

(sales@gqrp.co.uk)

# GQRP Club Sales

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Antenna Handbook – 2<sup>nd</sup> edition – members price £6.00 plus post } £3.00 (UK) or £6.50 EU

Radio Projects volumes 1, 2, 3 & 4 – by Drew Diamond – members price - £6 each book + post } or £10.50 DX per book

Polyvaricon capacitors – 2 types - 2 gang (A = 8 to 140pF + O = 6 to 60pF), and 2 gang – (both 8 to 280pF) Max of 2 of each  
Both come complete with shaft extension & mtg screws, and both are £1.75 each. Postage is £4.00 (UK), £5.50 (EU) and £6.00 DX

A Pair of LSB/USB carrier crystals HC49U wires - [9MHz ± 1.5kHz] £4 pair } All components

HC49U (wire) crystals for all CW calling freqs – 1.836, 3.560\*, 7.015, 7.028, 7.030, 7.0475 } plus postage

7.122, 10.106, 10.116\*, 14.060\*, 18.086, 21.060, 24.906 & 28.060 all are £2 each (\* also in LP) } (ANY quantity)

HC49U crystals- 1.8432, 3.5, 5.262, 5.355, 7.0, 10.006, 10.111, 11.5, 14.0, 22.0, 29.0MHz – 50p each } £2.00 (UK), or

HC49U crystals – 2.00, 3.00, 3.20, 3.579, 3.58, 3.60, 3.6864, 4.0, 4.096, 4.1943, 4.4336MHz } £5.00 (EU) or

4.5, 5.00, 6.00, 6.7725, 7.2, 7.6, 8.0, 8.032, 9.0, 10.0, 10.70, 11.0, 12.0, 13.50, 15.0, 16.0MHz } £6.00 (DX)

18.0, 20.0, 24.0, 25.0MHz 26.0, 27.0, 28.0, 28.224, 30.0, 32.0, 33, 40, 48MHz – all 35p each }

Ceramic resonators – 455, 480kHz, 2.0, 3.58, 3.68, 4.00, 10.7, 14.32 & 20.00MHz – 50p ea. }

Diodes - Shottky signal diode – 1N5711- 20p each; 1N4148 GP Si – 10 for 10p } Post free if

Varicap diodes - BB204 – twin diodes, common cathode, 15pF @ 20v, 50pF @ 1v 50p } ordered with

SA612AN - £2.00 (note – I may supply NE or SA, 602 or 612 as available. (Max of 2 per member) } heavier things

MC1350 - £2.00 (Max of 2 per member) } like binders,

LM386N-1 - 4 to 15v, 300mW, 8pin DIL - £0.50 10 for £4.75 } toroids,

TDA7052A - 4.5 to 18v, 1W 8pin DIL low noise & DC volume control – £0.60 each } polyvaricons,

TA-7642 Radio IC – direct equivalent of MK484 (& ZN414) – 75p each } Use just

BC109B (metal) (npn) FT - 100MHz, hFE-320 - 10 for 50p } that postage

MPSH10 transistors (npn) FT - 650MHz, hFE 60, VCE 25V - 10p each, 10 for 80p } If parts are

2N3904 transistors (npn) FT - 300MHz, hFE-150, VCBO +40V - 10 for 50p } ordered

2N3906 transistors (pnp) FT - 250MHz, hFE-150, VCBO -40V - 10 for 50p } with books

BC517 Darlington (npn) FT - 200MHz, hFE-30,000, VCBO +40V - 13p each, 10 for £1.10 } add

FETs - IRF510 – 50p; 2N3819 - 24p; 2N7000 - 10p; BS170 – 12p - all each } this

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10K 10mm coils – 1u2H, 1u7L, 2u6L, 5u3L, 45u0L, 90u0L – all 85p each } do

Magnet Wire – 18SWG – 2 metres – 60p; 20 & 22 SWG – 3 metres – 60p; } not

24, 25 & 27SWG – 4 metres – 40p; 30, 33 & 35SWG – 5 metres – 30p. } travel well

Bifilar wire – 2 strands - red & green bonded together. Solderable enamel. 3 sizes } with parts,

21SWG (0.8mm dia) – 2metres = £1; 26SWG (0.45mm dia) – 3m = 70p; 30SWG – 3m = 60p }

Litz wire – double silk covered multi-strand wire 7/04mm -12p, 14/04mm. 25p. Both for 3 metres. }

All our magnet wire is solderable enamel insulated. Max of 3 sizes per member per order }

QRP heatsinks - TO92 – 30p; TO39/TO5 – 35 & 60p; TO18/TO72 – 80p (pics on website sales list) }

Axial lead inductors (they look like fat ¼W resistors) these are low current }

3.3, 4.7, 6.8, 10, 15, 18, 22, 33, 39, 47, 56, 100, 150, 220, 470 and 1000 - all uH, all 20p each. }

Toroid Cores – priced per pack of 5 – you may order 2 packs, but only if you actually need them. }

I will no longer supply packs of everything – order only what you need please. }

T25-2 – 50p, T25-6 – 60p, T30-2 – 70p; T30-6 – 80p; T37-2 – 80p; T37-6 – 80p; }

T50-1 – £1.00, T50-2 – £1.40, T50-6 – £1.60; T50-7 – £1.20, T50-10 – £1.60; }

T68-2 – £2.20, T68-6 – £2.50, T130-6\*\* – £2.60ea; }

FT37-43 – £1.20, FT50-43 – £1.20, FT37-61 – £1.20, FT50-61 – £2.40; }

Ferrite beads – FB43-101 (3.5mm dia x 3.2mm long, 1.2mm dia hole) – 40p for 5; }

BN43-2402 – £1.50; BN43-202 – £2.40; BN43-302 – £3.40; BN61-202 – £3.40. }

All toroids are plus postage – up to 5 packs = £1.50 (UK), £4.00 (EU), £6.00 (DX). }

Each additional 5 packs, please add 50% \*\* Except \*\* item – these are heavy and each counts as a pack }

Standard MeSquares (0.25”), Little MeSquares (0.15”), MePads for DIL & MePads for SMD - £6.00 each plus post (UK & EU as parts }

for up to 4) : I can include up to 3 of these with small parts for no extra postage. }

I can supply UK & EU, will DX please order direct from Rex. These items from Rex's stock are pictured on the website. }

Limerick Sudden kits RX & TX both single band (160 to 20m); ATU (80 through 10m) £40.00 each plus post UK - £4.00, EU - £10.00, DX - £11.00 }

Sprat-on-a-stick V9 – 1 to 192. Only £5 each to members plus postage, UK - £2.00, EU - £5.00, DX - £6.00 (they will }

travel free with parts) There will not be a DVD version any more as sales of them had almost stopped. }

Sprat Binders – nylon string type – Black with club logo on spine -16 issues per binder – £6.00 each plus postage }

(one: UK - £3.00, EU - £5.00, DX - £8.00. More - add £1.50, £1.50, £3.00 each) }

UK members can order by email and pay by Bank Transfer. The info you will need to do that is – THE G-QRP CLUB, }

sort: 01-07-44, and a/c: 54738210. By post, send money by cheque, PO, or cash in GBPounds, or USS/Euros (at the }

current exchange rates) – please send securely! Overseas members can order via e-mail and pay by PayPal - use }

sales@gqrp.co.uk – and pay us in GBPounds, or by post with cash, and you MUST include your membership number }

and address please. PayPal are charging us about 7%, so please add that if you can, or, send as a gift to friends/family }

– thanks. Maximum quantity of any item is 20. }



# SPRAT

THE JOURNAL OF THE G QRP CLUB

DEVOTED TO LOW POWER COMMUNICATION

Issue No. 198

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Spring 2024



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This could be your last SPRAT. Check your delivery label, and please read the Membership Secretary's notes on p30 in this issue.

# JOURNAL OF THE G-QRP CLUB



Our founder George Dobbs G3RJV (SK)



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## Editorial

Our Club Secretary, **Dick, G0BPS**, has signalled that he will be standing down this year. Dick has served the Club very well for many years but has decided that it is time for him to let someone else, perhaps someone a bit younger, take a turn. The Secretary's role is not an onerous one and most Committee tasks are, thankfully, quite pleasurable. Due to some of the external connections, it needs to be a UK member. If you are interested, please drop me an e-mail and I can explain more about what is required.

I am pleased to report that the updated G3RJV SCD project is now with *Practical Wireless* for publication. The plan is to publish it in 4 or 5 parts with reasonably detailed instructions to allow first time builders to have a go. If you are interested in a commercial PCB set, please drop me an e-mail so I can gauge the level of demand before ordering.

You may have seen the sad announcement that Club Member **Martyn, G3UKV**, passed away in January. Martyn was the main driver behind the Telford Hamfest and he will be sadly missed. However, the Telford Club have said that the show must go on. So, the Telford Hamfest, and our 50th Anniversary Convention, will go ahead.

**The Convention will be on Saturday 31 August and Sunday 01 September.** I hope as many of you as possible will attend and I am sure Martyn will be with us in spirit.

**Steve Hartley G0FUW**  
Chairman GQRP Club [g0fuw@gqrp.co.uk](mailto:g0fuw@gqrp.co.uk)

An email from Dave G4YVM, brought news of long time member **Dave G0AYD #3309**, who passed away peacefully on the afternoon of 24th of February. His key is now silent.

He valued his membership of the club highly along with all the friends he made through the club and radio, who were all dear to him.

Best 73

David G4YVM QRP 2568

# Club Trophy Winners 2023

As always, re-reading the *SPRATs* from 2023 was an absolute joy. The broad range of topics covered, and the quality of the articles never ceases to amaze. Many have said that Tex deserves his own award for pulling it all together in such a professional way; take a bow Tex!

Well done to everyone who has shared their knowledge, skills and experience, they are all worthy of awards! However, after much deliberation, here are our trophy winners for 2023:

**The G2NJ Trophy** is sometimes awarded for a really good technical article, and sometimes for an outstanding contribution to international QRP. This year the article about a Simple Superhet by **Giovanni, IT9TZ** from *SPRAT* 194 caught our eye.

**The W1FB Trophy**, for the best simple article we awarded the Trophy for this year to is **Peter, G4UMB**, the author of many 'simple' articles, But the one that caught our eye, was his 70MHz Downconverter in *SPRAT* 195.

**The Partridge Trophy**, awarded for the best antenna article, goes to **Enzo, M0K TZ**, for his piece in *SPRAT* 194 about his Miser's Loading Coil.

**The Gordon Bennett Trophy**, is for the best practical article, and this year it goes to **Michael, DK1MI**, for his innovative Power Pole Cap for LiFe batteries in *SPRAT* 194.

**The Construction Competition** winner was **Stephen, G0FMY**, for his complete home-brew QRP station, and he was awarded the G3RJV Trophy. He also won the **GM30XX trophy** for using that same station during the Summer Sizzler.

The member who provided the best log for operating on World QRP Day, 17 June, was, **Carl, GW0VSW**, who won the **Suffolk Trophy**.

We have two more awards, the **G4DQP Trophy** for the Winter Sports and the Chelmsley Trophy for best log for the whole of 2023. Details of those are in Enzo's On-Air Activity column.

The Club has made a nomination for the **RSGB G4STT Trophy**, which recognises significant contribution to QRP. As it is their trophy, the winner will be announced by the RSGB at their AGM in April.

Congratulations to all of our winners, their Certificates and Trophies are in the post.



# Construction Competition 2023

Report by Steve G0FUW

This time around, the Construction Competition attracted the most number of entries we have seen. Congratulations to all those who submitted entries, which kept the judges occupied and in discussion for some considerable time.

The **Construction Competition winner** was **Stephen, G0FMY**, for his complete home-brew QRP station (shown below), and he was awarded the **G3RJV Trophy**. He also won the **GM3OXX trophy** for using that same station during the **Summer Sizzler**.

The station included a mix of scratch built rigs and some kits. The station as a whole had been well used and supporting records showed it to be fully documented and fully operational.



The **Runner-Up** was **Colin, G3YHV**, who shared his innovative two-valve transceiver shown on the next page. The 'mad' idea was prompted by a pub conversation, but its execution was top class. Had there been more supporting documentation, the judges would have had a harder decision to make, but in the end, it came a very close second.

Others entries that caught the judges eye included a couple of antenna matching units. The first from Andy, M0RON, and the second from Scott, VO1DR. Father and daughter team Hamilton, KD0FNR, and Hamie, KO6BTY, built a couple of QRPM kits to form the fun rig called the TouCans used with zero feeder loss by hanging the cans from a dipole centre! Mike, G8GYW, made an inexpensive digital QRP HF power meter and Doriano, IW1PAG, made a great micro loop antenna. Martin, GM5JDG, shared his Raspberry Pi based digital VFO and MC1496 DCRx. All of those received certificates of commendation.



Some of these projects have already featured in SPRAT, others will be shared in the future.

## Construction Competitions 2024 & 2025

As the Club will be 50 years old in September, we have decided to run the next two construction competitions with '50' themes.

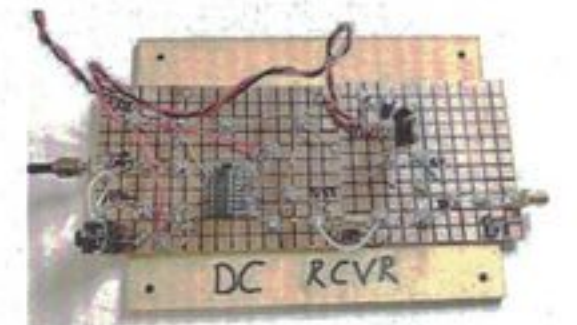
This year, we want to see any construction project that has a link to 50. That could be 50 parts, an output power of 50mW, you might have made 50 contacts with it; you get the idea? Construction and 50 are the main requirements. Closing date for entries (to the Secretary please) will be end of October 2024. A circuit, a description and a photo will suffice.

For 2025, we would like to see simple construction projects for 50MHz. That could be a down converter, a transverter, a QRP linear or a complete 6m transceiver. Whatever you build, simple, QRP and 50MHz are the three main requirements. Closing date for that will be end of October 2025.

Winners will receive the coveted **G3RJV trophy**.  
73, Steve, G0FUW



G8GYW's SWR meter in a tin



GM5JDG's DC receiver



IW1PAG's Micro Loop antenna



M0RON's Z-Matcher



VO1DR's ZM4 matcher

# EFHW-86432 Antenna

Raimund, DL1EGR

The overall view.

With little spare time for the hobby I don't switch antennas. I like old tube (valved) equipment. Such as WS-19, GRC-109 or the A510. And operating on 80, 60, 40m. Sometimes on higher bands. Living in an old miners' settlement with very tiny gardens, so available wire lengths depend on the size of the property.

My antenna design is a compromise, with 20m almost completely vertical while the subsequent lower bands are separated by traps or coils. The antenna is fed by a 49:1 transformer as known from many other EFHW projects.

I added a 2m single wire as counterpoise from this transformer also as there is a current-balun directly after this transformer feeding 50Ω coaxial cable to the rig indoors. For the vertical section 20m – first metre from transformer runs horizontally out towards to the mast top (9m). Then another metre runs to the first trap (20m) followed by sections for the second - 30m. Then a run to trap No.3 for - 40m. 60m is ended by a coil about 120μH to feed a short wire for the 80m section as space allows. Nearly all QSOs of the last 2 years have been done with this antenna also on 24MHz for fun. Keep in mind: with every section you establish a complete end-fed half-wave antenna.

The Coil for 80m extension is made on an old pill tube (right).

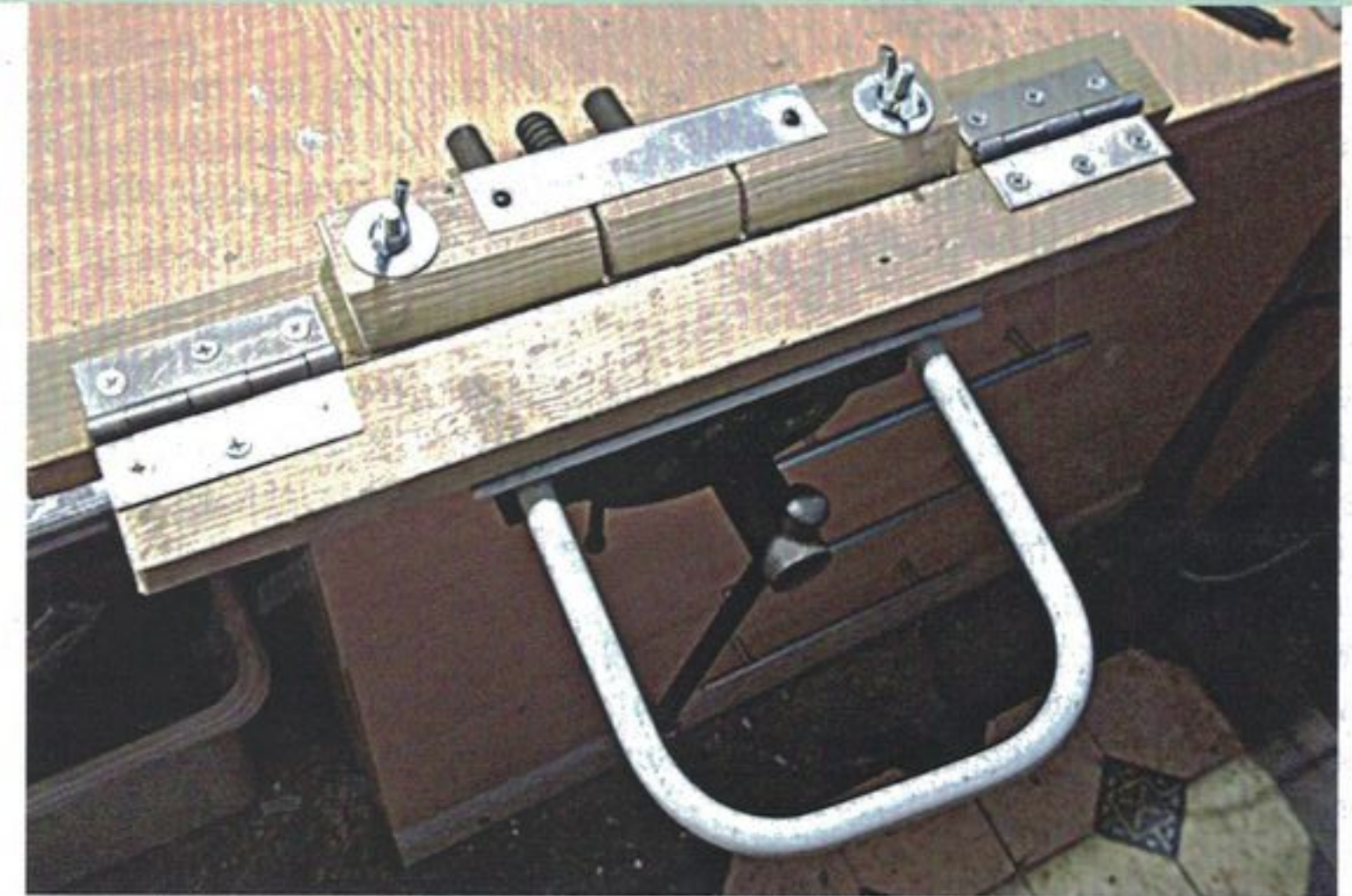
On the left is the 'trap-bone', made by 3D-printer for a T94-6 or T94-2 toroid and related capacitor.

