

STARLITE

THE NEWSLETTER FOR THE STOURBRIDGE AND DISTRICT A.R.S.



**G6OI
G6SRS**



ISSUE: OCTOBER 2018



G4CVK

**STOURBRIDGE & DISTRICT AMATEUR RADIO SOCIETY
INCORPORATING
OLD SWINFORD HOSPITAL SCHOOL RADIO CLUB**

MEETINGS HELD AT

**OLDSWINFORD HOSPITAL SCHOOL
HEATH LANE
STOURBRIDGE
[8:00 TO 10:00 PM]**

VISITORS ALWAYS WELCOME

**THE SOCIETY HOLDS ITS FULL MEETINGS
ON THE 1ST AND 3RD MONDAYS EACH MONTH**

80TH ANNIVERSARY YEAR

[MARCH 2018 - MARCH 2019]

RSGB AFFILIATED SOCIETY

STARLITE

Telephone Enquiries to:-

Hon. Secretary
John Clarke M1EJG
[01562] 700513

Or by Email to:-
honsec@g6oi.org.uk

StARS Website URLs:-

www.g6oi.org.uk
<http://g6oi.ross-lewis.co.uk/index.html>

StARS Facebook Page:-

<https://www.facebook.com/groups/stourbridge.ars/>

All correspondence/enquiries should
be addressed to the Hon Secretary at:-

StARS
c/o The Mill House
21 Mill Lane
Blakedown
Kidderminster
DY10 3ND

Forthcoming Meetings

October 1 st	On Air. Informal. Digi Modes Group.
October 8 th	On Air. Informal. Digi Modes Group.
October 15 th	Main Meeting – Subject tba.
October 20 th - 21 st	Jamboree On The Air @ Norton Scouts
October 22 nd	On Air. Informal. Digi Modes Group.
November 5 th	On Air. Informal. Digi Modes Group.
November 12 th	On Air. Informal. Digi Modes Group.
November 19 th	Main Meeting – Annual Surplus Sale
November 26 th	On Air. Informal. Digi Modes Group.
December 3 rd	On Air. Informal. Digi Modes Group.
December 10 th	On Air. Informal. Digi Modes Group.
December 17 th	Main Meeting – Subject tba.
December 24 th	On Air. Informal. Digi Modes Group.
January 7 th 2019	On Air. Informal. Digi Modes Group.

Editor's Comment

SSB Field Day was, once again, held at the garden centre in Sugar Loaf Lane and was enjoyed by all who attended during the weekend.

The final claimed score was 31,734 points from 194 QSOs and 43 multipliers.

The photo shows Jim **G4WAO** and Nick **G6DQN** waiting for the *off-you-go* time.



Martin G4VZO has kindly submitted a review article of the **BITX4Ø QRP SSB/CW Transceiver**, which he has recently completed. I have pleasure in including it in this issue. Many thanks, Martin.

Following the recent article about VSWR, **Gordon GØTZV** sent me this You Tube link. You may find it of interest. See it here:

https://www.youtube.com/watch?v=QWmx1_-V1-o

This is a reminder that the Society will be helping Norton Scouts in the annual JOTA/JOTI event, which will be at the Alderman Tye Scout site opposite the Gigmill public house.

The intention is to set up the aerials on Friday 19th October and maybe operate during the evening. Main operations commence on the morning of the 20th and end at 3pm on the 21st.

For more details, I suggest you contact our Hon Sec **John M1EJG** who should be able to give you all the information required.



Unfortunately, you will see empty spaces on some pages in this issue. I was unable to find any small items to fill these. Perhaps more members of the Society would like to show willing and forward anything of interest for me to include. I look forward to receiving your submission at:

g4xom@g6oi.org.uk

I am currently compiling the November and December issues. *Editor.*

Seen on a Facebook page

How many current licensed UK radio amateurs are there?

Following a Freedom of Information request Ofcom has now issued what is believed to be the correct figure for the number of individual radio amateurs in the UK

Stewart Baker G3RXQ has made several Fol's to Ofcom to try and find out how many individuals hold one or more amateur licences but the first couple of responses from Ofcom gave a clearly incorrect figure which was just below 10,000.

On August 3 he made another another attempt and on September 4 Ofcom supplied the correct information.

Ofcom said:

"As of 1 August 2018 I can confirm that the total number of individuals holding one or more current UK Amateur Radio Licences is 75,660."

