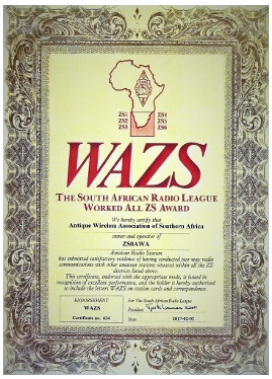
Antique Wireless Association of Southern Africa

202 May 2023



Inside this issue:

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* Vice President—Jacques ZS6JPS
* Technical Advisor—Rad ZS6RAD
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Reflections:

The AWA Valve QSO party is on this weekend and as many as possible are invited to join us. The AM session on Saturday afternoon does not usually get such a good response these days. Gone are the days when we would have up to 15 stations taking part. Those were the heydays of AM when there would be stations up every Saturday morning and Wednesday evening, doing musical transmissions on 80m. There was very often a call in on 40m before the Saturday morning net. But as time goes and interest wanes and the old timers who were the AM fans disappear, so too do the AM transmissions.

The SSB section takes place on Sunday afternoon and there too, interest has waned. In the early days we would have up to 50 stations taking part, but local competition in general is not doing so well these days.

The idea of course is to use those valve rigs and score more points than what the solid state or the hybrid rigs would score, but then, not many valve only radio's that get used these days.

Plug and play seems to be the in thing.

All the rules are on page 14 in this Newsletter.

There are many hybrids out there still, and it would be good to hear them back on the air again.

For the uninitiated, all valve means it has no transistors at all. Mostly the Collins and some of the Hallicrafters. Hybrid is anything that has valves in the finals, but has transistors somewhere in circuit. From the FT101, TS520 and so on. Solid state, self explanatory, no valves.

There has of course been the argument about some of the very old solid state radio's that are as old as the valve radio's, but the point is, they are not valve. The question is not about age, but about whether it has valves or not.

Use an all valve radio and you will score three points for every QSO. Use a Hybrid radio and score two points for every QSO. You have to work a bit harder for your points. Use a Solid State radio and score one point per contact. Your chances of getting the highest score are very slim. But then, maybe you just want to join in for the fun of it and get some call signs in your log for WAZS, that's great. The more, the merrier.

You can use your plug and play radio any time you like, but here is the opportunity ta dust off the valve rig and put it to good use.

The advantage is for those using valve rigs, because we are all about valve radio's. Our Mission statement says it all, "We find em, we fix em, we use em".

Help us to preserve our Amateur Heritage.

Go with the glow

Best 73

DE Andy ZS6ADY

Wikipedia

Coronal Mass Ejection (CME)

A **coronal mass ejection** (**CME**) is a significant ejection of magnetic field and accompanying plasma mass from the Sun's corona into the heliosphere. CMEs are often associated with solar flares and other forms of solar activity, but a broadly accepted theoretical understanding of these relationships has not been established.

If a CME enters interplanetary space, it is referred to as an **interplanetary coronal mass ejection** (**ICME**). ICMEs are capable of reaching and colliding with Earth's magnetosphere, where they can cause geomagnetic storms, aurorae, and in rare cases damage to electrical power grids. The largest recorded geomagnetic perturbation, resulting presumably from a CME, was the solar storm of 1859. Also known as the Carrington Event, it disabled parts of the at the time newly created United States telegraph network, starting fires and shocking some telegraph operators.

Near solar maxima, the Sun produces about three CMEs every day, whereas near solar minima, there is about one CME every five days.

Project Paraset Revisited

By Agent Tim ZS6IM

As some of you may recall, I first made a Whaddon Mark VII "Paraset" way back in 2013. The original article was called "Clandestine Radio During WWII" and was published in Radio ZS as well as the AWA news-letter at the time. It included some historical background of the Special Operations Executive, SOE, who developed among other things, radios, weapons, explosive devices and booby traps.

My first Paraset in action

The intention at the time, was to use the set on air and make many new CW contacts, all while blazing away with a QRP glow-bug at a whopping 2,5 Watts. Alas, the best laid plans of mice and men come oft' to nought in the cruel light of day. Work took precedence, as it must if you wish to survive, and pursuit of my Morse skills was forced to take a back seat and eventually faded into the mists of time. That is, until the advent of COVID.

