is quite simple, simply solder the capacitors on the back of the board (no cuts required this time).

The only remaining problem is that the PA bias resistor needs to be selected to give the correct collector bias current. The prototype was biased to run at 330 mA with no signal (2N3553), giving Class A operating conditions. Under these conditions the average power dissipated by the transistor is constant irrespective of the drive level applied, so if there is no thermal runaway with no signal there should be no problems when sending SSB, CW or FM. If a 2N3866 is used the bias current should be reduced to about 130 mA and the stage operated in Class AB. This may mean reducing the drive level on SSB to avoid distortion, but the useable output should be well over 1 W PEP.

Drive levels were not mentioned in the original notes, but as a guide they should be not more than 50 mW @ 28 MHz and 2mW @ 22 MHz.

Regarding the receiver board, most of the feedback was been to say how well it works, but a few people have experienced problems, which all concern the local oscillator. In the original circuit oscillation is sustained by feedback which relies on circuit strays. Jeff, G8PX had one which stopped oscillating when he coupled in the Tx board. The cure was to connect a 22pF capacitor between the emitter and the base. A Mr Barker had one which failed to oscillate at all and I suspect that this would cure his. I built a second one which would only work if I poked and prodded it in various places. I used 18 pF, but I suspect anything between 5 and 30 pF would do the trick!

While still on the subject of 50 MHz, I hear complaints about the lack of activity, which is bad news if you are trying out a new Rx for instance. However I spent about an hour one Friday evening tuning around an apparently dead band, not transmitting because I was waiting to use the club call which was on 2m. When I did eventually call CQ I got an immediate reply and within minutes there were at least half a dozen stations on the band! So the moral is that there is no such thing as a dead band, any band will always be open to somewhere, even if it is only down the road.

Finally, for this quarter some encouragement from MANFRED DL9CE. He says he is often on early and late evenings as well as weekends, using just 1/5W. 9 el. Yagi on 2m 144.060 CW or 144.300 SSB beaming into the UK. He says conditions are often better than most people suppose. His best Dx is 1200 km.

On a personal note I managed to work a couple of LA stations on 6m while in Wales on holiday. I think most people missed the event because it didn't get going until after midnight. I wonder how many other members worked stations during this event? (22.7.88).

WE HAD HOPED TO INCLUDE THE CIRCUITRY OF THE SIX METRE TRANSMIT CONVERTER IN THIS ISSUE UNFORTUNATELY IT WAS NOT PREPARED IN TIME FOR THE DEADLINE AND WILL APPEAR NEXT TIME

QRP COMMUNICATION FORUM Gus Taylor G8PG

Gus Taylor G8PG 37 Pickerill Road, Greasby, Merseyside. L49 3ND

"ELECTRIC WAVES, BEING RESEARCHES ON THE PROPAGATION OF ELECTRIC ACTION WITH FINITE VELOCITY THROUGH SPACE" was published by Professor Heinrich Hertz of the Karlsruhe Technical High School in 1888, one hundred years ago. It contained a report of his work to prove the Faraday-Maxwell theory of the existance of electro-magnetic waves which travelled at the speed of light, which could travel through obstructions (albeit at reduced speed) and which could be reflected. Despite entering literally into the unknown, Hertz produced experimental proof of all these assumptions by a series of brilliant experiments using the most simple equipment. His transmitter consisted of a spark coil connected to a dipole, and his receiver of a resonant loop with a spark gap inserted into it. To prove reflection he used sheets of metal. By the end his experiments Hertz had measured the speed of the eletro-magnetic waves to an accuracy of just over one percent, had proved that they were waves having nodes and anti-nodes, had shown that they could be relected from a suitable conducting surface and, most importantly, had shown that maximum energy transfer to the receiver took place when transmitter and receiver were tuned to the same frequency. Owing to the small laboratory space available Hertz had to adapt his frequencies to fit into his environment, and one hundred years ago these experiments were carried out at frequencies between 50 and 500 MHz! A truly remarkable man, and it is good that we still honour him each time we tune our equipment to some multiple of the Hertz.

THE SUMMER RAMBLE started with three days of excellent conditions, then they tailed off badly. Despite this there was a great deal of activity and many members were able to work for the first time. The social aspect of such events is very important. For results of the Suffolk Trophy see Award News later on.