"It has come to our attention that the figure in our letter to you dated 17 April 2018 concerning Amateur Radio Licence statistics as of 1 April 2018 is incorrect. As at that date, the correct figure for the total number of individuals holding one or more current UK Amateur Radio Licences is 74,646."

This figure enables an estimate to be made for the number of radio amateurs who die each year.

It believed the RSGB has about 19,000 UK members who are licenced amateurs, this is about 25% of total UK amateurs. From an analysis of the Silent Key column in 2015 RadCom it would appear that about 248 licenced UK RSGB members are dying each year. This suggests that maybe in total some 992 UK amateurs die each year.

Just over 1400 people pass the RSGB Foundation exam each year. Foundation was initially designed to provide an introduction to the hobby and it was accepted there could be a high drop-out rate, up to 50%, as people tried out the hobby but found in the first year or so it wasn't for them. Anecdotal evidence since 2002 appears to confirm a 50% drop-out rate is broadly correct. This suggests of the 1400 newcomers each year only about 700 may continue with the hobby, this is less than the apparent annual death rate.

Additionally an unknown number may decide after 5, 10 or 15 years to try a different hobby or they may no longer be active for various reasons. There is no way of telling how many as the licences are lifetime, the active UK amateur population could be declining at an alarming rate!

Ofcom issues M5 prefix calls again

The Twitter feed of the RSGB Youth Committee reports its Chair Mike Jones has now got the Full licence callsign M5PMJ

Mike first got his Foundation licence in 2011, later upgrading to 2E0MLJ. In August he was in South Africa for Youngsters on the Air (YOTA), there he did a two day HAREC course and took the 90 question exam. He passed, and on returning to the UK submitted a paper application along with his South African HAREC certificate to Ofcom asking for the callsign M5PMJ. Ofcom issued the licence on September 6.

Ofcom had originally issued M5 prefix callsigns for Class A/B licences from 1999 to 2001 but ceased when Class A/B was merged with Class A. Only a few hundred M5 calls were ever issued and this is thought to be the first M5 call to have been issued in 17 years.

Useful antenna handbook. Free download. It's 784 pages and 17Mb in size, so follow the link.

http://s1.nonlinear.ir/epublish/book/Practical_Antenna_Handbook_0071639586.pdf

Also seen on a Facebook page

2m Slim-Jim Antenna Kit

Sure this will attract some criticism. However, for people who want to build a 2Mtr Slim Jim, but don't have a big box of bits lying around, I think £10 is very reasonable. See the details here

https://www.hamgoodies.co.uk/index.php?_route_=slimjim



The BITX40 QRP SSB/CW Transceiver

Martin Deeley, G4VZO

The BITX40 is a QRP SSB transceiver that was designed and developed as a basic single band radio that offers an easy / low-cost way to get on the air; the complete kit costs under £50 including delivery!

It was originally designed in the early 2000's by Ashhar Farhan (VU2ESE) as 6-watt SSB Transceiver for 20M (Ref. 1) and became known as the BITX20. It was based on an earlier work published by the ARRL and made use of cheap, easy to obtain parts.

The radio soon gained a popular following amongst QRP'ers and development continued over the next 14 or 15 years. You can buy complete kits from Farhan via the 'HF SIGNALS' web site (Ref. 2 and 3). There are now two radios to choose from, the BITX40 (for 40m) and the new μ BITX which is a slightly more expensive model covering all the amateur bands between 3-30 Mhz.

However, for this article I'll focus on the cheaper single band rig, the BITX40. It's a small 4½ X 5 inch RF board with a secondary display & controller board called the Raduino; which is based on the popular Arduino Nano.

The Receiver:

The receiver is very clean, crisp, and quiet. The front-end has a triple-tuned circuit that limits out-of-band signals. The diode ring mixer front-end makes this a solid receiver that doesn't overload easily. It provides outstanding signal clarity that must be heard to be believed.

The Transmitter:

Around 7 watts of low distortion SSB provides you with enough power to have thousands of contacts on 40 metres, daily rag chews, and occasional DX chasing. Any common 2-amp, 12-volt, power supply will be enough for this transceiver, or you could simply run it from a battery!

The Raduino:

At the heart of the BITX40 is the Raduino; a small, easily programmable, board utilising an Arduino Nano to control a rock-steady Si5351 synthesiser and a simple 16x2 frequency display. It comes pre-programmed and ready to go. The program code is free and Open Source. The Raduino features 6 analogue ports, three oscillators and six digital lines.