One would be inclined to say that being locked down would be perceived as a negative experience, but I discovered that it was the perfect opportunity to resurrect my desire to conquer the world of CW. "You can't teach an

old dog new tricks", I hear you say, but No….. I resolutely set forth to master the world of dit's and dahs.

Some of the ~~junk~~ priceless artefacts I had lying around

As my CW progressed, my mind started thinking back to my Para-set, now a part of the museum display at the SAIEE in Observatory. I finally have the skill set to put the radio to good use, but there were a few short comings with the original build, that I decided needed to be addressed in a second build. Not least of which was the output power, no piffling 2.5 watts for me this time round. Oh no, it's a whole 5 watts at least.

I began by defining what I wanted to achieve from the build, taking into account that this was to be a working unit and not a show piece. That allowed me some leeway in the use of some more modern components, which would be inside and thus not on view. That was a good move as some of the items I used in the first build had indeed become "Unobtainium" in the intervening years. After scratching through my ~~junk~~ priceless artefacts, I found that I had most of what I needed to be able to proceed with the design and layout of the panel.

I have also managed to perfect the art of shameless begging when it comes to obtaining the bits and bobs I need for the various projects I have done over the years. Unfortunately some of my best suppliers have become aware of this and have taken to locking things away when I visit, and some even resorted to searching me on leaving their premises……

Can you believe it, the cheek of it…… ☺.

Checking for position and lay out, note the concession of some modern components

After the usual marking, re-marking and juggling of all the bits and pieces, the panel was drilled, filed and beaten into submission. Then a liberal coat of paint was added. As Henry Ford once said, "You can have it in any colour, as long as it's black" Which suited me fine, as that seemed to be the only colour I could find in my garage.

I must admit though, once it had some colour on, it seemed so much better and started to take on a life of its own. It is at moments like this, that you start to get some idea of how the finished project will look and it makes the pulse race a bit faster.

A quick pause in building was taken whilst I grabbed my camera and laid all the parts out on the lounge coffee table. Some photos were then taken for my build diary and then it was back to the assembly process.

Kit form

Partially assembled face plate

A view of the underside of the face plate

As you can see, the basic lay out is fairly straight forward and prior to adding the Tank and Receive coils, there is a fair amount of space available for the other components. The astute reader will have picked up on the use of modern rotary switches and variable tuning cap. All sneakily hidden inside the unit once complete. The rotary switch

at the lower right hand corner is for the band spread, more about that later. Another concession to practicality of use, is the addition of a key jack and an external key, instead of the built in one. Later versions of the Paraset were fitted with a jack and used an external key, so this does not deviate much from the original design. (In other words, I cheated a bit but actually not… Hi)

One of the advantages of building on the face plate like this, is that everything is easily accessible and can be viewed from any angle without obstruction. The face plate is then recessed into the box and held in place by the lid, doing away with the necessity of having to hold it in place with screws etc, thus giving quick access when doing repairs, maintenance mods et al.

The construction of the transmit coil went fairly quickly, with copper wire that I purchased from Communica. They stock a reasonable supply of the various gauges that I required for the build. Formers for the coils came from a used paper towel roll, which I liberally varnished both inside and out to give it some rigidity and the roll from the centre of some party ribbon that I snitched from my XYL's cupboard for the receive coil (of course you are all sworn to secrecy regarding that. If she ever finds out about it, I could be put up against a wall and shot).

Also note the start and finish ends of the coils as well as winding direction, it can catch the unwary constructor out.

The receive and transmit coils respectively

With former in hand, I soon wound the receive coil and then scratched around until I found a dowel stick to fit in the one end, which became the mounting point. Another liberal dose of varnish helped cement all the turns and dowel in place. A screw through the face plate from the top then secures the receive coil in place.
Brass screws and nuts were used as it gives a very satisfying appearance to the finished project whilst being closer to the original construction materials.

Checking for fit using a toilet roll (Coil former) which was later discarded in favour of a paper towel roll which was a bit thicker and thus more rigid. You will note that this picture was taken at an earlier stage of the build but has been included to illustrate the need to trial fit in order to ensure that all the parts will actually fit onto the available real estate.