160 PERIODS ADDED TO WINTER SPORTS. At the request of our UK friends there will be special 160m periods during future Winter Sports, starting this year. Dates are 29 and 30 December, time 2200-0100 and 0400-0600 gmt; watch particularly 1815, 1850 and 1900 kHz. Remember also that OL novice stations will also be around on QRP. Of course all our normal Winter Sports fun will take place 26 December to 1st January on all bands. This is the chance to up you QRP score. CU there!

ALL OUR QRP OPERATING EVENTS APPEAR IN THE CLUB OPERATING EVENT CALANDAR printed elsewhere in this issue. Please enter the dates on your shack calendar as a reminder.

AT THE AGE OF 14 I SENT MY FIRST SWL REPORT. It was to a G2 station I had heard on 7 MHz am phone. Although I did not know it at the time, he was a well known DXer who must have received dozens of such reports. But instead of throwing my report into the waste paper basket he not only sent me a card, but on the back of it suggested that I could learn about amateur radio if I bought the then new "RSCB Guide to Amateur Radio" (remember this was 1934). I bought the pamphlet, and it opened a new world to me. From then on radio communication was my goal. Three years later I was sending and receiving cards myself as a fully licenced amateur, and a little over four years later I joined my first ship as a qualified radio officer. All this very largely because one man followed the amateur code and made sure that the QSLs he received were acknowledged.

Fifty years later, looking back on a successful full-time career in communications and electronics, and an equally successful 30 years part-time career in teaching and writing about amateur radio, I know just how much I owe to the G2 who did QSL. That is one reason why the 500 or so cards arriving at G8PG each year are all answered irrespective of the labour and expense involved. Among them there may be just one from someone who I can encourage in the way that I was encouraged over half a century ago.

OUR CZECH FRIENDS WILL AGAIN BE JOINING US for the annual OK/G Activitu Weekend on 21/22 January, 1989. See the QRP Calendar elsewhere for details. A real chance to work some good OK QRP ops

REMEMBER IT IS THE CURRENT THAT DOES THE WORK! If we analyse the performance of any half wave antenna we find that almost 70 percent of the energy radiated from it comes from the centre quarter wave. The reason for this is that this portion of the antenna carries maximum current, and it is the parts of antennas which carry high current that do most of the radiating. This knowledge is important in several respects. firstly, if at all possible we should get the centre part of the antenna as high as possible; the people who use inverted V dipoles are not stupid! Secondly, if we are short of space and have to bend our antenna to fit, we can take a lot of liberties with the ends, but should try and keep the centre as long and high as possible. In this respect, remember your loft space - it may be possible to run one end of the antenna indoors into the loft. Thirdly, even if one cannot get the whole centre quarter wave straight, try and get as much of the centre as you can high and straight. (Multi-band, end fed antennas are obviously a different matter, so here try and get at least one current maxima up in the clear). When it comes to verticals, the ground plane is easy to feed, but it has its current maximum at the bottom, where screening effects are often maximum. The good old T antenna, with the vertical leg a quarter wavelength and the horizontal legs each a quarter wavelength, gets round this problem, as maximum current appears at the top of the vertical leg, well clear of the ground. It can be used with a short counterpoise (say two 1m lengths of wire under the antenna). The base of the vertical section presents a high impedance, so you will have to use an antenna tuning unit and feed back to the shack via co-ax, but the end result is a very efficient antenna which, as it is made from wire, is mechanically much easier to make than a ground plane.

AF FILTERS OPERATING AROUND 1,000 HZ ARE INHERENTLY INEFFICIENT because they ignore the characteristics of the second part of the audio chain, namely the human ear. The ear has a built-in discrimination system which works on the percentage difference between the two tones which it is trying to separate. For example if a desired signal is providing an output at 1,000 Hz and an interfering signal is present at 1,100 Hz the difference is only 10%. If we use a 400 Hz filter, on the other hand, the interfering signal will be at 500 Hz, giving a percentage difference of 25% which the discriminating faculty of the ear will cope with much more easily, thus providing far better copy. This has been verified experimentally at G8PG. how about some 400 Hz L/C filter designs for SPRAT?

5N QRP CLUB. Thanks to the assistance of the IARU in the shape of G3FKM (Region 1) and N1C1X (IARU HQ) We have been able to assist this Club to obtain a further Project Goodwill kit to replace one destroyed in a fire. This will help introduce a number of youngsters in Lagos to QRP amateur radio.