The BITX40 will inspire you to experiment. Modify it, tweak it, change it. The Users' Group is filled with plenty of ideas for modifications if you want to experiment (Ref. 4).

The really great thing about this radio is that it's hackable! Mine is only a few weeks old but has already had several software and hardware mods to add functionality and improve it.

The standard software provided by Farhan is functional but, because it is Open Source, several people have developed their own software for the radio. I use the software from Allard PE1NWL (Ref. 5) which offers LSB, USB and CW, two VFO's, split frequency working and a lot more.

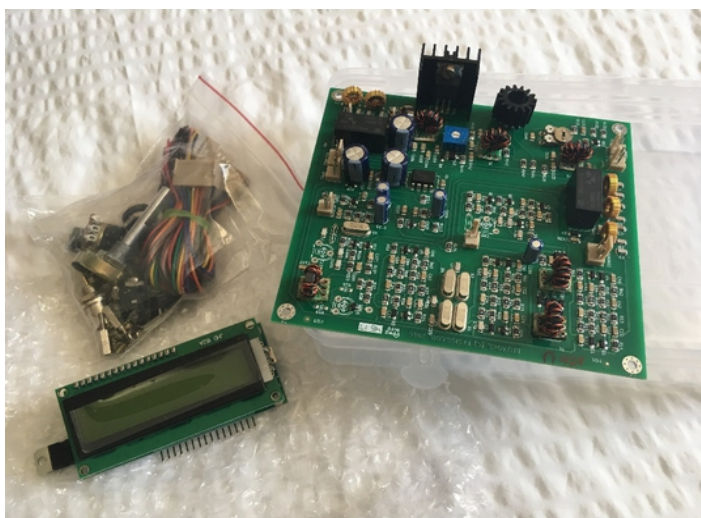
The main board comes with all the SMD components, coils, crystals and connectors already soldered on the board. The components are laid out on an easy-to-understand manner on a double-sided board with broad tracks to encourage experimentation. There are jump-points from where you can add more modules like the DDS, more bands, better audio amplifier, etc. Your imagination is the limit. You can separately increase the power amplifier's supply voltage to 25 volts to be more than 20 watts of power if you want (but you will have to add a larger heat sink).

The boards can be installed inside any box that you like. Make your own base station rigs, portables, man-packs, SOTA rigs, trail radio, or mount it in a XYL-friendly plastic box and leave it on your bedside table. Watch the example videos on the web site and YouTube.

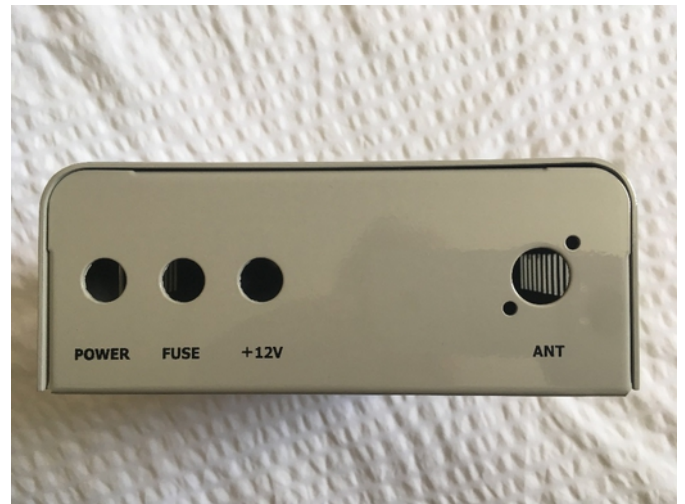
It takes about 3 to 4 weeks for the BITX40 to arrive via India Post. It comes in an unassuming plastic box that contains the two boards, all the cables / connectors and additional hardware to build the radio – all you need to add is a case.



The BITX boards are hand assembled by a collective of Indian women. Each of the toroids are hand wound. This provides these women with a livelihood. The assembled boards are then DC checked and a final RF check is performed to check the receiver's sensitivity as well as transmitter's output before being shipped.



