SPRAT

THE JOURNAL OF THE G-QRP CLUB

DEVOTED·TO·LOW·POWER·COMMUNICATION

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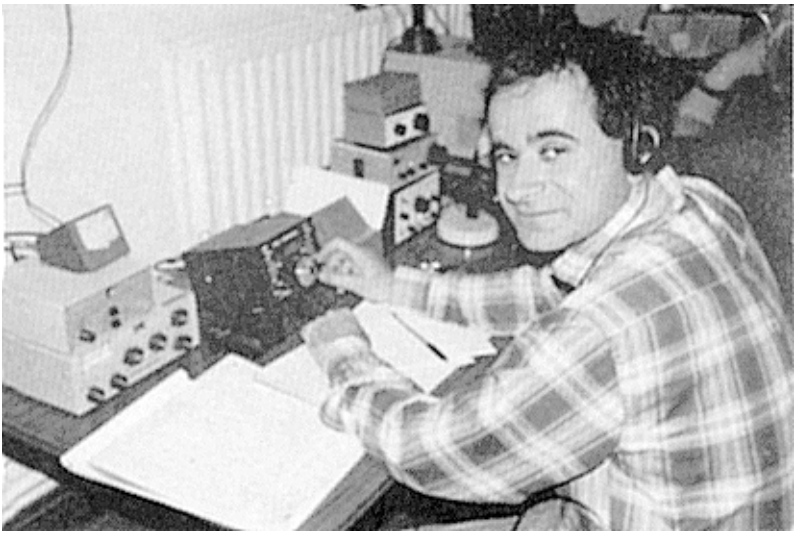

Bob Ross WA2MFI Operates EI3RJV

During the International QRP Week in Dublin

A QRP PLUS running into an experimental Memory ATU from Hands Electronics (above the TenTec Tuner)

RIT CIRCUIT - POPPET AM 160m TX - CMOS KEYER - POLARITY PROTECTION
SINGLE COIL Z-MATCH - DIGIRIG TRANSCEIVER - SILVER TERN REVISITED
BNC TO PL259 - NICAD CHARGING FROM CAR - BITE FOR THE SPIRIT
PYTHAGORAS KITE - SMD TECHNOLOGY - SLAVAKIAN INTERLUDE
ACTIVE RECEIVE ANTENNA - MATCHING W3NQN FILTERS - CLASS A AMP
KISS SPECH PROCESSOR - RECEIVER MUTING - LM386 HINTS
THE NEW QRP CLUB OF IRELAND - CLUB ACCOUNTS
COMMUNICATIONS & CONTESTS - SOMERSET CONTEST - A-A-A
NOVICE NEWS - SSB NEWS - MEMBERS NEWS

SERVING QRP FOR OVER TWENTY YEARS

JOURNAL OF THE G QRP CLUB

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Rev. George Dobbs G3RJV

EDITORIAL :

I know from when I am now writing that this issue of SPRAT may appear a little late. I apologise for the wait mainly due to attending the QRP Week in Dublin followed by a very heavy work load on my return. It does highlight that fact that all functions of the G QRP Club are done by members and officers in their own spare time. May I ask members to be patient when dealing with club officers and services - a lot of people give a lot of their own time. It is very helpful if members target the right person in their mail. About a third of my 50 or so letters per week should have gone to someone else ! There is a guide in the Member's Handbook, included with this issue, to show who deals with what. Queries about SPRAT items are best sent to the author at the address on the article. It also helps to include your club number and a return address on all correspondence.

My very enjoyable time is Dublin was completed by the formation of the QRP Club of Ireland to whom we wish every success. See elsewhere in this issue about the club and how to join. The excellence of the venue for this event, linked with the pleasure of Dublin and Ireland, suggest that a similar event may be run again, so keep watching for details.

Note that this issue concentrates on smaller, simpler, circuits and ideas. The last few issues have contained some major projects but we do not want to detract from the idea that SPRAT is a good source of ideas for the "weekend type" projects. Your ideas are always welcome - however simple. The real classics of SPRAT have been the simpler projects like the ONER, the Sudden etc. Please keep them coming in.....

G3RJV

EDITED BY GEORGE DOBBS G3RJV ARTWORK BY A.W. (MAC) McNEILL G3FCK
PRINTED BY SHOREHAM COPY, 3 JOHN STREET, SHOREHAM-BY-SEA. SUSSEX

AN RIT CIRCUIT

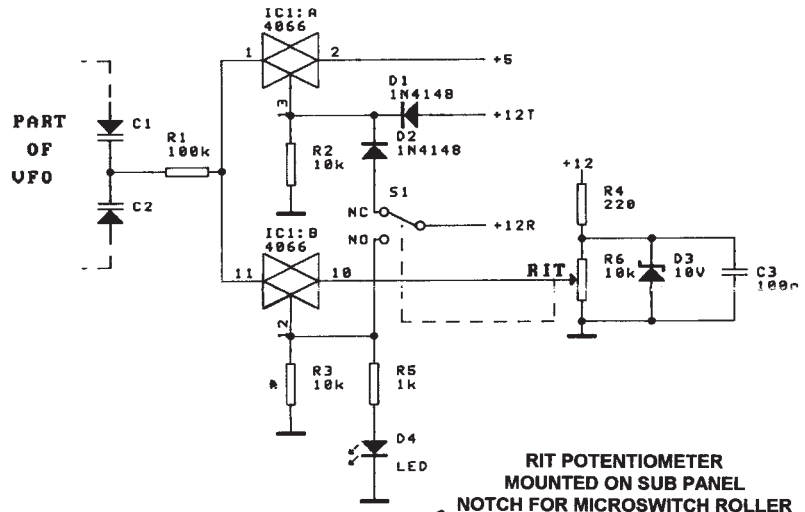
Tony Langton, GM4HTU, 71, Gray St. ABERDEEN. Scotland, AB1 6JD.

