SPRAT

THE JOURNAL OF THE G QRP CLUB

DEVOTED•TO•LOW•POWER•COMMUNICATION

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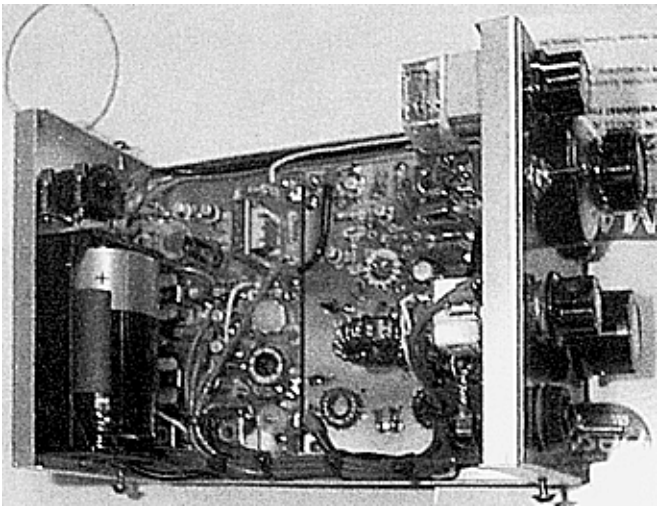

The Hamoeba Tranceiver by G4DFV described in this issue

SMID GEN RECEIVER - HAMOEBA TRANSCEIVER – ADVENTURE RADIO
EASY DIP – ANTENNA ROOF MOUNTING – SPLIT FREQ CONTROL
ANOTHER VXO – ON5SJ SUPERHET RECEIVER
RECEIVER INPUT FILTERS - CLUB SALES & OFFERS – QRP EVENTS
A.A.A. - CLUB NEWS - COMMUNICATIONS NEWS - VHF NEWS
NOVICE COLUMN - MEMBER'S NEWS

[YOUR SUBSCRIPTION IS DUE – SEE CENTRE PAGES]

JOURNAL OF THE G QRP CLUB

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EDITORIAL

This issue of SPRAT was a tight squeeze! I always attempt to make each issue about two-thirds practical content – plenty of practical circuits to build and minimal text.

The content includes two ideas that began at Dayton 2000. The Hamoeba Transceiver by G4DFV won the constructor's prize for a single cell [1.5v] transceiver. The regenerative receiver was the "back-end" of the Supergainer receiver which I presented as part of the Four Days in May Forum. Several people have asked me for details of the regenerative receiver portion of that project and it is offered here with a kit option.

Please keep the practical items coming to me – share what you are building with others. Can I commend to you a new event – **The Junction 28 QRP Convention** – see page 33.

May I wish you all a happy and fulfilling 2001.

72/3

G3RJV

EDITED BY GEORGE DOBBS G3RJV ARTWORK BY A.W. (MAC) McNEILL G3FCK
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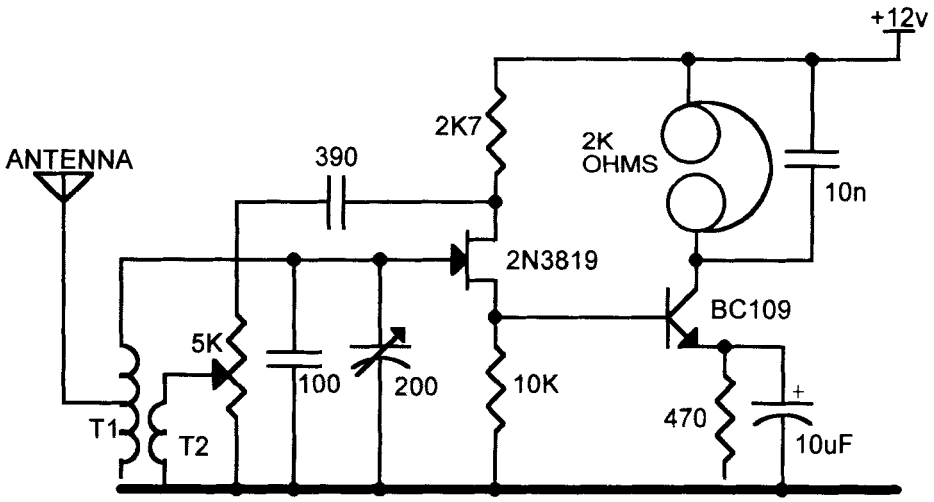
SMID-GEN CW/SSB RECEIVER

John Smith, G4KJJ, 30 Rookery Close, St Ives, Huntingdon. PE17 4FX



SMID-GEN CW/SSB RECEIVER G4KJJ

T1 – 28t centre tap. T2 – 8t [cold end reverse direction]
Wound on T50 – 2 toroidal core

I was impressed by the MB4 receiver in SPRAT and was interested to see how cheaply I could make a receiver for SSB/CW with a minimal component count and satisfactory performance. The SMID-GEN is the result. Built as shown, it covers the 40 and 30m bands with the broadcast bands between.

Until you have used a regenerative receiver it is difficult to appreciate how amazing the performance can be. Care must be taken in making all interconnections short and rigid. Sufficient fine tuning can be obtained by using the regenerative potentiometer.

It takes a little practice to tune, adjust and peak. The length of the antenna influences both the tuning and signal strength. A 20cm wire on the bench gave good reception of CW and SSB stations throughout Europe.

Further improvements can obviously be made but the object was to produce a minimalist receiver that can pull in some DX! A good quality variable capacitor with reduction drive is essential, as is a good pair of high impedance headphones.

The HAMOEBA, A 100mW Single-Cell CW Transceiver

Duncan Walters G4DFV, 11 King George Fifth Av. MANSFIELD. NG18 5AA

This project was inspired by the " 1-Volt Challenge" laid down by Ken Evans, W4DU, as mentioned in SPRAT 101, to produce a working CW transceiver powered by just a single 1.5 volt cell power source, and built using no i.c's, only discrete components .

The 10MHz band was selected on which to base the design of the transceiver, as previously successful two-way intercontinental CW communications from the G4DFV shack had been achieved on these frequencies using a power output of just 2 Watts. There is no reason, of course why the Hamoeba could not be used on other bands by changing the tuned circuits and input and output filters.

It soon became apparent, when building began, that obtaining 100mW from a transmitter powered from just 1.5 volts was going to be more difficult than at first visualised.

Perhaps the most startling (and annoying!) surprise came when substituting the two VN10KM output devices for others with differing batch numbers. It was found that only devices bearing the same batch number as the original ones used in the design would give 100mW output into a 50ohm load.

Other devices gave 50mW or less. Why this should be is presently not known, perhaps it may be that 10MHz is approaching the upper useful frequency limit of these devices, and that only full-spec ones will deliver sufficient output.

The batch number which was printed below VN10KM on the mosfets was "T930".

There is perhaps plenty of scope for experiment here where alternative types of device could be tried in the output stage. I would be pleased to hear from anyone who achieves success on these lines.

TRANSMITTER

The heart of the transceiver is the VXO, based around Q1 and a 10.158MHz crystal. The inductance of a KANK3333R winding in combination with a 200pF polyvaricon variable capacitor is used to pull the frequency of the crystal sufficiently to cover the entire band. On receive; closing S2 brings in VC2 across the second winding. Adjustment of VC2 provides RIT, which is disabled during transmit.

Output from the VXO is coupled via C3 to Q2, which drives the gates of Q3 and Q4 via transformer T2. VXO output is also taken via C14 to buffer Q5, which supplies local oscillator injection to the receiver balanced mixer.

Output from the two push-pull VN10KM devices is coupled via tuned transformer T3 into a low-pass filter comprising L1, L2,C8,C9 and C10.

RECEIVER

Direct conversion was chosen for simplicity and produces an effective working receiver with the minimum of complication. The antenna signal is fed via S1c to a 10.100-10.150MHz band-pass filter, comprising transformers T4, T5, C25, C26, and C27. Output from this filter is taken to a coupling winding on T6, a trifilar wound transformer, which, together with Schottky hot-carrier diodes D1 and D2, form a balanced mixer.

TC1 is used to peak up at 10.125MHz, band centre.

RV1 is adjusted for minimum AM broadcast breakthrough.

AUDIO STAGES

Audio signals from the balanced mixer are fed via C30 to the base of preamplifier Q7. Output from the collector passes to the AF Gain control RV2 via C18. Audio filtering, provided by T7, T8,C19,C20 and C21, is switched in or out as desired by S3. Q8 and Q9 form a high gain

darlington pair which drive a pair of ex-army high impedance balanced-armature headphones, type DLR No.5. Other high impedance headphones were tested in this circuit and gave good volume. but the ex-army types gave best results.
A simple Hartley audio oscillator built around Q10, using an LT700 transformer, provides CW sidetone. Sidetone audio is fed via R12 to the top of the AF Gain control.
As power to the audio stages is not switched off during transmit, Q6 is used as a muting circuit to prevent harsh clicking sounds reaching the headphones.

POWER SUPPLY

The transceiver was initially tested and set up using a variable voltage bench power supply set at 1.50 volts, but is designed to run satisfactorily on a single Duracell "D" cell. Other non-rechargeable batteries will work, but due to the heavy current drain, their voltage soon drops below useful level.
Ni-cad batteries have not been used as they only supply 1.25v. A difference of quarter of a volt makes quite a significant change at this power level!

RESISTORS

R1 150R
R2 8K2
R3 68K
R4 6K8
R5, R6, R11,1M
R7 8K2
R8 4K7
R9 150K
R10 1K
R12 27K
R13 100K
R14 4K7
RV1 1K lin preset
RV2 10K log

CAPACITORS

C1 47pF
C2 150pF
C3, C15 1nF
C4, C5, C11, C12 100nF
C6,C16, C23, C29 10nF
C7 780pF (2x390pF)
C8,C9 540pf (2x270pF)
C10 270pF
C13 100uF 16v
C14 330pF
C16 10uF 16v
C17, C22, C24 47nF
C18 1.5uF 16v
C19, C21 100nF
C20 220nF
C25, C27 47pF
C26 6p8
C28 68pF
C30 1uF 16v
C31 470uF 16v
TC1 50pF min. trimmer.
VC1 200pF polyvaricon
VC2 50pF

SEMICONDUCTORS

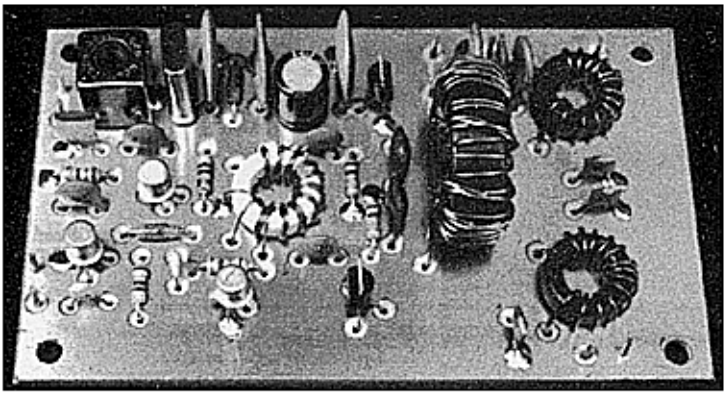
Q1,Q6,Q7,Q8,Q9,Q10 BC109C
Q2 2N2222
Q3,Q4 VN10KM (See text)
D1,D2, BAT41 Schottky Diodes

INDUCTORS

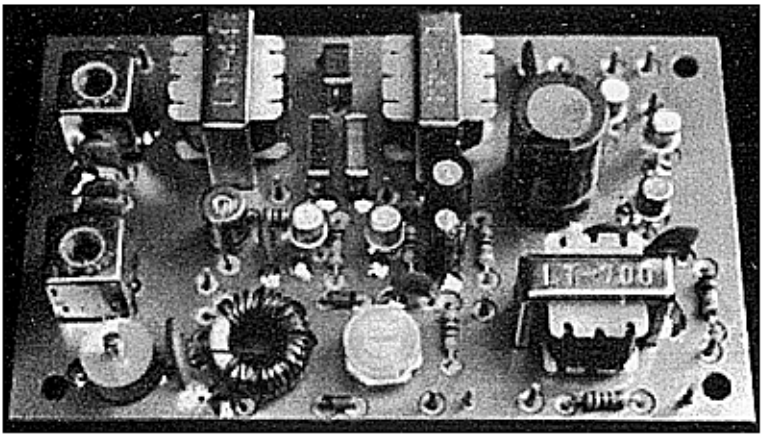
L1, L2 wound on T-50-2 cores
T1 Toko KANK3333R
T2 wound on T-50-6 core
T3 wound on T- 94-2 core
T4, T5 Toko KANK3334
T6 wound on T-50-6 core
T7, T8 Eagle LT44 AF driver
T9 Eagle LT700 AF output
RFC1, RFC2 47uH min. axial choke

SWITCHES

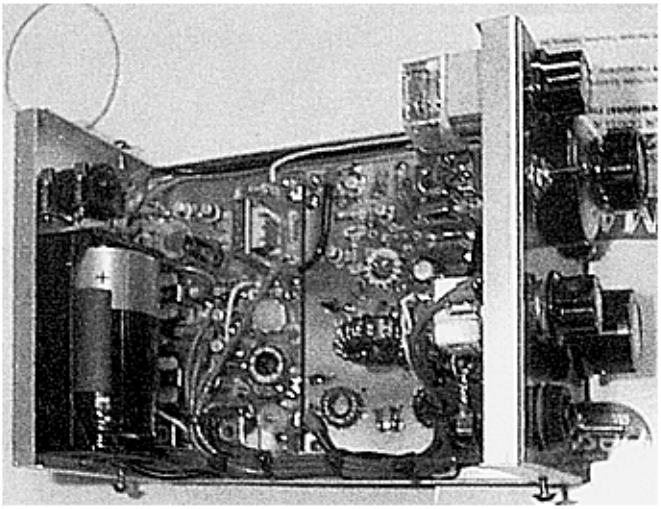
S1 3 pole c/o min. toggle
S2, S4 single pole c/o min. toggle
S3 2 pole c/o min. toggle