Check for fit

So with most of the pots and switches etc. fitted, it was time to get on with the fitting of the components.
I began by wiring up the filaments and HV side of things. Then added various resistors and the RFC choke etc. as they would be standing up away from the valve bases. The tank coils and other large items were left off so as to give better access to the valve bases and ground lugs. Much like voltage in a circuit, I always try to take the path of least resistance.

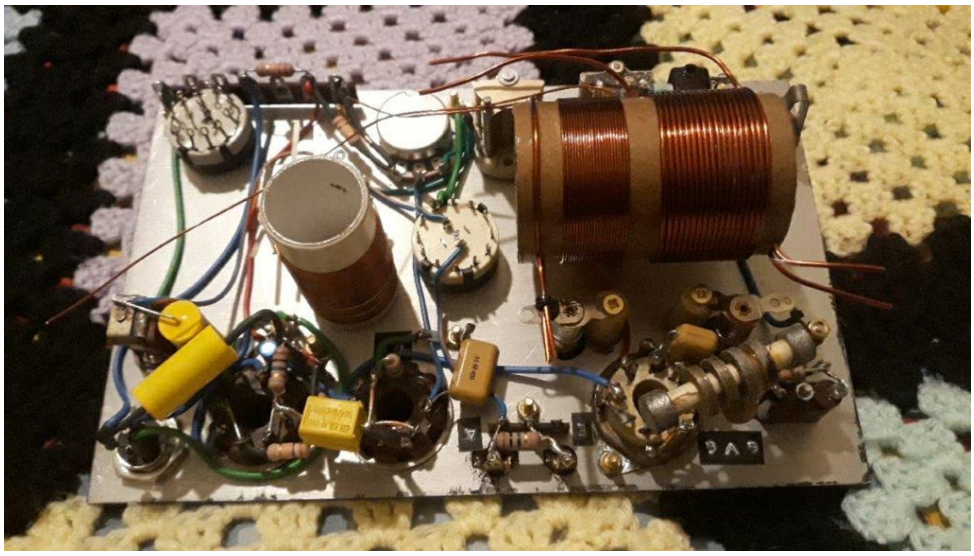
About this time, I added the stand-off's and lamp holders for the Tank and Aerial lamps due to the fact that once the Tank coil was fitted, they would be quite a bit more awkward to access and fit.

As you can see, there is ample access to the various bases, pots and variable caps without the Tank and Receive coils fitted, making it easy to do the wiring and fit the components.

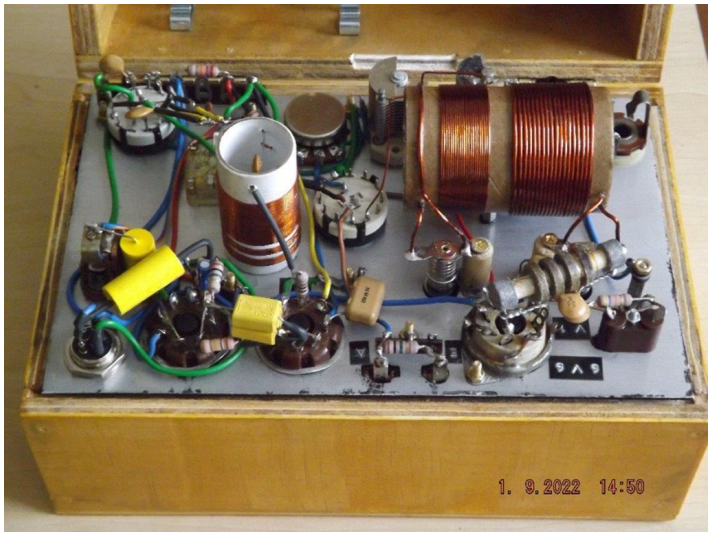
In the picture left, most of the receive side has been wired up to the two valve bases at the top right side. Along with some of the transmitter components including the RF choke on the top left side (6V6 valve base).

Starting to add components and wiring

Followed shortly by the addition of the receiver and transmitter coils. The space is rapidly filling up now and becoming more awkward to get access to.