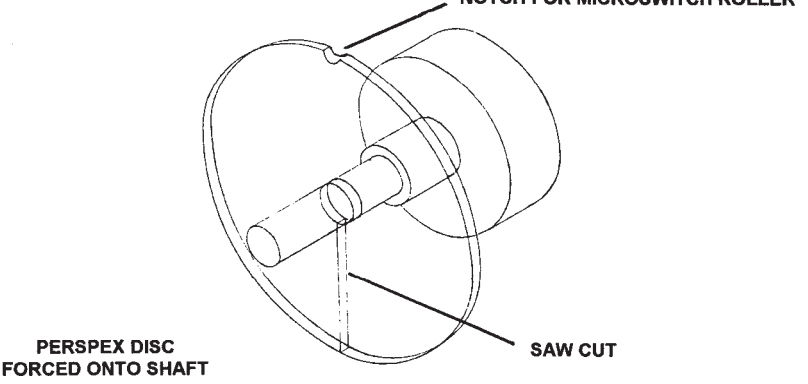
A recent advertisement for a Japanese transceiver boasted that it has 76 controls. I have been trying to go in the other direction. A tuning control is essential, and I grudgingly accept the need for a volume control, although the AGC takes care of most of the level changes. Receive Incremental Tuning, RIT, is useful, but I did not want (or have room for) a switch and a knob, so I combined them both.

The on/off switch is a microswitch, operated by a cam on the pot shaft. When the pot is rotated either way from the centre position the switch closes. On receive this enables the RIT, switching the VFO varicaps away from a fixed +5V to a variable voltage. On transmit the switch is overridden by the +12T line, so RIT has no effect.

I made the cam from a disc of 3mm Perspex, although it does not have to be insulated. It is drilled to be a tight fit on the shaft and a radial cut from edge to centre gives it a bit of spring. A half round notch is filed into the circumference to match the roller on the microswitch actuating arm. The switch position is adjusted so that it closes when the pot is just moved off centre. The disc is positioned on the shaft so that the pot gives +5V when the switch is off.

This provides a slight detent in the off position, a small but satisfying click when the control is rotated, and there is just room for a LED to show when the circuit is on.





THE POPPET QRPp AM TOP BAND TRANSMITTER

Gibson, G4RGN, Marlow, Westwell Lane, ASHFORD. Kent. TN26 1JA

Top Band AM nets are becoming very popular again, with many of us using AT5s, Chatterboxes, and inserted-carrier transmitters, running 8 watts or so, mostly on a very local basis.

It occurred to me that this amount of power is quite unnecessary for cross-town local nets, and after some low-power experiments, the "Nipper" was constructed.

The circuit is extremely small, cheap, (about a fiver!) and simple to make. There is no modulation transformer to wind, and no variable capacitor.

The RF output is about half a watt for a total consumption of about 100 mA at 12 volts.

Unlike some transformerless designs, it produces good "upward" modulation: the trick is in obtaining the PA collector voltage by DC coupling from the modulator IC output, which swings positive and negative from a 6-volt mid-point.

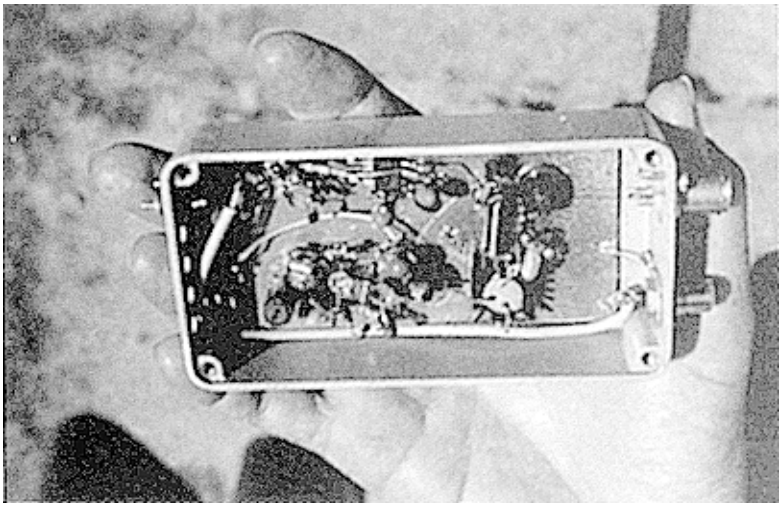
The oscillator is preset by L1 core ; most local nets have their own "permanent" frequency, and this saves the bulk and complication of a tuning system.

The coupling transformer is a half inch ferrite binocular with 12 turns primary and 2 turns secondary of 15mm wire.