HAMOEBA VXO and TRANSMITTER BOARD



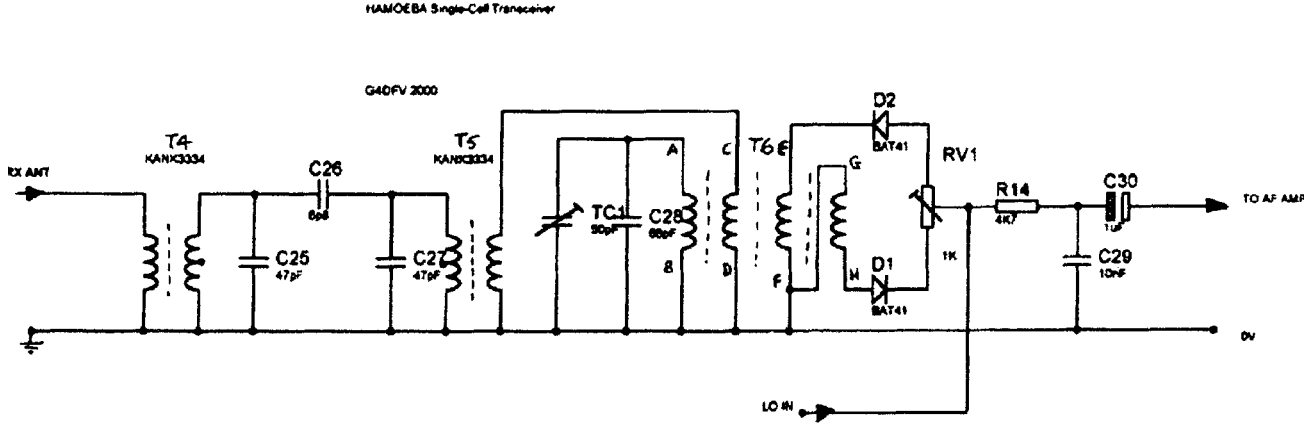
HAMOEBA RECEIVER and AUDIO BOARD

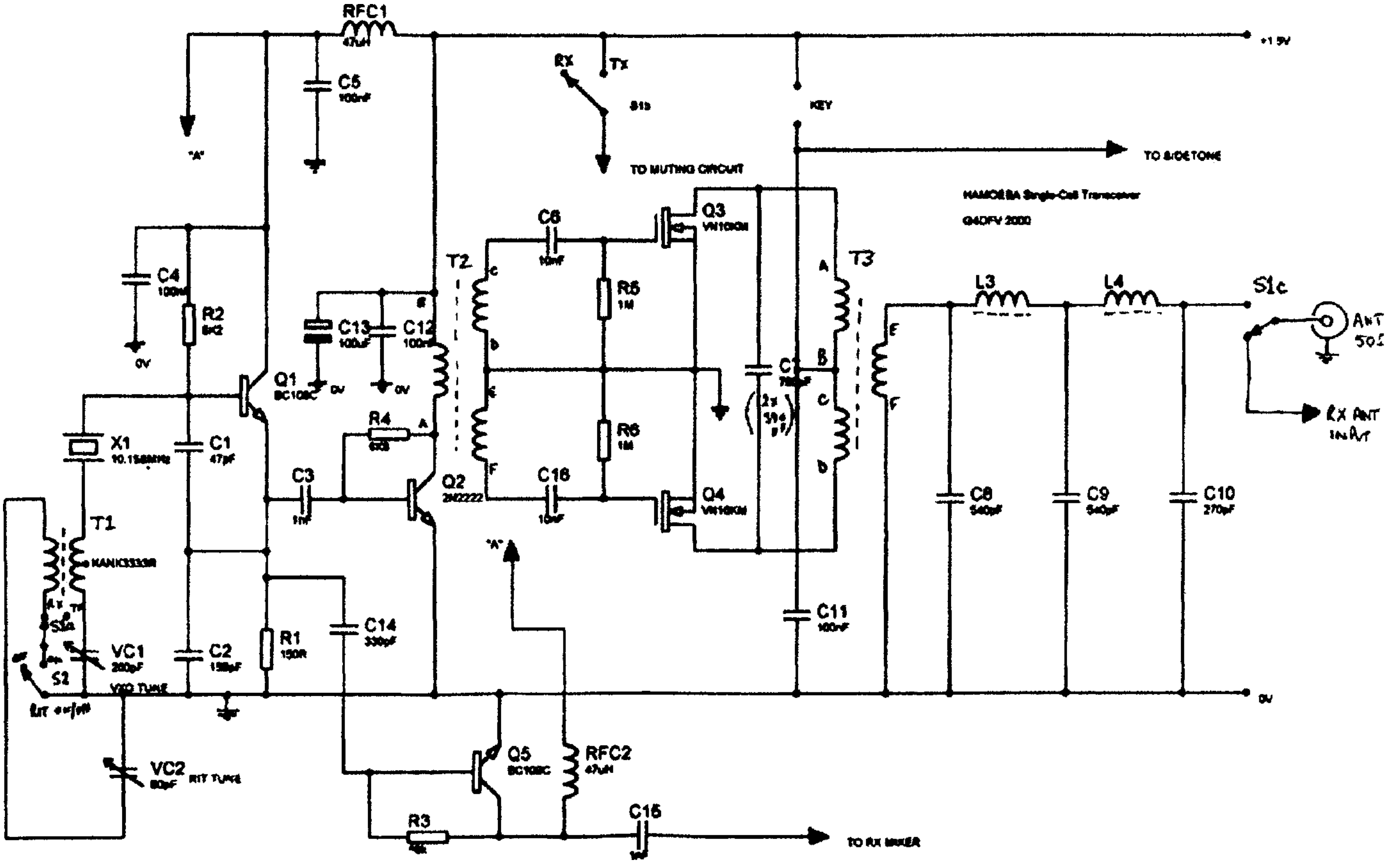


THE COMPLETED HAMOEBA TRANSCEIVER

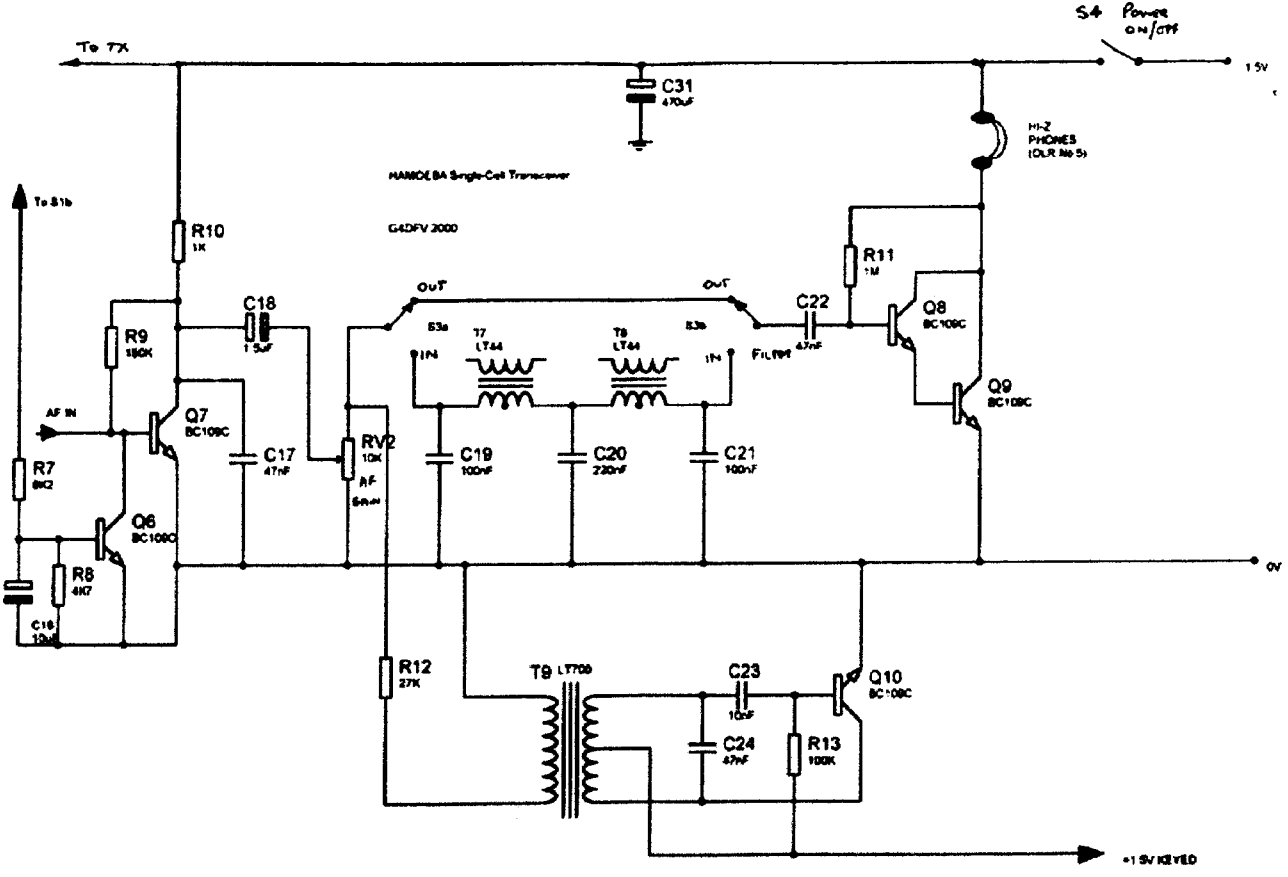
Hamoeba Circuits

Larger copies are available from G3RJV for a stamped addressed envelope marked "Hamoeba"





RFC1
47uH
+1.5V
C5
100nF
"A"
RX
TX
KEY
TO MUTING CIRCUIT
TO SIDETONE
C4
R2
0V
Q1
BC109C
C13
C12
T2
C6
R5
1M
Q3
T3
L3
L4
S1c
RX ANT
R4
Q2
2N2222
C1
47pF
X1
10.158MHz
C3
C16
R6
1M
Q4
C8
C9
C10
C11
100nF
T1
VC1
200pF
C2
R1
C14
330pF
S2
VDO TUNE
VC2
RIT TUNE
Q5
BC109C
RFC2
47uH
R3
C15
TO RX MIXER


To TX
S4 Power on/off
1.5V
C31
470uF
HI-Z PHONES (DLR No 5)
HAMDEBA Single-Coil Transceiver
G4DFV 2000
To S1b
R10
1K
R11
1M
C18
1.5uF
OUT
OUT
C22
47nF
Q8
BC109C
R9
150K
T7
LT44
T8
LT44
IN
IN
FILTER
Q9
BC109C
AF IN
Q7
BC109C
C17
47nF
RV2
10K
AF
C19
100nF
C20
220nF
C21
100nF
R7
8K2
Q6
BC109C
R8
4K7
C16
10uF
0V
R12
27K
T9 LT700
C23
10nF
Q10
BC109C
C24
47nF
R13
100K
+1.5V KEYED

Adventure Radio

Richard Newstead G3CWI, 89 Victoria Road, Macclesfield, SK10 3JA

Imagine the scene; you've had a hard day of walking in the hills and you return to your tent situated by a crystal stream flowing into a nearby loch. Before cooking tea on your portable stove you lie back on your sleeping bag and relax while taking a quick listen around 40 metres. The band is beautifully quiet, no man-made interference here. You soon hear an old friend and complete a leisurely QSO, taking pleasure in sharing the day's events. Too good to be true? No, this is Adventure Radio at its best and is my recollection of an actual QSO that I had from the shore of the remote Loch Dungeon in the Rhinns of Kells mountain range earlier this year.

QRP operating covers a wide range of interests and for me, the most exciting facet is the way in which amateur radio can enhance the wilderness experience. For this ideal to be achieved, the radio station has to be carefully though out. There is a narrow line between it enhancing the experience and it just being some extra weight to carry around in your pack. Developing equipment that is perfectly suited to this method of operation is quite an art. You may want to operate you radio at night, from inside a sleeping bag or with gloves on. Weight will be an issue too, what sort of batteries to use? What sort of aerial will work best and how do you get something sufficiently flexible to put up when there are no trees around? Should the radio be crystal controlled or have a VFO? What is the weight-to-performance ratio for a direct conversion transceiver when compared to a superhet?

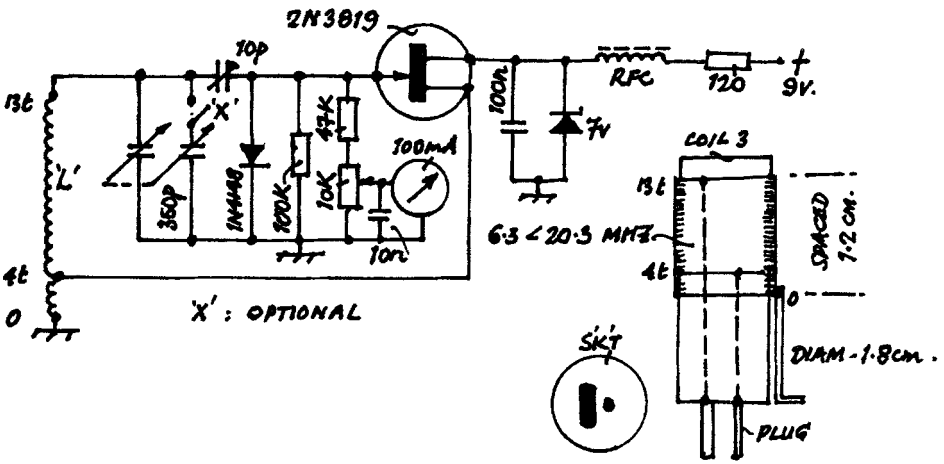
One of the great things about it is that home made equipment dominates – it's just so much more satisfying to make QSOs with something that you have made yourself and, of course, you can tailor it to your precise needs. No need to follow convention; for example my "trail friendly radio" (TFR) has the controls on the top which makes it far easier to use when its on my knee. Many of the designs in SPRAT would make excellent TFRs.

There now exists a forum in which to share ideas for adventure radio, this is the Adventure Radio Society. It's an organisation based in the USA which publishes a monthly magazine via its internet site at www.natworld.com/ars. It's free to join and even if you don't, the archives are well worth a look. My aim is popularise the concept here in Europe. I have teamed up with the ARS to do this as they have such a good foundation in place. To find out more about my plans, check in to my web site at www.qsl.net/g3cwi. If you are not on the web, watch out for Radcom over the next few months as there should be an article on adventure radio as well as a competition with an MFJ Cub as the prize.