The picture (below) shows getting the signal out. The feed-point is in the upper right corner.



# Build Your Own Bender

Peter Howard G4UMB

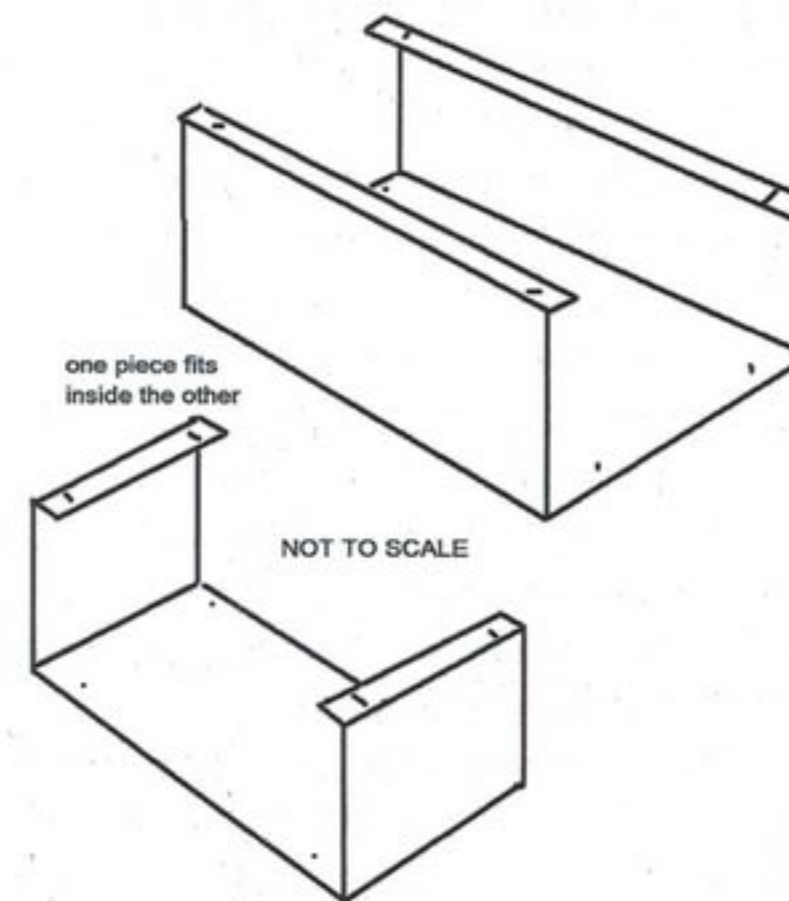


A few years ago you could buy two-part low cost aluminium boxes for our projects from places like Maplins; but these days I have to be creative and use all sorts of enclosures.

I thought I would try to make my own simple bespoke boxes from very thin malleable aluminium.

I chose 0.5mm thick so I could cut it without a guillotine by deep scoring it both sides and bending it backwards and forwards over the edge of a table.

Then I made up a very simple wooden bending jig from battens and door hinges as you can see from the pictures. If you are careful a decent looking box can be made.



# Valve QRP Activity In Earlier Times

Chris G3XIZ email: g3xizchris@gmail.com

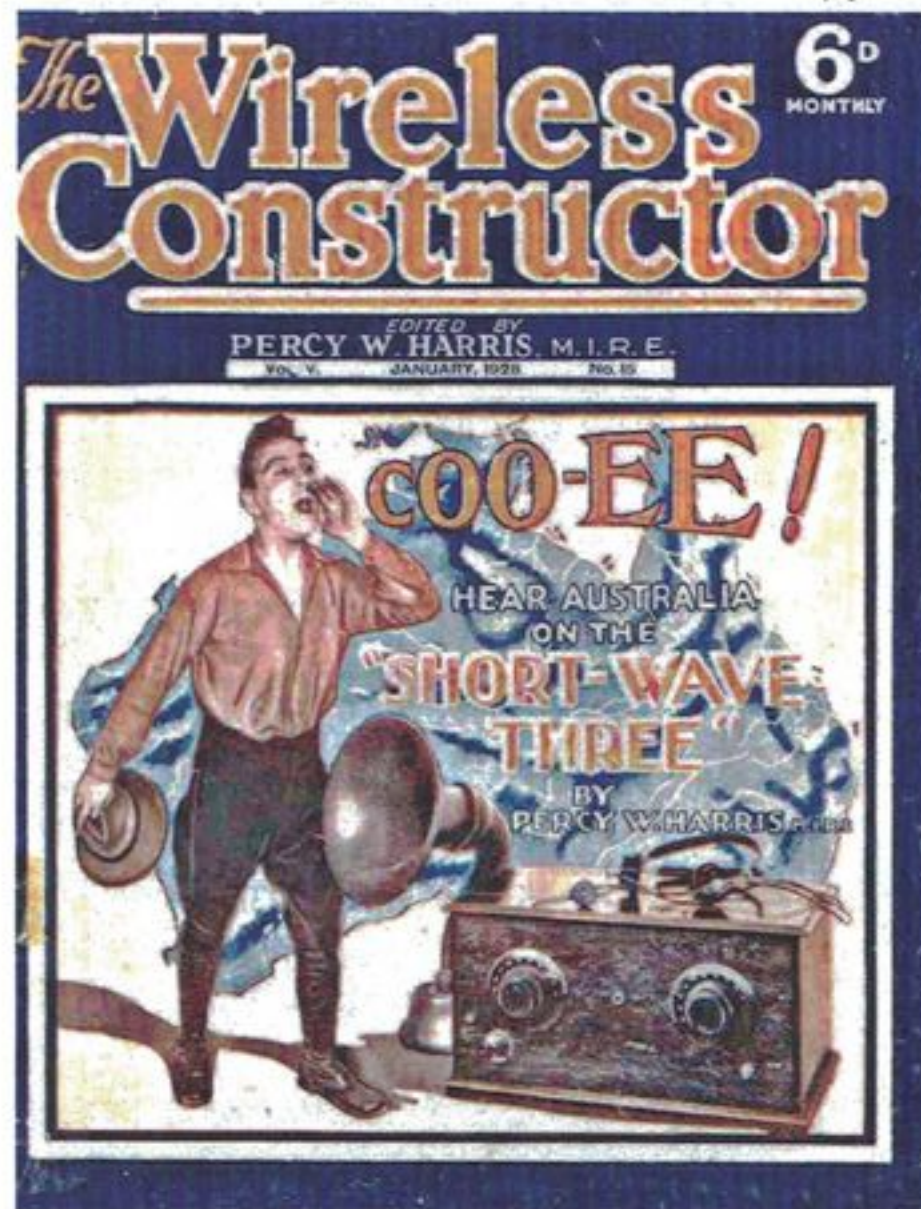
I'm aware that radio (wireless) history is not everyone's cup of tea but I recently read an old *Wireless Constructor* magazine article which is interesting on several levels. It shows the extreme simplicity of the equipment in those days, the ease of construction and the remarkable results which could be obtained.

## The 6QB transmitter

The *Wireless Constructor* magazine's 1928 article described a QRP transmitter built and operated by its author L. H. Thomas whose call sign was 6QB. This used a single directly-heated valve, was VFO controlled and gave a QRP RF output level. It was designed to be used on the 45 and 90 metre amateur bands, tuning from 44 - 46m and from 90 - 100m with plug in coils facilitated wave band changing.

The transmitter was capable of being used with CW, MCW (modulated CW) or AM phone and was powered by an LT and an HT battery. The LT battery supplied the valve's heater via a rheostat (variable resistance) and this presumably would have been adjusted as the LT battery slowly discharged.

The first thing to note is the extreme simplicity of the circuit which comprised only about a dozen or so components. It was basically a tuned anode tuned grid oscillator and somewhat resembled the regenerative receiver circuit of its day. One suspects that the resulting transmissions would have been somewhat chirpy and clicky.



Key clicks were however reduced by placing a 40,000 ohm resistor across the key's terminals which would presumably caused a 'spacer wave' of very low level. Not forgetting that in those earlier days the amateur bands would have been far less crowded so these drawbacks would probably not have been a significant problem.

To the modern radio amateur's eye the circuit looks quite unsatisfactory particularly as any change in the aerial's impedance, such as when it moved in the wind would have cause the transmitted frequency to vary. Again the author did not mention this as having been a problem.

There was no attempt at supply voltage regulation but as the transmitter only drew a few milliamperes any HT voltage fluctuation was probably minimal. As today the oscillator's frequency would have been affected by temperature variations and we

can only speculate on the temperature stability of a typical UK 1920s house.

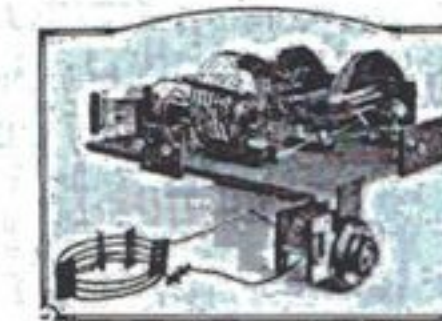
## Construction

The transmitter's components were positioned on an ebonite baseboard with point to point wiring as was common in those days. There was no metal chassis or any screening so presumably 'hand capacity' could have been an unwanted side effect and there was no front (or rear) panel.

The tuning capacitors had slow motion drives so fairly precise frequency adjustment would have been possible.

January, 1928

THE WIRELESS CONSTRUCTOR



## My 'FLY-POWER' TRANSMITTER

The author has experimented with America on the old standard before which he built up from ordinary components used in his receiver.  
By L. H. THOMAS (6QB)

A month or two ago the writer decided that it would be rather interesting to see exactly what could be done with a transmitter that incorporated receiving parts only, worked from a dry-cell supply such as any receiver needs, and operated in conjunction with a very ordinary receiving aerial.

There is, of course, nothing very new in the idea of transmissions with extremely low powers, such as were used in this case, but in the entire range of components used it was decided that nothing should be incorporated that was not readily obtainable at the average wireless shop or could not be made at home in the course of half an hour or so.

**Made in 2½ Hours!**

The little transmitter shown in the photographs is the result of these labours, and considering that the total time occupied by the writer in constructing it was only a few hours, it is considered to be a fairly simple job.

A perfectly straight receiving circuit was employed, the chief deviation from normal being that both the grid and anode circuits were tuned. (See Fig. 1.) A few slight modifications were later introduced, but as these were not found necessary until the transmitter was used for slightly higher-power work, they have not been shown in the circuit diagram.

**Choosing the Condensers**

The circuit as shown is commonly known as the "tuned grid-tuned anode" arrangement, and for efficiency on the shorter wave-lengths is certainly hard to beat. Its beauty is, of course, its simplicity, and it is so "flexible" that it is equally suitable for a midget transmitter such as that seen in the photographs, or a somewhat affair with an input of thousands of watts. It is also suitable for use on any wave-length simply by plugging in coils of suitable sizes.

The components that should be

chosen with special care are the valve holder and the fixed condensers. The actual valve holder used has not only a very low self-capacity but extremely long leakage paths between the pins, both very desirable features. The two most important fixed condensers, that across the H.T. supply and the grid condenser, are Dubilier Type 577 condensers, intended either for low-power transmission or for use in receivers employing voltages rather higher than those in common use.

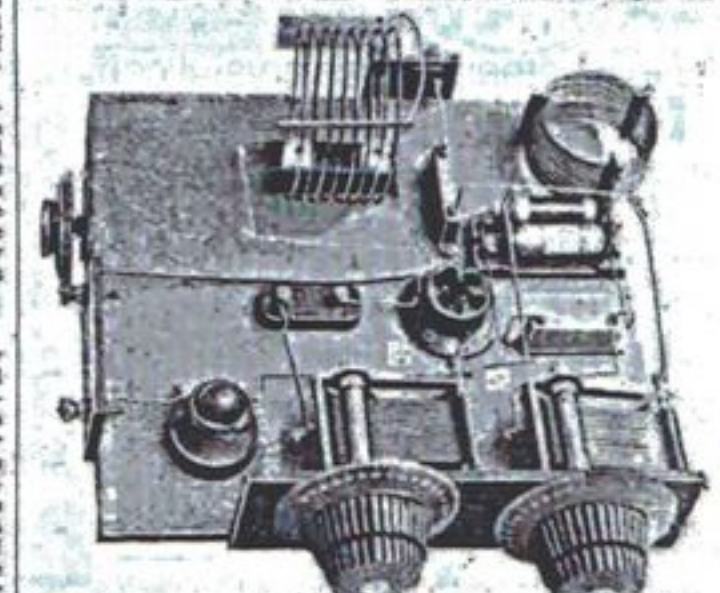
These, again, were not absolutely necessary at first, but as the transmitter has constantly been in use with an input power of 10 watts (at 900 volts) since the conclusion of the tests on very low power, it was thought advisable to include them. It should be understood that ordinary receiving condensers of good

manufacture would be perfectly suitable and beyond reproach.

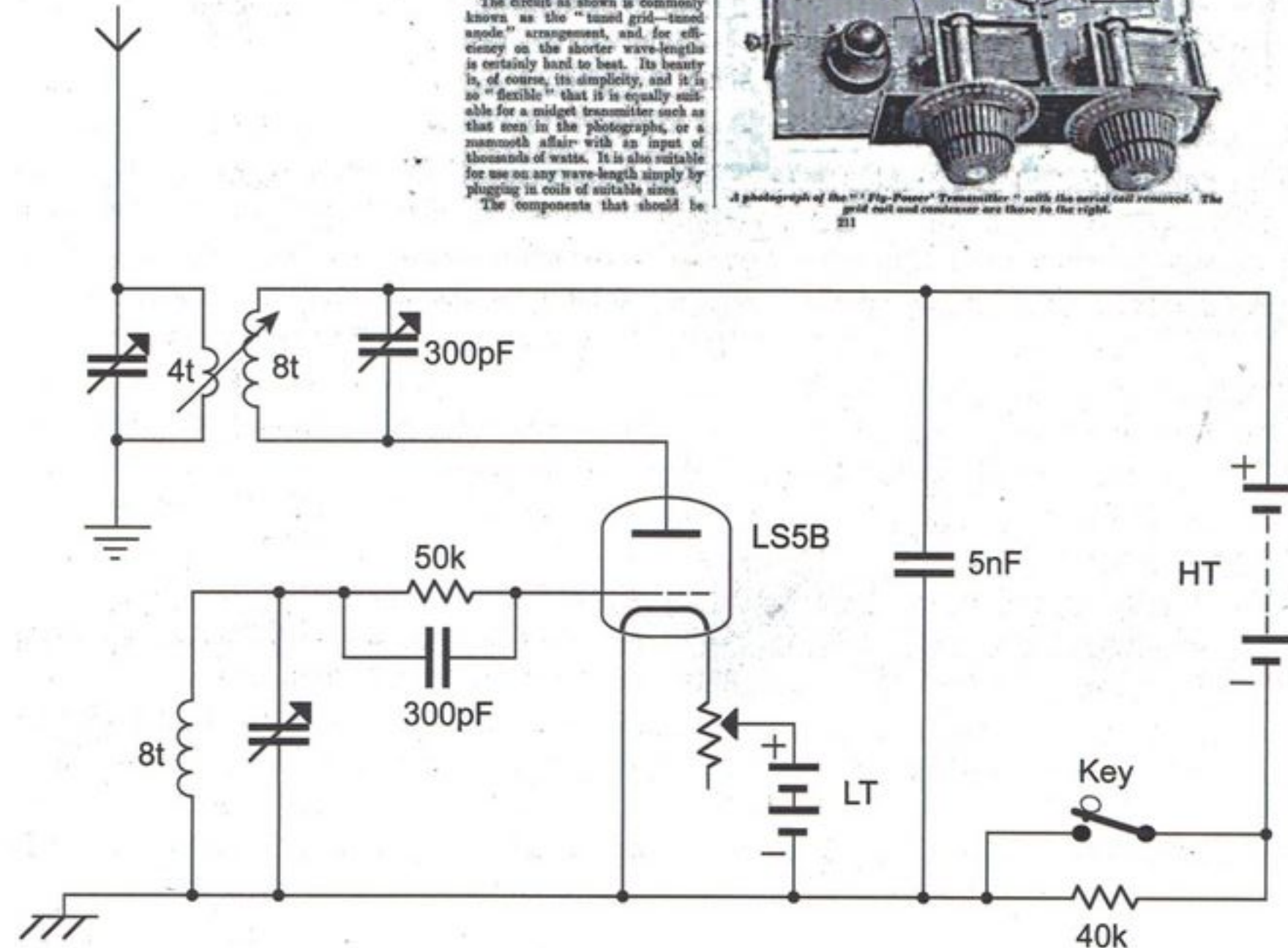
**Short Grid Wiring**

The coil on the right, as seen from the front of the transmitter, is the grid coil, tuned by the right-hand variable condenser. It has been placed in such a position that the associated wiring is as short as possible; the grid leads are in front of it and the grid condenser still further forward. The "grid leaks" comprise two 100,000-ohm anode resistances connected in parallel, giving, of course, a value of 50,000 ohms. The grid condenser is the conventional 1000, and no variation from this value was found to yield any advantage.

The central coil is the anode inductor, to which is coupled the



A photograph of the "Fly-Power" Transmitter with the aerial coil removed. The grid coil and condenser are those to the right.