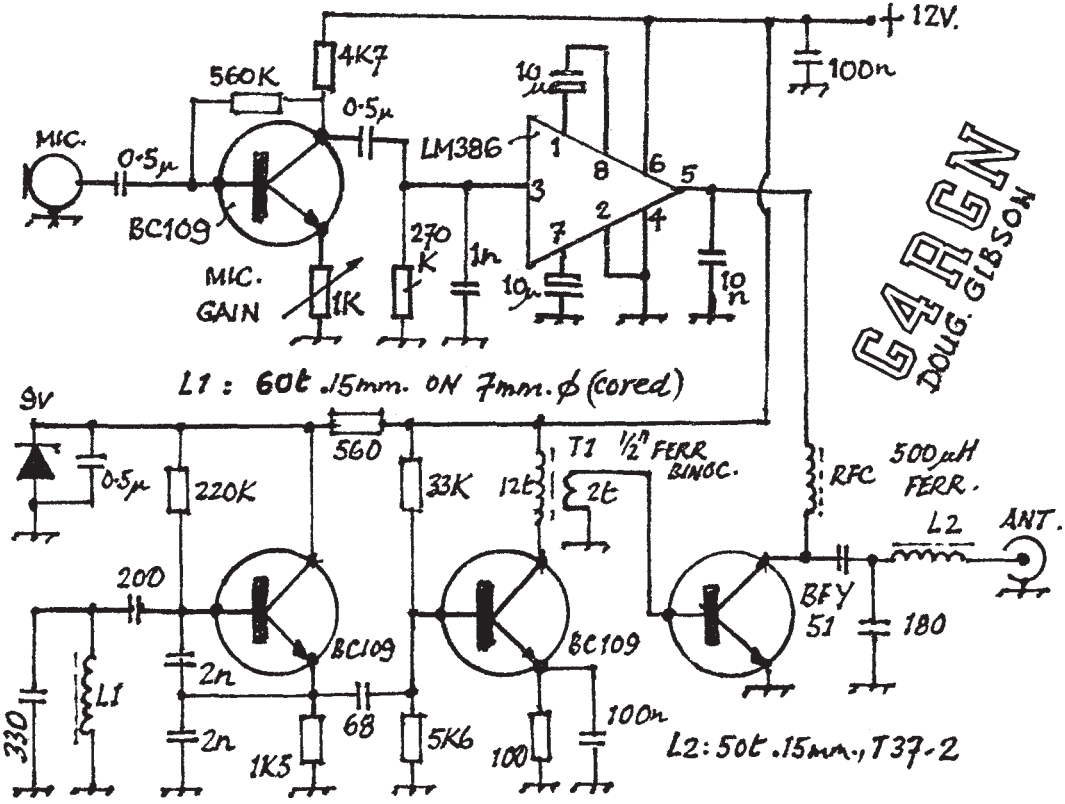
The prototype has been made ugly-fashion with the modulator chip stuck upside-down to the copper board for heatsinking, but a PCB would make a neater job.

To obtain a good stable output, some care is needed in tuning your ATU for a good VSWR, but not harm has come to the PA from mistuning.

The microphone used is a cheap CB type, but surprisingly good audio reports have been received from local stations.



THE POPPET QRPp 160m AM TRANSMITTER



A MORSE KEYER IN CMOS

Richard Hanes, G0RPH, 22 Lady Frances Dr. Market Rasen, Lincs. LN8 3JJ

A simple, low cost keyer with excellent timing characteristics, dot and dash storage, low power consumption, built-in sidetone and automatic powerdown. ***CLUB PCBs ARE AVAILABLE***

This circuit originated from a need for a keyer to try an experimental paddle arrangement. I wanted a circuit that was not too complicated but that would offer accurate timing of dots and dashes without the distortion of first element that is a feature of some of the simpler circuits. It is a development of one published in the RadCom Handbook and attributed to F3RUZ. The original met the basic requirements, and offered correct timing of spaces between dots and dashes as well, but was designed some years ago around TTL and was therefore not ideal for battery powering.

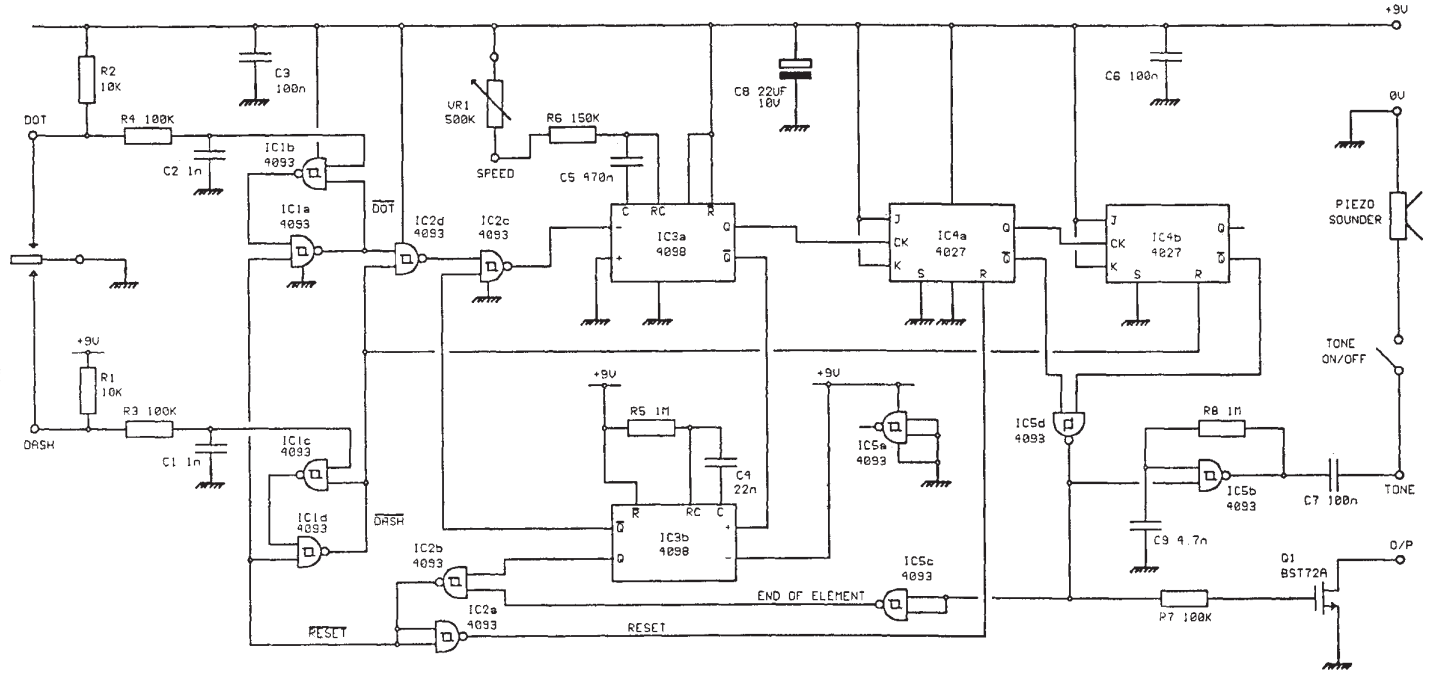
The development has comprised modifications to use CMOS ICs from the 4000 series which offer the advantages of much lower power consumption, low cost and tolerance of the changing voltage on the supply battery through its life. By careful design it has been possible to eliminate the need for an on/off switch. This is a major benefit at the RPH station where batteries regularly run flat when not watched! With typical sending the prototype draws a current of 1mA most of which is due to the key bias resistors. During receive or idle periods, the current is negligible. There is an internal sidetone generator and sounder but as this is designed using piezo effects it only contributes about 100uA of battery drain.