I have found that Adventure Radio is a good way of getting non-amateurs interested in this great hobby of ours. Imagine how surprised people are when you can contact someone across the other side of the country, from a place where their mobile phone just shows "no service" and there isn't an internet café for miles!

EASYDIP

Harry Frogatt G3SOX, 5 Goodwin Road, RAMSGATE. CT11 0LP



The unit to be described is a useful adjunct to any amateur station. Though not to laboratory standards, it can be extremely useful . Its principal use in most shacks is in the building of tuned circuits, and finding the resonant frequency, also finding the resonant frequency of unknown tuned circuits. Of course, a computer program; such as GSHNP's excellent program used in conjunction with a dipper is a great time saver, having been a member of the "cut and try brigade" I know all about that, hi. It uses few components, many to be found gathering dust in the junk box. The others can be purchased quite cheaply from many of the traders advertised in Sprat. When calibrated, using the main station receiver, or a friends general coverage receiver or other accurate signal source, it will be found good enough for most uses.

The meter I use is 100 micro-amps full-scale, but any meter in the range 50 to 250 micro-amps will be o.k. My meter measured 3.25cm x 2.54cm, see photo. The variable capacitor is a twin gang, 300 pF, 150 pF each section cap from J Birkett. If preferred it can be switched to give 300 or 150pF,to give more flexibility LC wise. The 10pF capacitor, found in the junk box, is a bee-hive trimmer. But most defunct transistor radios have small trimmers on their boards.

For the package I used an old rectangular biscuit tin, approx, 6.5 x 2.5 x 1.75 cm after fabrication. The tin was cut from one end, which gave me three rolled edges and after leaving enough material on the cut side, which, on folding gave me the fourth side. This was then soldered at the ends. The back panel was then made from the remainder of the tin. The tin bashing was done with the help ofGM4JJG's article: Sprat No, 102 Spring 00. Making the holes for the components can be a bit tricky, safety being paramount. Safety glasses should be worn at all times, and the tin plate clamped onto wood. I have found it easier to punch out some of the holes, and safer too. The fourth side, should be slightly wider, the top edge can then be rolled over. The holes for the switch/s and other components are made before folding. The rear cover is secured with four small self-tapping screws.

My unit uses the two 150pF section strapped together, giving me 300pF,and has only three coils to cover the frequencies of interest, but other coils can be made in the manner to be described. I had no trouble with the oscillator which works quite happily from 1.5 MHz to 25 MHz, in three ranges, no doubt the ranges can be extended without any problems.. The circuit is a Hartley oscillator. The value of resistor in the gate circuit, fig 1. will depend on the meter used. My unit uses a 4.7k resistor. The coils are made using discarded plastic solder holders, by Dencon, the solder comes in handy too. Other small diameter plastic or cardboard tubes could be found to do the job. The plug and socket are speaker connectors, the type with a blade and pin, the ground connection for the coils is a stiff piece of copper wire cemented to the outside of the former with a loop to fit a terminal post on the case, see photo. The socket is cemented to the case using epoxy resin; what would we do without it. The other coil connections are taken down the outside of the formers and soldered to the pins. The 2N3819 F.E.T. together with the rest of the circuitry is mounted point-to-point or dead bug style. It could be made much neater using a small piece of circuit board. As with all oscillator circuits stability is all-important and the unit should be mechanically sound.

The dial is a piece of white card with the frequencies of interest marked off. After marking the card with small semi-circles the start of these semi-circles can be coloured together with the coils for easy identification. Mark the card sparingly; the card can then be covered with a small piece of plastic sheet. The 9v battery is held in place with a small length of stout wire and bent in position. The plugs will have to be filed to fit the plastic tubing. These plugs and sockets are still available from most of the older dealers. Be careful, when calibrating with the harmonics of which there are plenty. After construction and before the dial card is fitted, the unit can be finished using Hammerite paint. Half the fun is in winding the coils and seeing which frequency range can be covered. So go to it and have fun and save yourself £60!

Antenna Mounting Through a House Roof

Tom Sorbie GM3MXN, Tamaur, 7 High Pleasance, LARKHALL, ML9 2HJ

This is an easy way to mount a vertical or a beam on a roof. The drawings give a general idea of the construction. The idea is based on getting a plumber to make a "slate piece". This is like a large rood overflow made to suit the angle of the roof with a vertical tube of lead where the mast passes through into the roof space.

Lifting and pulling sideways can remove a tile. Fit the slate piece under the row of tiles above, on top of the tiles below and under the side tiles. The lead must give a good weatherproof overlap and therefore should be larger than the removed tile. Follow the construction data in the drawings.

If using a beam, with the rotator in the roof space, clearance is required between the lead upstand and the inside of the bottle, and between the mast and the upstand. My original leadwork cost £10.

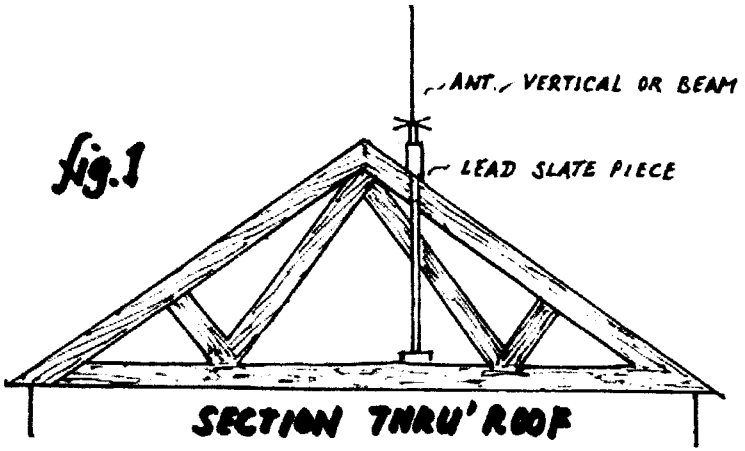


fig.1

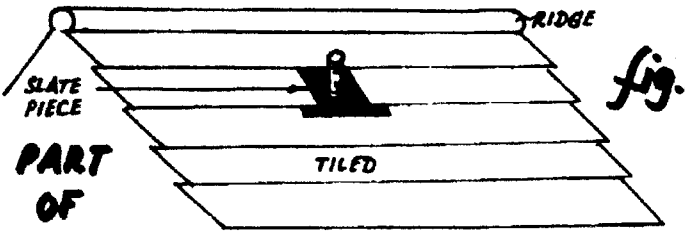


fig.2

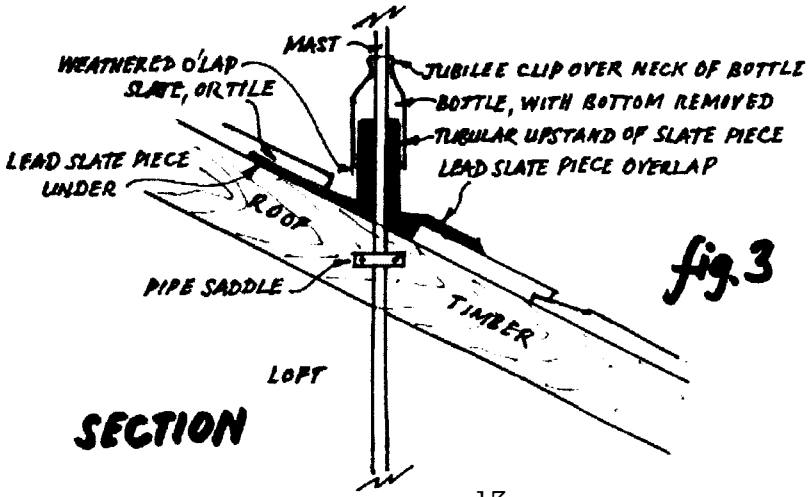
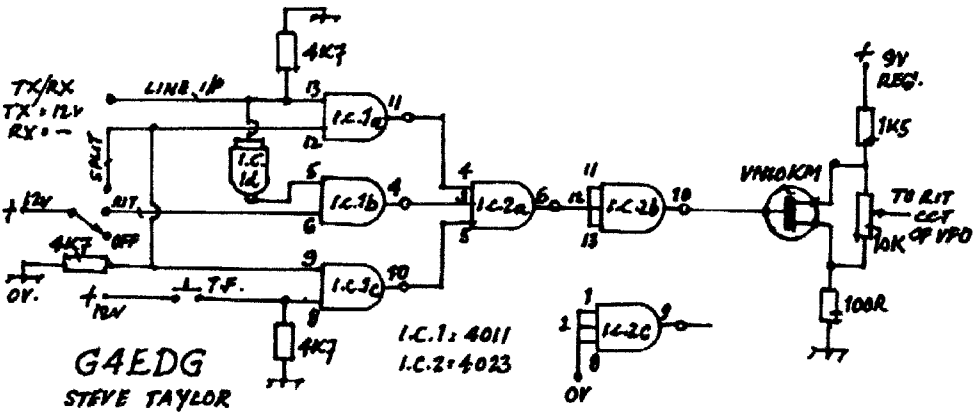


fig.3

Split-Frequency Addition for VFO Controlled Transceivers

Steve Taylor G4EDG, 80 Nadder Park Rd. ST THOMAS. EX4 1NX



This simple circuit adds facilities to a VFO controlled transceiver, to provide efficient split frequency operation.
The three-position switch gives the following

1. **All functions off, i.e. transceive operation**
2. **RIT**
3. **Split operation.**

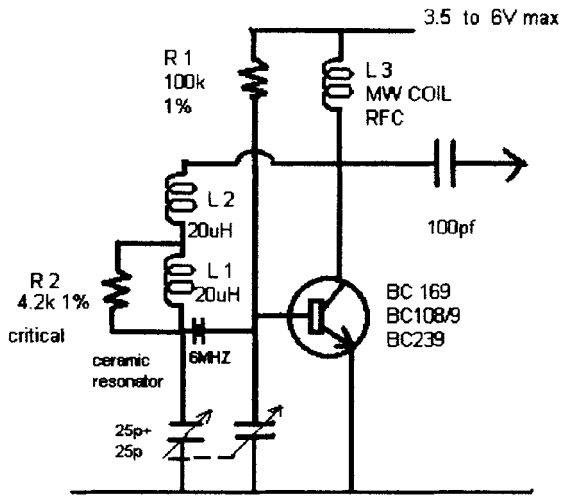
Tune to the split frequency working DX station on the main VFO, then with the T-F button pressed look for the station he is working using the RIT control, once found (if you're lucky!) release the T-F button and wait for your opportunity to call the DX, your TX frequency has been adjusted to the DX station's listening frequency, repeat as necessary!
I have added this circuit to my G3TSO transceiver, which uses the VFO unit from a scrap Kenwood VFO 240.

With the component values shown a shift of some 10KHz HF is achieved, enough for run of the mill split operation, the shift on the LF side is deliberately small (about 1.5KHz), as few if any DX stations listen below their transmit frequency.

FOR SALE: Sony SW-100E micro size receiver with SSB and world time. Frequency 150 KHZ - 29.999 MHZ AM/USB/LSB/CW and 76MHZ - 108 MHZ FM. Complete with box, all literature, soft case, wire aerial, and AC mains adapter vgc. £79 ONO. Please contact David Rowlands G6UEB at 7 Broomfield Road Swanscombe Kent DA10 0LU Tel 01322 381 303.

Another VXO Circuit

Paul Debono,9H1FQ, 34 Triq Il-Hafur, ATTARD. BZN O3. MALTA



This VXO will tune from 6.00MHz to 6.10MHz, with the values shown. However ceramic resonators have wide tolerances, and final coverage can be trimmed by L1 and L2. R2 determines the overall stability and is critical. Stability is as good as the ceramic resonator itself, when checked against my BlackStar counter.

Geert - PAØYF

We regret to announce the death of Geert Kijff, PA0YF, (member 512) who with PAØGG, founded the Benelux QRP Club. Geert was one of the leaders in the promotion of QRP operation in Europe.

SSTV on QRP

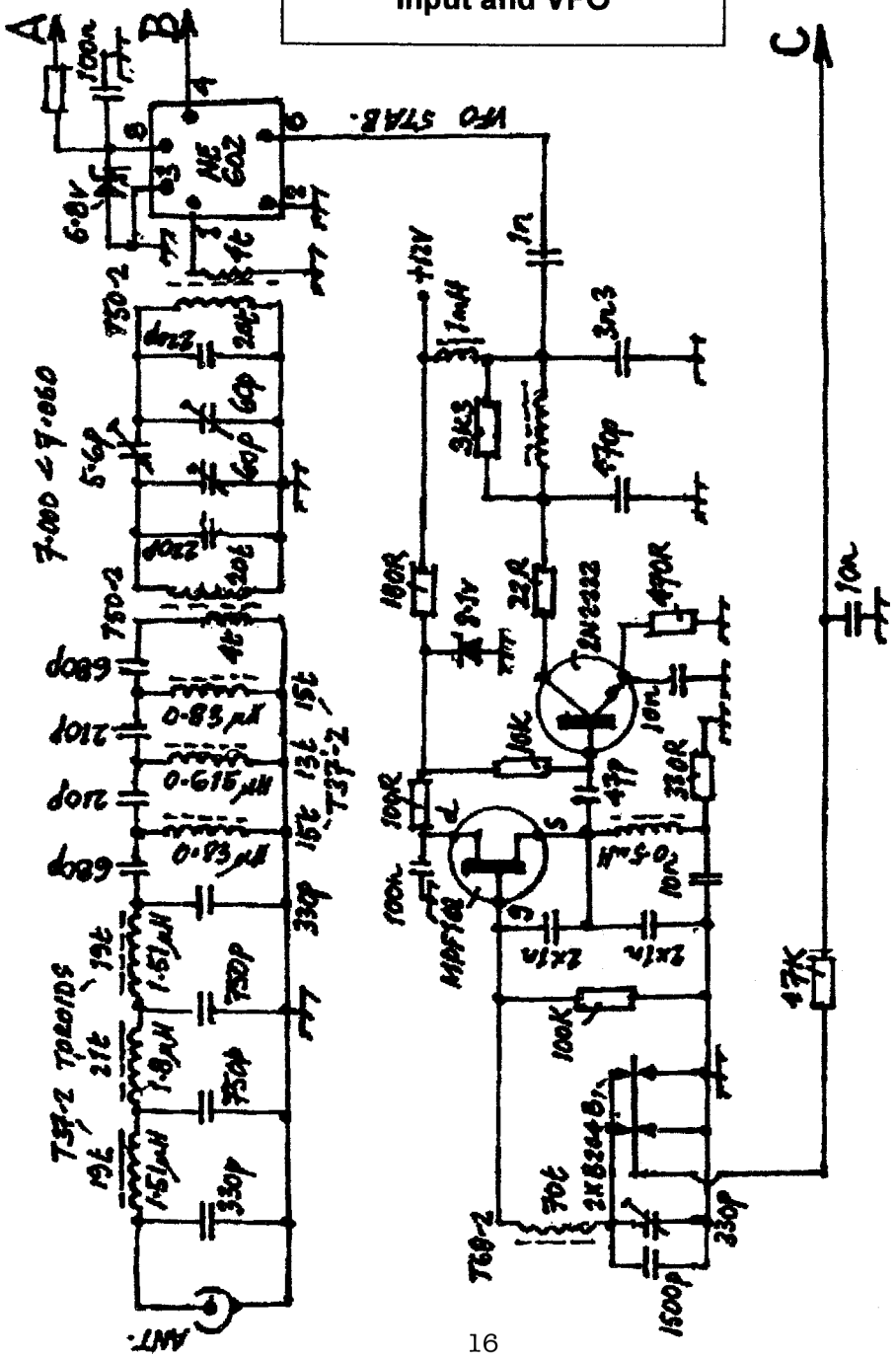
I would like to know of any other SSTV QRP'ers with a view to exchange of ideas and possible skeds. Any responses can be made either by e.mail Peter@g3myz78.freeserve.co.uk or QTHR. Peter Nicholson G3MYZ