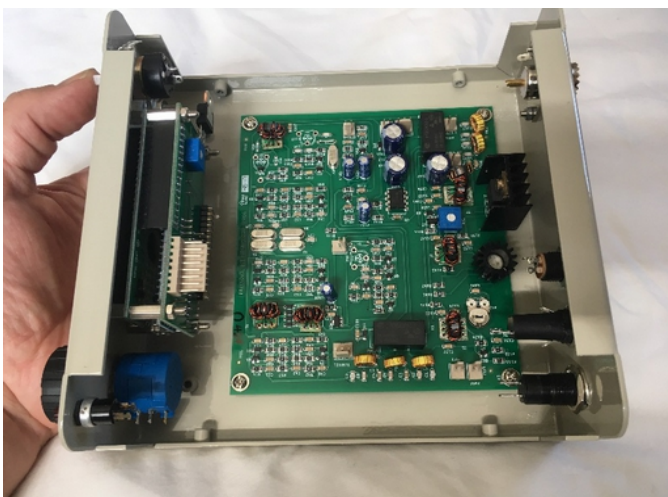
I have to admit, I hate doing metal work; I did find a suitable case at one of the rallies this year but struggled to cut the 'letter box' hole to mount the display. Luckily there is another Indian enthusiast, Sunil Lakhani VU3SUA, who makes a nice, pre-drilled and painted cases for the BITX40 and μ BITX (Ref. 6).



I made a few mods to mine to my case, adding a Trio/Kenwood compatible 4-pin mic socket and a 'function' button to the right of the VFO.

It's really an assembly project, but it's still great fun and very rewarding to use a piece of equipment you have put together yourself.

Now we see a few photographs as I put it all together ...



The red power switch on the back will be the next thing to change. I'll fit a 6.3mm socket for the key.



Now time to power-up and try it on the air!



See you on 40m!

In fact, I'm currently building another for the 5Mhz / 60m band – a BITX60 - the hardware mods are easy (Ref.7) and I'm updating the software myself to make it a little more bespoke.

Links:

<http://www.phonestack.com/farhan/bitx.html>

<http://www.hfsignals.com/>

<http://www.hfsignals.com/index.php/bitx40/>

<https://groups.io/g/bitx20>

<https://github.com/amunters/bitx40/>

<http://amateurradiokits.in>

<http://www.nd6t.com/bitx/bitx60.htm>

QRP Corner [in occasional feature]

EI9GQ's SIMPLE 80m TX

C1 = 47PF

C2, C3 = 1500PF

$$C4 = 0.01\text{mfd}$$

C5, C7 = 0.1mfd

C6, C12 = 0.047mfd

C8, C10 = 820PF

$$C9 = 1500PF$$
$$R1, R2 = 5K1$$
$$R3, R5 = 100R$$
$$R_4 = 180R$$

R6 = 1K2

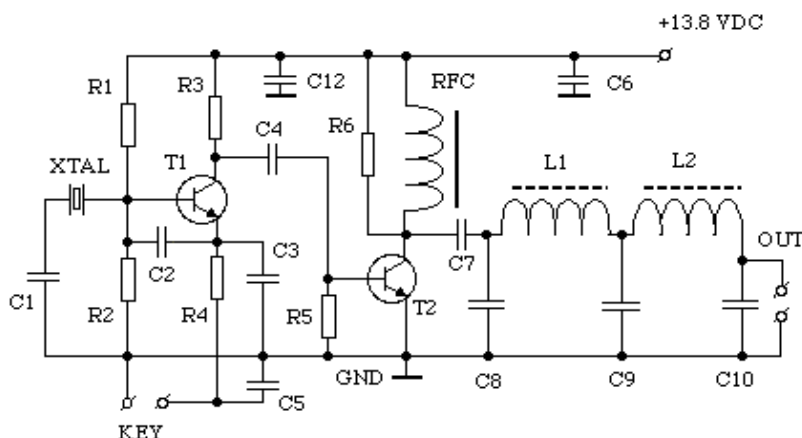
RFC = 22 MICROHENRIES (APPROX)

L1,L2 = 2.2 MICROHENRIES (21 TURNS ON T50-2)

T1 = 2N2369A

T2 = CB OUTPUT TRANSISTOR (2SC1237 OR SIMILAR)

XTAL 3.579MHZ (CHEAP COLOUR TV CRYSTAL) OR 3.560MHZ (QRP CW FREQUENCY)



This simple circuit will give about 1.2 Watts of output when powered from a 13.8VDC supply. If you don't have a 2SC1237, try any other 12V CB radio output transistor 2SC1969, 2SC1307 etc. The value of RFC is not critical, 10 turns on a high permeability ferrite toroid core works fine. I used a DPDT switch for the RX/TX switching, one pole for the aerial, the other pole to switch the 13.8V supply.