The L.S.5B. valve, which had a spherical shaped bulb was mounted in its socket on the baseboard. The author stressed the importance of the valve holder having low capacitance and a long leakage paths between the pins. It isn't clear how the aerial-coil's coupling was adjusted but this was probably by means of a swinging arm arrangement. Loose aerial coupling would have mitigated the frequency shifts caused by changing aerial impedance. The unit was built in two and a half hours.

### On air performance

The author 6QB was more than satisfied with the transmitter's performance and using his 36 foot aerial (height not given) he listed several of the stations that he had worked. During his first night's transmission using 0.3W he received a "good R4-5" report from Glasgow followed by another good report from 5 X D in Douglas, Isle of Man.

On this latter occasion he also used an 'interrupter' which superimposed an audio frequency on to the continuous wave carrier thus allowing reception even when the IOM's receiver was not oscillating. 6QB worked several other stations on succeeding nights, all giving him good reports i.e. "steady and easy to read"

He went on to say that during a single day's activity 5 out of the 7 stations worked had asked him whether he was crystal controlled This implies an excellent (and almost unbelievable) level of frequency stability. Other notable contacts included S M X V in Sweden who gave him an "R4 - steady" report with stations in Berlin and Copenhagen giving him R5 and R3 respectively.

His best DX QSO at the time of publication was with French Morocco, a distance of 1300 miles. His report from there was "R5 - steady" with the Moroccan station stating that was using only a 2 valve receiver.

### Amplitude modulation

6QB went on to try using amplitude modulation and again with the remarkably low power of 0.3W he was received in Brussels, Paris and Glasgow. His method of achieving A.M. was somewhat novel as he had placed a (carbon) microphone in series with the valve's grid leak resistor. One must hope that he didn't experience RF burns to his lips !

### QRO tests

Higher power tests were later tried with up to 9W and he received 5 signal reports from the USA's east coast plus his best : an R9 - report from Sweden.

### Conclusion

These results were truly amazing for such simple equipment and such low power. Admittedly the amateur bands were relatively sparsely populated in those halcyon days and local RF interference probably non existent.

Even so it was a remarkable achievement and maybe we should replicate the circuit and see how it performs during the GQRP Valve Activity Weekends.

Ref: *The Wireless Constructor* Jan 1928 - "My Fly Power Transmitter" by L. H. Thomas 6QB

## Cleaning Silver Plated Variable Capacitors

Patrick Cassidy M0DDI email: patrickc1948@gmail.com

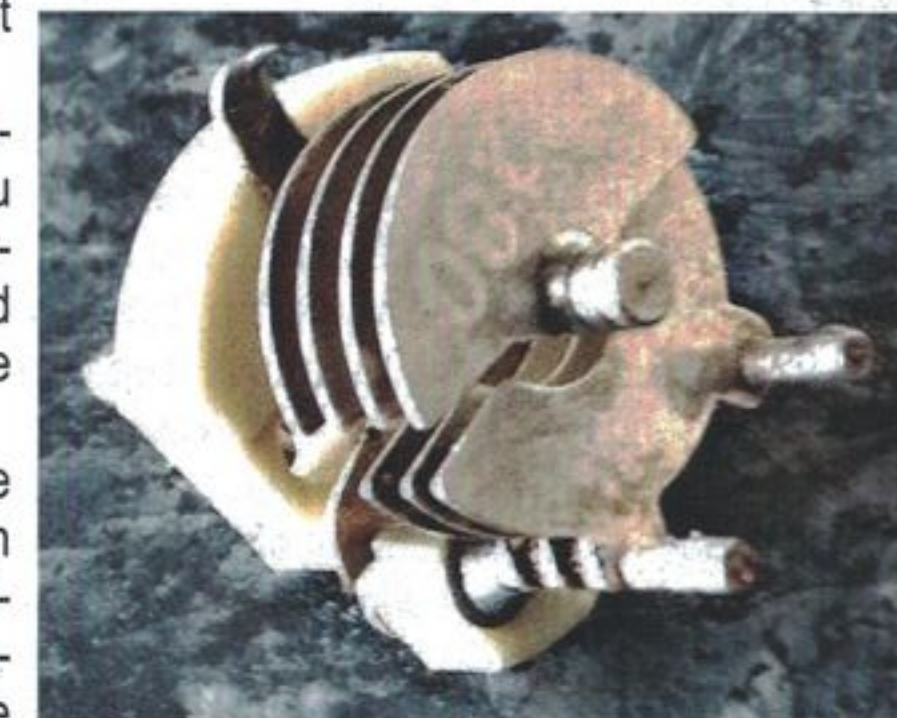
Many of us have silver plated variable capacitors that are covered in a black tarnish. This article describes how to clean these capacitors without scrubbing and therefore without losing any of the silver plating. In fact this method replaces the silver that has been taken up in forming the black tarnish.



Beforehand

The tarnish found on the capacitors is formed when the silver reacts with hydrogen sulphide in the air to form silver sulphide which is black in colour. This method of cleaning relies on the fact that aluminium is a more reactive metal than silver and which replaces the silver in the silver sulphide tarnish. This forms aluminium sulphide and silver which is deposited back on to the vanes of the capacitor, hence no silver is lost.

The method is as follows. Take a small bowl, deep enough to fully immerse the capacitor, and line it with aluminium foil of the ordinary kitchen variety and put the capacitor into it. It is important the capacitor is in contact with the aluminium. Cover the capacitor with boiling water and add a teaspoon full of salt and let it dissolve, agitating if necessary. The reason for adding the salt is that the reaction involves the transfer of electrons from the aluminium to the silver ions in the silver sulphide and adding the salt increases the conductivity of the water.



Afterwards

Next add a heaped teaspoon full of baking powder, sodium bicarbonate. When you add the baking powder the solution will effervesce, fizz up, so make sure that you stand the bowl in the sink or in a bigger bowl in case it spills over.

When the baking powder is added to the boiling water it decomposes forming carbon dioxide, hence the fizzing. This carbon dioxide reacts with the microscopic film of aluminium oxide that may have formed on the aluminium foil removing it and exposing the aluminium so that the reaction with the silver sulphide can take place.

All that remains is to wait until the reaction has done its magic. It is worth checking it now and again and giving the bowl a swirl round. Like most reactions this one works best when hot so if when the solution in the bowl has gone cold and the capacitor is not full clean then simply repeat the process.

## Indoor Antennas – Extended & Enhanced?

Robin Richards G4IRD

During the 1990s and 2010s prior to retirement in 2013, I regularly stayed in hotels overnight and used a range of antennas to operate on the HF bands. 10, 15 20m etc were good when open however 30 to 80 were more of a challenge the best results when using the MFJ-936 and subsequently the MFJ-936B using the MFJ-58B PVC Cross Loop Antenna Kit.

The appropriate loop of wire mounted per the instructions (10 to 20m on the PVC Cross) or suspended around the room using clothes pegs etc to hold the wire in place being used for 30, 40, 60 and 80m (60 and 80m only possible with the MFJ-936B). I used a Miracle Whip to assess band activity prior to selecting configuration for the MFJ set-up. I also have a SuperAntenna MP1 SuperStick but never found this to have a better performance than the MFJ-936(B) when indoors.

Having retired to live in a bungalow out of town centre, a year or so ago I spotted a video on Youtube about a TAK-Tenna40 spirally wound wire loop antenna. So, this gave me the idea of forming spiral loops for 40, 60 and 80m supported by the MFJ Cross Loop mounted on the MFJ-936(B). An additional 19 'p' clips (5mm) and pop rivets (4mm x 8mm) for 80m (2 for 40/60m) were needed with only the 40 m antenna wire or 10 for 60 m if the 40 and 20 m wires are joined for 60 m).

To fully evaluate the performance of this arrangement I purchased an MFJ-9232 QRP Mini Loop Tuner and pipe material for the construction of a mounting frame plus G4TPH Magloop MKII remotely tuned loop antenna. The MFJ-936(B) loop arrangements generally outperformed all the others especially on the lower frequency bands. Pipe purchased on eBay for the MFJ-9232 QRP Mini Loop Tuner and loop were not able to support the larger loops per the MFJ-58B arrangement and the G4TPH Magloop support frame.

To attach the MFJ-9232 QRP Mini Loop tuner and the Remote motor unit with top capacitor box and Load unit and Load unit of the G4TPH Magloop I used Push-In PVC U Conduit Saddle Clips. The PVC tube supplied with the MFJ-58B measures 1.047' outside diameter whilst 3/4' Furniture Grade PVC Pipe from The Plastic Pipe Shop ([plasticpipeshop.co.uk](http://plasticpipeshop.co.uk)) measures 1.054' outside diameter which will fit into the PVC Mount - This is the mount located on the tuner's enclosure top which facilitates mounting of the PVC Cross Assembly.

I was able to make a number of 2-way QSOs 30, 40 and 80m with a handful of good incoming signals from Europe on 60 m which were unfortunately not within the UK allocations for this band. I then considered 160m where a wire loop around twice the length for 80m around the living room was not viable and the MFJ cross and the four off 2' 2' pipes in the MFJ-58B kit (4' 4' across) were also not viable for this length of wire.



The table to ceiling height available in my living room was sufficient for 4 tubes measuring 3" 3' each providing 13 loops requiring 49 'p' clips and pop rivets and 10m x 6mm<sup>2</sup> Auline® 10AWG Thick Low Resistance HiFi Loud Speaker Cable providing more than 20m of wire all from eBay terminated with 16 mm<sup>2</sup> Copper Tube Terminals with 6mm diameter holes.

This required additional support both at the base – the tuner – and garden string attached about 18' from the top of the upper tied back to a bookcase at



the same height. This gave an apparent SWR of around 1.2:1 with 5 watts output. Signals from Europe and the UK have been clearly heard have been copied with reasonable ease.

I generally use a Yaesu FT-817 with a bhi NEDSP1061 Noise Eliminating PCB Module and an MFJ-1026 Radio Communications Receiver Noise Eliminator and Signal Enhancer using a Miracle Whip as the Auxiliary Antenna. I also have a Tokyo Hi-Power HL-50B Power Amplifier which can output up to 50 watts if required. Now for my questions.

Firstly to MFJ ☹ Have you considered and or tested these variations and if so with what results and if not why not? And the same question to owners of MFJ-936(B) tuners. For those who state they do not know of a suitable antenna for their situation – flat dwellers, no garden etc, has this been of use?

Finally, I note the currently available MFJ-936C etc have coax outputs. 'P' clips for cable up to 22mm diameter are available (may manage larger size) and Push-In PVC U-Conduit Saddle Clips back-to-back with suitable co-ax clips could manage a support on a PVC pipe cross support for larger diameters of coaxial cable.



# Valve QRP News

Paddy G4MAD email: G4MAD@gmx.com

Welcome to my second submission for the Valve Section. A number of you have asked what happened with the first one. Sadly there was a bit of a hiccup between me, Tex† and the printers and as a result the SPRAT 197 Valve News was published on the club website as a supplement. Think of it as a Special Edition !

## Right, onto the latest news...

**Tim G4ARI** reports he has been QRV on QRP CW, but only with solid state equipment, but he has said he will try to get on with his AT5 during April's Valve weekend.

**Chris G3XIZ** has been putting his home made valve tester to good use to check out a box of old valves, this time for the friend of a friend. Chris said it was a 'labour of love' and took ages! However, as a reward he was allowed to keep the old ex-TV valves; which got him thinking...



"At some stage before too long I plan to build a TX using only ex-TV valves as I have a bucket of them now . . ."

**Colin G3VTT** (formerly of this very column!) has finally finished a nostalgia TRF receiver using a 6D6 detector and a type 76 audio amplifier. It tunes 3.4Mhz to 6.0Mhz and uses plug in coils. The Valve QRP activity days are conducted with a rare Ame-co AC1 single 6V6 transmitter. Colin has obtained some Russian valves and is now wondering what he can construct next!



I managed to free up some time to make a start on a 3 valve crystal controlled transmitter. My first challenge was a chassis - I'm not particularly good at metal bashing, but some steel salvaged from a retired barbecue was cut and shut into shape, and once painted I'm sure it will look fine.

My design is based on a circuit from *Practical Wireless* February 1994. The original had a 6BW6 for it's final whilst I'm using a Russian made 6P3S/6N3C (as a side note mine was sourced from the Ukraine) which is overkill for low duty cycle QRP CW - it has an anode dissipation of 20W - the 6BW6 was already conservatively rated at 12W.

At the moment I'm not getting enough drive into the final, so I plan to add a tuned circuit in the second stage with the hope of getting 5W out on 80 & 40m. I already have a working PSU - named the

'Widow Maker.' During testing, one of the electrolytic smoothing capacitors let out the magic smoke VERY suddenly, causing me to jump out of my skin. But luckily I was out of harm's reach. The cause was incorrect labeling on the HT transformer primary - so I'd put 230V across a 115V winding.....

For those wishing to dip a toe into the world of hollow state, a PSU is a good starting point. It goes without saying (but I'll say it anyway)....**safety is paramount.**

The HT voltages in a QRP valve PSU can be dangerous and **POTENTIALLY LETHAL.** Just 5 mA is considered the upper limit of safety for an electric shock through the body, with 10-20 mA being the "let-go" threshold - meaning your muscles tense and you cannot shake loose from the electrical source. The most lethal paths for electric shock are hand-to-hand and hand-to-foot - these currents can pass through the chest in the region of the heart or lungs, with resulting physiological effects on the heart, or the nerves that control breathing (source "*Electric Shock*", by Clifford D. Ferris, University of Wyoming - *The Electronics Handbook*, 2nd Edition Chapter 22. Published by Taylor & Francis)

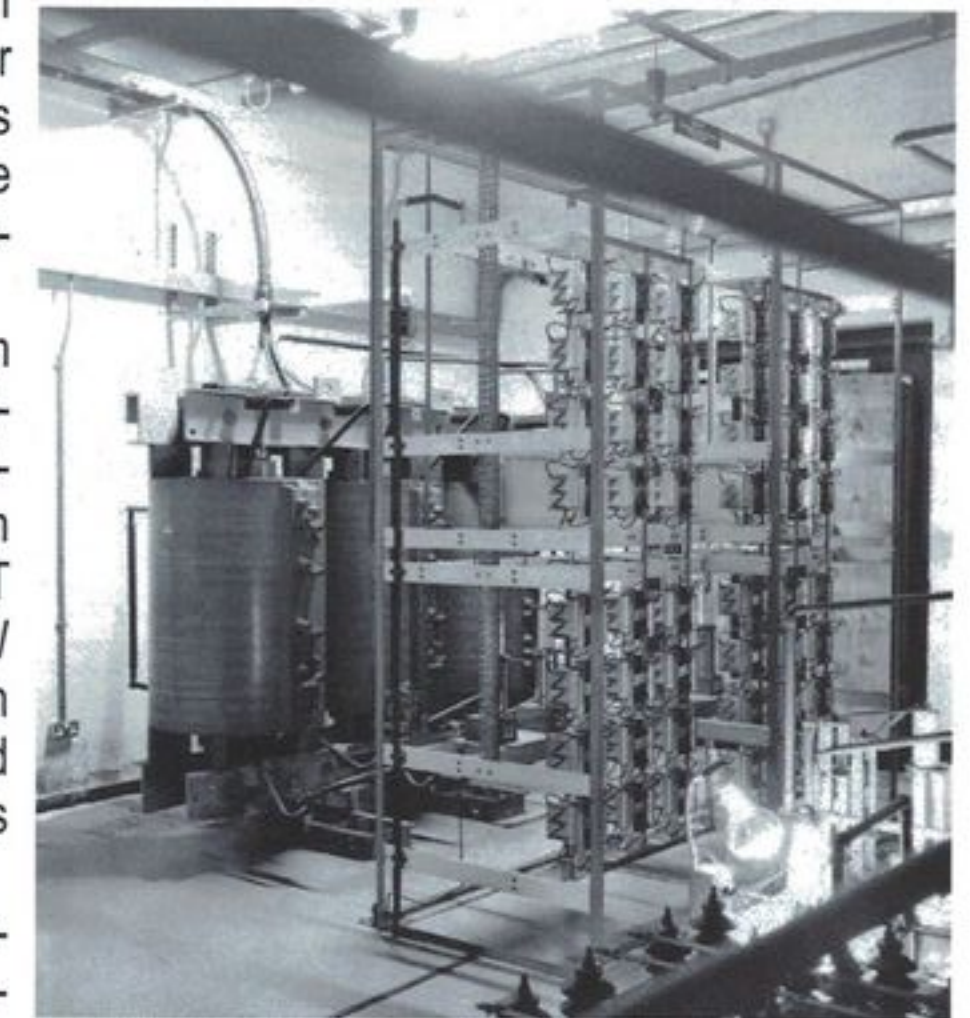
I ALWAYS keep my left hand in a back trouser pocket before energizing any opened equipment with anything above 12V, and I religiously turn off and unplug the PSU before any work - allowing time for the HT capacitors to discharge - and as an additional measure I earth the HT line to ensure all charge is removed.

But for those wondering where to source the lump of iron that's the centrepiece of any linear HT PSU. I got mine from a certain online auction site for about £10 + P&P. It's a salvaged valve receiver HT transformer, complete with a filament winding and even came with a diode rectifier. It has no rating details, but a conservative guess would put a valve radio consumption at 20-30W so it's enough for QRP. I subsequently bought another transformer that has a specified rating of 30mA and it's a good deal smaller than the one in the Widow Maker - so I think I have ample capacity.

I will do a write up with circuit diagram and internal photos for the next valve column, but in the mean time here's the internals of a REAL HT PSU - the ignitron pulse unit, smoothing components and HT transformer of a Marconi B6126 300kW AM HF transmitter - 11kV 3 phase A.C. in & 26kV D.C. out. With thanks to old friend and former colleague **Russ G4YLI** for this photo.

And don't forget the next Valve Weekend on April 13/14 2024. There are no major CW contests that weekend, so there should be space for all. I note QRP ARCI & SKCC have activity sessions over that weekend, so there could be some kindred QRP spirits on the bands.

† *Mea Culpa: It was entirely my fault, as I had rather foolishly put Paddy's email in another folder, then promptly 'forgot' where I'd put it.* Tex.