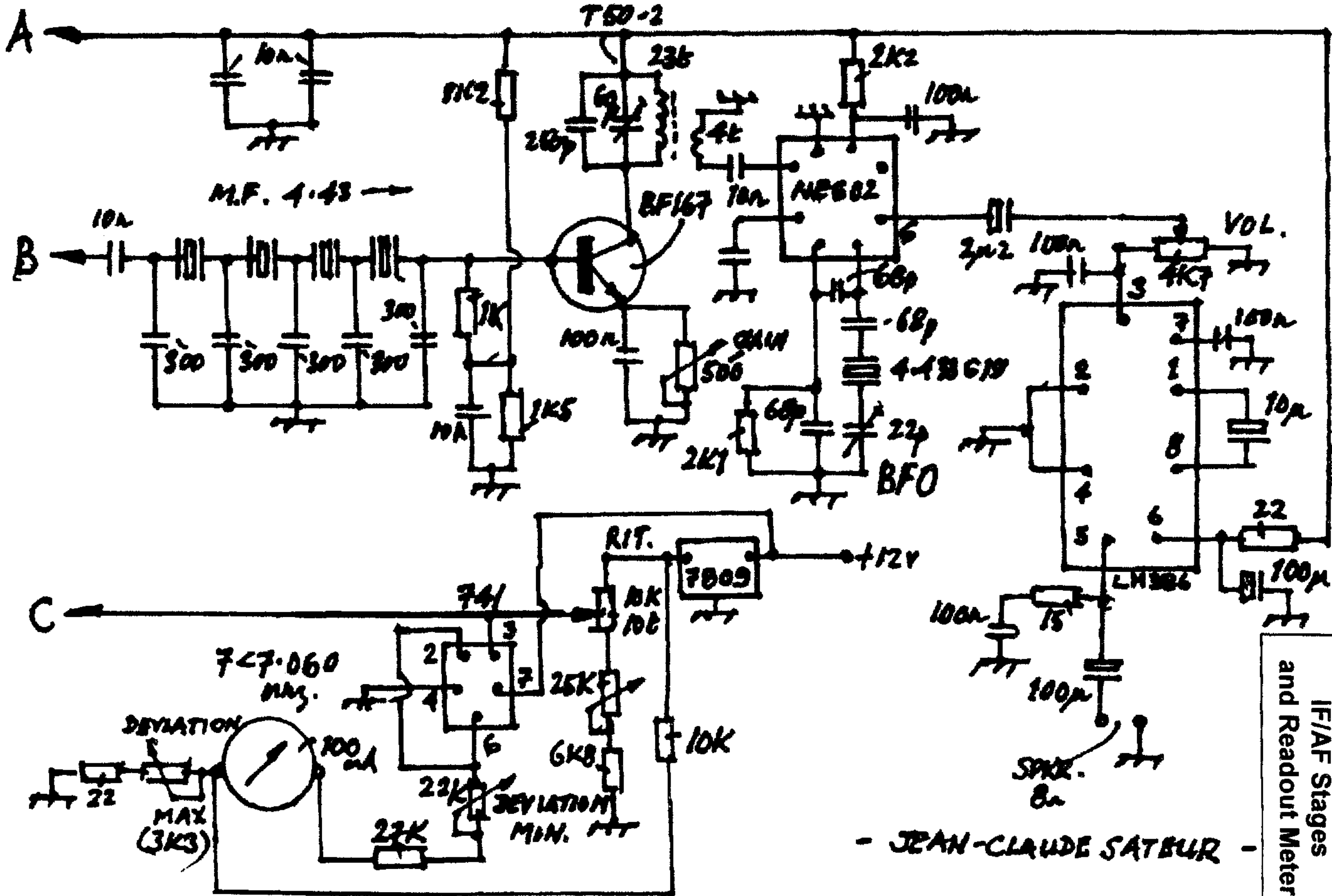
ON5SJ 40m Superhet Receiver

Jean-Claude Sateur ON5SJ, rue de la Boutille 71, BONNEVILLE. B-5300, BELGIUM

Jean Claude has supplied the circuit of his 40m receiver built from scrap and junk box parts. It uses a 4.433MHz ladder filter and a Varicap tuned VFO on 2.56>MHz. Jean Claude spent considerable time on the VFO tuning, the bandpass input filter and "frequency indicator meter" and would like to share the fruits of his work with other SPRAT readers.

ON5SJ Receiver Input and VFO





ON5SJ Receiver
IF/AF Stages
and Readout Meter

Receiver Input Filters

Supplied by Marco Eleuteri, IK0VSV

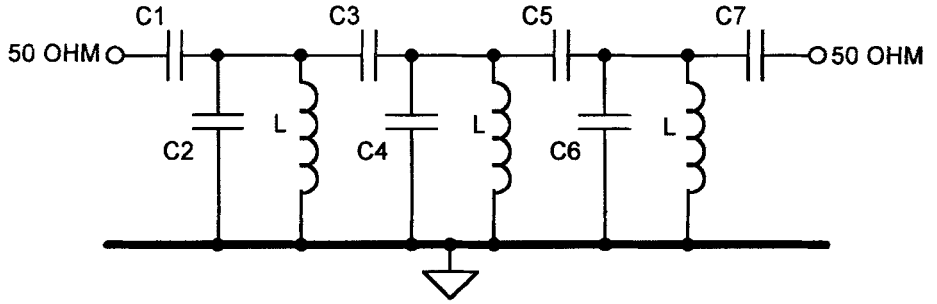


TABLE OF VALUES – Capacitors in pF – Inductors identical

BAND	C1	C2	C3	C4	C5	C6	C7	TURNS	WIRE	CORE
10	36	47	7	75	6	56	27	8	16	T50-10
25	51	62	10	110	8	75	36	10	18	T50-10
20	75	91	15	150	12	120	51	13	20	T50-10
40	150	180	27	300	24	240	100	18	22	T50-6
80	300	360	51	620	47	470	200	23	22	T50-2
160	600	720	100	1240	100	1000	400	28	24	T50-2

These filters are used by contester W3LPL and from my friend IKØXBX with the contest team in Perugia. The filters can also be used for diplexing, triplexing etc, simply by paralleling in inputs of more than one filter and connecting to the inputs of separate receivers. They have been used for multi-multi contest operation from the same shack. The filters are lightly top coupled with the minimum value of silvered mica capacitors

The filters must use good RF components – sound RF connectors [not phono!] powered iron cores and silvered mica capacitors. The input/output is at 50 ohms. Tune the filters by squeezing or adding/subtracting turns. It may be an idea to begin with a few extra turns on each inductor.

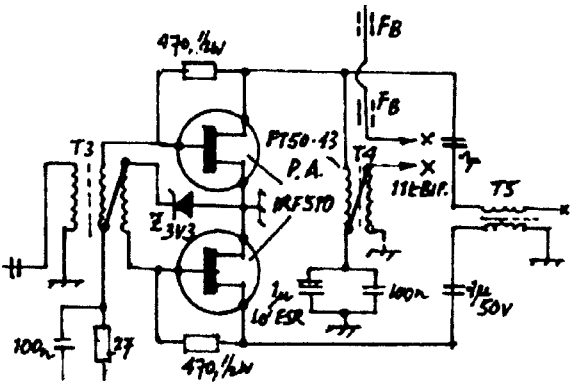
Typical characteristics:
Nominal 3dB bandwidth : 10% of centre frequency
Nominal mid-band loss : 1dB
Attenuation: greater than 60dB out of band

There is no need to individually shield each tuned circuit.
Two or more filters can be used in series for better selectivity.

WANTED: A circuit diagram of a ' SWAN 500c ' I hope somebody can help. Call Alan 01757 700332 or E-Mail alan@semark.freeserve.co.uk G4OJN not QTHR.

WANTED: Plustron TVR5D, portable television, also Yaesu FT707s. Steve Gray, 01784 256482 or g4vrr@freeuk.com

FOR SALE: RF Wattmeter: SolaBasic Dielectric model. Takes Bird 43 elements and is a copy of the Bird but with a 4 inch meter dial which is very easy to read. N-Series sockets - a nice bench instrument. 40 pounds + carriage. Wanted: Carrying case for Bird 43 + elements. Marcus Sleightholm G8HDN, 4 Bridge Avenue, OTLEY, W. Yorks. LS21 2AA



NATTERBOX 160m AM TRANSMITTER CORRECTIONS (SPRAT 104)

1] The RF PA inout stage (page 20) There should be a link between the zener diode anode and the 27Ω resistor leading to the bias adjustment.

2] The T4 (page 20) requires a link and a 0.1uF is required above T5.

3] The PTT changeover switching (page 23) the bottom end base resistor is shown as 3.6KΩ poses no real problem in performance, a 4.7KΩ was used, and is a common value (the range 2K2Ω to 10KΩ should work)

The name "Natterbox"

John Heys, G3BDQ, points out to me that the name "Natterbox" is well known as the name given to his Top Band SSB Transmitter (Short Wave Magazine – June 1961). This popular rig – the first SSB TX using an HF Filter to be described in the UK – was built by many G and overseas stations and is still mentioned to John when in QSO on 40 or 80 metres. Our apologies to John for appropriating the name.

THE REDDISH RADIO RALLY – St. Mary's Parish Hall, St. Mary's Drive, South Reddish, Stockport. 10am – Saturday 17th February 2001. The table charge is £8, pre-booked and pre-paid. Details from John, G4ILA – 0161 477 6702

Two Way QRP QSL Labels and Blank G-QRP QSL Cards

QRP Labels: Black Lettering on Gold with Club Logo : 200 labels £2. Post inc.

Blank QSL Cards: You complete your address and call. Blue lettering on white card. 5.5" x 3.5". 100 cards £4. Post inc. Sample from : **M.L. Prickett [Max] G3BSK, 260 Haslucks Green Road, Solihull, West Midlands. B90 2LR.**

Cheques: "M.L. Prickett" [The G QRP Club benefits from each order]

N.B.T.V.A

The Narrow Bandwidth TV Association (founded in 1975) is dedicated to low definition and mechanical forms of ATV and introduces radio amateurs to TV at an inexpensive level based on home construction. NBTV should not be confused with SSTV which produces still pictures at a much higher definition. As TV base bandwidth is only about 7kHz recording of signals on mini cassette is easily achieved. A quarterly 12 page newsletter is produced and an annual exhibition is held in April/May in the East Midlands. If you would like to join, send a crossed cheque / postal order for £4 (or £3 plus a recent SPRAT wrapper) to Dave Gentle, G4RVI, 1 Sunny Hill, Milford, Derbys. DE56 0QR, payable to "NBTVA"

FROM THE MEMBERSHIP SECRETARY
SUBSCRIPTIONS 2001

John Leak. GØBXO. Flat 7. 56 Heath Crescent. HALIFAX. HX1 2PW
Tel:- 01422-365025. Email:- g0bxo@gqrp.com

Subscriptions for the year 2001 are now due. Please see the centre pages of this issue of SPRAT for details of methods of payment. I can accept payment for more than one year at a time. If you wish to do this, please show clearly how many years you are paying for.

STANDING ORDER PAYMENT

IF YOU ARE A UK MEMBER AND DO NOT ALREADY PAY BY STANDING ORDER, PLEASE CONSIDER DOING SO IN FUTURE. THIS METHOD OF PAYMENT IS THE CHEAPEST FOR THE CLUB AND IS THE EASIEST FOR US TO PROCESS.
A STANDING ORDER MANDATE IS INCLUDED IN THE CENTRE PAGES OF THIS ISSUE OF SPRAT.

A PLEA FOR HELP!!!

It is a very great help to me in processing payments if members respect the following procedure.

If paying by cheque, please write your membership number and callsign (if any) on the back of your cheque. I list cheques on bank payment slips under your membership number so that I can trace a cheque in the event of a query. The callsign serves as a check.

Please make cheques payable to "GQRP CLUB" not to me personally, nor to SPRAT. I will HAVE to return cheques made out to SPRAT and may return cheques made out to me.

If you pay by credit card, please quote ACCURATELY, the card number and expiry date.

If members will follow this procedure, as most members do, my task will be MUCH easier and I may even have a little time to get on the air during the Winter Sports!!

The W1FB Memorial Award Reminder

For 2000, the project is to

Design a Useful Piece of Test Equipment for a QRP constructor's workshop.

Please submit your design to G3RJV as soon as possible, with circuit sketch, all values and brief notes.
The project will be published in SPRAT and the winner will receive an engraved plaque.

A Stable Regenerative Receiver [with Club Kit Offer]
Described by George Dobbs, 3RJV

The History of the Receiver

The "Technical Topics column by Pat Hawker, G3VA in RadCom for October 1987 described a novel regenerative receiver circuit by G QRP Club member Des Vance, GI3XZM using an infinite impedance detector and Q Multiplier. The idea was taken further by a circuit from Tony Langton, GM4HTU (February 1991), which used the GI3XZM circuit as the "back-end" of a 7MHz supergainer receiver.