The circuit functions as follows; The incoming dot or dash is stored in the bistables formed by IC1. IC2c&d provide a trigger signal for the following monostable IC3a when a dot or a dash is requested by IC1. The time period of the monostable is controlled by C5 and VR1/R6 so that VR1 forms the speed control. With the values given a speed range of about 8 to 31 words per minute is obtained but the values can be adjusted if other ranges are required. At the time-out of IC3a, IC3b is triggered and provides a short reset pulse, inhibiting IC3a (via IC2c) from being retriggered during the reset period and also setting the conditions for retrigger immediately on completion of the reset period if the end-of-element (dot or dash as appropriate) signal has not reached IC2b. When the dash as appropriate) signal has not reached IC2b. When the end-of-element signal arrives, the IC1 bistables and IC4a are re reset and the circuit then awaits the next input from the paddle. IC3 completes a full cycle from the appearance of the end-of-element signal to the end of generation of the reset signal, this gives the correct spacing between elements.

IC4a and IC4b form a pair of binary counter stages that provide the dot (count 1) or the dash (count 3) division of the oscillator IC3a/b. The outputs of the counter are gated into a single signal element by IC5d and, if a dot is required, the counter is prevented from advancing to the count of 2 condition as the output of IC1d holds IC4b in the reset condition.

The output of IC5d is the required dot or dash and this is fed to the MOSFET Q1 used as the keying device. This MOSFET is adequate to key most rigs with a positive keying voltage. It will handle 50v and 200mA with ease. If your rig is relay-keyed internally then make sure that the relay has a parallel diode on its coil or the MOSFET will be destroyed by the back emf. A 47V zener between drain and source of Q1 (cathode to drain) would be a wise precaution if you are not sure. If your rig has a negative keying requirement then you could use a P-channel J-FET here but you will need to invert its drive using the spare gate of IC5,

IC5b forms a sidetone generator which is keyed by the dot or dash and drives the sounder. The values of RB and C9 may be adjusted to suit your tone preferences, however most of the piezo sounders are very inefficient at frequencies much below 1KHz.



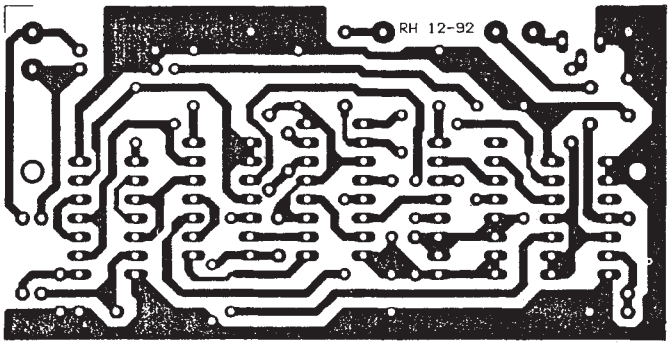
MORSE KEYER IN CMOS

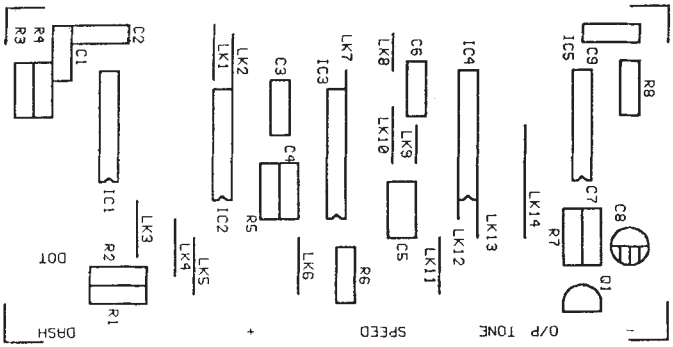
GORPH - 6967

The PCB layout is straightforward on single-sided board which is designed to fit in the Maplin box type PX-2. It will be necessary to file the corners off the PCB at one end in order to clear the screw pillars of this box it you wish to fit the battery in the same box, as I did. In order to obtain a single sided board there are a number of tinned copper wire links and some of these are under the integrated circuits. You will need to take care to fit these links before the ICs and to use a suitable fine wire (0.6mm fits OK). I don't use IC holders on my projects but if you prefer them, you will need to fit the links with sleeving on the back of the board, as most holders I have seen do not have clearance under them for the wire.