AWARD NEWS

SUFFOLK TROPHY 1988 to OK1CZ, runner-up G4CFS. Congratulations!

NEW QRP MASTERS congratulations to GM4UYE and G3LGH who have both been admitted to the Worshipful Company.

CLUB AWARDS. Congratulations to the following

QRP WAC: G14DQO, G3LGH

QRP COUNTRIES. 150 G4JFN (well done), G3XJS (ditto), 100 G3IQF, 75 GM4UYE, G3LGH, 50 GM4YLN, 25 G0GAW, GWODYT, G4CFS.

WORKED G QRP CLUB. GM30XX 640 (all cw!!), G4JFN 600 (well done!), 500 G3XJS, 200 G3KPD, G4WZV, G2DAN, 160 G4RAW, 140 G3LGH, 120 G4XVE, G4CFS, 100 G4ETJ, 80 G0FTO, GM4UYE, GWODNR, 60 GW3SD, UP2BFE, FA3EGV, GWODYT, G4IQO. 40 G4JVJ, G4VPF, G0EWH, G0HTR, G0BYA, G14DQO. 20 G0HEY, G0BOP, G0H0J.

Try sorting that lot out!

LATE FLASH

LATE FLASH

UNITED ACTION SUCCESSFUL!

Thanks to united action by our own Club, the EUCW, and other organisations the AMTOR On 7030 will be moving shortly.

MILLIWATTING AND MICROWATTING - AN ALTERNATIVE METHOD FOR THE 1990s

By Chris Page G4BUE

With the increase in sun spots and better conditions on the HF bands, I have been turning to "milliwattting" and "microwattting" again. These are the terms given to working DX with milli and micro watts.

My article in Sprat 50 described the method I used during the last sun spot high. That system was based on accurately measuring input power, but since then we have gone over to output power. I have made several references in my Members News column to the Welz RP-120 meter, which I purchased at Dayton in 1986. The lowest setting is very good for measuring output power, as it has 200mW on fsd, but it is difficult to accurately measure below 5mW. After my results during the last sun spot high I am now confident that with well designed and efficient antennas DX QSO can be made with much lower power levels, well down in the microwatt range. Some alternative to my RP-120 meter had to be found of accurately measuring these very low power levels of RF. In addition none of the dealers at Dayton this year had any RP-120 meters, so it maybe that Welz have stopped making them.

Whilst in the flea-market at Dayton I purchased an Allan Industries Inc. stepped attenuator, model 50TAB2-5 for \$20. The unit is 50 ohms impedance and is capable of inserting up to 82.5dBs of attenuation in steps of 0.5, 1,2,3,6,10,20,20 and 20dBs. 81dBs attenuation of a one watt signal represents 7.5 nanowatts of RF, which I considered more than enough for my purposes!

The unit is very well constructed and testing it against the Welz meter, it would also appear to be accurate, i.e. halving the output power with each 3dB inserted. I have fitted the attenuator to my 515 Argonaut, and by using the Welz meter can accurately set the drive to provide 1 watt out. It is now an easy matter for me to insert the appropriate amount of attenuation to obtain the desired output. I have made up a small chart which I keep by the Argonaut, showing my output power in relation to the amount of attenuation. I can now quickly and accurately decrease my power from 1 watt to almost any level, e.g. 250mW (6dB), 976 micro watts (30dB) or if I am feeling really ambitious and confident, 953 nano watts (60dB)!

One problem I have encountered is that by inserting the attenuator in the antenna lead, the received signal is attenuated as well as my transmitted signal! This is not a problem if the received signal is 599 from a big contest station, but doesn't help with the average QRP signals. Some form of relay to switch the attenuator out during receive will have to be designed.

My first QSOs with the attenuator were on a very rough 15 meter band at the begining of August. I worked WB2LEM with 3dB (500mW) and K2LE with 6dB (250mW) of attenuation. Nothing remarkable, but it showed the attenuator was working. My Summer QRP Party the following week-end coincided with the WAE CW Contest, and contests are always a very good way of making QRP contacts. Carlo, PA3DWZ was one of the three Dutch QRPers staying over the week-end, and after the other guests had departed we settled down to do some serious milliwattting.