Some time later I read a paper called "An Active Crystal Set" by Chris Garland, G3RJT, from Holmfirth (the "Last of the Summer Wine" village). In his paper, Chris describes a short wave crystal set and moves on to an FET infinite impedance detector with Q Multiplier. He even produced a whole QRP transceiver based upon his version of the receiver. This was an amazingly simple but viable little rig, the circuit of which filled the back of his QSL card.

The G3RJT "Active Crystal Set" proved to be another variant on the GI3XZM regenerative detector. The same idea formed the basis for the "Nicky TRF" which appeared in SPRAT 70 (Spring 1992). Colin Davis, G3VMU, wanted to build a simple receiver for his son, Nicky, and developed a receiver along similar lines. Doug Gibson, G4RGN, improved the circuit and I designed a printed circuit board for my two sons to build the receiver.

Finally, to bring us to the present time, Harry Tyreman, VK2BHT, described a receiver called the "RX80/r" in the September and December 1999 issues of Lo-Key, the Journal of the VK QRP Club. This receiver is yet another development of the GI3XZM and GM4HTU circuits.

The Circuit

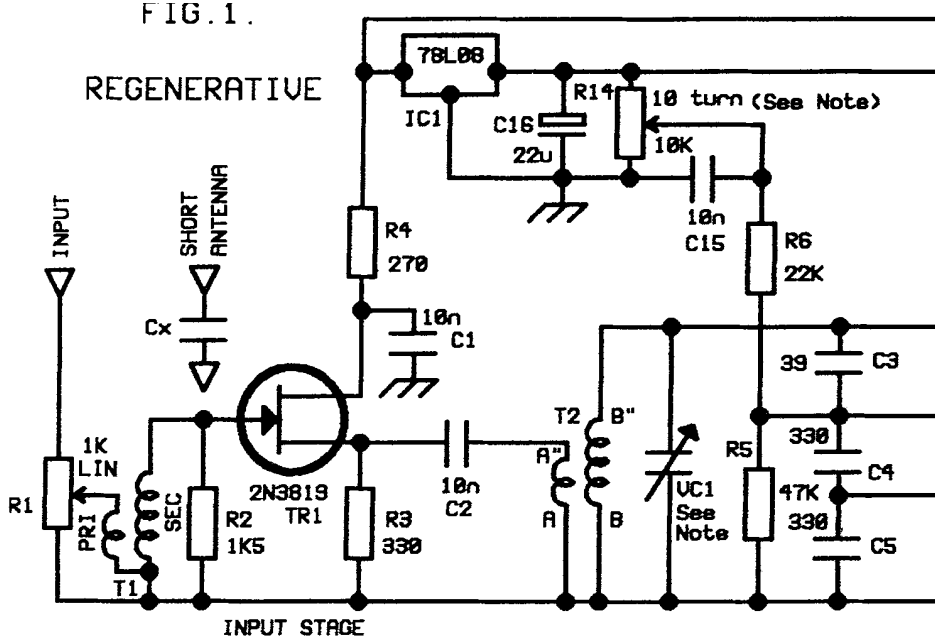
Figure 1 shows the circuit of the regenerative receiver module, which follows the general pattern of the Nicky TRF. The first FET is an aperiodic stage that isolates the antenna from the detector circuit. A 1K linear potentiometer provides a rudimentary RF gain control to the impedance matching transformer, T1. This matches the typical low impedance amateur antenna input. If a short wire antenna is used, it may be connected to the gate of the FET via a small value capacitor, Cx. The value of Cx is open to experimentation and it could be a small trimmer or variable capacitor. The source follower circuit feeds to the input winding of T2, which is the only tuned circuit in the receiver.

You may recognize the BC183 stage as a Colpitts Oscillator with capacitive tapped feedback from the emitter to the base. A small value (39pF works well) capacitor couples to the tuned circuit formed by T2 and VC1. The bias voltage on the base of the BC183 is controlled by a 10K, ten-turn, potentiometer. This provides adjustment through the point of oscillation.

Oscillation occurs when the tuned circuit losses are at a minimum. This is equivalent to having a very high "Q" tuned circuit. So the stage functions as selectivity control for the tuned circuit and as a BFO (beat frequency oscillator) to resolve SSB and CW signals. The ten-turn potentiometer provides a very smooth "reaction" control, as feedback controls are called in regenerative receivers. [continued on Page 24]

FIG.1.

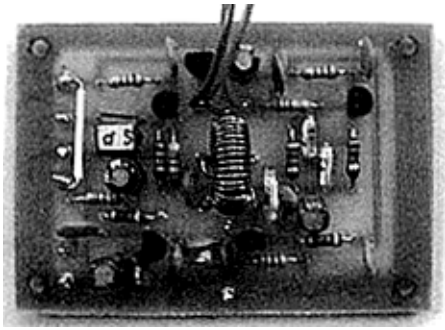
REGENERATIVE



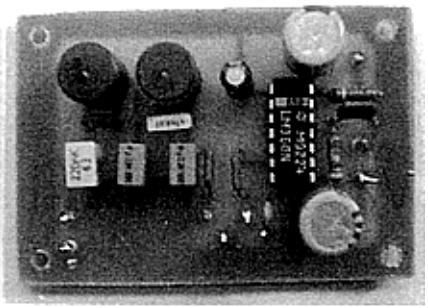
T1 = 3t. primary + 10t. secondary on Pig-Nose ferrite

T2 = 30t, 26swg on T50-2 + 4t (A"-B) over ground end

REGENERATIVE BOARD



AUDIO BOARD



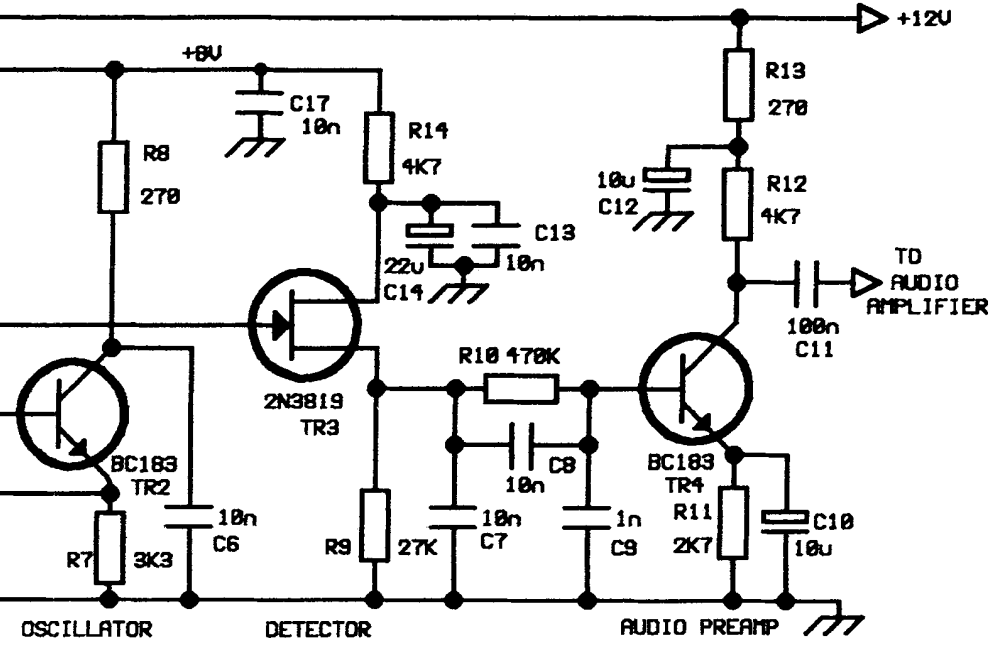
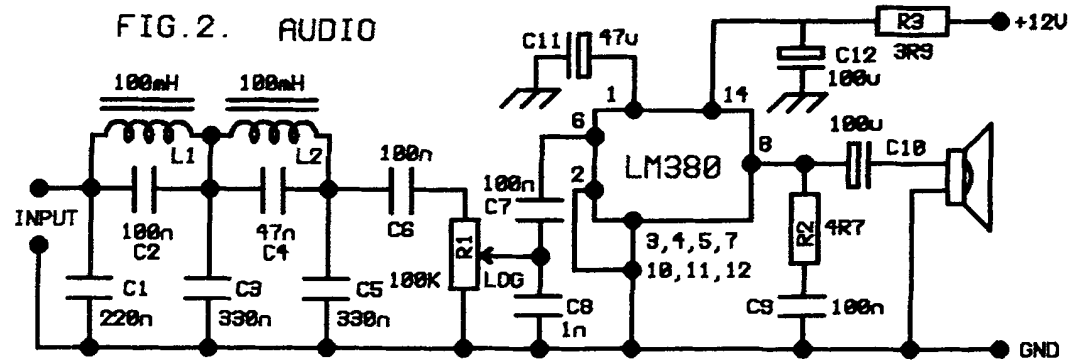

+12V
+8V
C17
10n
R14
4K7
R13
270
R8
270
10u
C12
R12
4K7
C13
22u
C14
10n
TO
AUDIO
AMPLIFIER
100n
C11
R10 470K
2N3819
TR3
BC183
TR2
BC183
TR4
10n
C8
10n
C6
R7
3K3
R9
27K
10n
C7
1n
C9
R11
2K7
C10
10u
OSCILLATOR
DETECTOR
AUDIO PREAMP

FIG.2. AUDIO


100mH
100mH
L1
L2
100n
C2
47n
C4
100n
C6
INPUT
C1
220n
C3
330n
C5
330n
100K
R1
LOG
100n
C7
C8
1n
C11
47u
R3
3R9
+12V
C12
100u
100u
C10
LM380
1
14
6
2
8
3,4,5,7
10,11,12
R2
4R7
C9
100n
GND

It is possible to use a single turn potentiometer as the reaction control but the adjustment is very critical. However the amount of adjustment required on the 10-turn pot is small and a single turn control may be used by adding extra resistance either side of the track. Begin with the single-track control, determine the resistance range required and add resistors [or presets] on either side to extend the range of the single turn pot.

The tuned circuit (VC1 and T2) is connected to a detector circuit. Older constructors will probably recognize this circuit as an infinite impedance detector. The high impedance of the detector enables it to be connected directly across the tuned circuit without any damping effect. The audio output for the detector FET is RF decoupled and fed into the second BC183. This stage is an audio pre-amplifier designed to give enough output to feed the audio output stages.

T1 is wound on a small (about 6mm x 6mm) "pignose" ferrite core. T2 is wound on a T50-2 core with 30 turns of 26 swg enameled wire for the tuned winding and 4 turns for the link winding. The link winding is wound over the "grounded end" of the main winding. This allows the tuning of the 40, 30 and 20 metre amateur bands with suitable variable capacitor values.

Inexpensive variable capacitors are getting difficult to obtain. For my version of this receiver, I used a polyvaricon capacitor. It is possible to get several combinations of capacitance swing by using the available sets of vanes. I used the AM range for a general coverage version and the VHF range for a 40 metre only version of the receiver.

Figure 2 shows the audio output stage that I used with my prototype receiver. The input feeds to an audio lowpass filter. Two commercial moulded chokes form the basis of the filter, which cleans up the audio output from the detector. This filter originated with DK4RW and was described by G3XJS in SPRAT. An LM830 audio chip provides the output stage. There are losses in the lowpass filter but there is sufficient output to drive a small loudspeaker and plenty to drive walkman-type phones. The filtering is worthwhile as regen receivers are prone to high frequency noise.

I have built both general coverage and a 40m only version. The feedback control is amazingly smooth and the whole receiver is much more "easy to drive" than any other regenerative receiver I know. The polyvaricon can be configured to provide a wide tuning range for a general coverage receiver or a limited tuning range for a single band receiver. The receiver can be used for AM, CW and SSB signals depending upon the setting of the regeneration control. Try fixed values of capacitance in parallel with VC1 to access the desired frequency range. With the existing coil winding data for T2, a capacitance of about 75pF (total VC1 + parallel capacitance) will cover the 40m amateur band.

KITS OF PARTS FOR THE REGENERATIVE RECEIVER [Limited Number]
Printed Circuit Boards plus All Components (polyvaricon for VC1 and a single turn pot for the reaction control) Simple manual with circuits, layout drawings and coil winding information.
£20.00 including postage in the UK and EU.
Available from: Graham Firth G3MFJ, 13 Wynmore Dr. Bramhope, LEEDS. LS16 9DQ.
Cheques made out to "G QRP Club"

GQRP Club Sales

For all items listed formerly from G3YCC, the new address for orders is Graham Firth, G3MFJ, 13 Wynmore Drive, Bramhope, LEEDS. LS16 9DQ
Currently available:
Radio Projects for the Amateur by VK3XU. £6
Low Power Communications Vol 3 Rich Arland. £8
GQRP Club Antenna Handbook. £5
(All the above are plus postage - £1.25 UK, £2.90 EEC, £3.00 DX)
6 pole 9MHz SSB crystal filter 2.2kHz @ 6dB, 500Ω in/out £12 [50p post]
6 pole 9MHz CW crystal filter 500Hz @ 6dB, 50Ω in/out £12 [50p post]
Matching pair LSB/USB carrier crystals HC18U [9MHz +/- 1.5kHz] £6 a pair
88mH Toroids - £1 each [+ post each – 30p UK, 50p EEC & DX]
LT700 [type] Transformers £1 each post free.
NE602 at £1.75 each. MC1350 at £2.25 each [both inc post]
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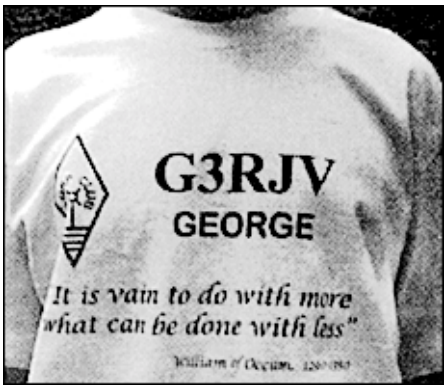

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THE ON5NO HOMEBREW MOBILE ANTENNA

Coils

m	A	L	T
10	-	-	-
15	20	8	8
20	20	10	19
40	20	14	49
80	30	24	122

All in cm. Wire 15m 1.5 cm, others 1 cm, copper.