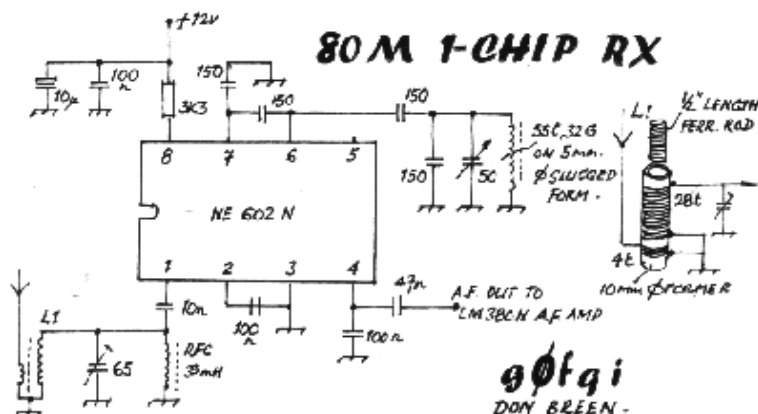
A 'One Chip' Receiver by GØFGI

The circuit is of an 80 meter band one chip DC receiver, (excluding the AF stage). As you can see the design utilises the NE602 as VXO/mixer. It is economical with components.

I have spent a little time optimising the design and this is my latest version.

The RFC value is 33mH and may be a bit over the top for the job. It was just one that I had in the junk box.

An ATU on the front end improves selectivity. Performance is quite reasonable considering the simplicity of design. I think other experimenters would be interested in it - perhaps it is possible to get the oscillator to drive a transistor allowing the circuit to be turned into a transceiver.



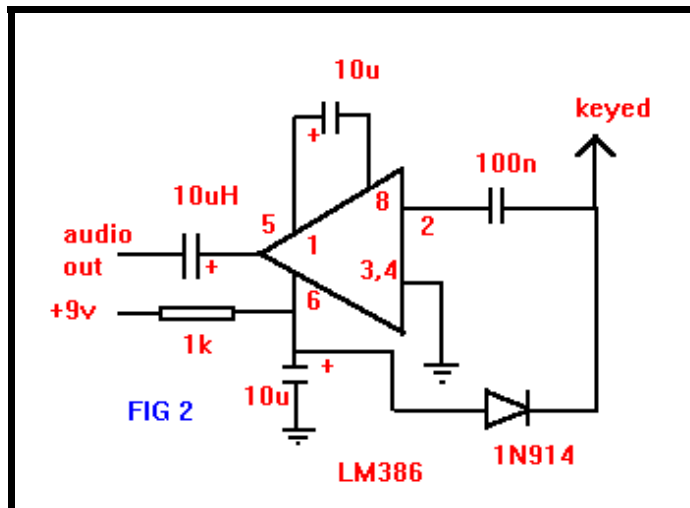
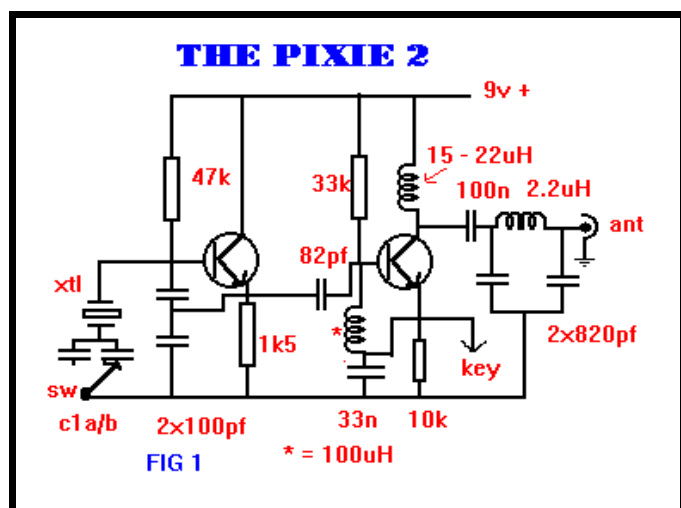
THE PIXIE 2 TRANSCEIVER

WA6BOY's TINY RIG UPDATED BY G3LHJ

The rig is designed for 80m and although very simple, it can give interesting results.