The power source is the ubiquitous PP3 type battery. I have found the alkaline type less prone to leakage (although not necessary from the current point of view). The extra cost is insurance against damaged components. The original has been in use for over two years, so I don't know how long it will last!

One final refinement worth considering (especially as it does not affect the PCB layout is the use of a 12-way switch with fixed resistors for VR1. There is room for this in the box specified, and it enables quick resetting to a favourite speed. The prototype has a calibrated scale which I find adequate.





CLUB PRINTED CIRCUIT BOARD OFFER

Printed Circuit Boards for this project are available to members for £3.00 plus 50p postage & packing (Cheques : G QRP CLUB) from: Ian Wye GØOKY, New House, Hook Road.. Amcotts, Nr. Scunthorpe. DN17 4AZ

A KIT OF PARTS is available from JAB ELECTRONIC COMPONENTS, Industrial Estate. Rear of 1180 Aldridge Road, Great Barr, Birmingham. B44 8PB. Tel : 0121 - 366 - 6928

HIGH EFFICIENCY REVERSE POLARITY PROTECTOR

Laurence Fletcher, G4SXH, 4 Manor Rd. Barton Le Clay, MK45 4NP

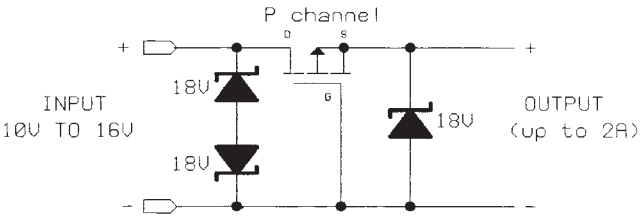
After reading PA3BHK's item in SPRAT 83 I thought it was worth sharing this circuit. It offers the best of both worlds in that it has a low volts drop and virtually zero operating current.

When a supply with the correct polarity is applied the MOSFET is switched on giving a low resistance between the drain and source. If the supply is reversed then there will be no gate-source bias and the MOSFET will be switched off. The parasitic diode between the drain and source will be reverse biased.

The volts drop across the circuit is dependant on the on-resistance of the MOSFET used. Suitable devices along with their maximum on-resistances are listed below.

Device	Ron (max.)
BUZ171	0.40Ω
RFP8P05	0.30Ω
RFP15P05	0.15Ω

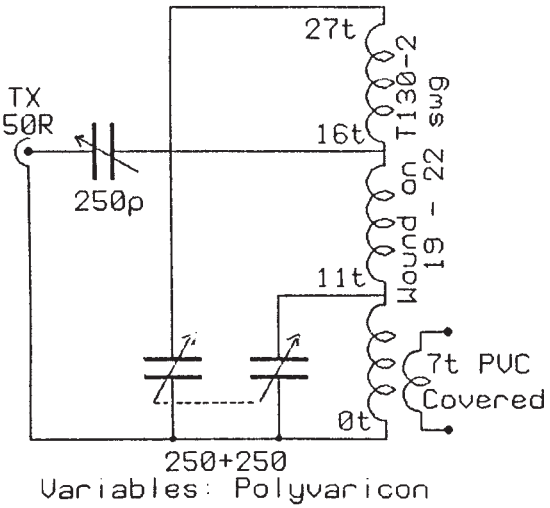
The voltage drop Increases linearly with load current up until the drain-source diode becomes forward biased at around 0.8V.
The zener diodes protect the MOSFET from damage due to electrostatic discharge.



A SINGLE COIL Z-MATCH ATU FOR 80-15M

F.G. Stewart Sims G3WQW
71 Lambley Lane, Burton Joyce, Nottingham. NG14 5BL

This ATU is intended for QRP up to a maximum power of 15 watts, being fully balanced it works well with 300Ω slotted feeder.
250pF "Polyvaricon" miniature variable capacitors available from J. Birkett, Lincoln, at 50p each + £1.00 postage,
T130-2 toroids, Cirkit at 98p each
Winding wire, 1mm (19swg) to 71mm (22swg) enamelled, try local "Elec. Motor Repairs" in Yellow Pages.



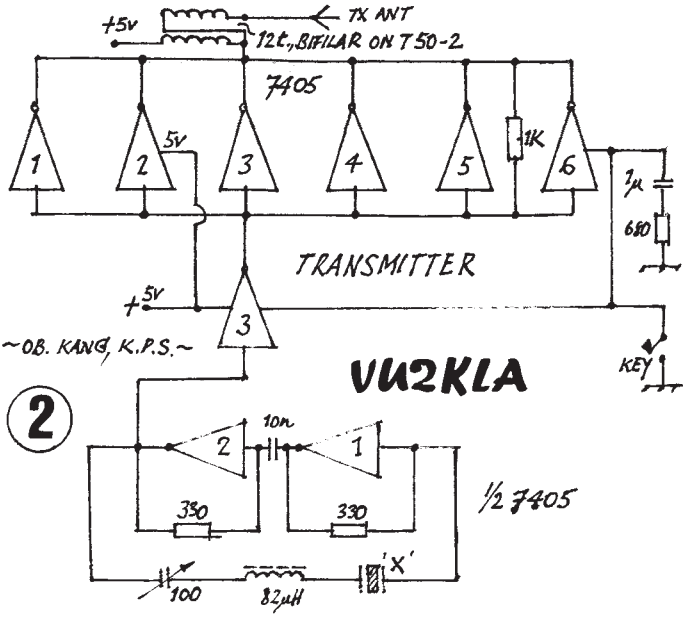
THE DIGIRIG 7MHz TRANSCEIVER

K.P.S . KANG, VU2KLA, 301/2 NANDI COLONY, KHANNA 141401. PUNJAB. (NORTH) INDIA.