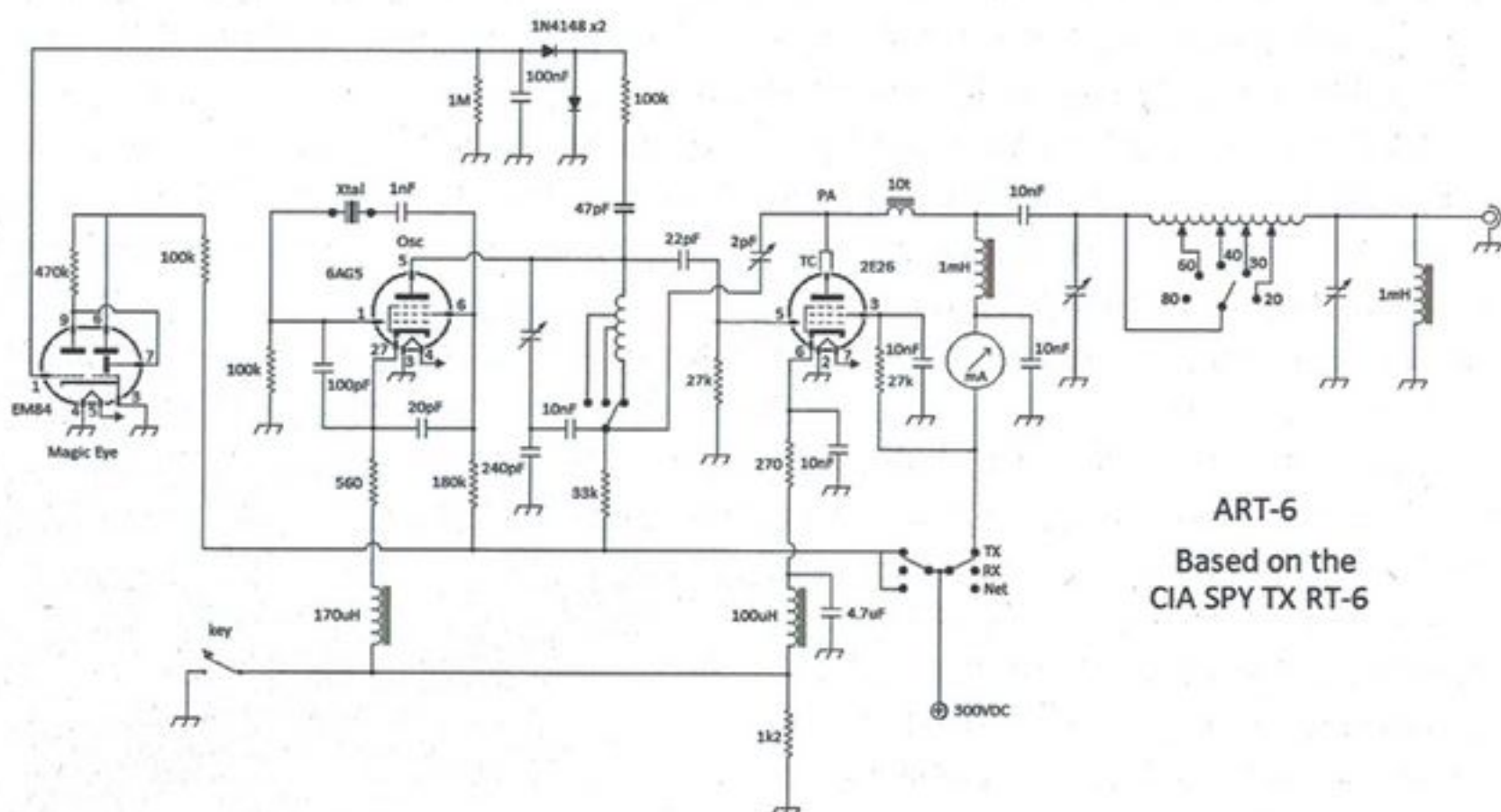


# The ART-6 (Amateur RT-6)

Richard Parkins, G0GGA.

This is a recent project I built - a two valve CW TX, based on a 1950's CIA Spy transmitter known as the RT-6 - I call mine the ART-6 - A for Amateur.

The circuit uses two pentodes, a 6AG5, as the electron coupled crystal oscillator and a 2E26, as a PA. The original design had two ranges 3 to 6.5MHz and then 6.5 to 15MHz. This easily covers 80 through 20m, with a nice clean CW note, which to date has had a few on-air complements. The original RT-6 PA used a switched parallel tuned circuit / coupling arrangement, which I chose to replace with a more conventional PI circuit with tapped L.



It uses an interesting arrangement where the cathode current of the PA, when not driven with RF on its grid, is used to drop a voltage across a resistor which lifts the cathode of the oscillator, and its in this circuit that the key click filtering is achieved. I have built quite a few two valve MOPA/COPA type Valve TXs. Most of which suffered on higher bands with pulling of the oscillator or instabilities induced from the PA back into the Oscillator.

So I decided to look for a simple design that used a neutralised PA arrangement - something I wanted to try from an educational point of view, as I've never built anything using neutralisation before.

Setting the neutralisation was very easy. Just connecting an RX on the TX output (through an attenuator just in case ;-)) and then with just the oscillator powered tune the small feedback cap



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for a dip in the apparent level of the carrier. If you can pass through a dip you know all is working and you have enough range of tuning for optimisation. This is done on the highest frequency range (although I have found little difference).

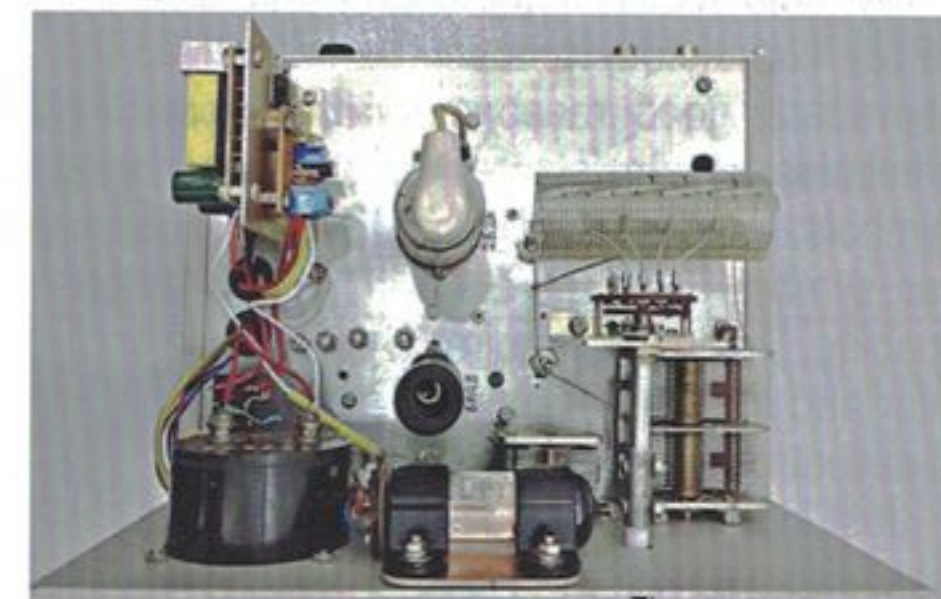
So now we come to the icing on the cake... I wanted a way of seeing if the grid on the PA was "peaked". In my valve collection I had some "magic eye" valves (EM84), and though how cool it would look, on the front of the TX, to see the magic eye show the RF level on the PA grid. I was worried that this would load the high impedance of the drive, but luckily it doesn't - in fact I could not detect any influence.

So now to change band I plug in the required Crystal, peak the grid of the PA (using the magic eye) and then applying HT to the PA, tune the C<sub>anode</sub> and C<sub>load</sub> as usual. Job done. With 300V on both the osc and PA there is no noticeable chirp on the modern HC49 xtal, and this gives a solid 5 or 6 watts output.

The octal base on the front panel is used for xtals. They're not really FT243s but modern xtals in recycled FT243 holders. The switch to the RHS of the xtals allows me to put two (same band) xtals and do a quick QSY if it's only a few 10s of kHz it only requires a slight tweak of the Controls.

Oh, and the whole thing is powered from 12V HT is from an Oriental SM-PSU and the LT from a series regulator chip. The small circuit board under the chassis on the RHS is my preferred side tone option of RF powdered audio oscillator driving a piezo transducer.

*Next step is to build an accompanying Valve RX :-)*



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## Keying WSPR On a One-Valve Transmitter

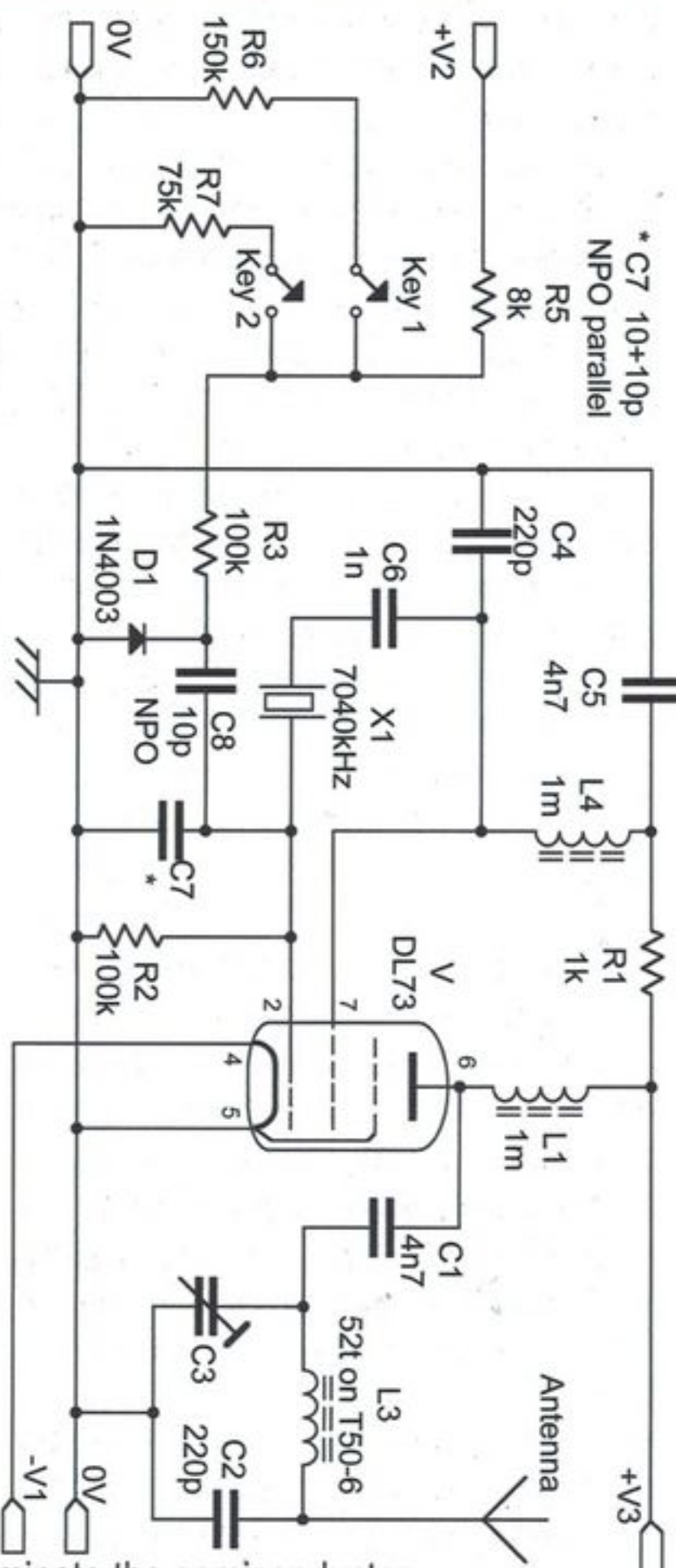
Robert Östling SM0YSR email: robert@robos.org

Let me start with some background: my log is 99% CW, most of it with a straight key. Although I own and use a couple of microprocessor-controlled radios, I prefer valves for construction. That said, I am also fascinated by narrow-band weak signal modes. WSPR in particular is a very useful tool for checking out HF conditions, testing antennas, or simply enjoying the pretty maps at WSPRnet.

My main WSPR setup is an FT-450D transceiver connected to a laptop with WSJT-X. There are good reasons for this. A WSPR transmission consists of 162 random-looking symbols, transmitted at a fixed speed of 683ms per symbol using 4-FSK with 1.465Hz tone spacing. Doing this requires a very stable oscillator and accurate timing, so computer control is essential.

Just kidding! You could almost perform this task with a straight key and a valve. I say almost: since we are dealing with 4-FSK you actually need two straight keys and a valve. As a basis for the transmitter, I use my DL73 based circuit (SPRAT 179, page 31) with a 7.040MHz crystal. It gives about 200mW out with 70V in. In order to hit the 40m WSPR segment 7.0400-7.0402 MHz, add a suitable amount of capacitance between the crystal and ground. For keying I use a 1N4003 diode as a varactor, with the resistor RX empirically determined to achieve about a 4.5Hz difference with both keys down compared to both keys up. A valve puritan might want to modify this part of the circuit to eliminate the semiconductor.

The circuit as described is stable enough, even with all voltages coming from batteries without any additional regulation. Now to the operator challenge: manually keying this 162-symbol message. To my help, I wrote a quick program to display visual indications in real time for each key. Again, a puritan could avoid the computer by writing down the symbol sequence on paper and using some analog or even mechanical device to produce ticks with 683 ms intervals. Since I only own one real telegraph key, I improvised a pair of keys using a grounded heatsink and one wire in each hand. If you have paddles, that might be a better solution.



Antenna connected, filament battery connected, high voltage (well, 70V) battery stack connected. Wait until the first second of an even-numbered minute and... go!

Two minutes later, your head will feel a bit numb and you might think that you failed completely. After all, the 683 ms symbol interval is not very much more than your reaction time, and you will have made numerous errors. But just head over to WSPRnet and see! My first ever attempt was spotted by IU1QQM, on the other side of the continent. I tried multiple times after that, and nearly every transmission has been received by someone. Since my reaction time is about the same for key down as for key up, this simply results in a consistent delay of the whole transmission, well within the allowed tolerance. You can even measure your reaction time in this way by decoding your signal with WSJT-X and comparing the DT value to computer keying (mine is 0.4s).

What about receiving WSPR? It's not like you could take a one-valve regenerative receiver and hope to keep it on frequency for long enough to decode a weak narrow-band signal like this, right?

Of course you can. Please refer to my website [1] for more information on that experiment, as well as pictures, software and additional information about straight key WSPR transmission. Unfortunately, decoding WSPR without a computer is very difficult, but you can still have a lot of fun with modern digital modes without betraying your vintage ideals!

References: [1] <http://www.robos.org/sections/radio/wspr/>

## Using the ISM bands

Roger Laphorn G3XBM

Discussing this with OFCOM it seems anyone in the UK may legally beacon in the ISM bands without a licence or even a callsign as long as IR2030 and certain technical requirements are met. The main use of these bands is for things like microwave ovens, key fobs and RFID tags. If you later intend to put a product on the market you have to get type approval, but for simple propagation research one may self declare.

The exact technical requirements and duty cycle depend on the band used. To avoid causing or receiving interference, power is usually restricted to low milliwatts, ideal for QRPers! On WSPR this can travel a very long way, as we know. For this reason the ISM bands make very useful parts of the spectrum to carry out propagation research. One such band is the 8m ISM band from 40.66-40.70 MHz. Recent tests with 10mW ERP on 10m suggests all of Europe at least could be spanned on 8m within ISM power limits.

Clearly a made up callsign that WSPRnet recognises is a very useful thing as you can then see where your signal is reaching by looking on the Internet. **Please note, this NOT amateur radio** and the ISM bands are not generally for chatting! Although WSPR is better, FT8 will also work, but is not as good with very weak signals. Mind you, the bandwidth needed for WSPR is only about 6Hz, against 50Hz for FT8. Both 22m (the so called HiFer band) and 8m have been used.

There are probably other ISM bands to exploit. Modes like QRSS3 could also be tried. This would be ideal for stations co-operating with SDR receivers. At one time QRP Labs sold a QRSS3 beacon for the HiFer band. IR2030 may be found on the OFCOM website. Its equivalent EU spec is EN300 330.

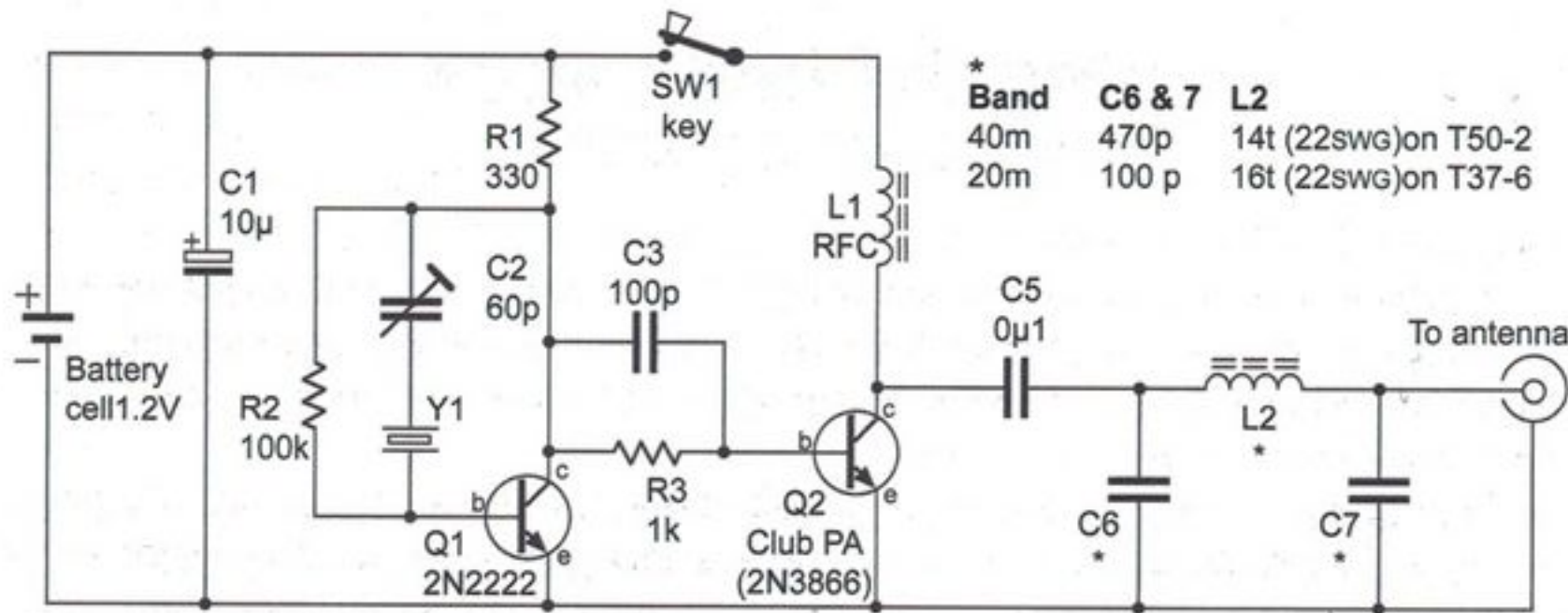
# The "Matchbox Marvel" Transmitter

Daimon Tilley, G4USI, email: daimontilley@hotmail.com

A few weeks ago I re-visited my early days in radio and built a "Matchbox" radio – an AM receiver which I first built from Elektor Magazine in 1982, using, then, a ZN414. I actually built it into a 3d printed matchbox replica base for rigidity and then used the original card cover. It was a fun build and helped me re-visit my teenage years. It also gave me an idea – dangerous!