It was great fun to listen to a USA QRO contest station continually making contest style QSOs, while we called him with gradually less attenuation until we finally got through. 20 metres was the only band still open and I had never been able to make milliwatt QSOs on that band during the last sun spot high. I later discovered this was due to my antenna, as after re-designing my four element tri-bander onto a bigger boom (30 feet), I was able to cross the Atlantic with levels down to 5mW and once with about 1mW, as measured with the RP-120.

We first of all worked KQ3F at 15dB (31.25mW), and then K3WW and N2GZL at 20dB (about 10mW). By then the band was going out and it was necessary to go back to a full watt to mak

We first of all worked KQ3F at 15dB (31.25mW), and then K3WW and N2GZL at 20dB (about 10mW). By then the band was going out and it was necessary to go back to a full watt to make QSOs. Two interesting points come out of these QSOs. First, whilst making these QSOs we called several other well known contest stations who were the same strength as those we worked, but they did not hear us. I suggest this is because they were using high power to achieve their loud signals whilst the stations we worked were using good antennas, and skilful receiving ability. The second point is that, in theory at least, you do not need a big beam to go milliwattting. I like to think my yagi has a forward gain of about 8dB, and assuming this to be right, means that if I had been using a dipole instead of the yagi I should have been able to work K3WW and N2GZL with 20 - 8dB = 12dB = 62.5mW. I may erect a simple dipole to see how much the theory differs from the practical.

The purpose of this article is to try and persuade you to give milliwattting and microwattting a try, hence my reason for writing it at this early stage and before I have seen how much low power I can go down to and still make DX QSOs. As I mentioned earlier, I am confident that given the right conditions and efficient antennas, microwatts, (and possibly nanowatts), can be used to make DX QSOs. I will report again in due course.

In the hope that this article has stirred your interest in milliwattting, I can hear you saying, "but where do I get an Allen Industries Inc. attenuator from?". I cannot answer that, although one of our American members may be able to, but what I can suggest is turning to the ARRL Radio Amateurs Handbook. Page 25-42 of the 62nd edition (1985) describes the construction of a low power step attenuator of 50 ohms impedance and having the ability of switching in up to 60dBs (953 nanowatts on one watt). I would be pleased to supply a photostat copy of the three page article in exchange for a SAE. I would also like to hear from other members who have tried milli and microwattting, especially those who have used different methods.

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The Multi-Channel Crystal Oscillator has been redesigned to fit Toko 10K coil formers following requests at the RSGB Convention.

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ARGONAUT WANTED: Myles Hely, 25 High Street, Olney. Bucks.

MANUAL WANTED for Trio 9R-59DS Receiver by Trevor Artingstoll, G0J0E, 16 Marlborough Road, Romford. RM7 8AJ

WANTED: Cobra 19X and/or Uniden AM, Circuit Diagram for Above. G3Z0F, Tel: after 6pm, 0366-384660

WANTED URGENTLY: RF TUNER Noll (for LARKSPUR C-13 SET) by I.G. Mant, G4WWX, 28 Welbourne Rd. Childwall, Liverpool. L16 6AJ

WANTED: Narrow CW Filter for FT707 : Dick Pascoe, G0BPS, c/o Kanga (see advert)

WE REGRET TO ANNOUNCE the deaths of the following club members: G4CRI (Mac:4437 ex 437), G2CAV : 456, G3SPR (Terry;2307) and G2HII (Richard:588)



"Alamosa", The Paddocks, Upper Beeding,
Steyning, West Sussex, BN4 3JW

The only response to the challenge for the quickest QRP WAC from G3XJS has been received from NNOF in Iowa. John offers QSOs with CT3 at 1919, XE at 1921, F6 at 2007, HD8 at 2226, JA at 2232 and ZL at 2354. Although an hour longer than Peter's WAC, still a very good effort in non-contest conditions. John was using 5w out and although the contacts were made on 15 and 20m, he was using an 80 metre dipole at 30ft, open line fed to a transmatch. With the conditions continuing to improve all the time, there must be some other fast WAC achievements being made by members. Let me know about them or any other interesting ways you have made WAC. Proof that conditions are improving comes from your letters. G4UYA worked his first JA with his low G5RV on 21MHz, G4CFS recently worked VK to complete his WAC and then did WAC again the following day, and G4JFN has worked ZL with 1w and V6 on two-way QRP. Bob has also made milliwatt WAC. G4KKI worked V188NSW (VK2) and VK5 with his modded HW7, and now only needs SA for WAC. As final proof on conditions G3XJS says he made his 1988 DXCC three days quicker than he did in 1987!