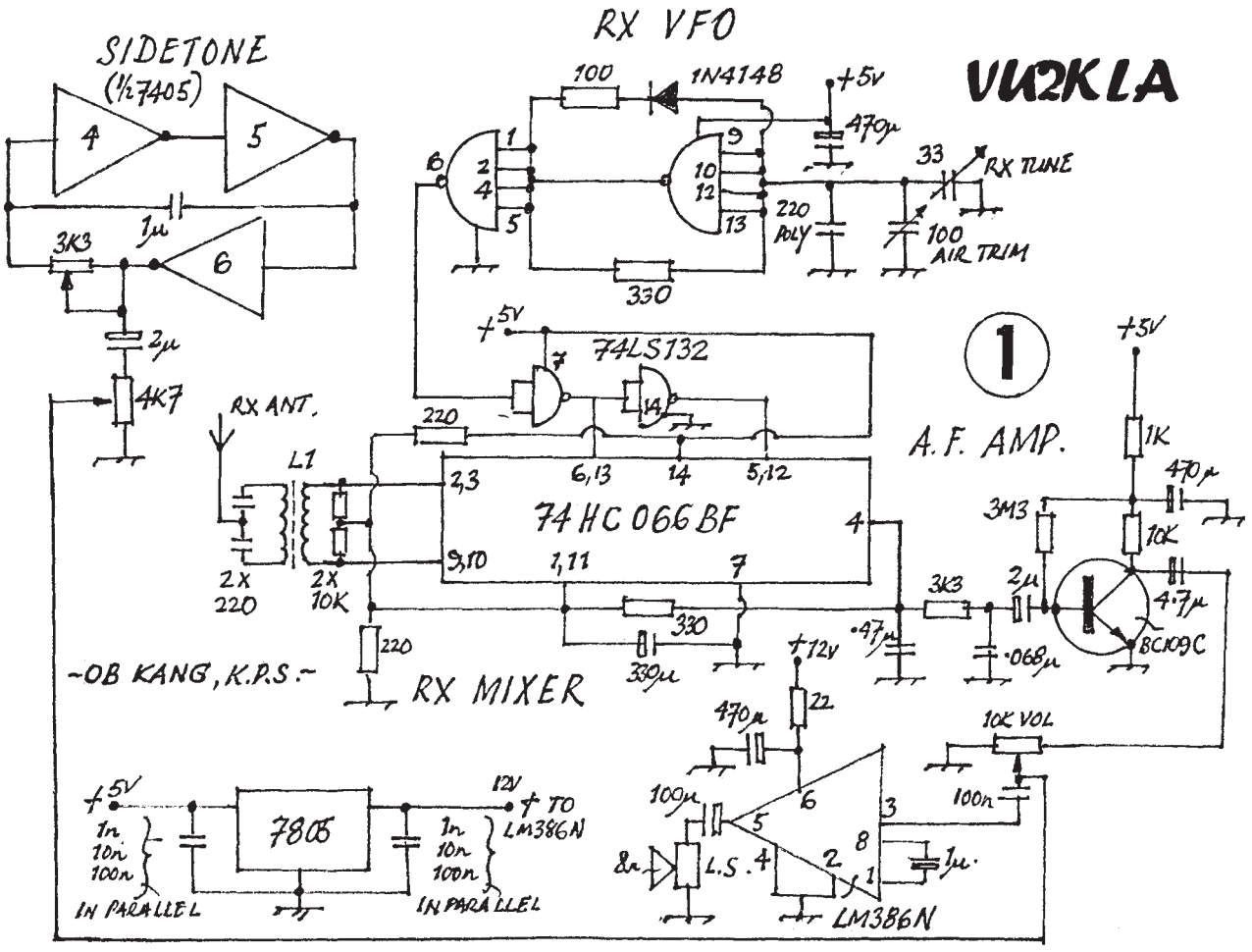
The rig came into existence when I saw an idea to use 74HC4066 as a mixer in Sprat 57 by DJ1ZB. I had been trying SD5000 Series (DMOS Chips) for the purpose but 74HC4066 is a considerably cheaper alternative maintaining a good input intercept. The 74HC4066 is a switching IC wired as a ring type balanced mixer.

A VFO was designed using digital chips to make the receiver VFO controlled with go anywhere convenience. The RX is tolerably dynamic with good sensitivity. Two Hex inverter chips 7405 (open collector output) are used to wire TX VXO and TX PA as well performing for side tone. The transmitter puts out about 1 watt.

The rig is all digital except the audio amplifier and I'm trying to put a good digital design in here too. DX contacts are surprising here my shack on this simple set up. Complete transceiver is build on a single PCB especially etched for this rig and housed in an enclosure. I could hear 0.3mV in the RX from my Marconi test set 2955A at tolerably listening strength.