What, I wondered, could I manage by way of a transmitter in a matchbox? My mind went back to the early 80's when as a teenager subscribed to SPRAT I used to love looking at circuits such as the Oxo, the Oner, the Tag Transmitter, the Fag-box transmitter, and many others. All rigs that inspired me, even though at the time as a youngster, I didn't have the confidence to build one.



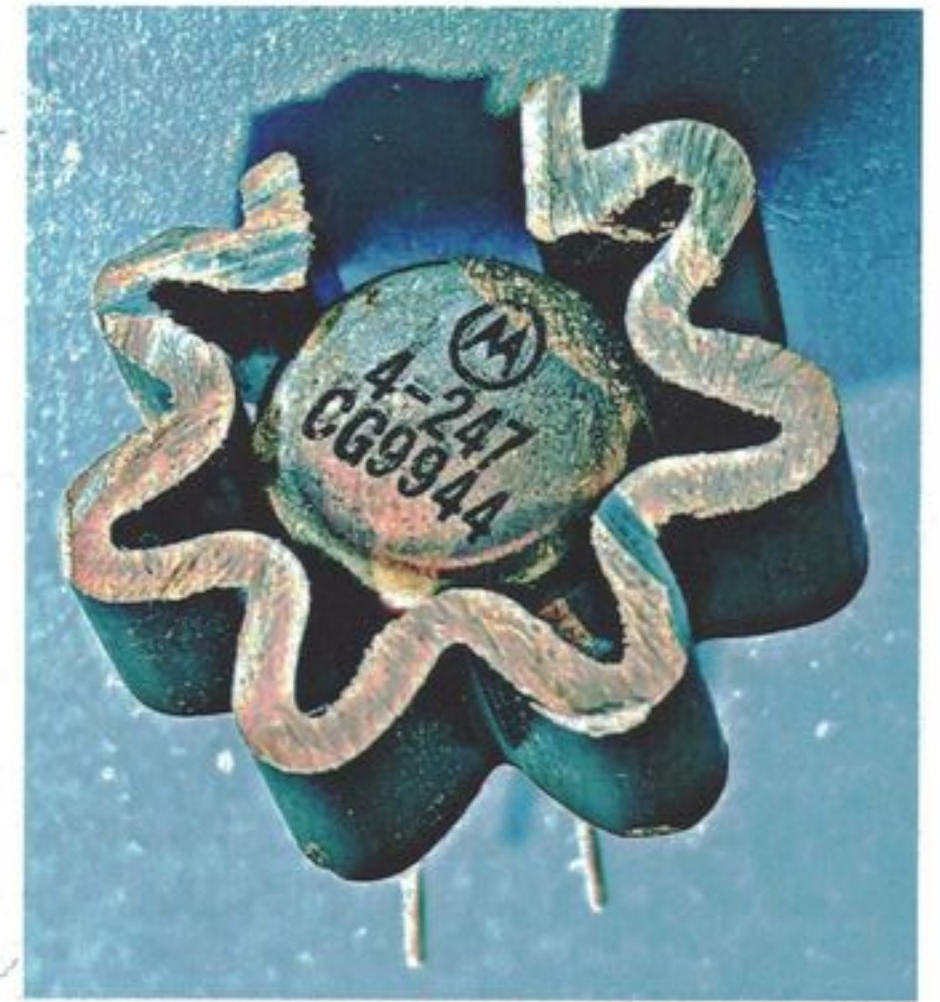
I started trawling through back issues and was re-inspired by those early designs. I decided on building the Oxo, by George Burt GM3OXX (SK) but realised that I didn't have the specified final transistor. In the end I ended up with drawing ideas from a few of those early designs and coming up with a bit of a hybrid.

Of course, there is very little variety around such simple circuits, so I make no claim of originality for the design, but I do think that this is the first transmitter published in SPRAT that has a built-in key, as well as the ability to connect an external one, and an internal Low Pass Filter, all built into a matchbox. All you need do is add power and an antenna and you are on air in a tiny package!

The circuit is shown above. The p.a. transistor is one of the "club specials" and the design is a hybrid of the Oxo and the Oner. I played with the circuit in a trial and error fashion to arrive at the final component values. As it was to be built in such a small space, with the external connectors intruding quite a bit on the space, I made three key design decisions.

First, I dispensed with the keying transistor in the Oxo and Oner designs; next I decided I would best accommodate components if I built "ugly style"; and finally I compromised with the Low Pass Filter, choosing a three pole design from "The International QRP Collection." I felt the LPF compromise was reasonable given the fact this rig was really intended as a novelty and running low power. In fact, having built it, I think with some careful stacking of toroids it would be possible to fit a fifth or seventh order filter! I may give this a go one day.

For my initial build, I built the rig on my "Proto Rig" which is a mounted breadboard with front and rear panels and polyvaricon. Using a seventh order filter from QRP Labs, and tweaking component values I achieved a good solid one watt on 80 – 20m bands. It is not a perfect test rig, as jumpers and breadboard can lead to losses and stray capacitance and inductance, but it helps me to play and tweak values easily. When it came time to transfer the design into the matchbox, I decided there was no way the polyvaricon would fit as well so it was replaced with a 60pF trimmer, to swing the frequency to a QRP centre of activity. I also had to halve the height of the final transistor heatsink using my Dremel tool to fit the height of the box (shown above right).



I chose to build for 20m, as the sunspot cycle is good and to take advantage of the three elements my Spiderbeam Yagi offers on this band. Once fully built and powered up, I was glad to see all was working and I tweaked the trimmer to put the rig on 14060. It was good to see that power had increased a little to 1.4 watts.

Band conditions were pretty poor, but a mid afternoon series of CQ calls brought a number of RBN spots, as far as 2,700 miles to the east into Russia. I was then rewarded with a response from DL1DTX but was unable to finish the QSO as I watched my transmitted signal on my SDR receiver drift upwards by 700Hz! It was a very cold day and I had been operating the rig without the "matchbox" cover on, so I "tucked it up" snug and warm inside its container cover and tried again. Success! A much more stable signal. QSOs with DL1HBL and SM4RYF followed in quick succession and I was delighted.

The entire rig is housed in a 3D printed replica of a matchbox and I scanned and printed an original matchbox cover, printing slightly oversize, to allow wrapping and gluing onto the outer case.

The remaining photographs show the cut down p.a. heatsink, the finished internals and the completed rig in its matchbox housing.

I look forward to more QSOs over the next few weeks, whilst I consider other matchbox projects, but in my mind this one is indeed a "Matchbox Marvel!"

72 de Daimon G4USI  
Lower Park Farm, Wiveliscombe, Somerset, TA4 2AF,

## Antennas and feeding thoughts

Dave G6EGM GQRP 6884

A number of years ago I tried QRP with a Yaesu FT817 but it didn't work out very well and I ended up trading it in for its bigger brother the FT897D. I then came across the website of **Steve G3TXQ** (sadly Steve is SK).

On his website there is an article about Tuner Baluns and recommended tuner balun ratios. Steve mentioned a balun made by Balun Designs model 1171 1:1 as being a good example of the type of balun being suitable for use with an unbalanced antenna tuner to allow the use of balanced line to feed a balanced antenna.

[http://www.karinya.net/g3txq/tuner\\_balun/](http://www.karinya.net/g3txq/tuner_balun/)

<https://www.balundesigns.com/model-1171-1-1-atu-current-balun-1-54-mhz-5kw/>

My bungalow has a small garden and no telegraph poles in the area so having a large high antenna was always out of the question. However, I was able to manage a simple half-sized G5RV in an inverted V configuration with the centre at a height of 6 metres. Now many people knock G5RV's but seeing as Louis Varney was Marconi's chief Engineer I figured he knew a thing or two about antennas.

I decided to feed my 1/2 size GRRV antenna with 300Ω twin feeder all the way to the tuner (to minimize losses) and match via the 1171 Tuner Balun and MFJ 945E ATU. Over the years this has proved to be an excellent antenna.

Recently I was gifted an Icom IC-705 and I bought myself the matching AH-705 Antenna Tuner and connected it into my setup. Results have been excellent and I had the urge to go portable with my new QRP Equipment but had no wish to lug around a large 5 KW handling 1:1 Tuner Balun.

I work full time and travel 20,000+ miles a year so have little time to build and test a good quality QRP Tuner Balun so I looked around to purchase one and could not find anything suitable, so I emailed Bob at Balun Designs in America and asked if he could make me a QRP version of the balun mentioned above. Bob said that would be no problem and he could supply via Roger at the DX Shop. (<https://thedxshop.com/>) Early last December it arrived. (see pictures below)

Just before Xmas 2023 I joined club and read about 'bending' antennas and lengthened mine from 51-66ft, dangling the ends down vertically. It now tunes and works on 60m-6m and tunes on 160&80m too. I've now had several QSOs on 80m SSB into Central and Eastern Europe with this antenna system using 10W and have received creditable signal reports.

Please note I have no connection with Bob at Balun Designs or Roger at the DX Shop in the UK, just a very satisfied customer of both companies.



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## Mag. Loop Antenna On TV Led Support

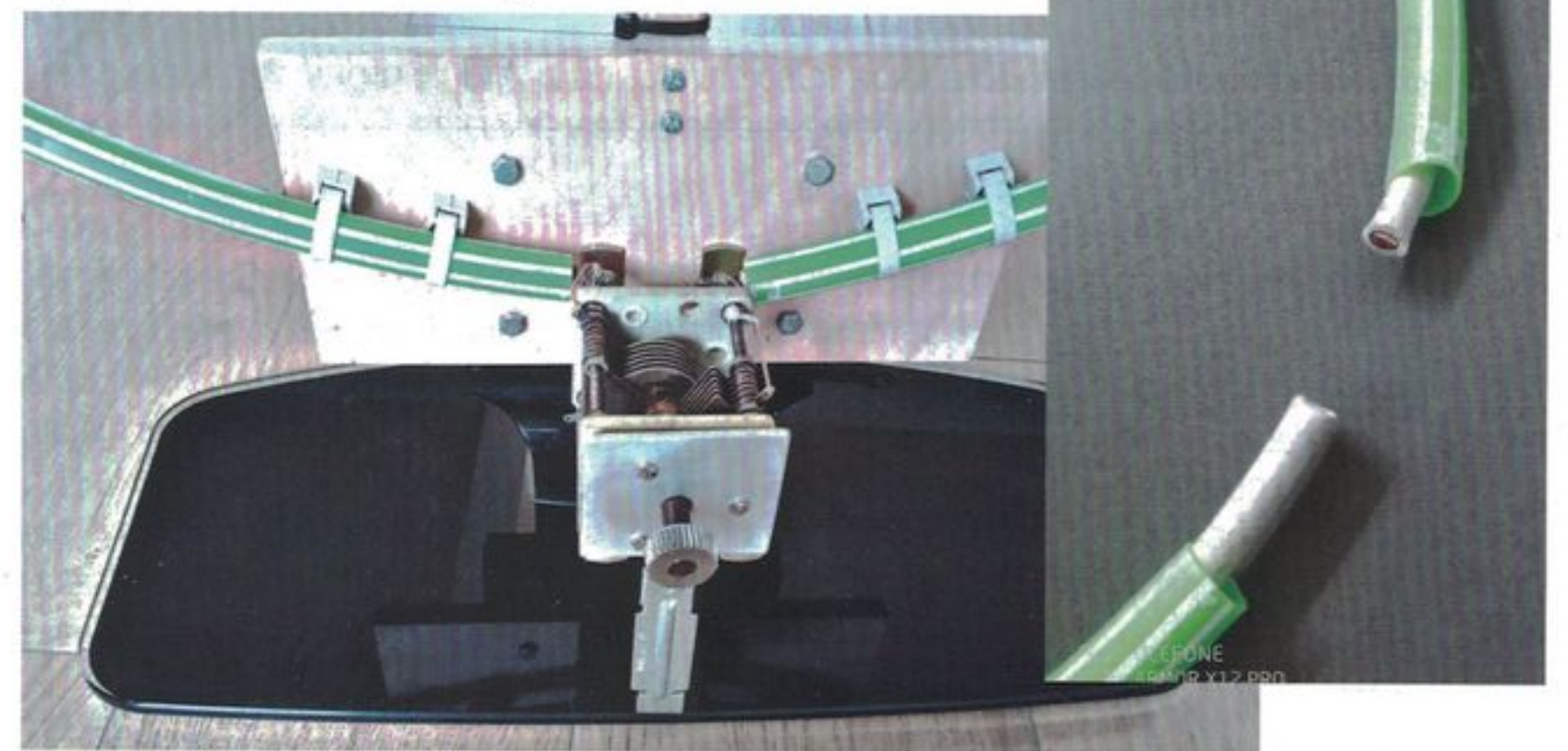
Daniele Del Negro IW3SOQ email: daniele.dn@libero.it

The construction and use of magnetic loop antennas, is not a new thing for who, like me, is active on the bands in qrp mode, indoor and outdoor. This is a simple 31.5in diameter loop with a secondary 6.3in diameter loop and a variable 50pF capacitor. The main loop is made with a "Hula Hoop" within which, there is heavyweight copper cable.

For the secondary loop, I used the same cable, seen this rigidity but it's also a good choice, a piece of Cellflex cable. The frequency range of this magnetic loop antenna is from 14MHz to 28MHz and is tuned by the variable capacitor.

The particularity of my home-made antenna, is to use a solid old TV LED 32" support of the whole system.

The weight of 10lb and a base measurement of 19x9in produces a good element for a solid support, able to 'manualy' rotate the antenna system and it's also usable indoor on the table or, why not? Outdoors in our garden.



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# The Active Antenna Loop

Geoffrey David Cowne, MØOOZ, Email: geoffcowne@gmail.com

The Active Loop Antenna is an exceptional solution for QRP radio enthusiasts, delivering HF signal reception capabilities, even within confined spaces. With a frequency range spanning from below 1 MHz to well beyond 30 MHz, this antenna primarily operates in the magnetic domain, significantly mitigating the impact of QRM (man-made noise). The ever-increasing menace of QRM poses a considerable challenge for QRP reception, particularly in urban environments.

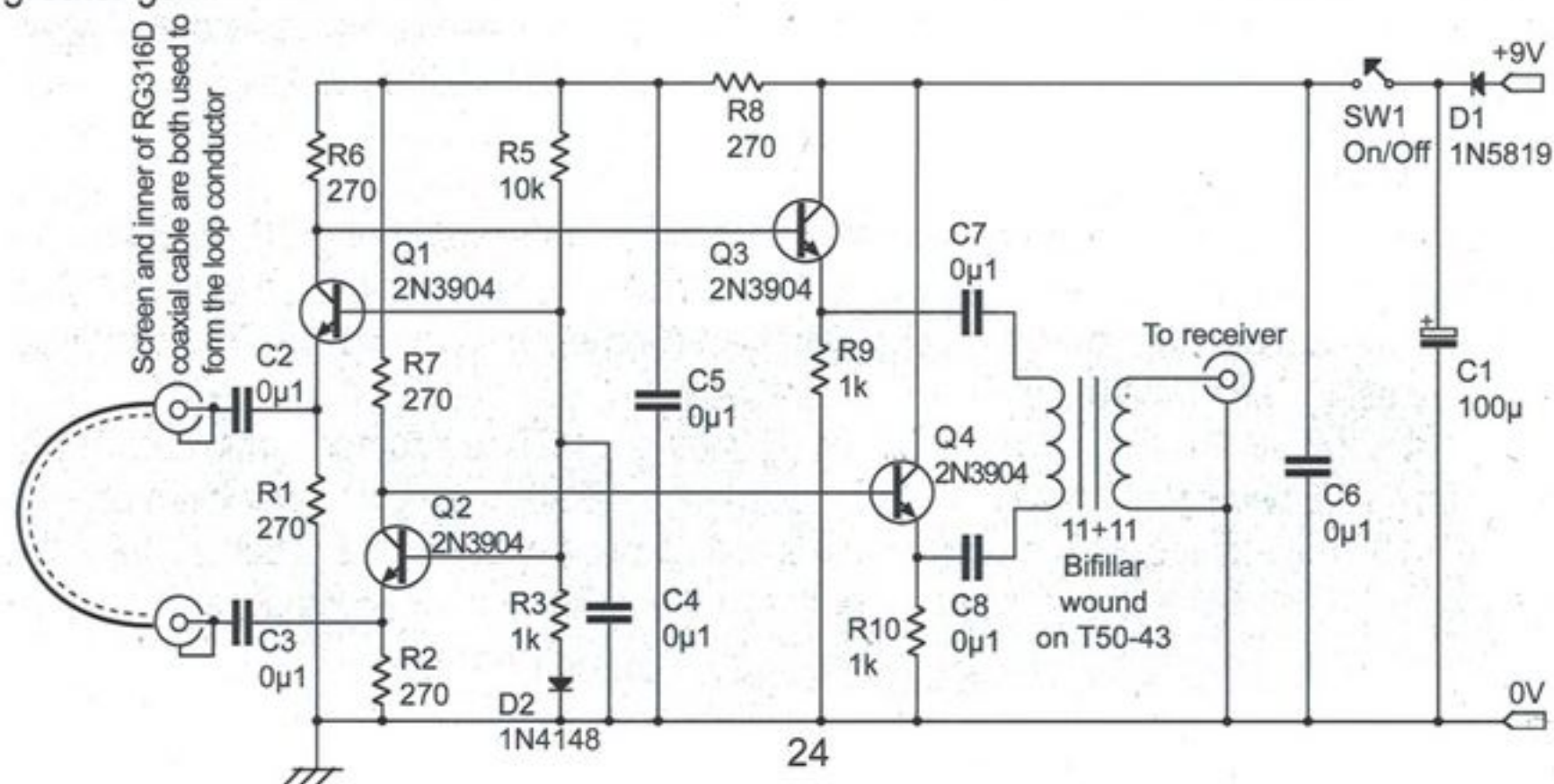
However, even in remote residential settings equipped with computers, Ethernet networks, and various household electrical appliances like vacuum cleaners and dishwashers, the Active Loop Antenna excels in countering unwanted interference. Computer monitor screens are the most notorious sources of QRM when situated just a few meters away, according to my observations.