G4KJQ is going to West Germany for a tour of duty and will be using the call DA1GT to his FT7 on RTTY and Packet as well as QRP. Ron has a Heathkit RAI receiver in good condition surplus to requirements, and would like to exchange it for a 2m handheld with cash adjustment. He can be reached at F8249564 SAC Crawford RD, Cammen COC, RAF Laabruich, BFPO 43. NNOF is QSYing to England for a year and will be doing research in Oxford. G3GJQ should now be active as /5NO from Victoria Island with a TH5 at 80ft, 2el yagi for 40m at 55ft and slopers.

Ray is surrounded by salt water and should put out a good signal. K7OWJ and WB8TSO are going to a trade convention in Taipei in October. Denton and Wayne will be QRV between 15-18 October from BV with Heathkit gear. They will dedicate some of their operating time to QRP.

G0CFN has made his own version of the SuperScaf filter and by using hex switches instead of BCD ones has been able to obtain additional cut-off frequencies. On a different tact, and to get a little controversial, Terry says that many members tend to run their morse characters into one long transmission, making it extremely difficult to separate the individual characters from each other. Other stations transmit too fast so that some of their dots are lost. Terry thought his CW was reasonable until he recorded himself and played it back - rubbish! It bore no resemblance to what he thought he was sending. He suggests members do the same and play their CW back a few days afterwards. There may be one or two shocks waiting! I entirely agree with Terry; sending CW is like driving, we all think we do it well and don't like to be criticised about it. There are many excellent CW operators in the Club, but unfortunately there are also some awful ones who do not help project the image and skills that we like to associate with QRP. It is even more important that you send good CW when using QRP, and I recommend you record your own code as suggested by Terry. I thought my CW was good until I visited the USA a few years ago. One of the shacks I visited had a computer and a morse programme which displayed on the screen what you were sending. After my initial embarrassment I amended my sending style so the computer displayed English instead of rubbish! If you know someone who has such a programme, ask them if you can try it. In ensuring you send good CW you will be promoting the image of QRP and your own call.

G4FNL has moved out of the flat he has been in for the last three years and now hopes to get some good antennas up. Graham had TVI problems at the flat as three flats were connected to one TV antenna! G3DOT moved from Beds to S.Humbs in June, and is now QRV with his HW8 and Century 22 to a 66ft wet string, until he 'educates' the neighbours. Talking of the Century 22, G2HKU recently tried out the first British built one at KW Ten-Tec Ltd and worked a W2 on 20m with it. G4NPV has taken delivery of a Century 22 from the KW production line. Dave hooked it up to his 10m 2el beam and worked WA4NBE (2533) which was a nice way to christen the new rig. He then worked FT2XE and 3B8CF on 10m and is very pleased with the rig.

W5QJM sends more information on the ARRL Convention in Dallas on 2-4 June 1988. The ARCI have booked 40 rooms at the Marriott Courtyard Hotel for the QRP gang. Rates are \$44 per

room and there will be a QRP hospitality suite and QRP station. Three flea-market spaces have also been booked and all QRP clubs are invited to participate in the information booth operation. An awards banquet is being arranged for Saturday evening and there is to be a technical forum and banquet speaker. After experiencing Texas organisation in 1983, I just know Fred and the gang are going to make a huge success of this one. Give them your support. Whilst on the social scene, G3OEP is again running his "QRP Beside the Seaside" meeting at Great Yarmouth on 10 September. Perhaps Dave will let me have a report on it for my next column. Pam and I held our fifth Summer QRP Party here on 13 August and yet again the weather was kind. PBOAHS came with G3VIT and PELLIF, PA3DWZ and PELMIO stayed the week-end. Marinus and Carlo helped me build a 2m antenna on Sunday afternoon, and I am now QRV on 144.525 with a Trio 2200 (2w of course!). I monitor that channel whenever I am in the shack as it has been adopted in several parts of the country for HF DX information, and we have a good group beginning to grow here in Sussex.