THE DIGIRIG TRANSMITTER SECTION


RX VFO
SIDETONE
(½7405)
VU2KLA
1N4148
+5V
100
470µ
33
RX TUNE
220
POLY
100
AIR TRIM
330
74LS132
1
A.F. AMP.
RX ANT.
L1
74 HC 066 BF
2X
220
2X
10K
220
RX MIXER
-OB KANG, K.P.S.-
3K3
1µ
2µ
4K7
1K
10K
4·7µ
BC109C
·068µ
·47µ
22
10K VOL
100n
7805
IN PARALLEL
TO
LM386N
L.S.
1µ

THE SILVER TERN RECEIVER REVISITED

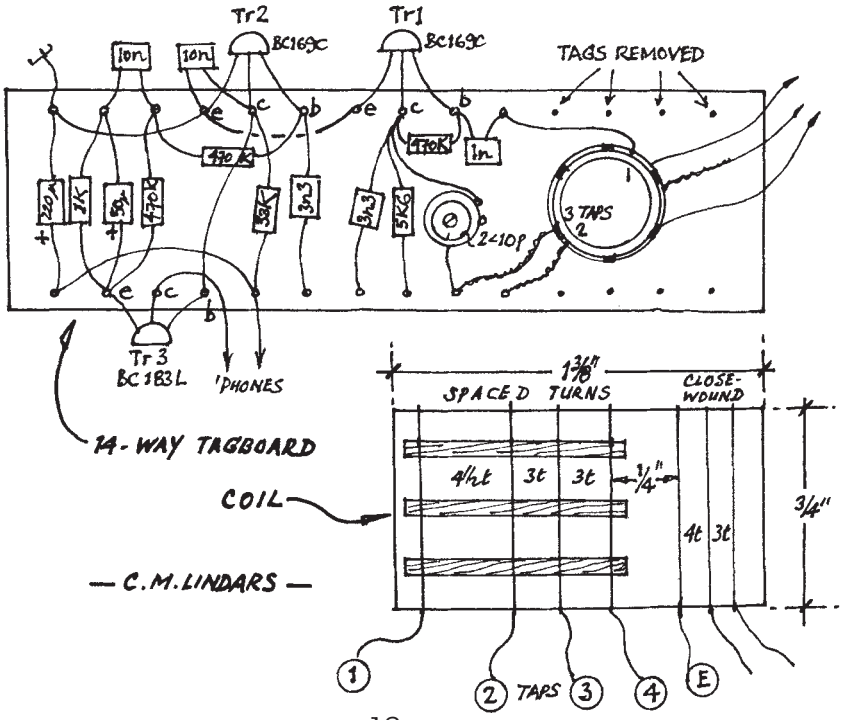
Martyn Lindars, Providence Cott. Unity Lane, Misterton, CREWKERNE. TA18 8NA.

The Silver Tern TRF Receiver appears in the G QRP Club Circuit Handbook and was originally submitted to SPRAT by Emil Tenlund, SM7WK. Martyn updates and upgrades the original article.

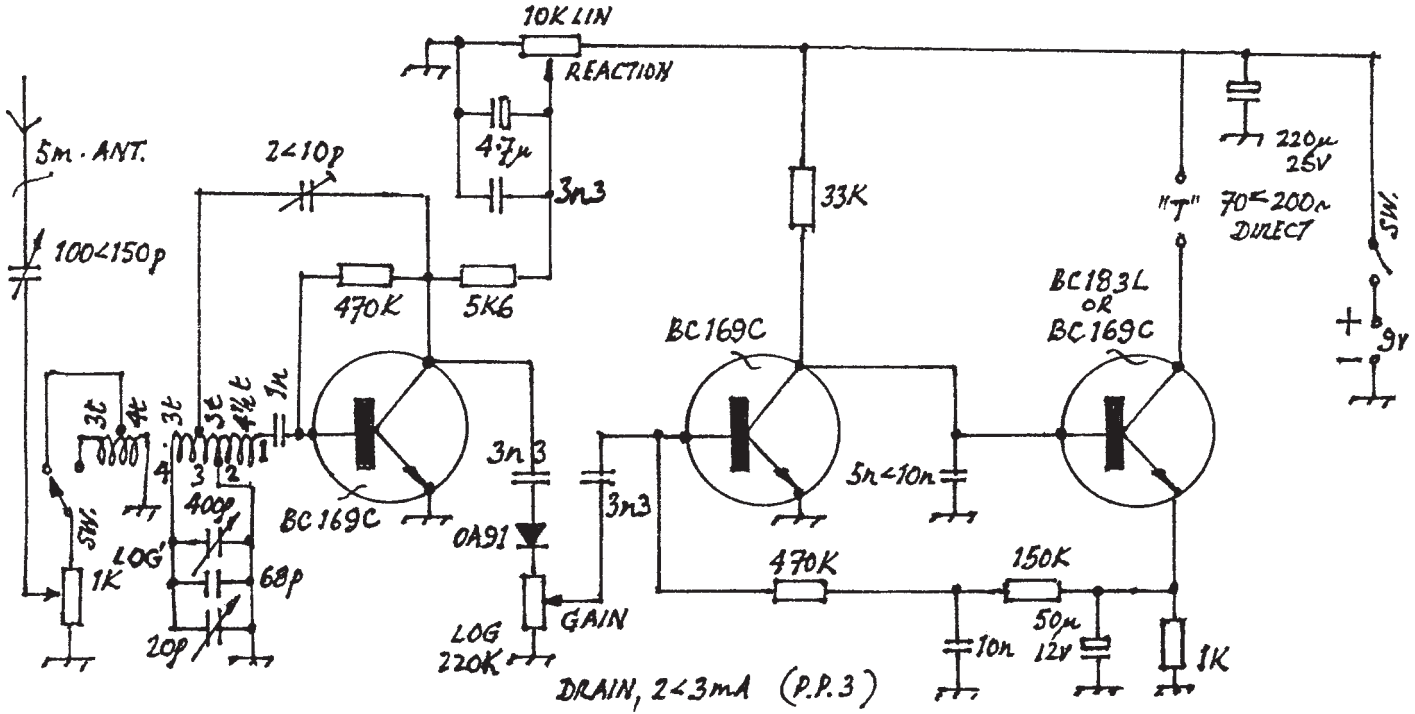
I like a little project to work on and this one seemed to have appeal. My version is built on a tag group board mounted on the back of a control panel made from PCB material. The main modifications may be summarised as:
The Reaction Pot was changed from 5K to 10K. The diode was given a DC load, with considerable improvement. The reaction was tapped further down the coil thus needing more "C" in series : a 2 - 10pF trimmer. I also tried other arrangements, including a capacitive tap, without improvement. The bandspread is increased to 20pF and it is still easy to tune SS with a reduction drive. The coil is modified and wound on a discarded "starter unit" for fluorescent lamps with matchsticks glued to the former for the sections 1 -2 and 3 - 4.