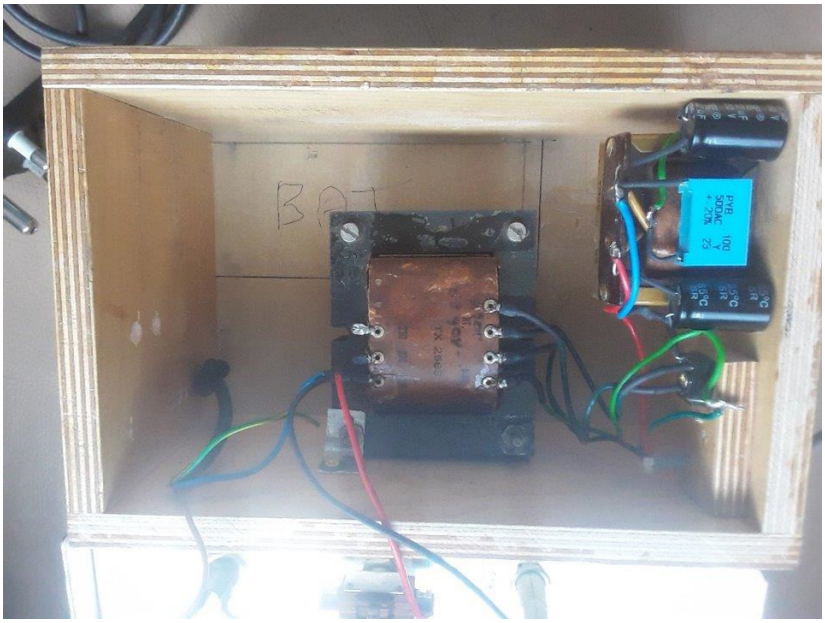
The Box



I decided to take a break in the build process to put together the box to house the finished project. As I love the ease of working with wood, and having the necessary tools, I proceeded to once again make it from wood. The spin-off of making the box at this time is that it could be used to hold the project securely whilst continuing to add parts.
In addition, it kept everything neat and tidy when it had to be put aside for other more pressing matters to be attended to (like work and family time – you get the drift.) As with most projects of this nature, life seems to intervene and there were long periods of nil activity, so having a secure housing in which to keep all the parts together in one place was a necessity.
One of those items that interfered with the build, was the power supply. Although an important part of the

whole project, it started to take on a life of its own and went through several iterations before being completed. The original intention was to make an inverter type so that the set could be used at any venue, but after several false starts and a complete failure to get the inverter to operate, it was time to go back to basics and build a standard mains powered unit to deliver the voltages that were required.

This turned out to be the best decision as the inverter type power supply was very heavy on current draw and would have necessitated the use of too large a battery to be practical for a man portable rig.



Sometimes the best laid plans of mice and Hams go oft astray – Hi.

At least there was ample room to fit the components in, after turfing the battery and inverter, also it had half the weight of the first design (I wonder if this classifies it as a fishing weight instead of a boat anchor?).

Now, back to the build. I could not resist taking some photographs of the almost complete unit, to get an idea of how it would look. So here is a sneak peak of it, left

Once the box was completed, it was back to work on the internals with a vengeance. I was getting impatient to see how it would perform. In no time at all and with the magic of time lapse photography, I was ready to fire it up and make the final adjustments that would make me famous and a house hold name through out the world…… Not so fast……!

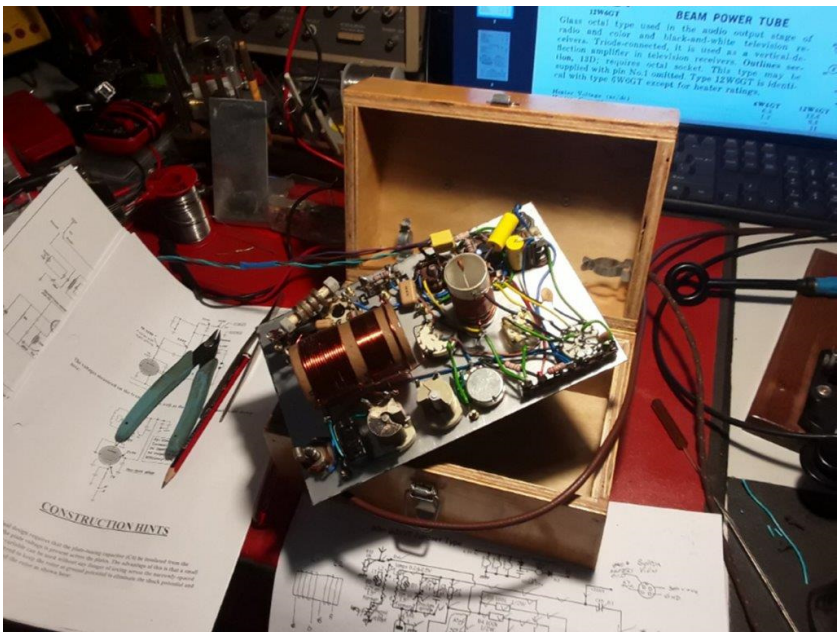
As before, lacking test equipment and the facilities at home, I roped in the help of a friend who graciously offered to assist me with the final testing and powering up of the rig.