The two switched capacitors in series with the crystal are 1000pF and 40pF and, with the switch used as a T/R switch, give 600Hz offset. A PP3 9v battery is used to power the rig.

Suitable transistors for the transmit portion (Figure 1), would be BC107/BC108, etc., for the crystal oscillator and an 2N3866/2N3053/BF51, etc., in the 'PA'. The crystal is an 80m one - 3.560 MHz being the QRP activity channel. Figure 2 shows the receive side.



Just for a chuckle



The mysterious Morse code transmission

Jannie Smith, ZS3CM

Trying to receive a Morse signal is difficult enough. Receiving a Morse signal on the voice part of the 40 m band is something else....

It was a very mysterious event that took place during our recent activation of the North Head and South Head lighthouses in Langebaan. These two Lighthouses are located in classified

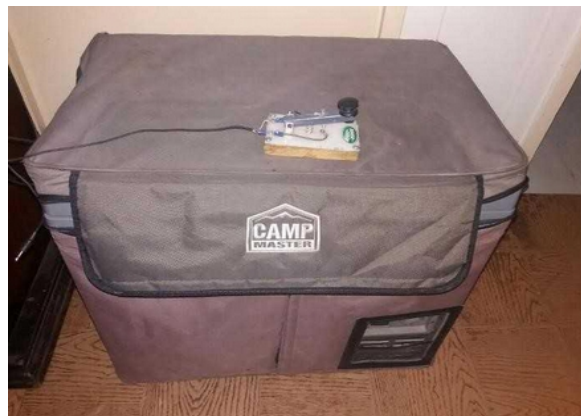
Military areas.

During the Saturday the North Head Lighthouse was manned by Woody, ZS3WL who was operating ZS3VDL/L on the 40 m band and all through the day Woody was receiving a mysterious CW message. The transmissions were received between 7 070 and 7 120 kHz. Woody was an extremely busy man that day making contacts all over South Africa and Namibia. If you did not speak to Woody that day you were not seriously participating in the ILLW. But he also was a nervous man, the mysterious CW signal kept on coming in. He asked the other stations if they also received the CW signal, everybody said no!

When the team returned from the South Head Lighthouse (ZS3ZU/L) that day we found Woody with a long list of QSOs but worried, to the point of losing his voice, about the mysterious CW signal. After listening to his account, we went to listen on the radio and there the CW signal was the letters 'I H S 5' and it kept on repeating.

Our imaginations went haywire with the strangest explanations, from secret submarine beacons to Recce beacons and what not... and nobody else was receiving the CW.

Then a man with experience came and cleared up the mystery. "Check for a camp fridge," the wise man said. We found the guilty party or fridge in a caravan parked alongside the building we utilised as our radio shack. And Woody was a relieved man!



We all had a good laugh about this camp fridge sending CW all day. The fridge really did its part and it was decided to enter the Campmaster fridge into the log with an RST report of 599. Never a dull moment in Amateur Radio!

First National Ham Radio Clubs & Societies

As amateur radio took hold as an interest, so too clubs and societies started to be formed. National societies were also started around the globe.

As the number of amateur radio experimenters started to increase, so people started to meet to discuss their common interest.

First, local clubs and societies were formed, but, after a while, national clubs were formed that were able to provide more support and represent the interests of members better.

Often the first amateur radio societies started as local clubs, which then amalgamated to become larger ones, or they met in the capital of the country.

Clubs and societies were formed in many countries, although the first one national amateur radio society seems to have been formed in Australia.

First national amateur radio society: WIA

What is now called the Wireless Institute of Australia was the first national amateur radio society to be formed.

Like many of the first amateur radio clubs and societies, the Wireless Institute of Australia had humble beginnings. It started when a group of wireless enthusiasts met together in March 1910 in Sydney. The group was a complete mixture of people from school boy amateur electrician experimenters through to academics and members of the defence forces.

There were 50 people at this first meeting of the society, although between 1905 and 1910 only ten wireless stations had been licenced by the government in Australia. However, this had not dampened the enthusiasm of the attendees.

There were two leading lights at this first meeting of the society: George Taylor who had called the meeting and was already a member of the newly formed Aerial (Aviation) League of Australia. He saw wireless as an important part of aviation. The other person was Walter Hannan. He was an experienced electrician, and he had already demonstrated his home made wireless equipment, but had been unable to obtain a licence that would enable him to legally make contact with others. He later became the first secretary of the Wireless Institute of Australia.