.....

Capacitors

m	pf
10	-----
15	50
20	150
40	330
80	660

Values may require adjustment for different vehicles. Ceramic or silver mica. If QRO to be used at least 500V working.

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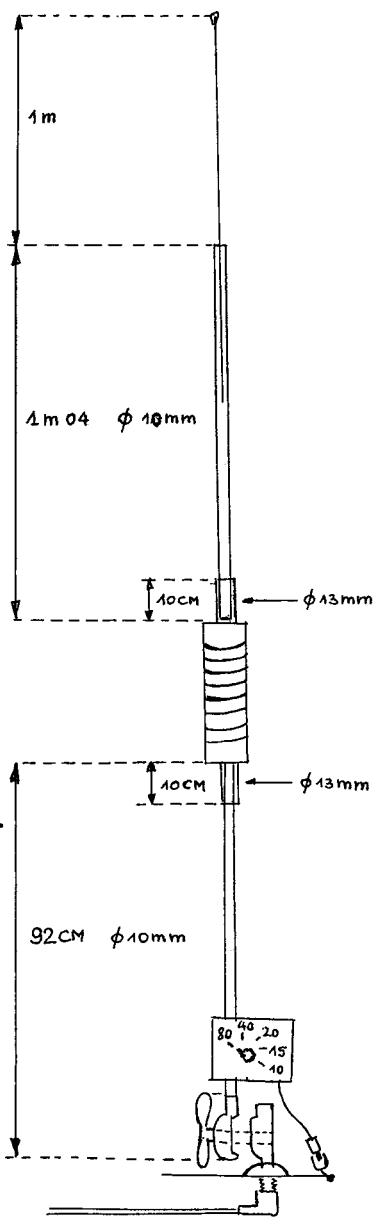
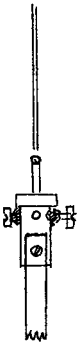
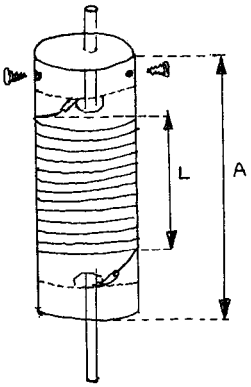
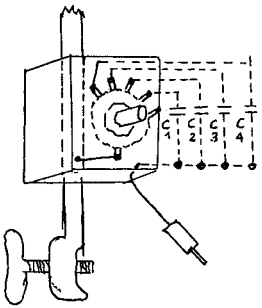








THE ON5NO HOMEBREW MOBILE ANTENNA (Cont.)

G. De SMEDT, ON5NO, DRAAISTRAAT 16, B3600 GENK,BELGIUM

The base is a discarded 2 metre antenna base which incorporates a suitable co-axial connector. It is permanently mounted on the vehicle. The lower section of the antenna consists of a 92cm length of 10mm diameter aluminuim tubing. Near its base it has clamped to it the plastic box holding the matching capacitors. The centre section is a 1.04 metre length of 10mm diameter aluminium tubing with the inner part of a PL co-axial connector attached to its top end. This is screwed to the tubing and has three small nuts soldered into its soldering holes.Bolts passing through these nuts secure the top section and allow its effective length to be varied. The top section is the top of an old CB antenna, but a suitaable 1m long telescopic antenna could be used instead. Coil sizes and winding data are given in the Table on the diagram. The ends of each coil former have a 2cm deep wooden plug inserted and held in place by three small woodscrews. A 13mm diameter hole is drilled at the centre of the plugs and a 14 cm length of 13mm diameter aluminium tubing is fixed in this hole with 10 cm protruding. A solder tag is attached to the inner end of the tube by means of a self-tapping screw, and a flexible wire lead from this tag is connected to the associated end of the coil winding. The capacitor box contains a 5-position switch , the capacitors as shown in the Table on the diagram, and an insulated pluglead which connects to a socket on the vehicle body. The plastic box provides weather protection for the switch and capacitors. The coils are weatherproofed by covering the windings with heatshrink tubing and the ends with rubber caps. On 10m the antenna is resonated in the desired part of the band by adjusting the effective length of the top section. On other bands the length of the top section and the value of capacitor in the switch box are varied for resonance at the desired frequency. Note that on other vehicles the value of C required may be different. (The possibility of using a variable capacitor seems well worth investigating .Ed.) Some surprising DX has been worked with the antenna, including three continents on 40 metres.

AWARD NEWS

QRP Master. PAoRBO is welcomed to the Worshipful Company.

QRP Countries. 100 S53MA (well done), 75 PAoRBO

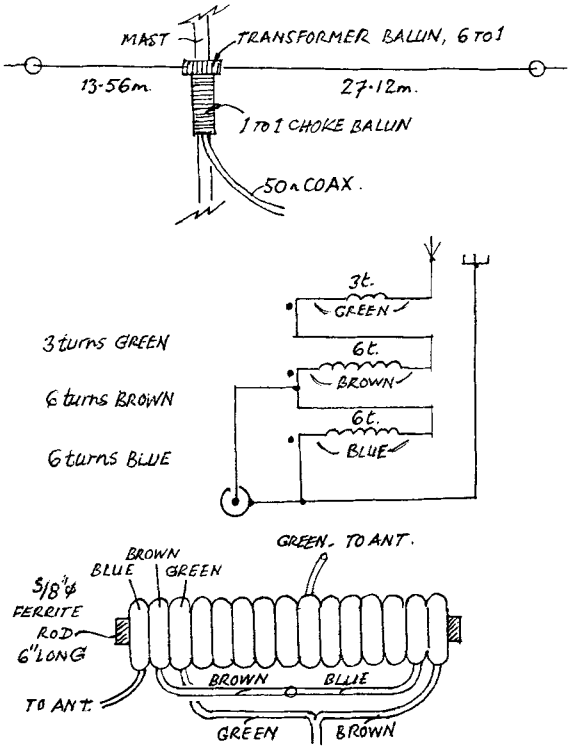
Worked G QRP Club. 1360 GM3OXX (no stopping him !),
520 G4NBI, 200 PAoRBO, 40, G4HOH,
20 ZL4sea (Nice work).

Two-way QRP. 30 PA0RBO, 10 ZL4SEA.

Working for Awards not only gives a great deal of pleasure but equally important it keeps up the activity on our precious QRP frequencies. How about trying it ; you will be very welcome.

THE GM3MXN MULTI-BAND WINDOM

T. Sorbie, GM3MXN, 7 High Pleasance, Larkhall, ML9 2HJ.



The antenna covers 80m-10m. SWR is less than 1.4-1 on all bands except 21 Mhz (3-1) and 10.1 Mhz (5-1). The transformer balun is wound on a 12 inch long ferrite rod (or 2 6 in. rods butted together) and the choke balun has a similar core. If both horizontal and vertical radiation is desired the choke balun can be omitted. The antenna can also be erected as an inverted V. It has proved to be a good all band co-ax fed antenna.

THE TALE OF AN ANCIENT SLOPER

AAA Technical Staff

Way back in the autumn of 1949 the problem was to provide a 7 MHz antenna , 66 feet long, for a rig located in an outhouse at the end of a 20 foot long yard behind a shop. Eventually it was decided to use a half wavelength of wire bent over and with the top attached to a rain gutter about 30 feet up. Part of the wire sloped down to the shack at an angle of about 45 degrees and the remainder hung vertically from the rain gutter. The output from the rig was under 10 watts. More in hope than anticipation some early morning DX work was tried, with amazing results. Despite QRO competition a number of Americans were worked as far west as Kansas, and also some Canadians. The big pay-off came on 4th October, 1949, when a CQ DX produced as S5 reply that turned out to be PY2AFS, at that time a rare one on 7MHz. The moral is plain- you never know what a simple antenna will do unless you keep on trying ! Incidently the whole antenna ran over concrete paving, in turn laid over a sand sub-soil.

COMMUNICATIONS AND CONTESTS

Peter Barville G3XJS, 40 Watchet Lane, Holmer Green, High Wycombe, Bucks HP15 6UG.
E-mail: g3xjs@gqrp.com

WARC Bands QRP Frequencies

Way back in SPRAT 90 and 91 I discussed the subject of preferred QRP frequencies for the WARC bands. Initial conclusions were that 18086kHz would be the best choice for 17m cw, but recent experience (and correspondence) now suggests that 18096kHz is more widely used and recognised. In order to fall in line with other QRP organisations, I think we should now 'adopt' 18096kHz as our 17m QRP cw meeting place. So, for 30m it is 10116, 17m is 18096 (18130 ssb) and 12m is 24906 (24950 ssb). **Winter Sports** is the *ideal* time to put these frequencies to good use!

QRP SSB Net?

Rowland, G4APO, has suggested the possibility of a regular (Sunday morning?) QRP ssb net for Club members. Choice of band might prove difficult as 40m is very busy on a Sunday, and 80m propagation tends to deteriorate during the morning. It sounds a very good idea to me, but what do you think?

Winter Sports

This long running event is the most important of them all, and surely the most fun! December 26th to January1st (inclusive), 24 hours each day, on all bands. What more could you ask for? It's not a contest (although the G4DQP Trophy goes to the most outstanding log), but is a much enjoyed opportunity over the festive season to meet up with friends (new, and not so new) on the air - with QRP, of course! Some prefer a ragchew on the LF bands, and others like looking for QRP activity from overseas. Some try and do it all, Hi. Whatever your particular pleasure, **Winter Sports** is the time to do it! Have FUN, and send me your logs by 1st February.

O QRP Contest

This year's winter event will be held between 1500z December 30th and 1500z 31st December 2001. Space considerations do not allow me to include details, but I can supply the information on receipt of an SSAE. Members often comment that it is a pity this popular Contest clashes with the G-QRP Club Winter Sports, but at least the bands will be busy with QRP activity!

17th Yeovil QRP Convention FunRun Rules

Monday 2nd April to Thursday 5th April 2001 (inclusive) 1900z to 2100z, on 3560kHz and 7030kHz (both +/- 10kHz). Bonus stations **GB2LOW** (from G3CQR) on 3558 and 7028 (both +/- 2kHz), **G0KZO** (Eva) on 3563 & 7023 (both +/- 2kHz), and **G3LHJ** (Derrick) on 3553 & 7033 (both +/- 2kHz) will operate each evening randomly for 1 hour on each band.

Call "CQ FR" - all stations may be worked once each evening on each band. Qso's with other QRP stations count 10 points, qso's with QRO stations count 5 points and qso's with any bonus station counts 25 points. Exchange rst/serial number/output power/name (your three figure serial number must start at a random number of your choice, but not less than 100, and must be incremented by 1 for each qso throughout the WHOLE contest). The 3 bonus stations will start at 001 (all leading zeros being sent).

Separate log sheets for each band (preferably in RSGB format), and signed RSGB style cover sheet stating rig, power output and aerial(s) used, should be sent to G3ICO George Davis, Broadview, East Lanes, Mudford, Yeovil BA21 5SP. George will also be pleased to supply full details via email (george@mudford.fsnet.co.uk) or telephone 01953 425 669. Certificates will be awarded to

the highest score for any three evenings on each band, and to the highest overall total score for any three evenings on both bands. A certificate will also be awarded to the station consistently using the lowest power, as well as one for the most comprehensive SWL report. Your comments and/or further information from George.

17th Yeovil QRP Convention

The Convention will be held on 22nd April 2001 at the Digby Hall, Sherborne, Dorset (the Convention Dinner is the previous evening). One of my favourite annual events, the Convention has a traditional of devising an intriguing Constructional Challenge. On this occasion, the Challenge is to construct the most sensitive Grid-Dip type oscillator (GDO) covering the frequency range 3 to 5 MHz, not using more than two discrete transistors. Each competitor will be required to demonstrate the greatest distance at which he/she can identify (to within +/- 100kHz) the frequency of our test resonant tuned circuit. The horizontal test coil will be centred 3cms above the working surface on which will be marked a 'Start Line', with a 25cms measuring strip between that and the beginning of the test coil winding. The frequency of the test tuned circuit will be reset to a different frequency for each test. In the event of a tie, the entry using the lowest component count will be the winner.

New EUCW Annual QRS Party

To encourage newcomers to Morse, and as a contribution to the activities of the European CW Association, the FISTS CW Club are inaugurating a new annual QRP event, to be called the **EUCW/FISTS QRS Party**. This will provide an opportunity for EUCW club members, and non members, to meet and exchange greetings with each other at a leisurely pace (and to make contacts qualifying for the prestigious Worked EUCW Award). Although not a contest in the normal sense of the word, there is a contest element for those who thrive on challenge, with awards for those who score the most points, and a merit award for "The Most Readable Morse Heard" (voted for by contestants). In other words, this is an event where taking part is more important than winning, giving an opportunity for the more experienced operators to put something back into the hobby by helping and encouraging those less experienced in CW operating.

The rules are rather lengthy to include here in full, but I will be happy to send full details to anybody who sends an SSAE, or via email. Alternatively, drop an email to "g4fai@connectfree.co.uk" and Tony will be happy to help. In brief, the event will be held (each year) from 0001z on the 4th Sunday in April, until 2359z on the following Saturday (Sunday 22nd to Saturday 28th April 2001). Use CW on the normal QRP frequencies (all bands except WARC) and call "CQ QRS/EUCW". **BUT** non QRP stations are requested not to call cq on the QRP frequencies. Any type of key or keyer may be used, but no keyboard sending (or pre-programmed messages from computers or keyers) are allowed. Maximum speed 14 wpm, but the speed of the qso must be at the speed of the slower station. Stations may be logged once each day per band.

Class A is for members of EUCW clubs (including G-QRP) using more than 5 watts output (10w input), Class B is for members of EUCW clubs using less than 5 watts, Class C is for non members of EUCW clubs (any power), and Class D is for shortwave listeners.

Classes A and B should exchange rst/qth/name/club/membership number, whilst Class C entries should exchange rst/qth/name/NM (ie not a member). Classes A/B/C score 1 point per qso with own country, 3 points per qso with other EU countries. Class D score 3 points for every completed logged qso. Logs should go to M0CLO, Keith Farthing, 86 Coldnailhurst Avenue, Braintree, CM7 5PY (keithm0clo@hotmail.com).