At least my ~~junk~~ priceless ar-

tifacts supply at home has been replenished, but for heavens sake please don't let him know……
(P.S. I think I am now banned from ever entering his house again…..
☺)

This photo is actually of the inverter power supply that never succeeded, but you can see a glimpse of all the test equipment, of which I have none.

It very quickly became apparent that during the build process which had taken so long, I had made a number of wiring mistakes, which resulted in a great deal of Nothing happening. I got stuck in and corrected them and we fired it up to a rather lacklustre output. Now what? So back to the drawing board and some further rewiring of the output tube, only to discover some more built in faults of mine. Ouch!!



Finally after much soul searching (read swearing!) it started to oscillate and produced an output of about 3,5 Watts. Now we were cooking with gas. So on to the receiver side of things, and it was as dead as the proverbial Dodo. More head scratching and measuring with heavy duty test equipment, before finally adding a few more turns to the receive coil (See Arrow) and Hey Presto! We had sound.

If you remember, I mentioned the rotary switch that was fitted for the purpose of band spreading, Well, in the process of sorting out the receiver, we discovered that all the band spread capacitors and switching that had been so laboriously wired in, were not required. So they were

disconnected from the circuit, but left inside in case of there being some further use for them some time in the future. Although I very much doubt that will ever occur. Actually, I was just too lazy to remove it, so I am calling it a design feature ☺.

With all of the internals now sorted, it was time to finish the exterior and make it user friendly. Thus the Dymo tape was dragged out of a drawer and all the switches etc were duly marked. The power supply was closed up, my Speedex key was found and the requisite jack plug fitted. Then I scratched out my period headset which was buried in a trunk in the garage and put all of it down on the lounge coffee table so that I could take some photos, which you will see shortly.

So, the question remains, did it meet my expectations?

Well, like most things in life, yes and no.

The output was definitely higher than the first unit I built and could probably be improved by using some LED's in place of the bulbs for the Tank and Antenna indicators.

Reception is good with it going into and out of oscillation easily with use of the reaction knob and ample volume on the headset.

Tuning a station is still twitchy (Maybe I need to revisit the bandspread?)

The sound of it on air is unique, possibly not for those of you who were raised on the valve sets of old, and as such I think that I will be reserving its use for the AWA Valve radio QSO days. (I find most of the modern Hams will quickly complain that you are .00005 of a Hz off frequency and heaven help you if your set should warble or chirp a bit ☺. Also, I am a paddle user and so using it with the straight key tends to give some rather unique new code symbols, Ouch!

By now you are wondering what the final product looks like, so here it is.

The set in action, note the Aer and Tnk indicators showing good coupling

As with any rig, a good antenna system pays dividends, so I hooked it up to my existing QTH 40m end fed antenna. Tuning the output into the antenna is easily done with the two tuning knobs, one for the tank circuit and the other for the antenna tuning. The best coupling seems to occur when the antenna indicator light is shining slightly brighter than the tank indicator, as shown above.

All packed and ready to roll (almost). I think it requires a period style suitcase to pack it into though.

Some Specifications:

Receiver:-
A regenerative detector with a single stage audio amplifier. This design was common among radio-amateurs at that time, as it used the least number of valves.
It can cover 3.0 to 7.6 Mhz. in one band.

Transmitter:-

Consists of a crystal controlled oscillator connected to an output coupling system that can effectively match quite large variations in impedance.

The transmitter is arranged into two bands of 3.3 – 4.5 MHz and 4.5 – 7.6 MHz, respectively when selected by a toggle switch.