A similar group was also formed in Melbourne in 1911. It initially took the name of Amateur Wireless Society of Victoria. In addition to this, other groups were formed around Australia, but with the onset of World War 1, all wireless activities ceased and radio societies, clubs and associations generally became moribund.

Following the war, it took a number of years before activities fully returned to normal. Wireless societies (now all generally known as Wireless Institutes) in the various

Australian states reformed and then in May 1924 a meeting took place in the Melbourne Town Hall to formalise a national association for Australia. The meeting aimed to establish a federation of the Wireless Institutes organisations that existed in the various states within Australia. Accordingly the Federated Wireless Institute of Australia came into being, known as the WIA, the name it has today. In this way the WIA can trace its heritage back to the meeting in March 1910.

Radio Society of Great Britain formed

Within the UK a similar path was adopted for the formation of the early national radio society within the UK.

With interest in wireless experimentation growing, many enthusiasts met together to discuss their common interests as in Australia.

The Radio Society of Great Britain, RSGB traces its roots back to the formation of London Wireless Club that held its first meeting in West Hampstead, London, on 5 July 1913.

Later in the same year, the club decided that its name should be changed from London Wireless Club to the Wireless Society of London.

The inauguration of the club came only shortly before the start of the First World War and with the suspension of amateur wireless licences in 1914, the activities of the club were placed into suspended animation for the duration.

As activities started to recommence, so too did activities of the society. Then in November 1922, the society changed its name to the Radio Society of Great Britain to reflect the national nature of the work of the society.

The RSGB was not necessarily the first amateur radio society in the UK. The Manchester Wireless Society was founded in 1911 and possibly the first national amateur radio society in Britain was the British Wireless Relay League. This organization held the callsign 2ZZ which was granted in August 1920. Later this society was amalgamated with the Transmitting and Receiving (T & R) section of the RSGB.

American Radio Relay League started

In many respects the name of the American national radio society seems to have an interesting name. Whilst the name of this national amateur radio organisation may seem unusual, the name reflects the way in which it started and the way that amateur experimenters were able to send messages over the vast distances within the USA.

The ARRL, American Radio Relay League was founded was founded in 6th April 1914 by Hiram Percy Maxim of Hartford, Connecticut. Maxim was a prominent businessman, but also a keen radio amateur or radio experimenter of the time and a member of the member of the Radio Club of Hartford in Connecticut, USA.

The ARRL came about because of the distances people wanted to send messages and

the limited range of amateur radio stations of the time. Maxim had wanted to send a message to another station but was unable to do so, and asked an intermediate station to forward on a message, i.e. relay it to another station. In view of the distances across the USA, this could be a very valuable capability.

Maxim had the idea of forming a league of stations that could relay radio amateur's messages. In April 1914, he proposed a plan for the organization of a roster or league of stations that would be able to relay messages over large distances. The plan was agreed by the Hartford club and application forms were sent out to as many stations as could be reached. The league grew and many stations were included within it.

Then in February 1915, the American Radio Relay League, as it was known, split off from the Hartford club after some disagreements. It incorporated under Connecticut law and although initially finances were very tight, it survived and grew.

The membership grew, and the League set up six trunk lines to relay messages in both north-south and east-west directions. As proof of its effectiveness a message was sent from New York to Los Angeles in 1916, and a reply was received within 1 hour and twenty minutes.

Then in 1917, the League re-organized and opened its membership up to anyone interested in radio. This effectively made it the national amateur radio society within the USA. However this success did not last for long as amateur radio activities were stopped as the USA entered the First World War.

After the war, the ARRL petitioned the USA government to allow the re-commencement of activities. Although finances were poor as a result of the suspension of activities for the war, it refinanced, restarted, and membership grew rapidly.

Other national wireless societies formed

There are very many national amateur radio societies in existence today.

Many started around the same time as the WIA, RSGB and ARRL. These three examples have been given for a variety of reasons, but others like the French REF, German DARC, and very many others have their origins in the beginnings of amateur radio.

Today these societies represent the amateur radio community, striving to maintain and improve the facilities available and providing valuable facilities and resources: everything from magazines to QSL bureaux, advice, information and much more.

Coming next month: Antenna Switch from KØBG

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