CZEBRIS 2001

I'm quite sure more of you could support this event, and send an entry, so put the dates in your

diaries now: 1600z Feb 23rd to 2359z Feb 25th. QRP cw only, on/around 3560, 7030, 14060, 21060 and 28060kHz. Power not to exceed 5 watts output (ie 10w input). Call "CQ QRP" and exchange rst/name/power. Stations may only be worked once per band, and only 2-way QRP qso's may be counted. Scoring is as follows:

Your location:	QSO with station in:			
	UK	OK/OM	Eu	Non Eu
UK	2	4	2	3
OK/OM	4	2	2	3
Eu	4	4	1	2
Non Eu	4	4	2	1

No multipliers, final score is total number of points scored.

Separate logs for each band showing (for each qso) date, time, callsign, exchange sent/received, and a summary sheet showing your name, callsign, claimed score for each band, and brief details of your station, should be sent by 17th April to G3XJS (UK entries). All other entries to OK1CZ P Doudera, U1 Baterie 1, 16200 Praha 6, Czech Republic. It would be good to see far more activity this time around, and plenty of support from our OK/OM colleagues.

Somerset Homebrew Contest

Tim Walford is once again kindly offering a first prize of a £50 voucher towards any current Walford Electronics product. This is one of the rare events which actively encourages the use of homebrew equipment, and (with the new rules) attracted quite a good entry last year, and so we have decided to keep the same rules this year. The Contest is open to all single operator QRP stations using homebrew equipment. Either the Tx or Rx (or both) must be home made, but not necessarily by you.

The Contest will be held 25th March 2001, between 0900z and 1200z (ie *not* clock time). Any mode is permitted (cross mode contacts are allowed) on 80m and 40m around the normal QRP frequencies. Any station may be claimed once per band. Call "CQ HBC Contest" (ssb), or "CQ HBC Test" cw. Exchange rst/SC serial/power (eg 579/SC132/2W). Your SC serial number must start with any random number of your choice, not less than 100, and increment by one throughout the Contest. Stations not in the Contest may send any serial (eg 001).

Each 2-way QRP qso scores 5 points, qso's with qro stations score 1 point. The final score is the total number of points (there are no multipliers), BUT deduct 25 points from your total if you did not build either the Tx or Rx yourself. Entries by 30th April to G3XJS, with log sheets showing times, stations worked, reports sent/received, and points claimed. Please supply details of equipment used, power and antenna(s), together with a declaration that your station was operated in accordance with the Contest rules. In the event of a tie, the winner will be drawn from a hat.

Y2K Contest

From comments I've received (in person, and over the air) this seems to have proved a popular event. I hope you have enjoyed taking part, but it comes to an end after 31st December. I am expecting to be inundated by your logs - by 31st January please.

My very best wishes for Christmas, and the New Year. The deadline for SPRAT 106 is the beginning of February, but in the meantime I hope to see you in **Winter Sports.**

72 de QRPeter

2001 QRP Calendar

1 Jan	Last Day of Winter Sports
1 Jan	0900-1200z AGCW Happy New Year Contest
6-7 Jan	1500-1500z AGCW Winter Contest
31 Jan	Last Day for Y2K Contest logs to G3XJS
1 Feb	Last Day for Winter Sports logs to G3XJS
3 Feb	1600-1900z AGCW HTP (Straight Key) Party
15 Feb	Last Day for Chelmsley logs to G3XJS
23-25 Feb	1500-2359z CZEBRIS 99
25 Mar	0900-1200z Somerset Homebrew Contest
2-5 Apr	1900-2100z each day Yeovil Fun Run
16 Apr	(every Easter Monday)
	1400-2000z Slovak Low Power Spring Sprint
17 Apr	Last Day for CZEBRIS logs to G3XJS and OK1CZ
22 Apr	Yeovil QRP Convention
17 Jun	IARU Region 1 International QRP Day Contest
7-8 Jul	1500-1500z Original QRP Contest
17 Jul	Last Day for International QRP Day logs to G3XJS
21-22 Jul	1500-1500z AGCW Summer Contest
27 Oct	ROCHDALE QRP CONVENTION (tbc)
18 Nov	HOT Party (DJ7ST)
26 Dec – 1 Jan	G-QRP WINTER SPORTS
29-30 Dec	1500-1500z Original QRP Contest

Please advise G3XJS of any errors, or omissions.

Radio-controlled Clocks

These clocks feature 24hr readout, offset to GMT with continuous seconds and date display.
Dual alarm with snooze facility.
Ideal for the shack or for Field day.
£14.95 each + £1 p&p any quantity.
Cheques payable to Martin Peters,
11 Filbert Drive, Reading. RG31 5DZ
Check into
http://freespace.virgin.net/martin.peters1 or SSAE for more details. Email - radio.clocks@virgin.net (G4EFE)

A New QRP Event

JUNCTION 28 QRP CONVENTION

(M1 Junction 28) SATURDAY 17th MARCH 2001

TheVillage Hall Community Centre, Market Street, South Normanton, Nr. Alfreton, Derbyshire. [5 mins from M1 Jn.28 and A38]

COMPONENTS - KITS - VINTAGE - SURPLUS - TRADE & CLUB STANDS
LECTURES BY LEADING AMATEUR RADIO PERSONALITIES
HOT & COLD FOOD & DRINKS - LICENCED BAR - FREE PARKING
TALK-IN:GBØLOW on S22 - OPENS 10am - ADMISSION ONLY £1
DETAILS: 01623-465443 or www.qsl.net/snadarc

THE FIFTH RED ROSE QRP FESTIVAL

is to be held on Sunday 3rd June, 2001, from 11am to 4pm at the Formby Hall, Alders St.[off High St.], Atherton, Manchester.
The aim is to promote interest in low power operating and home construction. The event is at a large spacious hall at ground level with Disabled Facilities and a large car park. Refreshments and Bar are available throughout the event. The stands will include lots of "junk" and radio parts and a large inexpensive Bring and Buy section. Details can be had from Les Jackson, G4HZJ, 1 Belvedere Ave, Atherton, Manchester, M46 9LQ. [01942-870634]

Don't Forget..... THE GQRP CLUB WINTER SPORTS
26th DEC - 1st JAN INCLUSIVE - ALL DAY - EVERYDAY
Call "CQ QRP" on the International QRP Calling Frequencies
CW: 1843, 3560, 7030, 10106, 14060, 21060, 28060 kHz. SSB: 3690, 7090, 14285, 21285, 28360 kHz

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100 1N4148 Signal Diode
75 1N4001 Rectifier Diode
50 1N4002 Rectifier Diode
50 1N4007 Rectifier Diode
30 1N5401 Rectifier Diode
5 W02 1.5A Bridge Rectifier
30 Ass. Zener Diodes 400 mw
5 7805s Voltage Reg. In. Tab
5 7812 Voltage Reg.
20 BC 182L NPN Transistor
20 BC212L PNP Transistor
20 BC327 PNP Transistor
20 BC337 NPN Transistor
20 BC547B NPN Transistor
20 BC557 PNP Transistor
20 BC548 NPN Transistor
20 BC558B PNP Transistor
20 BC639 NPN Transistor
20 BC640 PNP Transistor
20 Asstd. Above Transistors
4 741 OP.AMP
4 LM1458 Dual OP.AMP
4 LM324 Quad OP.AMP
2 TDA820M Audio AMP
10 4013 Dual Flip Flop
10 4049 Hex buFfer
8 555 Timer ICs.
25 4u7 25v Rad.Caps
25 l0uF 25v Rad.Caps
25 22uF 25v Rad.Caps
20 47uF l6v Rad.Caps
20 100 uF l6v Rad.Caps
15 220uF l6v Rad.Caps
10 PP3 Snaps High Quality
20 8 Pin DIL Sockets
15 14 Pin DIL Sockets
15 16 Pin DIL Sockets
1 28 Pin Zif Socket
4 Stripboard
(9 tracks x 25 holes)
5 3A 12 Way Connector Strip
100 100mm Cable Ties
10 Ins. Croc. Clips Red, Black
(Blue, Green, Yellow)

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250 gm. Ferric Chloride £1.99

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Mail order only.
P&P £1.45

7 Bakewell Road, Baslow, Derbyshire, DK45 1RE. Tel: 01246 583777
email: enquiries@bowood-electronics.co.uk

Corrected Copy of Handbook Entry:

SPRAT INDEX AND DATA SHEETS

Tony Fishpool,
G4WIF
38 James Road
Dartford
Kent, DA1 3NF

The SPRAT index is kept fully up to date and also includes details of errors in published articles. For U.K. orders, please send an A4 self addressed envelope with 72p stamps for first class delivery, 54p for second. Payment for the materials will be one additional first class stamp. For DX orders, send a self addressed envelope enclosing $4 (U.S.) dollar bills and we will pay the postage. The Index can also be downloaded free from the club website www.gqrp.com.

Tony can also supply a copy of any SPRAT article at a cost of 10p per article payable in small denomination (U.K.) postage stamps. Each U.K. order **must** include a large self addressed envelope with postage appropriate to the number of articles ordered. From **outside** the U.K. each order must include a large self addressed envelope. Payment to be in the form of two (U.S.) dollar bills per reprint and we will supply the postage. Regretfully, cheques, postal orders and IRC's cannot be accepted.

The list below gives the current availability of the Club Data Sheets. The cost per sheet is the same as for SPRAT reprints.

RECEIVERS
"DIREX" 40 / 20m DC Rx - G3RJV

QRP TRANSCEIVERS
The "SCD" complete transceiver - G3RJV

COMPONENTS
A guide to Capacitors - NA5N.
From George Dobbs G3RJV:-

- A Short Guide to Harmonic Filters for QRP Transmitter Output.
- Toko 10k inductors for hf band use.
- Quick and Easy Bandpass Filters for Receiver Input Tuning.

Tony also manages the club website (www.gqrp.com), and the Internet QRP discussion forum GQRP-L ~ see the club web pages for more details or email g4wif@gqrp.com.

Club Members Email Listing - www.hamfist.co.uk

As most will already be aware, for some years, I have kept a listing of Club members with email, on my website. Please note the new URL and my new email address

If you are not already on my listings, and wish to appear there, please mail me your Call-sign, Membership Number, First name, and email address. The information is listed by call-sign and by Club No. (two lists), which appear in the QRP section of my website. (Pse feel free to browse the rest of my site, all manner of stuff is hidden there!)
Brian Gibbs, G3MBN, Neston, Corsham, Wiltshire [brian@hamfist.co.uk]

NOVICE NEWS

Steve Ortmayer G4RAW
14 The Crescent, Hipperholme, Halifax. HX3 8NQ. Tel: 01422-203062
email: ortmayer@hotmail.com

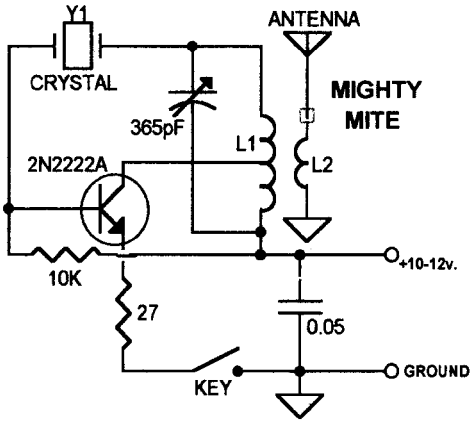
Ron 2EOAIS has sent details of the fun he has on 10m phone Ron uses a Ground plane antenna at 5m and has recently worked
IZ7DOK,US3I0G, UR6MX, UR7MF, 9K2ZZ, RV6LJY, 9H3V ,RN3ZQ, WAIJMP, JR4GPA, JHIKLN, SVICQN, VA3RTZ, SV3AQR, VA3SIY, JH7BZR
Well done Ron it shows what can be done with a simple set up.

Todd, WYSQ has sent details of "The Michigan Mighty Mite" by W3FQJ and KY8I
It is a one-transistor transmitter with the tank coil wound on a 35mm film can this saves the expense of a toroid!! I have tried it on 80m and it worked fine.

Transistor: 2N2222A, 2N3053 or similar
Use a heat sink – a crocodile clip works

Tank Coil:
1.25in – 35mm film canister or similar
20 – 22 AWG enamelled wire.
Wind L1, form loop and twist for tapping point. Complete winding, wrap in masking tape and add L2 over the centre of L1.

Crystal – Fundamental type
The variable capacitor may be salvaged from an old AM Radio



L1 Primary / Collector			L2 Sec./ Antenna
160m	60 turns	Tap at 20 turns	8 turn link
80m	45 turns	Tap at 15 turns	6 turn link
40m	21 turns	Tap at 7 turns	4 turn link
30m	15 turns	Tap at 6 turns	4 turn link

NOTE: Please use a low-pass filter or additional harmonic filtering before the antenna to comply with UK emission rules [Editor]

SSB COLUMN : Dick Pascoe GØBPS

Seaview House, Crete Road East, Folkestone. CT18 7EG. Tel: 01303 891106
Email : Dick@bps.demon.co.uk. via packet to GB7RMS

A letter from Mick M5AED arrived with details of his ventures onto SSB, having been licensed in October 1999 he has only used SSB with an output power of 4 - 7 watts. With his Alinco DX70TH driven by an EMS-14 Microphone as he has a quiet voice. The antenna is a dipole cut for 40m fed with 300Ω slotted ribbon which tunes up nicely from 7 - 28 MHz he Writes. Not set in the optimal position it is bent into a horizontal 'V' shape and a massive 4m off the ground. UK contacts include G0NSL, G0GPO, and G4KEE who are often on the band. Further afield contacts include KL7RA, VE3EJ, VY2SS HI9/DK8YY, D44BS, 3V8BB, TF3HP and JH8BOE. A very impressive selection of rare countries. Well done.

Jack GM0RWU is often on the bands with SSB as he email reports. Usually on during the weekend daytime with 750mW on 80m or 5W on 40m. The rig on 80m is the Epiphyte, which is hard work but gets out to the UK and into GI. He favourite band is 17m and with the exception of VK/ZL has worked all continents.

Paul M0CDP is considering QRP SSB and wonders what single band rig to build next. His current project is almost complete and he wants the soldering iron to stay hot! His current thoughts are towards a 'Small Wonder White Mountain ' rig. Brian G0UKB recommends the K2 rather than go for a single band rig. His DXCC with the rig using 132ft Windom at 25ft and a Cushcraft R7 are obviously doing well.