## Circuit Description:

The Active Loop Antenna features what I feel to be an intelligent approach to analogue electronic circuit design. The loop itself is made from RG316D Coax Cable, where the outer sheath is used as the loop. Both ends of the one metre of RG316D Coax Cable are then connected using standard BNC connectors to the circuit. This one-metre-long wire loop serves as the primary signal source.

The loop can be made from practically any conducting material. However, I chose to make it from RG316, which is often used for pigtail leads. Only the outer woven copper shield is used as the loop conductor. The inner copper core signal conductor is not connected to the circuit. This is done for two reasons.

Firstly, only the outer woven shield of the coaxial cable is visible to RF; secondly, if somebody makes a mistake, by connecting a 'normal' BNC to BNC cable to the loop connectors, no harm will be done. Experiments strongly suggest that a longer loop does not provide greater gain.



## Coupling Capacitors:

Two 100nF capacitors establish the connection between the loop and the rest of the differential loop amplifier circuitry. This is pragmatic, as it both couples the HF signals and prevents any mishaps that might occur with a DC input across these terminals.

## Differential Amplifier:

The circuit employs a common base variant of a differential amplifier, intentionally designed to maintain low input impedance, matching the wire loop's low impedance.

## Biasing:

The biasing of both upper and lower transistor bases is achieved through a combination of a diode voltage dropper, and a potential divider, consisting of 10K and 1K resistors. This configuration ensures the circuit functions reliably across a wide supply voltage range, from 3V to 16V, without abrupt cutoff or undesirable changes in current.

## Decoupling:

A 100nF capacitor decouples the base bias voltage, maintaining a stable DC potential.

## Emitter Follower Amplifiers:

Transistors buffer the output of the differential amplifier, enabling it to drive a 50-ohm load through the output transformer effectively. Two 270 (or 330) ohm load resistors are positioned above the collectors of the differential amplifier.

## Base Biasing:

The bases of the emitter follower amplifiers receive biasing through three 330-ohm resistors.

## Supply Decoupling:

Decoupling of the supply line is achieved using two capacitors—a 100µF electrolytic capacitor and a 100nF ceramic capacitor.

## Power Indicator:

Not shown in my diagram (left), is an 'On' indicator across C6. It uses a 4k7 resistor that powers a super-bright LED indicator, visible across a voltage range of three to 16V.

## Conclusion:

The Active Antenna Loop represents an exciting project in the world of QRP radio and offers exciting possibilities for HF reception in constrained spaces. It achieves a gain of 10x or 20dB, making it more sensitive and capable of receiving even weak signals. You can build this circuit using parts from the club or your junk box.

However, it is available as a complete kit (including a PCB, all components, a housing, and the loop) at [www.yoofab.com](http://www.yoofab.com) Before deployment of this loop, I had not been able to receive on 80 meters or below, mainly due to a combination of QRM and a lack of space for a half decent antenna for these bands. Now I can at least listen to conversations.

## EAT32-Rx Followup

Philip G4HOJ email:G4HOJ@yahoo.co.uk

I thought I would share a little more of my searching and experimentation in searching for mixing schemes for my "Regenerodyne" experiments, trying ideas for, relatively simple, multi-low-frequency band receivers and only using mixing crystals currently for sale from the GQR Club or on the 'Bay.

### Errors!

Firstly though, for any of you interested in trying to recreate the experimental, EAT32, receiver shared in issue 197 of SPRAT (and I have heard from a few), I need to point out that a couple of errors crept into the associated schematic.

- The ECH81 base diagram is correctly marked, but schematic connections for g3 and g2&4 have been transposed. The 330k resistor and capacitor to ground should be connected to g2&4 and the crystals switch should connect to g3.
- The frequency shown for the 60m crystal is incorrect and, although it would work, the tuneable IF would have to be moved to properly cover that band. The correct frequency is 8.192MHz, as per the text.

### EAT53

As mentioned in the original EAT32 receiver article, the tuneable IF chosen for that receiver will also support two more bands within the 300KHz tuneable IF range used. In table form, here is the full frequency information:

Mixing Xtal (MHz)	Tuneable IF Range (MHz)	Band Coverage (MHz)	Note
4.864	2.753	3.054	301kHz IF Tuning Range
6.553		3.499	
8.192		5.138	
10.000		6.946	
13.104		10.050	

### Choices though

At the moment, I think the EAT53 option is good because it provides the potential for five bands with one tuneable IF range, thus simplifying design challenge. However, if you would prefer a different mixing scheme (or maybe you already have some crystals to hand?), the choice of crystals currently available offer some choice. The amateur bands covered vary, as does the required tuneable IF frequency range.

Mixing Xtal (MHz)	Tuneable IF Range (MHz)	Band Coverage (MHz)	Note
6.400	2.595	3.000	405kHz IF Tuning Range
8.000		*5.000	
10.000		7.000	
			*Birdie as IFx2 tunes 2.6MHz = 5.2MHz

Of course there may be other combinations that will work for other receiver arrangements but, as I am a "regen nut", I wanted to use my self-oscillating/Q multiplying/self-detecting oscillator (what-ever you want to call it) style of receiver heart that I developed for my earlier "Anoder" Receiver design. That means trying to under-

Mixing Xtal (MHz)	Tuneable IF Range (MHz)	Band Coverage (MHz)	Note
6.400	4.195	4.600	405kHz IF Tuning Range
8.000		3.400	
9.600		5.000	
11.500		6.900	
		7.305	

stand the implications of an 'at-tuneable-IF' frequency oscillator, rather than the offset oscillator and BFO implications of a dual-con-

Mixing Xtal (MHz)	Tuneable IF Range (MHz)	Band Coverage (MHz)	Note
7.200	5.000	5.500	500kHz IF Tuning Range
9.000		3.500	
*10.700		5.200	
10.7=5.35		7.000	*Poss Birdie IFx2 at
12.500		7.500	

version type superhet receiver. I may have still missed some unwanted hits but if you find, let us know! Anyway, I've certainly been having much fun with different schemes/designs/etc. during this winter's dismal, windy and wet weather when I seriously need wireless distraction for me to keep the faith! .....and one benefit (which I've mentioned before) of using valves and associated components is the ease of which an experiment can be stripped down, rebuilt, altered, optimised, etc.

### Experimental

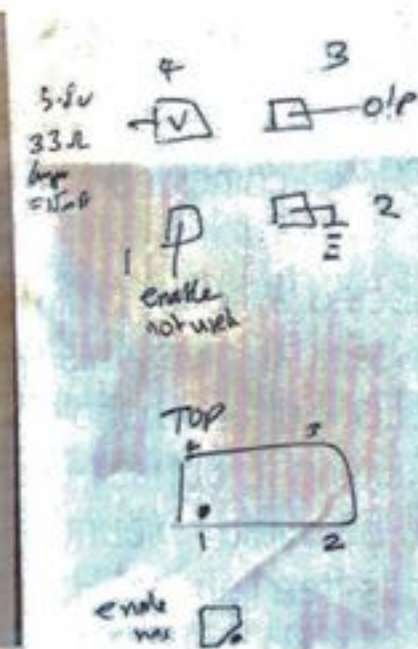
All this is experimental design of course, with the bias of a "regen nut" and the focus of an analogue-only brain cell... but much of this could be of interest for dual-conversion or solid-state designs.....it matters not but let as many of us as possible try and keep the home-brewing spirit of Amateur Radio alive in some small way!

## A Vape-Powered Oscillator

Andy G0SFJ email: andythomasmail@yahoo.co.uk

This is just an idea for those better than I to develop! Here is a cheap and cheerful oscillator for 14.3181MHz (see photo below). It uses the battery from a disposable Vape as the power source. That's 3.7V nominally with 500mAH, and free. Watch your feet in the street! and wear 'marigolds' when you dismantle it, because of nicotine contamination.

The charger unit is to be found on eBay. Just look for "Convenient USB Type C Lithium Battery Charger Board with Phone Charger". Apparently the TCXO frequency is 4\*the NTSC colour burst frequency. But it also drops into our 20m band. You could follow it with a LPF and maybe encase the whole lot and key the antenna, as keying the power is ( I think) a bit chirpy.



I dropped the voltage with about 40 ohms (used the slider in the picture) and didn't use the NC/Control pad on the smd TCXO. The TCXO itself was bought surplus on ebay at about a £1, the same for the battery charger module. Of course you could build a crystal calibrator the same way, when you actually want those harmonics!

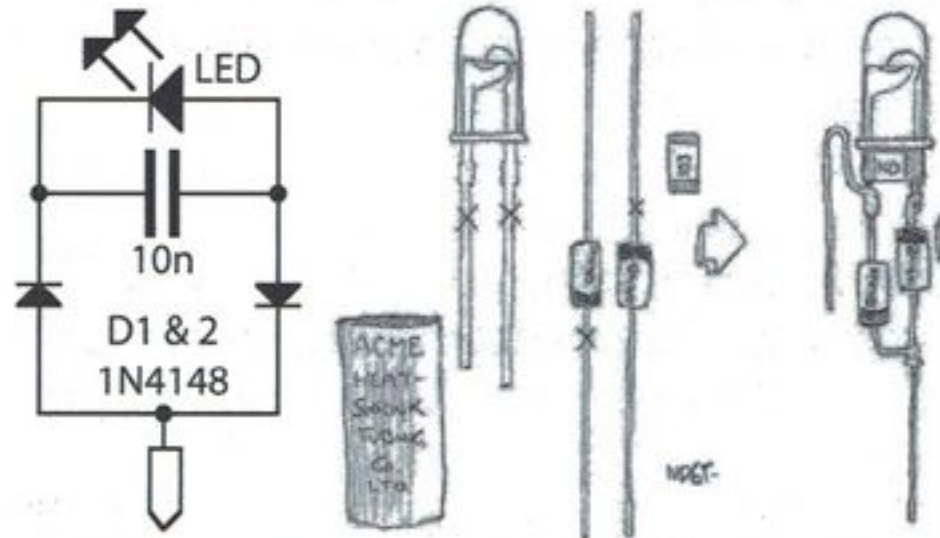
Hope this is interesting, and someone will run with it!

73 de Andy G0SFJ

# The "RF Sniffer Clip"

Scott Schillereff VO1DR and Don Cantrell ND6T

Here is a handy relative RF indicator that is small, cheap, light, passive, versatile, and fairly easy to build. This is a repackaging of the "RF probe" described under "Doochiekeys and Thingamajigs" on Don's website (ND6T.com) which, in turn, evolved from initial concepts described in RadCom (May, 1997) by G4TKV. Passive relative RF indicators are certainly not new, ranging from a toroid and LED version (recently described by Peter, VK3YE), a parasitic RF detector loop (Hot Iron, vol 101, p.29), back to the "Soup Loop" of the 1970s (Rock, W9SCH), and the NE-2 neon bulb proximity RF indicators of even earlier decades.



**Figure 1** (copied from Don's site) shows the schematic and basic construction of the ND6T RF probe. The circuit works as a voltage probe. Diodes D1 and D2 rectify alternating voltage that appears across the probe tip and the "touch lead" (leading to the anode of D1), and applies the resultant DC voltage to the LED

and filter capacitor. Only four passive parts, plus shrink tubing!

A 5 mm diameter LED is best (wide enough to solder the SMD capacitor across its leads), and a red ultra-bright type is best (most sensitive). You could crunch this down even smaller using a 3 mm LED and smaller SMD cap and diodes. Small signal Si diodes were used (e.g., 1N4148, 1N914, etc.) since they are tiny, plentiful, and cheap. Ge diodes (e.g., 1N34A) might offer slightly more sensitivity, if you have some.

This simple RF probe has several useful properties. By holding the touch lead and placing the "hot" end on an RF source, your body capacitance completes the circuit and the LED lights up (don't worry, no RF reaches you through the touch lead!). Thus, you can use this probe to prospect for RF (in circuit stages, around your shack, on antennas, etc.). It will readily show RF down to ~0.1 W. ND6T's writeup describes a range of standard RF detection uses.

## Two other useful features are that

- 1) LED brightness is proportional to the RF power, and:
- 2) at the output of an ATU, the brightest LED level coincides with best impedance match to an antenna (lowest SWR).

Playing with the original probe, Scott connected a 40cm (16in) jumper wire from an RF source to the probe "hot" tip lying on the shack desk, thinking this would be a handy arrangement for touching the probe and lighting the LED. Lo! and behold! the LED lit up on its own (hands-free)! About half as bright as when touching it, but still usable. A versatile bonus! It followed that some sort of mounting clip would be useful. Mounting the probe on a large alligator clip (Mueller 60) damped or nullified hands-free lighting. However, when mounted on a miniature wooden clothes peg, the LED lit up well - \*voila\* the RF Sniffer Clip was born!

**Figure 2** (right) shows the RF Sniffer Clip, along with an unmounted ND6T probe for comparison; total length of each 4.5 cm (1.8 in). Any non-conducting material should work for the supporting clip. The clip was assembled as follows. Adhesive copper foil tape was wrapped over the front of the top jaw of the clothes peg and extended underneath as a contact surface (**Figure 3 - left**).

The "hot" lead was soldered to that, as well as a 1 cm (0.4 in) piece of #16 (1.64 mm diameter) wire to make a point probe. The LED end was attached to the peg higher up with more foil tape and the "touch" lead soldered to that. A drop of CA glue anchored the LED to the peg. It seemed like we were done...

But wait - there's more! When the RF Sniffer Clip was clamped onto insulated ladder line, the LED glowed (hands-free) when RF was applied (**Figure 4>**) in this case 4 W! Another bonus - indirect coupling to RF by simply clipping onto an open wire transmission line. Further trials showed that using the

"brightest LED = lowest SWR" behaviour, a QRP transmitter could be matched to an antenna on all HF bands by first simply peaking receiver noise and then peaking the LED brightness with the ATU controls - no SWR meter required. Trials with an ICOM IC-705 showed that final SWR was close to 1:1 every time! If needed, closer RF coupling can be had by attaching the clip to one end of 10-20 turns of hookup wire or magnet wire wrapped tightly around one of the ladder line wires; the other end left free (a kind of "pickup" coil).

Some parting thoughts: Peaking is easiest to discern when the LED is dimly lit. You could decouple the clip or reduce your RF power to reduce LED brightness for peaking; or, if needed, leave it bright for use in broad daylight.

- Power loss due to the indicator is so small (mW level) that it is difficult to even measure. So, you could leave it on for QRP/QRO, or remove it after peaking for QRPp operation.
- A couple of clips could be used to simultaneously compare (relative) RF current on both legs of a balanced antenna. This would be a very precise way to trim each antenna leg.
- This would also be an excellent indicator for tuning a counterpoise.
- Many other configurations to mount the RF probe are possible, even hard-wired in.
- The RF Sniffer Clip would be a practical, cheap and useful project for Build-A-Thons or club projects. Each one will cost just pennies in materials.
- You could build a handful and store them everywhere (shack, bench, field kits)
- They would make great little gifts for practical ham friends.

Happy 2024 and best 72, Scott and Don  
 emails: [scott.schillereff@gmail.com](mailto:scott.schillereff@gmail.com), [nd6t@velotech.net](mailto:nd6t@velotech.net)



## Membership News

Daphne G7ENA, 33 Swallow Drive, Louth, LN11 0DN

Welcome to the first membership news for 2024. A big thank you to everyone that sends me their used stamps, I am still collecting them for the local horses' home.

### Your last Sprat?

This will be your last Sprat if your wrapper label says "membership expired" or "underpaid". Please check your wrapper and contact me (or your overseas representative) if this applies to you. Please do not assume if that if you are a UK standing order payer that it can't be you.

### If I could not identify your payment, then your membership has lapsed.

Please everyone, check the wrapper now. If underpayment applies to you, there will no further Sprats until you send the balance?

Due to a technical problem the renewal details were missing from the winter Sprat. If you are unsure of how to pay, please contact me at the above address, check the website or email me at [membership@gqrp.co.uk](mailto:membership@gqrp.co.uk) Sorry for any inconvenience. "If you wish to pay by PayPal, please use the page on the club website

<https://gqrp.com/paypal.htm>

"Members wishing to pay by Bank Transfer, or Standing Order, should use the following bank info - Business Account, The G-QRP Club, Sort code - 01-07-44, Account - 04109546"

### Providing information with your payment.

Astonishingly our overseas reps and I receive payments with no information about the member paying. We have no special gifts of prescience so please take the trouble to include your name, callsign, membership number and address. An email address is very helpful if we need to contact you about the payment.

### Privacy.

This is to remind you that the club holds a database of all our members' names, callsigns and addresses. It is implicit that every time that you renew your subscription, you are giving us active consent to record this activity in the club database. We only use your data to confirm your membership to send you *SPRAT*, QSL cards, or fill your order in the club component store.

We only share your data with the printers who mail you your *SPRAT*. If you are unhappy with us holding this information about you, then clearly you cannot, for all practical purposes, be a member of the G-QRP Club. If you contact us we will gladly refund your unused membership fees and delete your data.

### CQ CQ our members in France.

**Richard - F5VJD** our representative in France for many years, has decided it is time to step down and pass the reins to someone new. The committee and I would like to thank Richard for all his hard work.