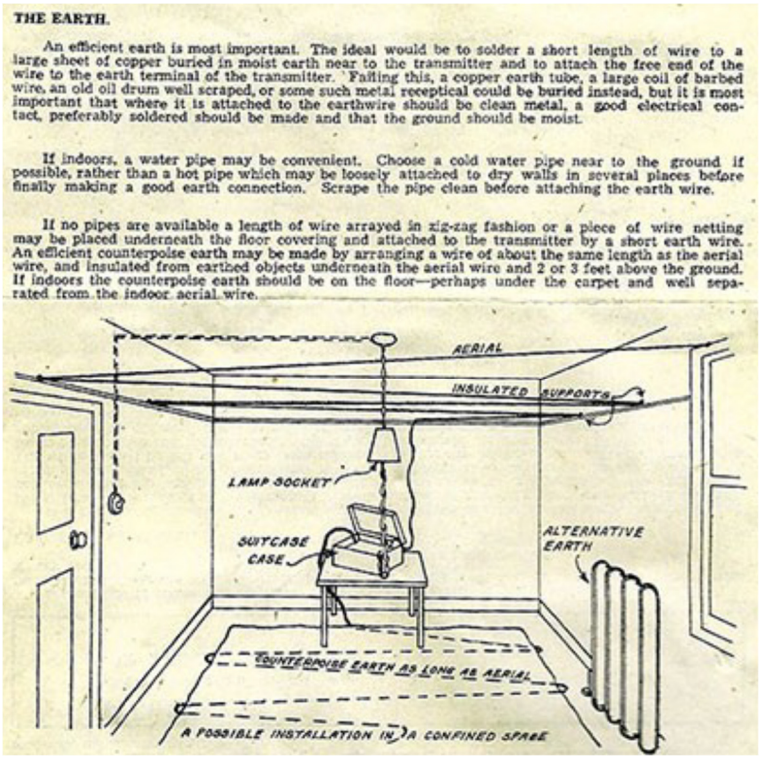
Power output of my unit is a modest 3,5 watts CW only.

Power Supply:-

AC mains unit 220V 50Hz giving an HT of 350V on receive and about 305V key down, with 6,3V for the heaters. I used silicon diodes for the rectification instead of a rectifier tube, for ease of build and future maintenance.

Antenna System:-

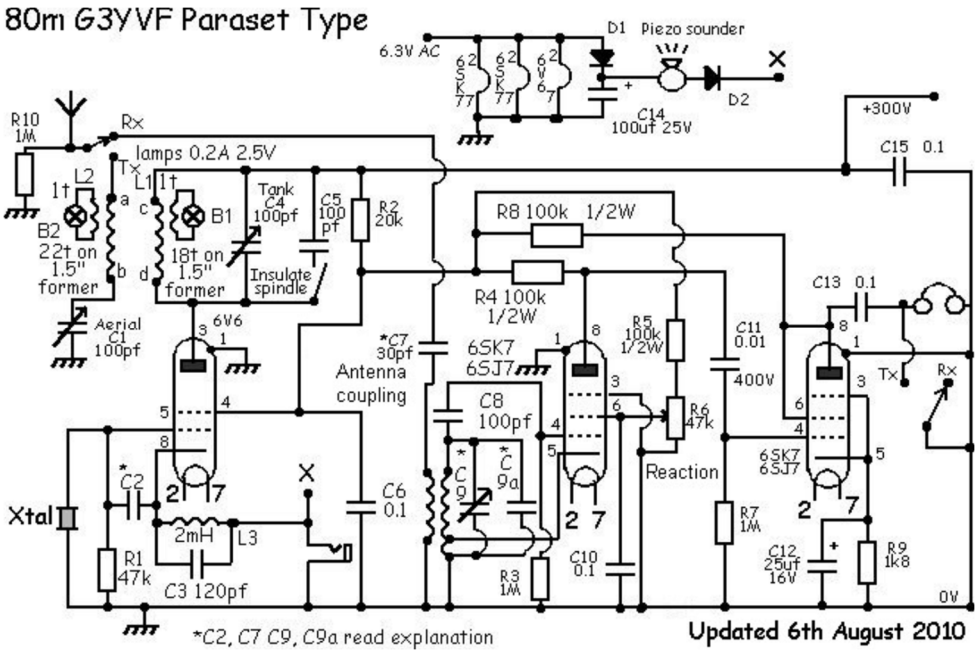
A single wire antenna, which was never more than 20m long and often much less. Along with a Counterpoise earth system, at least as long as the antenna (see illustration).