It was nice to see so many old friends at the convention in October. Thanks for all that stopped by and shared a few minutes with me. Another huge success for the club.

That's it for this time. Please let me have your news and views on SSB matters to me via Email or postal mail – as above.

MEMBERS' NEWS

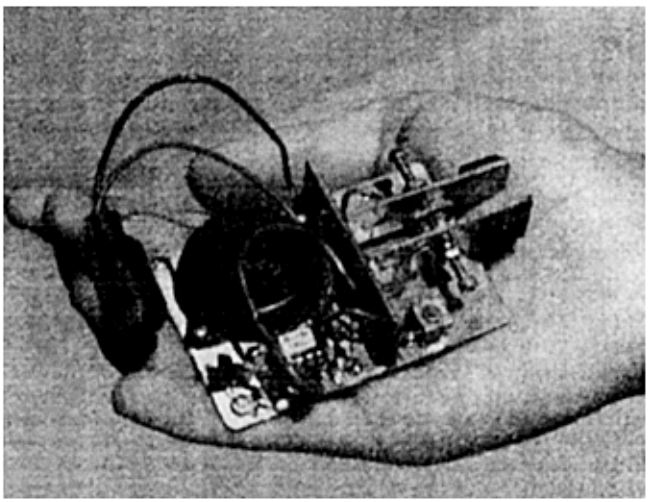
by Chris Page G4BUE

Highcroft Farmhouse, Gay Street,
Pulborough, West Sussex RH20 2HJ.
Tel: 01798 815711 Fax: 01798 813054
E-mail: g4bue@thersgb.net
Packet: GB7DXS on UK DX PacketCluster

Are you a keen homebrewer? We start this column with some information about homebrewing. I hope you find it useful and please let me know about any similar information that you discover to share with Club members through this column.

K3TKS mentions the *QRP Homebrewer*, the 60 page Journal of the New Jersey QRP Club with the NoGaWatt (North Georgia QRP Club) SWR / wattmeter by **W3IRZ** on the front cover of the Spring 2000 edition. Danny says it appears to be a Stockton Bridge but the two things he likes about it is the circuit board construction (surface mounted wire lead components) and the PCB 'NJ style enclosure'. He also mentions a crystal checker design on page 48 of the same edition which uses a Pomona box with a PCB lid, and that the first 25 pages deal with antennas and construction tips (including articles by **W4RNL** and **N2CX**). US members can subscribe for $15, and DX members for $20, to George Heron, **N2APB**, 2419 Feather Mae Court. Forest Hill, MD 21050, USA, e-mail <n2apb@amsat.org>.

Elecraft have just announced the release of the KAT1 internal automatic ATU for the K1. They say "It takes less than an evening to complete, tunes 80-10m (slightly reduced range on 80m), latching relays for low power consumption, similar tuning algorithms to the K2's KAT2 ATU, built in SWR / FWD / REV watt meter, uses K1's display, runs random wires and other unbalanced loads (coax fed dipoles, beams etc.), tunes balanced loads with an external balun, built in tuning memories for each band, no-wires construction, plugs into the K1's filter board, lowest cost ATU on the market at $89". For pictures of the KAT1 and the KAT1 installed inside the K1, see <http://www.ele craft.com/K1/kat1.htm>.

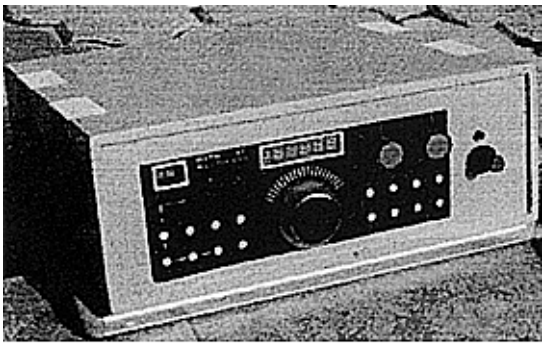


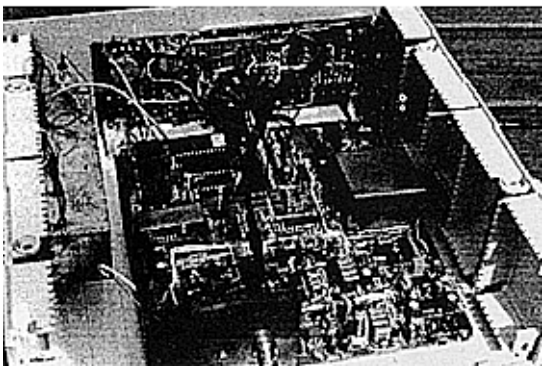
The Fort Smith QRP Group's P-TiCK paddle and keyer.

Still on the subject of homebrewing, Richard's, **KI6SN**, QRP column in the November 2000 issue of *World Radio* describes the Fort Smith QRP Group's P-TiCK, which is small combined and keyer and paddle. The Group offer it as a kit for just $10 (plus postage of $2 in USA and $4 for DX) and the proceeds of sales help to finance a QRP forum held annually at ArkieCon. The P-TiCK is put together in two stages; first the paddle, then the electronic keyer, which is based on the classic TiCK-1, the remarkably simple

and extremely popular electronic keyer that put Rochester, New York based Embedded Research on the map.

There is an eight page manual with the kit containing step by step instructions and Manhattan style construction techniques are used to surface mount the TiCK-1k keyer to the main frame. Richard says, "If you've never built a QRP station accessory before, the P-TiCK is a perfect entré. You'll not only get a primer in electronic home-brewing, but also in physical construction techniques that have become so popular with the enclosure kits accompanying such units as NorCals's BLT ATU, the NJ-QRP Club SOP receiver and the NorCal SMK-1 transceiver. The same basic techniques for soldering kit housings apply when building the P-TiCK iambic paddle". More information and orders can be made to Jay Bromley, **W5JAY**, 9505 Bryn Mawr Circle, Fort Smith, AR 72908, USA.





PA3ADJ's beautiful homebrew digital transceiver designed by SP3ABG, and which Stefan used when he was QRV as SO4ADJ/P.

N4UY was QRV from the beach at Corolla, NC (FM26) in August with his GM-20, deck mounted dipole for 20m and kite supported ¾ wave doublet for 20m. On 29 October, Jake made his one thousandth QSO of the year from his QTH in the Washington DC suburbs with **FY/DL5CF**, (**N4BP**, using his new Elecraft K1 transceiver, was number 999), and 926 of them were made using QRP. The QRP total included 613 DX QSOs with 113 DXCC and 19 DXCC with two-way QRP. Ten metres was Jake's favourite band (370 QSOs) followed by 20 metres (117 QSOs) and 15 metres (QSOs) and most were made on his attic fan-wire dipole antenna. **EA8QJ** was testing a beacon from locator IL18UL on 20m (14065kHz) at the beginning of September. Juan was using one watt from a HW9 to a vertical antenna (Fritzel four bander) and a Kempro memory keyer and was welcoming reports (<jalopezd@ arrakis.es>). **G3HKO** planned to be QRV as **LX/G3HKO** on 14 September using 500mW on 80, 40 and 20m.

Congratulations to **G3XJS** on QSOing VKØMM on 20m on 20 September using 3W from his K2 and two element tri-bander. Peter then had QSOs with **GM4ZQJ** and **G4EZF** on 40m on his way to work with 3W from his IC-706 into a Pro-Am whip on the back of the car. Mobile CW is a new venture for Peter and he says, "I thought it would perhaps be more tricky than it is actually proving to be. Reports have been amazingly good, but today was the first opportunity I had had to try mobile QRP/QRP on 7030kHz. So, look out for me **G3XJS/M** on 40m CW". **GØTAK**, <g0tak@netnow.uk.com> or <g0tak@thersgb.net>, uses a variety of homebrew QRP equipment, an IC-202 for VHF and an Index QRP Plus for HF. Roy has modified the Index to enable him to send CW on it from his PC but says "it will never replace real CW!". He is also experimenting with PSK using 1.5W from the Index and asks if any other member have tried PSK with the Index?

WB3AAL worked Europe with 950mW on 10m on 3 November. **DL2BQD** was QRV this summer with one watt on 20m with his SST and FD4 antenna at 30 feet. Dieter says his FD4, wife and himself have a combined age of 100 years and their son is **DL4NSE**. **WA2EUJ/KC4** is QRV from the Antarctic with an Elecraft K2 (sometimes driving an Icom 2KI amplifier), and checks 10140, 14040, 18100 and 21040kHz around 0600z. **G4EHT** recently visited his son Dez, **GØDEZ**, in Cyprus and was QRV as **5B4/G4EHT**. Bill says, "I had the pleasure of being at the receiving end of some large pile-ups with 5W and had some excellent two-way QRP contacts with Club members". His best QRP DX was ZL and he hopes to be QRV from Cyprus again.

G3ICO reports the date of the 2001 Fun Run Contest at the Yeovil QRP Convention (Digby Hall, Sherbourne), will be 2 to 5 April. **GØUKB**, <bejones@hursley.ibm.com> make their own Christmas crackers and while looking in a novelty store for tiny toys as inserts, Brian found some miniature slinkies (springs which children play with descending stairs), just over an inch in diameter and cost only 50p. He says " when stretched out there is a good five metres of spring I'd guess. I am going to make a 10m dipole a little short and add a spring to each end and expand the springs to pre-arranged lengths to get a dipole resonant on 10, 12, 15, 17 or 20m. It should make a neat single band inverted vee on one of those 20 feet fishing poles. Can anyone see a problem with having such a relatively large inductive load on the end of a dipole?". The slinkies are available from Hawkins Bazaar and on the Internet at <www.hawkin.co.uk> (go into the catalogue and search for Mini Slinker). In the USA, bigger Slinkies (two inches diameter) have been available from stores like Kaymart and Wallmart for sometime and have been used by LF DXers for making short Beverages for listening on 160m, called a Slinky Antenna. They join several Slinkies together to obtain the correct length of wire for a Beverage without it taking up the full length over the ground. Has anyone in the USA tried slinkies for making short dipoles as Brian suggests?

DL2BQD spent two weeks in Cumbria this summer after visiting Hull and meeting Richard, **GØOII**. Dieter was QRV with his 20m SST20 with one watt and made contacts with members, including **OHØ/DJ7ST** and **RW3AI**, and a UA9 for his best DX. The photograph below shows a DL electric socket that Dieter soldered to a UK electric

socket for use in Cumbria and so his XYL "can use her hair dryer at the same time as I am on the air!". The photograph also shows he is a reader of *Practical Wireless*! Dieter says the landlady at High Wray Farm (Loc: IO84 and WAB: NY30) is very friendly and pro-amateur radio and allowed him to fix his 10 metre mast to her gate. She will be pleased to entertain other radio amateurs who may like to holiday and operate from this lovely part of the UK. More information about the farm is available on the Internet at <www.highwrayfarm.co.uk> and the area generally at <www.lakelandcam.co.uk>.

June (who is now **MØBUE**) and I wish you all a very Happy Christmas and a healthy New Year. Let me know how your winter goes, by 20 February 2001 please.

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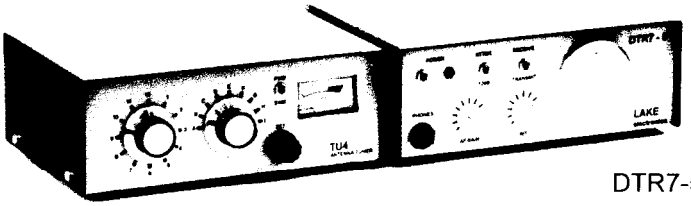

TU4

The **"DTR" series of Single Band CW Transceivers,** all of similar basic specification, now come in three versions :

DTR3-5 (80m) DTR7-5 (40m) DTR10-5 (30m)

All feature : Internal power adjustment, 25mW (or less) to 7W (or more)
Low-pass output filter : better than -50dB harmonic attenuation.
Receive (DC) sensitivity < 1μV MDS, selectivity about 250Hz @ -6dB.
Stable VFO covers 100kHz up from the lower band edge.
Receive attenuator 12dB, RIT ±4kHz
Power requirement - 1A (key down) at 12 - 14 Vdc

(For a completely independent assessment and an objective comparison with other QRP rigs, see Peter Hart's review in October 1995 RADCOM)

Kit price, including ALL components AND hardware **£97.80 plus £4.00 postage**
These kits can be specially built to order for £172.00, inclusive.

TU4 Antenna Tuner

Frequency range 1.5 - 30MHz
Power rating 80 watts (CW)
Very sensitive SWR meter - less than 1/2 watt for full scale reading.
SO239 for co-ax, terminals for end fed wire and balanced feeder.
4:1 balun included.

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Ready Built - £88.00 plus £4.00 pp.

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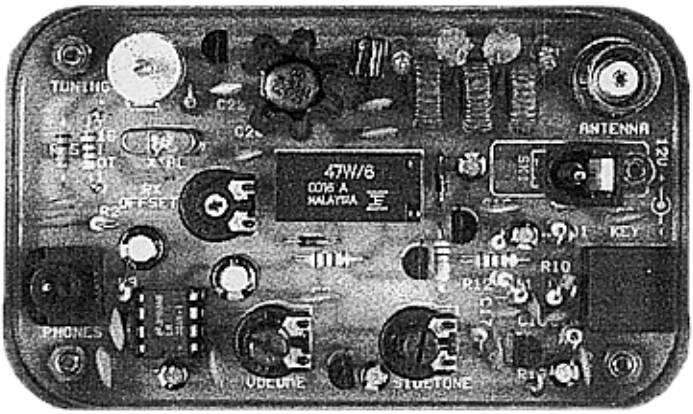
KANGA PRODUCTS

NEW! The FOXX-3 Mini-Transceiver

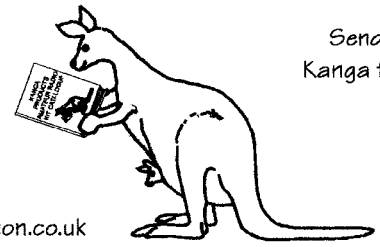


With sidetone, low-pass filter, changeover relay, crystal, key and connectors - and it fits inside an Altoids tin!

80, 40 and 20m Price £21.95, 30m price £23.95

Plus shipping £2 (UK), £3 (Europe), £5 (DX)

See us at the new South Normanton and District QRP Convention on 17th March 2001. Details from Duncan Walters G4DFV.



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