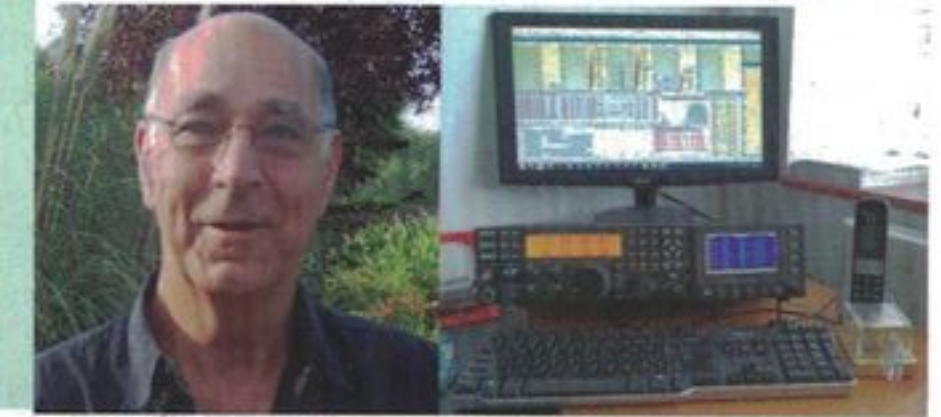
If you reside in France and would like to take on this important role then please email me:

[membership@gqrp.co.uk](mailto:membership@gqrp.co.uk)

## MEMBERS' NEWS

by Chris Page, G4BUE

E-mail: [chris@g4bue.com](mailto:chris@g4bue.com)  
[gc4bue@gmail.com](mailto:gc4bue@gmail.com)



Congratulations to **KDØFNR**, who continues continues work on Project TouCans with **KØ6BTY**, on coming fourth in the QRP single-station section of the California QSO Party in October, when TouCans was only operating at 3 or 4W, rather than the 5W it is now. I hadn't heard of Project Toucans, see <https://copaseticflow.blogspot.com/p/project-toucans.html>. The vast majority of the station set-up is in the antenna, with only the keyer and battery in the tent at the end of the ethernet cable going to the rig. Hamilton says the idea was to get rid of any balanced antenna, feedline loss, and impedance mismatch concerns by eliminating the feedline by having the radio in the antenna! The radio is a Rockmite mounted just below a Tuna Topper 5W amplifier contained in a pineapple can, with a tuna can serving as a cover and antenna mount. The entire rig is then hoisted up with the dipole. During a POTA activation over the 10/11 February week-end from New Mexico, when they made three QSOs to Europe, they finished up in a snow storm!

**G4LDS** writes, "My home is poor for radio with a high noise level which semi-mutes 40m for me. I've started to enjoy /P work with my KX3 and either an Ampro 40m or 20m whip on the roof of the car, or a SOTA 20/40 bandhopper on a 30ft telescopic pole that should work on 15m being 3 x 40m! I started with the new Bunkers on the Air award as a ROC bunker is about 2½ miles from here, and I can park opposite in a nature reserve (pictured right). I run 5W PEP to one of the antennas. I also activate GWWFF for Morecambe Bay, RSGB Leighton Moss or Silverside/Arnside from other locations. It's great being QRP and getting the pile-ups!"





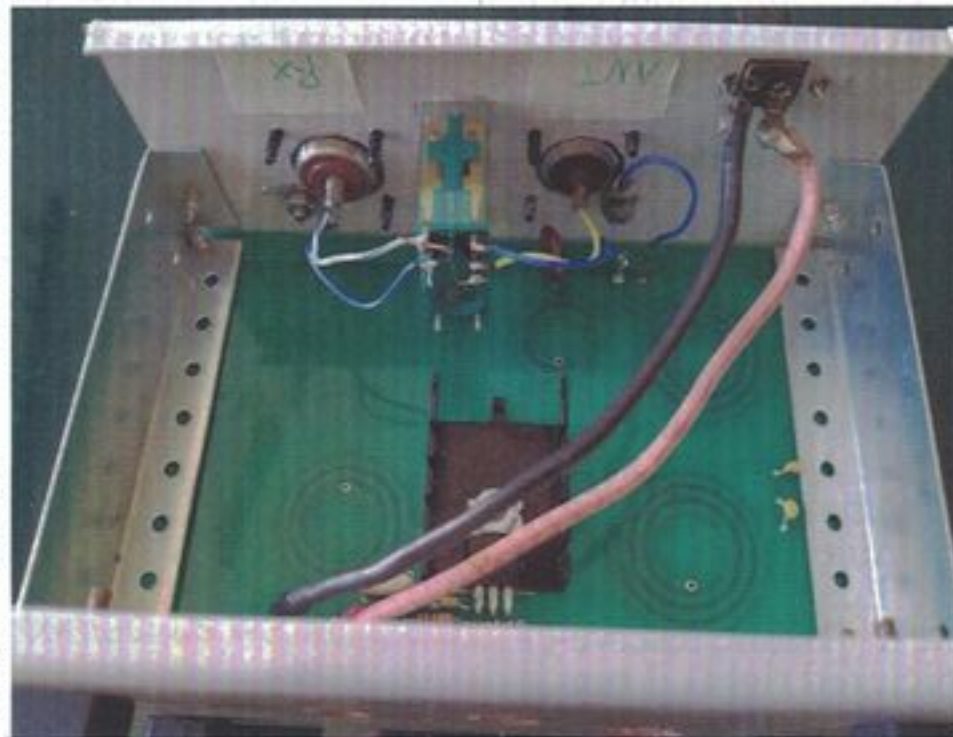
**OH5JIL** is QRV this year as **OH50LOW** to celebrate both our Club's anniversary and his personal 50th anniversary, and QSO'd **G3XJS** on 8 February on 20m with two-way QRP. Tuomas bought three Elecraft radios in 2023 and now has a K3/10, KX3 and a K2. **G3XJS** also QSO'd **GØHUZ/MM** on board *Spirit of Adventure* in Porto Praia, Cape Verde on 16 February with 3W on 10m. Tony was running 5W into a vertical on the deck. Two days later, Peter QSO'd **TA3IIF** with two-way QRP on 17m. On 19 January, **GØTPH** found 12m 'buzzing', making 5W QSOs with PJ2, VE and V3, the latter being an all-time new QRP one for Alan. **DM4EA** will be QRV 6/16 June from Kakovatos, Penelopennes as **SV3/DM4EA** with his X6100 and wire-antennas mostly CW. Tom says activations will be put on <<https://www.qrpcluster.com>>, and he is open for sked requests (tom.klaschka@gmx.de).

**VE3IPS** plans to be QRV, especially POTA, from Spain in April with his IC-705 and the JNC MC-740 vertical antenna. He obtained a Prepp Comm DMX-40, a 3W TCVR with a built-in decoder using a CW pitch of 1300Hz (not 700Hz). In future, John will use a flame bag and/or a metal bucket when charging Li-On RC batteries following a fire! He writes, "I was so very lucky to catch a three foot flame erupting from a Li-On RC battery that exploded under charge. I threw a fire blanket on it and contained the fire and now have 'black snow' particles everywhere on my workbench" (pictures above). **G4TGJ** is continuing his regular SOTA activations with one of his homebrew CW rigs, even in the snow!, and says 30m usually generates a pile-up. Richard is including 10m now because SOTA has a 10m Challenge in 2024, and he has had QSOs with LU, PY and USA on the band. He is also working on his Raspberry Pi Pico based SDR TCVR, a prototype that is going well ahead of building a permanent version for SOTA trips.



A year ago, **IW1PAG** acquired a 'NS40' QRP TX kit from the 4SQRP Group, USA. It is a Class E little simple CW TX for 40m with coil printed on the circuit board, without coils to be wound. Its name stands for 'No Simpler 40 meters Transmitter'. Dorianio has just built it in a case used for a previous project and gets 5W with a classic 12V PSU (pictured right). He soon hopes to be QRV with it and make QSOs with members. **N2CQR** continues to build BITX-style dual-banders, the latest a 15-10m for use in the Dominican Republic. Bill is every day more committed to analogue, HDR, discrete component rigs built using Manhattan-style boards affixed to wooden chassis.

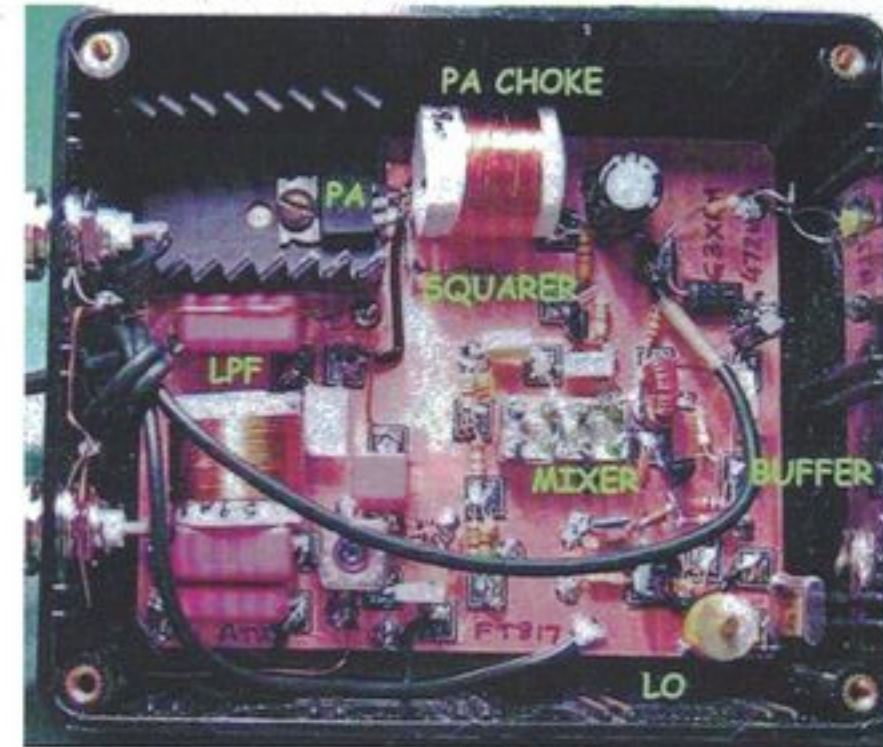
**GØKJK** is now living in a retirement complex in Scarborough with awful RFI, meaning at times he cannot hear or QSO anyone! However, in a rare break in the RFI, Keith was hugely cheered up with a 2W QSO with **9A1KDE** on 20m over a 1000 mile path that saved his QRP sanity, saying, "No great DX but a great moment!" **MØKTZ** moved QTH in December and he now has enough space for a 2x59ft doublet 33ft high. Enzo said the New Year started with a very enjoyable two-way QRP long chat with **G4IVV**, followed by many more during and outside of activity slots, including an early-morning chat on 80m with your scribe a few days later.



**G3XSJ** dug out his long unused Codar AT5 TX to participate in an early January morning 80m QRPAM net, and was delighted in the number of stations participating, most clearly audible with just a few watts, and one at mW level. The picture right shows Ken's minuscule AT5 and matching Codar PSU with an Eddystone 680X RX, overshadowed by a QRO Labgear LG300. **ØØ4Z** says the next '1 Watt Game' is 0900-1200z 24 March, see <<https://forum.mountainqrp.it/t/the-1-watt-game/3811>>. **F4IUJ** says his local club, ARA35 is organising a QRP convention on 28 May at Rennes, Brittany, details from Yannig at <[F4IUJ@protonmail.com](mailto:F4IUJ@protonmail.com)>. **MILCR** will be visiting various rallies this summer and will carry the G-QRP 'mobile shop' with him.



**K3DZ** has again had an experience with leaking batteries - a named brand (Ray-O-Vac High Energy) AA alkaline. Frank writes, "Recently one of my single AA cell operated wall clocks lost time and turning it over revealed a badly leaking battery. It was easy enough to clean the battery compartment of whitish-coloured paste, but what I did not expect when I opened my bulk pack of unused batteries is to find about one-third of 20 unused batteries badly leaking! I purchased a 60 battery bulk pack in November 2019 with an expiration date of February 2028, some four years from now! Each battery label and the 60-pack label proudly stated 'guaranteed not to leak'!" He made a warranty claim and was quickly reimbursed with the cost of a new 60 pack. Frank adds, "Moral of the story: (1) if you squirrel away 'any' type of battery operated device, remove the batteries before tucking away that device, (2) don't over purchase batteries, they do go bad in storage!, (3) don't be hesitant to lookup and execute a warranty claim, you might be surprised, especially from a named brand manufacturer, and (4) 'Guaranteed' is a nebulous term."



**G3XBM** is still using his homebrew TVTR (pictured above left) designed some years ago (10mW ERP (measured) from the earth-electrode 'antenna' in the ground for 630m QRP WSPR). Furthest are several RBN spots in Finland at 1747km. Roger tried 160m FT8 one night in December with 2.5W with the same antenna and found 113 stations right across Europe copied him (picture above right), and the furthest was on the east coast of the USA. He has also been doing some experiments with 500uW (0.5mW) QRPP WSPR transmissions, resulting in three spots, the furthest in the USA. Roger has a special permit for 8m and is using 2.5W to a dipole and has QSO'd all the active stations in the Caribbean with two-way FT8. He says, "F2 has been good this autumn with reports of my QRP 8m FT8 from USA, Canada and South Africa. I just wish OFCOM and RSGB would see the value of this band!"

**MØRON** has decided to learn CW, using the **IZ2UUF** app at 25WPM with 12WPM effective speed. Andy was given a **K1EL** keyer board for Christmas and has boxed it up ready for when he starts to learn iambic keying. He also has a **GMØEUL** academy paddle (picture right) that he has paired with it, both coloured bright orange so he doesn't lose them on a hilltop! A few months ago, **F5NZY** resumed traffic with his straight key, a Hi-Mound HH-808, and says he is really enjoying it. At the end of 2023, Steph received the 80-20m version of the QMX, which he plans to use for ultra-portable activities. He also has a SDR TCVR, the Hermes Lite 2, that he says the receiver is quite surprising and very similar to his IC-7610. Like many, he uses Thetis from **MIØBOT**.



Pictured above is **G3TPV**'s build of **G4HOJ**'s EAT 32 RX. Alan says, "It is a very interesting concept in design", and thanks **G4SBF** and **G6MNL** who researched and found the error on the circuit diagram in *SPRAT* 197 relating to xtal oscillator wiring. He says, "I did find that a one turn link from the antenna onto the input toroid reduces SW broadcast interference on 40m. Looking forward to more unusual circuits from **G4HOJ** - thanks **G6MNL**. **G4JBE** mentions a new QRPTCVR kit, the Explorer, from Radio Kits, see <<https://www.radio-kits.co.uk/explorer/index.html>>.

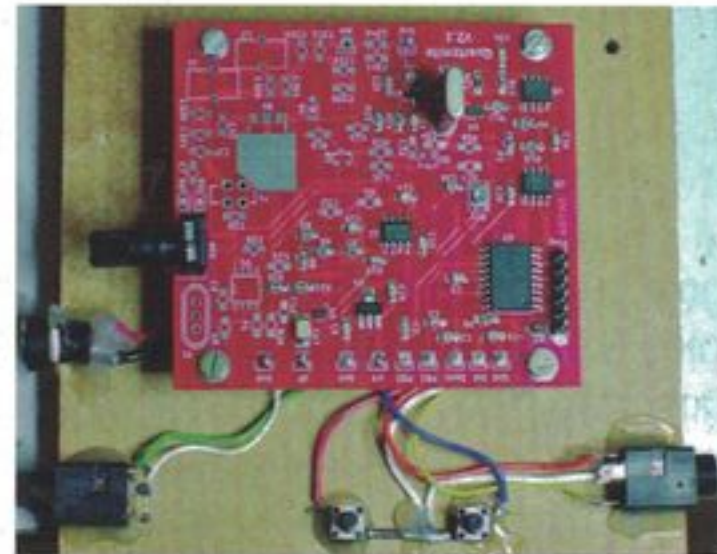
**G4USI** has designed and built a 20m TCVR in a matchbox, complete with in-built key and LPF that he used as his only rig for Winter Sports, making 46 QSOs on and around 14060kHz with 14 DXCC, several over 2000 miles, the highlight a two-way 1W QSO with **OH9VL**. Sadly in this period, a good friend of Daimon's from the Taunton Club, **GØEYR**, passed away. In his younger years, Peter was a keen QRP constructor and Daimon has inherited a nicely built CFO 80m TX80 of his (pictured right), which he has re-sprayed, except the front panel. It has a VFO, side-tone and TX/RX switching designed by **G3RJV**. He replaced the PA with a BD139 and it is giving a healthy 2W out. Daimon uses it (as he does with all his TXs) with a RSP1a SDR RX, and has made a good number of European QSOs with it so far.



**F5NZY** entered the QRP All-band Single-op Assisted section of the CQ WW CW Contest in November with the intention of beating the French record of 412k points. Congratulations to Steph who really smashed the record making 1323 QSOs for a claimed score of 1,012,928 points! He used his IC-7610 at 5W to his Hexbeam (HF) and inverted L and vee antennas, to make 31 WAZ and 109 DXCC. He later found the station that held the old record beat him by 250k points! **G3YMC** made 676 QSOs on all bands for a score of 251k points with

his K2 at 5W and a 75ft low long-wire and quarter-wave loop for 160m, and your scribe made 565 QSOs for a claimed score of 268k points in the All-bands Assisted QRP Section.

**G8TMV** finally re-started work on his Quartzmite V2 SMD clone of **K1SWL** design. Colin had the PCBs made a long time ago and is building one up for testing (pictured right). The PIC, which controls it, and the side-tone audio chain, is complete, and the keyer is working. He is now working on the TX chain and the local oscillator is working, next is the driver. He says, "This version of the Quartzmite has independent RX and side-tone volume controls the same as V1, but also has proper RX muting when switching to/from TX so there should be no loud pops or clicks in the headphones. It has a memory keyer built in and a way to calibrate the TX/RX offset in software, plus a few other minor changes and enhancements."



**GWØVSW** has been trying FT8 with his FT-857 at 5W to an indoor 'Crown' wire loop and has QSO'd 70 DXCC including 5Z, 6W, 7Q, A2 and KP4. Carl says the mode is not his favourite but it does allow QSOs when conditions do not suit CW or SSB. He also has a **G5RV** and Hustler six-band vertical mounted on the side of his house (pictured right), and while replacing the 300ohm feeder on his old **G5RV**, he used 450ohm and raised it a little, resulting in it working much better despite much of the feeder running down the aluminium mast. Carl made over 400 QSOs with his Xiegu G90 running 5W on 160-10m in the CQ WW Contest week-ends with the **G5RV** (connecting the centre of the coax to one side of the antenna and running a counterpoise from the braid to the earth wire for 160m), saying, "the tuner on the G90 seems to cope with almost anything you throw at it!" His next project is to use a MTRB with a small loop made from a hula-hoop to see what can be achieved.