A page from an operators manual for a suitcase set showing the antenna and suitable counterpoise earth. My QTH 40m end-fed with its 9:1 balun works fine on the set and the Para set tuning system used is capable of tuning most things including the proverbial bedstead. As most radiation of the signal occurs at the end nearest the transmitter it makes sense to get the antenna going vertical as soon as leaving the Paraset! The far end can be horizontal if need be. It is also worthwhile experimenting with the length of the counterpoise.

As in the first set I made, an addition of a 1M Ohm resistor was used on the antenna to "bleed" any static off the antenna to ground. The original set switched the receiver off when transmitting and this would cause the receiver to drift. To avoid this situation the receiver is powered all the time, as is the transmitter. This is not a problem because the transmitter only operates when you key it. Also to stop a loud crashing noise in the headphones each time you switch from receive to transmit and back the audio signal to the headphones is shorted to ground during transmission.

Circuit Diagram:-



All in all it has been a very rewarding build and once again I have been pleasantly surprised by the amount of good advice, encouragement and help I received.

My special thanks goes out to Renato Bordin ZS6REN who was as excited as I was to see this project up and running. His technical input was vital in getting the set to operate and his shack is a wonder to see, with all of the test equipment you could ever wish for adorning every conceivable space.

Also to Andy Cairns ZS6ADY who was instrumental in my finally getting on air with CW and was also pushing me to get my butt into gear and write this article (only a year late I might add).

If there is anyone that I have omitted, the fault is mine and I apologise.

And lastly, remember the sharp ears of enemy agents are always listening.

73
Agent Tim

AWA Valve QSO Party

1. The aim of the AWA QSO party is to create activity on the 40 and 80 meter bands. It is a phone only contest.

2. Dates : Saturday 06 May 2023 and Sunday 07 May 2023. The Saturday will be an **AM** QSO Party and the Sunday an **SSB** QSO Party

3. Time. From 15:00 - 19:00 SAST (both dates)

4. Preferably, Valve radio's, or radio's with valves in them may be used.

5. Frequencies - 80m 3,600 to 3650 Mhz
   40m 7,050 to 7,100 Mhz

6. Exchange - call sign, RS and consecutive serial numbers starting at 001, plus type of radio used. eg HT37 Tx.

7. Scoring - All valve radio 3 points per contact
   Hybrid (valve & solid state) 2 points per contact
   Solid State Radio 1 point per contact

8. Certificates will be awarded to the first three places in each category. (AM/SSB)

9. Sponsor : The Antique Wireless Association of Southern Africa (AWA).

10. An excel log sheet is available on the AWA website. Copy and paste the following link : Downloads (awasa.org.za)
    Look in “Other Downloads”

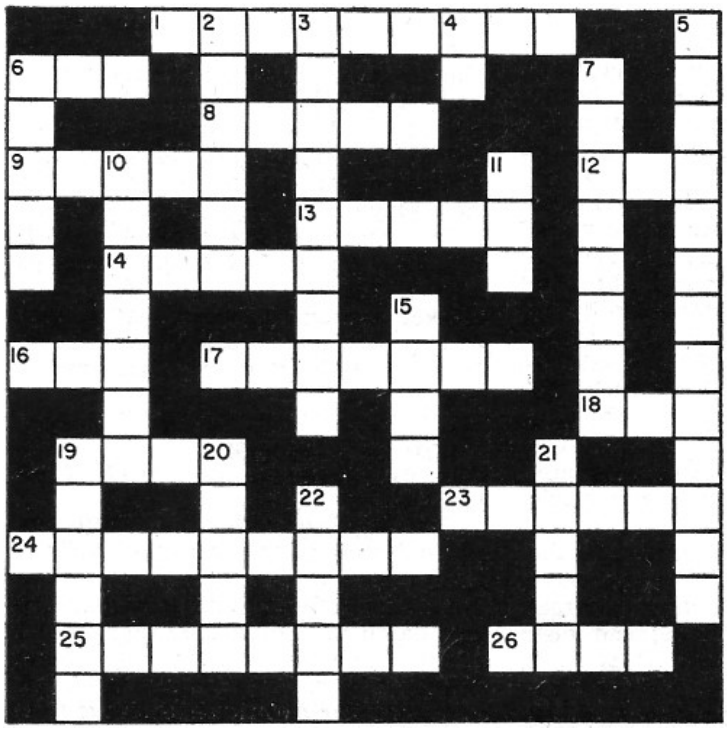
All contact logs to be sent to:

email: andyzs6ady@vodamail.co.za

All Valve

Solid State

Hybrid



Across

1. The purpose of the video _____ is to increase the amplitude of the video signal frequencies.

6. A type of TV antenna in which the various elements are in a vertical plane and spread out fanwise from a lower junction.