G3SYC has been QRV on 50MHz, but is now back on 10m. Brian uses 3w and has worked ZS, PY, 8Q7, TY and FB8 with his two wave terminated wire. G0HTR has been on 2m CW due to 80m QRN. Larry is using an Icom 202S and is finding 2m CW a real pleasure. He cannot get on with keys so has acquired a first rate heavy brass key. Larry is interested in hearing from local members for a VHF net, (Tel: Tamworth 898024). G1ZCY was active from G80ITV on 2m FM during the recent Telethon. Paul said they had go to 1.5w instead of 70w due to interference, but then broke a pile-up, proving once again that brains are better than watts!

PA3DWZ has been active on 30m with his 1w TCVR. Carlo has worked 20 EU countries and W1 and W2 with it to a 25ft inverted vee in the last 6 months. G0EBQ has worked 24 DXCC with his Imp at 250mW. Nigel worked a G3 on 80m who gave him 5x2, which is normal as his G5RV does not work very well on that band. He then noticed the resistive SWR bridge was still in circuit and on checking found it gave only 100mW from his OXO and 50mW from the Imp. Nigel says it is a good way to go milliwatt, although it also attenuates the incoming signal! Nigel has found the same trouble I have with my new "toy" from Dayton. I bought an Alan Industries Inc. stepped attenuator in the flea market. It can put up to 81dB of attenuation in, which on a 1 watt signal is 7.5 nanowatts!! It should enable me to accurately get down to power levels below the few mW that the Welz RP-120 can measure.

Ajit, VU2Z0Y reports there is a lot of QRP interest in his local club at Karale, and G3KJC sends information on an interesting article from the

December 1977 edition of Ham Radio about an accurate low power RF wattmeter. This will appear as a separate article in Sprat. G3NNK worked OK3CUG and Igor asked Alf to send his regards to his UK QRP friends. Alf is using the Altron minibeam for 6,10,15 and 20m. N8CQA has built the Twofar and Ramsey receiver kit into the same box to make a nice combined rig. Buck is soon erecting his repaired Hy-Gain 10/15m yagi. G0HGA uses a TS130 and linear for both QRO and QRP, and is also active on 2m, often working QRP'er F6FLE in Calais. Angie was active in the IARU test and was pleased to crack the WIAW pile-up with her 66ft wire. She has some bad TVI problems on 40m when running QRO at 50w. WF6U had an enjoyable holiday in the UK this summer. Hollis is still working on his Acorn tube final.

G4OIC says the U-QRP-Club operated a QRP station in Adzor (oblast 014) between 5-20 August with the call UZ3EXB/UF3Q. The operators were QRPers EA3EAC, UW3DM, UA3QLC, UA3GVR and UB5FDG. QSL information is to UA3GVR, Box 229, Lipetsk, USSR. G0JNX, in response to GW3FSW in my last column, is also interested in QRP RITTY but so far is only QRV on 2m. He would like skeds. Just as I was preparing this column, G3XJS rang me to say that G3PLX has agreed to move his mail-box from 7030. This is terrific news, and Peter and others who wrote letters are to be thanked for their efforts on behalf of all of us who use 40m QRP.

G3OEP has modded his JU6 by replacing the PA transistor with a 2N3053 and using a transformer type PA ATU with a further tuned circuit in front of the mixer dual gate FET. Dave successfully used a loop in the QRP Contest. It was a 200ft rectangle, 35ft high and fed with slotted 300 ohm midway along the lower wire. Dave also says that when working /P and /M a mobile whip looks at 40m as a quarter wave wire to the PA. This means that a mobile whip resonated at 7030 works quite well on 21060 without re-resonating it. Another tip from G0CFN, Terry says that tarnished and discoloured BNC connectors can be made to sparkle like new by giving them a couple of washes in the washing machine!

Just room to say thanks to those of you and your wives who came and helped make our QRP Party another good day to remember. Let me know how your Autumn goes, by 20 November please.

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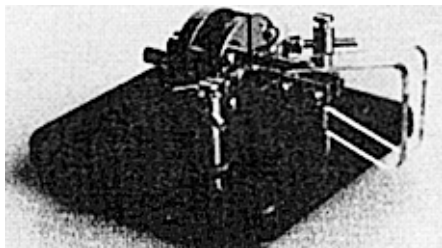
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