Pictured right is **G3VNT**'s shack, referred to as 'The Doghouse', showing his JST135 TCVR that can run from 5-150W (mostly 5W), a QCX+ and a 'Rooster' for 40m. Outside is an inverted-vee 'fan' antenna tuned to the 40 and 80m COAs running roughly north-south at 50ft. Lindsay operates mostly CW enjoying the G-QRP activity sessions. He will be out /P with the QCX+ and Rooster as the weather warms, and says, "Hoping to get some on-air time in our caravan if the XYL doesn't notice the antenna! Unfortunately East Anglia isn't exactly the place for SOTA, and as I hit 75 in a couple of months I'm not sure I am up to legging it up the hills as well as I used to. POTA perhaps?"



Thanks to all the contributors. Please tell me how your spring goes for the Summer 2024 edition of *SPRAT*; what you have been building, interesting QSOs you have made and any other information about QRP, by 12 May. Also, interesting pictures please, don't be shy in letting members see what you have been building and/or where you have been operating from, your antennas, who you have been meeting, and even a shack picture to let other members know what you and your equipment look like. Finally, please let me know if you intend operating from somewhere other than your home QTH during the summer and autumn months, so I can let members know to listen out for you.

## Activity Report

Enzo M0KTZ email: m0ktz@katolaz.net

Too many announcements for this 2024 Spring editions, so not much space left for extensive notes from your scribe. I am just overjoyed in seeing so many activities going on and being supported by our members. I really hope you will join in the many events that will populate our QRP Spring and Summer. More details will be circulated through the email Reflector closer to the dates.

### Winter Sports 2023.

The Winter Sports are the iconic, relaxed, get-on-the-bands GQRP Activity, and the 2023 edition was really a blast for the Club. I received logs and reports from more than 30 members (plus a check-log from your scribe), totalling more than 1500 QSOs QRP between Boxing Day and New Year's Day, which is indeed a fantastic result. But the most extraordinary thing is that this edition seems to have represented the beginning of rehabilitation from the QRPZ (QRP-Zero power HI) disease for many fellows.

I received at least four reports from members who said that this was their first time participating in the Winter Sport in decades of Club membership, and the best thing is that all of them admitted to have enjoyed that!

All bands from 160m to 70cm were at play, and QSOs happened on a variety of modes, including CW, SSB, AM (!), FT4, FT8, and RTTY, and several DX at more than 1000 Miles per Watt were bagged. Some of the members lamented high levels of local noise or restricted antennas (**Steve 2E0ADR, Brian G3XJY, Dick G0BPS**), several more had QSOs on 8 or 9 bands (**Tom DM4EZ, Chris G4CWS**), some fellows kept themselves rigorously to QRPp levels throughout (**Steve G0FMY, Steve G3ILO**), a few others had great results in a few contests happening in the festive seasons (**Dave G3YMC, Toumas OH5JL**), and some others lamented some unduly QRM from contests (**Colin G3VTT**).

A few members insisted in using exclusively or predominantly their own home-brew TX/RX/TRX, including **Steve G0FUW, Daimon G4USI**, some fellow had most or all of their contacts from SOTA (**Roger MW0IDX**) or from WWI bunkers (**Chris G4LDS**), **Paul EI5KI** took part again after more than 20 years, and **Robert PA9RZ** had many contacts from his home convalescence, while battling with an unpleasant guest (we are all with you Rob!).

Most of our members used dedicated QRP rigs (**John G3NUA, Lindsay G3VNT, Robin G4DNP, Dave G4HMC, Paddy G4MAD, and Peter GM0EUL**), and we got some welcome non-G contributions from **Didier F6GNK, Val RW3AI, Garry WA1GWH, and Anthony K8ZT**. The best log mostly focused on digital modes was submitted by **Paul GU4YBW**, who operated mainly FT8 and FT4 (with the occasional few ones on CW) using indoor dipoles and end-fed antennas, and including also some 2-way QRP one.

An outstanding digi log was also submitted by an ex member, that we thank for their continued support. Two outstanding log for the traditional section were submitted by **Carl GW0VSW**, who operated CW and SSB, both mostly with 1W of power, to collect 32 DX entities across ten bands, and by **Peter G3XJS** who set himself on the quest of having 2-way QRP on all the non-WARC bands (check!), and was stubborn in putting on air a variety of

rigs, including a valve Tx and several home-brew stuff. They both earned a well-deserved runner-up certificate.

The best log overall was submitted by **John G3YPZ**. He admittedly had some good antennas there, but a very interesting point is that his log is filled with QRPp QSOs (29 at 1W and 24 at 0.1W, including half a dozen SSB ones) and includes several AM ones, with a few interesting DX to North America with 2.5W carrier (10W PEP). **John receives the G4DQP Trophy for the 2023 Winter Sports**, and the congratulations of the Club at large.

Well done everyone. It was good to review the results of so many different manifestations of the subtle QRP disease, all showing that, despite our personal preferences and inclinations, we are united by a strong, common love for the ability of getting heard using peanuts power.

### Chelmsley Trophy 2023.

The Chelmsley Trophy recognises outstanding commitment to QRP operation during an entire year. For the 2023 edition we received four truly outstanding logs, as a testament to the continuous dedication to QRP of many of our members. **Toumas OH5JL** used a variety of rigs, including a Rockmite and an Argonaut 515, and different antennas to bag 74 DXCC entities, including several contacts with ZL, and at least 31 2-way QRP DXCC across 4 bands.

**Carl GW0VSW** had a fantastic QRP year and lots of fun with 1-5W from his Xiegu G90. He mostly used a G5RV and worked both CW and SSB on all bands except 60m, for a total of 87 DXCC entities of which 13 2-way QRP, including a phenomenal effort to activate GW-5LOW. Also **David G3YMC** operated on all bands except 60m but plus 6m, using mainly an Elecraft K2 (upgraded to a Yaesu FT-710 in December) and several antennas, for a total of 120 DXCC entities contacted, including several QSOs to VK, VL, JA.

The fourth application came from **Chris G4BUE**, who repeated the great performance which earned him the Chelmsley Trophy 2022, by contacting 150 DXCC entities across all bands from 160m to 6m, including 16 DXCC entities 2-way QRP, and many QSOs with remote and exotic locations across the world. Chris also operated just 1W on several occasions, and reported on his amazement at finding out how far such small power can get you, if you only dare trying.

The check-log from your scribe had nothing really interesting to sport, except perhaps for showing at least one CW QRP QSO logged on every single day of the year, for the second year in a row HI.

These were all truly outstanding contributions, showing a deep love for this odd side of the hobby, characterised by patience and persistence, which is a source of immense satisfaction for all of us. **The Chelmsley Trophy 2023 is awarded to Chris G4BUE**, for the second year in a row, with congratulations for his continued dedication to QRP operation.

### Easter Egg-xpeditions 2024.

By the time you receive this edition of SPRAT, the GQRP Club Easter Egg-xpedition Challenge will probably be in full swing. This shows how important the Reflector is for the life of our Club, as it happens that sometimes SPRAT does not align perfectly with the timing of Club events.

The Easter Egg-xpedition Challenge is a Club Activity that runs between Good Friday and Easter Monday, both included (29th March to 1st April 2024). It is focused on /P, /M and /MM

operations run by one or more QRP enthusiasts. Your Egg-xpedition does not need to be to a far-away exotic place: your backyard, a park near home, a SOTA reference, or just a field in the countryside are all good enough for the aim.

There are not even limits on duration (anything from a couple of hours to a 4-days camping adventure), or number of participant to each Egg-xpedition (anything from a single operator to a gathering of a dozen or more QRP nuts will work). Just get out of the shack, meet with fellow QRP nuts, set up an efficient QRP station in the field, and have fun on the bands with like-minded ham friends.

A list of Egg-xpeditions will be circulated through the Reflector closer to the date. Appreciation certificates will be sent to all the Egg-xpeditions announced in advance of the event. We will also have awards for the best Egg-xpedition team and the best Egg-chaser.

**Logs and Egg-xpedition reports to be sent to Enzo M0KTZ by April 15th.**

### **International QRP Day.**

A celebration of QRP activity and achievements runs on 17th June every year. In 2024 this will fall on a Monday. The QRP Centres of Activity (CoA) on all bands are a great place to start (see the bottom of this column), but hundreds of QRP stations will be heard all over the bands. We aim to repeat the great success of last year, where all (but one!) of the Regional Variations of the Club callsign G5LOW were on air on the 17th and during the Summer Sizzler. That will only be possible with your continued support.

### **Suffolk Trophy.**

The Club has traditionally run the Suffolk Trophy on International QRP Day. Power and limits as for the Chelmsley Trophy but with operation for six hours only in not more than two periods. Contacts are with any Region 1 country; normal QSO, no serial numbers. Scoring: Each Region 1 country counts 1 point on each band. The total score is total of IARU countries on the bands used. Only one contact per country per band is allowed irrespective of mode. The other station may be QRO.

Please include Name, address, call, power used, equipment, time, call band for each contact. All logs and claims must be sent to Enzo [M0KTZ m0ktz@katolaz.net](mailto:M0KTZ m0ktz@katolaz.net) by 30th June 2024. A trophy to the winner plus runner up certificates.

### **Summer Sizzler.**

This stress-free get-on-air Club event runs between Saturday 15th and Sunday 23rd of June. It is not a contest, rather a relaxed activity that we can use to meet and greet new and old friends, to test our latest homebrew creations, and to fill the bands with friendly QRP signals. QRP power levels only, the other station might be QRO.

Logs should be sent to Enzo M0KTZ [m0ktz@katolaz.net](mailto:m0ktz@katolaz.net) by the 7th July 2024, but more importantly, please accompany your logs with a description of your experience of the event, which is far more important than sheer numbers. If you need to send paper material, just drop me a line and we will arrange it. The best log submitted will be awarded **The GM30XX Trophy**, with certificates available for runner-ups.

On top of that, we will award five more certificates, namely **The Busy-Bee certificate** (for contacts made using exclusively homebrew equipment), **The Tiny-Flea certificate** (for QRPp contacts, i.e. using 1W output or less), **The Old-Beetle certificate** (for contacts made

using vintage rigs, 25 years or older), **The Iron-Knee certificate** (for POTA, SOTA, /P, /M or /MM operations), and **The Ladybird certificate** (for logs submitted by hams licensed less than three years ago). More news in the Summer *SPRAT* and on the Reflector.

### **GQRP 50th Anniversary Special Event Stations.**

We will have a month-long activation in September 2024, where the Gx5LOW Club callsigns and a commemorative SE callsign will be aired by GQRP members all around the UK and the Crown Dependencies, starting at the Telford Convention. We have already received news of a Finnish Station (**OH50LOW**, thanks to **Tuomas OH5JLL**) which is already on air and will be heard throughout 2024, and of a German station and an Italian station which will announce their callsigns soon.

This is a call for action to all members not residing in the UK: if you can obtain and activate in your country a Special Event callsign during September 2024, containing the "LOW" or "QRP" suffix (possibly with a 50 mixed in!). Please send an email to Enzo M0KTZ to let us know. We will have a special commemorative "50LOW" award to chase, and certificates for all the operators that will help with this endeavour. This is a great way for all our members to celebrate the 50th anniversary of this fantastic Club.

### **Weekly QRP Activity Slots.**

GQRP Club members convene on the bands twice a week to have friendly QSOs with fellow QRP enthusiasts. The two slots are as follows: "QRP Activity Slot" on Sundays 17:00z-20:00z, and a "Mid-week QRP gathering" on Wednesdays 17:00z-19:00z. All bands, all modes, any type of QSO, no scores, activity focused around (but not restricted to) the QRP Centres of Activity (CoAs, see at the end of the column).

The idea is to just get on the air to test your latest QRP creature and to find other QRP fellows to talk with. These slots seem to be working quite well, as you can normally find more than a few QRP stations on the air and you are assured to make a few nice QSOs. Logs and short reports are welcome.

### **Join the GQRP Reflector.**

Members are welcome to join the GQRP email Reflector at: <https://groups.io/g/ggrp> The reflector is a 'high signal-to-noise' venue that hosts interesting discussions about all sorts of QRP-related topics, from antennas to circuits to components to operating techniques. This is also the place where many of our members announce their QRP activities, experiments, and results, and where periodic reminders about Club Activities are circulated

72 de Enzo M0KTZ

### **These are the International QRP Calling Frequencies:**

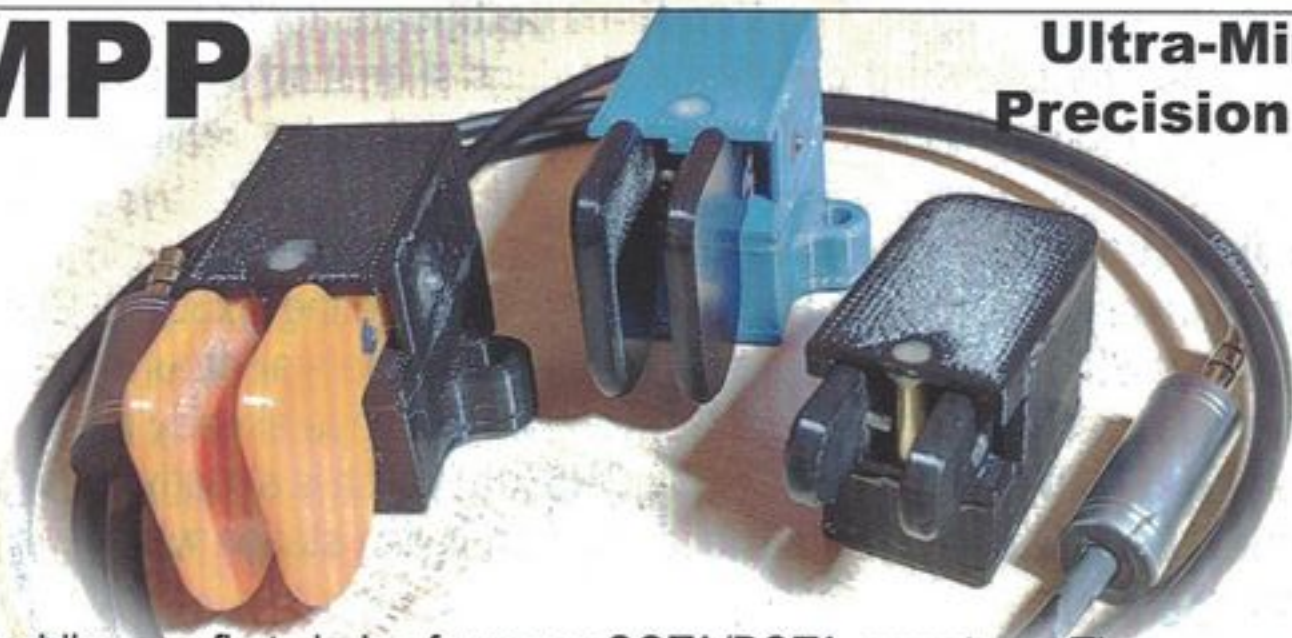
**CW: 1836, 3560, 5262 (UK only), 7030, 10116, 14060, 18086, 21060, 24906, 28060kHz**

**SSB: 3690, 7090, 14285, 21285, 24950, 28360kHz**

**Notice that these are Centres of Activity, so please spread out when activity levels are high (and use those CoA to make sure we all need to spread out!)**

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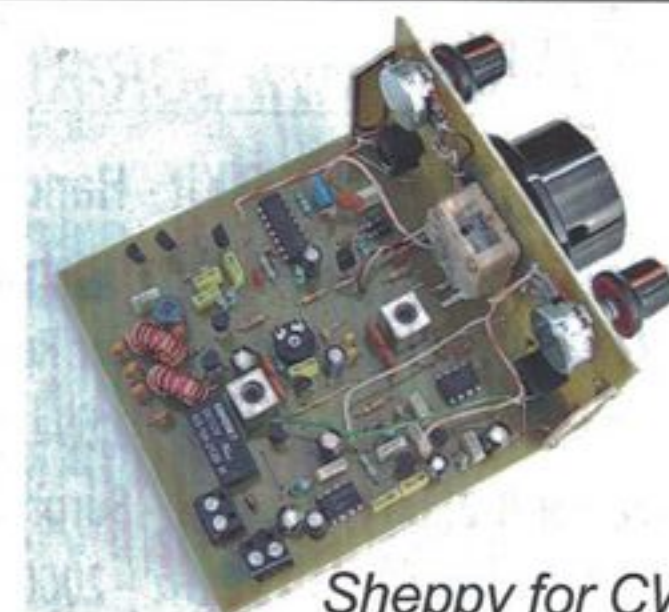
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See *Practical Wireless* August & September 2023

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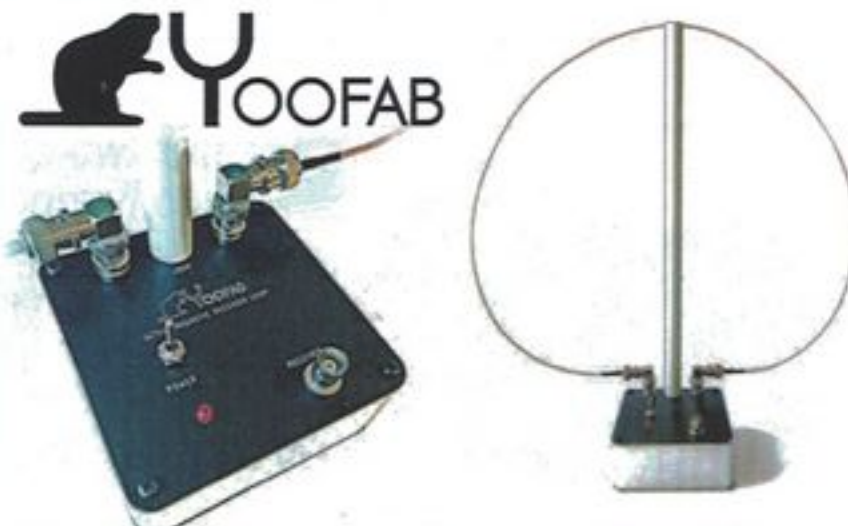
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