8. The first series of circuits that receives the incoming signal immediately after the antenna.

9. In a color TV receiver, it is the function of the sub-carrier oscillator to generate the _____ subcarrier frequency.

12. A regulator type of circuit that maintains the output of a TV receiver constant irrespective of a fluctuating input signal.

13. The _____ amplifier in a TV receiver enlarges amplitudes of sound frequencies.

14. In this circuit, the incoming signal is combined with a local oscillator signal to produce an i.f. signal.

16. The matrix amplifier in a color TV set is a combination of voltage divider _____ works and amplifier stages.

17. The function of the TV _____ is to snare minute voltages and currents from passing radio waves and transfer them to the lead-in.

18. The inner structure in the neck of a CRT.

19. An ion _____ is often placed around the neck of a picture tube to deflect ion particles.

23. When the image on a TV set is compressed or folded over at the top or bottom, this usually indicates the vertical _____ control needs adjusting.

24. The function of the vertical _____ control is to adjust symmetry of image in vertical plane.

25.A crystal diode often serves as video _____ in many TV sets.

26. The deflection _____ in a TV set deflects the electron beam in the CRT.

Down

2. The _____ amplifier in a color TV set amplifies and reproduces the three primary color voltages from the incoming signals.

3. The horizontal _____ control is used to adjust the symmetry of the image in the horizontal plane.

4. The _____ amplifier in an intercarrier TV set amplifies both picture and sound signals. (Abbr.)

5. The FM sound detector of a TV set.

6. When the image on the screen of a set lacks sharpness and the scanning lines are coarse, the _____ control is adjusted to pinpoint the electron scanning beam.

7. The horizontal _____ generator in a TV circuit operates at a frequency of 15,750 cps.

10. Circuit in audio section used to prevent amplitude variations.

10. A _____ is used in many of the circuits of a TV set as a control to vary voltage. (Abbr.)

15. A weak tube in the picture portion of a set will often cause the image to appear to be covered with _____

19. A three-element tube often used as r.f. amplifier in the tuner of TV sets.

20. In a color TV set, the sub-carrier signal is passed through a _____ shifting network before entering the "Q" demodulator.

21. Pertaining to the picture.

22. A control that is used to adjust image width.

Answers to last month puzzle

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Anique Wireless Association of Southern Africa

Mission Statement

Our aim is to facilitate, generate and maintain an interest in the location, acquisition, repair and use of yesterdays radio's and associated equipment. To encourage all like minded amateurs to do the same thus ensuring the maintenance and preservation of our amateur heritage.

Membership of this group is free and by association. Join by logging in to our website.

Notices:

Net Times and Frequencies (SAST):
Saturday 07:00 (05:00 UTC) —Western Cape SSB Net— 3.640; Every afternoon from 17:00—7.125
Saturday 08:30 (06:30 UTC)— National SSB Net— 7.125; Sandton repeater 145.700
Echolink—ZS0AWA-L
Relay on 10.125 and 14.135 (Try all and see what suits you)
Saturday 14:00 (12:00 UTC)— CW Net—7025

AWASA Telegram group:

Should you want to get on the AWA Telegram group where a lot of technical discussion takes place, send a message to Andy ZS6ADY asking to be placed on the group. This is a no-Nonsense group, only for AWA business. You must download Telegram App first. …..+27824484368

ITEMS FOR DISPOSL FROM DANIEL ZS6JR

These items and many more are available from Daniel ZS6JR. They are all in need of repair from minor to major.
If you are interested in any of them, contact him at :083 553 4140...WA or call
There are two complete FT501 with PS, a Hallicrafters SX28 and many other radios just waiting to be collected and restored.