The frequency range was 7.5 - 30MHz. This did not include 40m so a 68pF was wired in parallel to give 6.5 - 15.4MHz. The layout drawing shows how the tag board and the controls are mounted behind the PCB material front panel. Some ground connections are made directly to the panel. It is advisable to mount the coil above the panel to prevent the latter constituting a shorted turn the Q being lowered. A metal case would also help with hand capacitance and stray signal pickup.

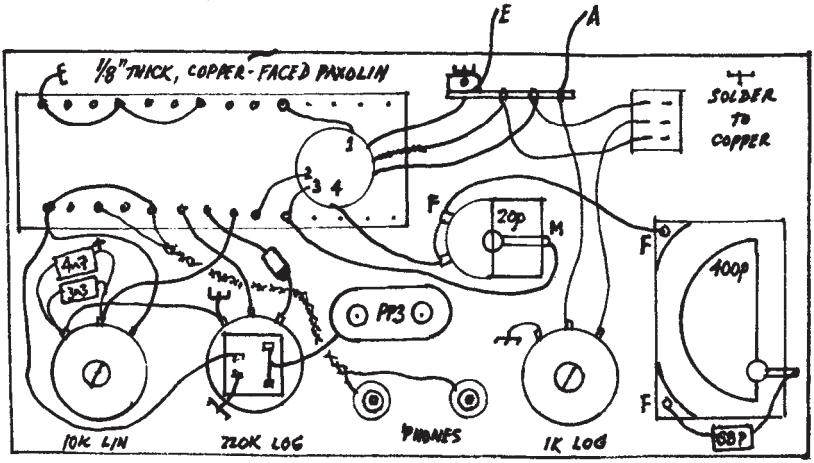
The radio is lively and SSB is good with hardly any drift. Breakthrough can be a problem at night. The idea of separating the antenna coil from the main coil is a good one as it is tightly coupled. This is manifest by the input pot altering the tuning and reaction settings.



SILVER TERN MKII



BEHIND THE SILVER TERN PCB FRONT PANEL

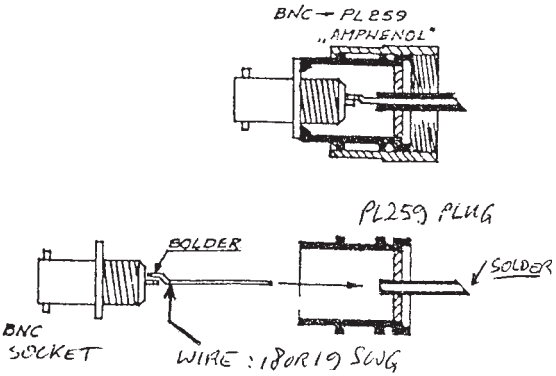


BNC TO PL259 ADAPTER

Robert van Zaal, PA3BHK, Parklaan 89, 2171 ED. SASSENHEIM. The Netherlands

Although experienced VHF/UHF constructors know better most commercial manufacturers still enjoy finishing their VHF/UHF equipment with SO239 aerial sockets requiring "shielded bananaplugs" (PL or "Power Loss" 259) on the end of your cables.

Unfortunately this causes losses up to over 6 dB at 430 MHz as above 50 MHz the impedance of these connectors only approach 50 Ohms within very wide margins. No wonder that those of us who use the higher frequencies for more than a local chat often prefer to use "BNC" connectors. But what to do when suddenly confronted with a commercial radio? One solution is to modify the rig. If this is not possible an adapter comes in handy. Although readily available a BNC to PL259 adapter can be easily built. With parts from local rallies or your own junkbox this is usually a cheaper solution anyway! Use a hot solder iron, preferably 80 Watt or more. Do I hear someone moan about extra losses being introduced by using this adapter? Well, better take it for granted. After all, an adapter is a compromise to adapt commercial errors to appropriate standards.



DON'T FORGET.....

ROCHDALE QRP MINICONVENTION - SATURDAY 14th OCTOBER

DETAILS AND MAP IN THE LAST ISSUE OF SPRAT OR SAE TO G3RJV

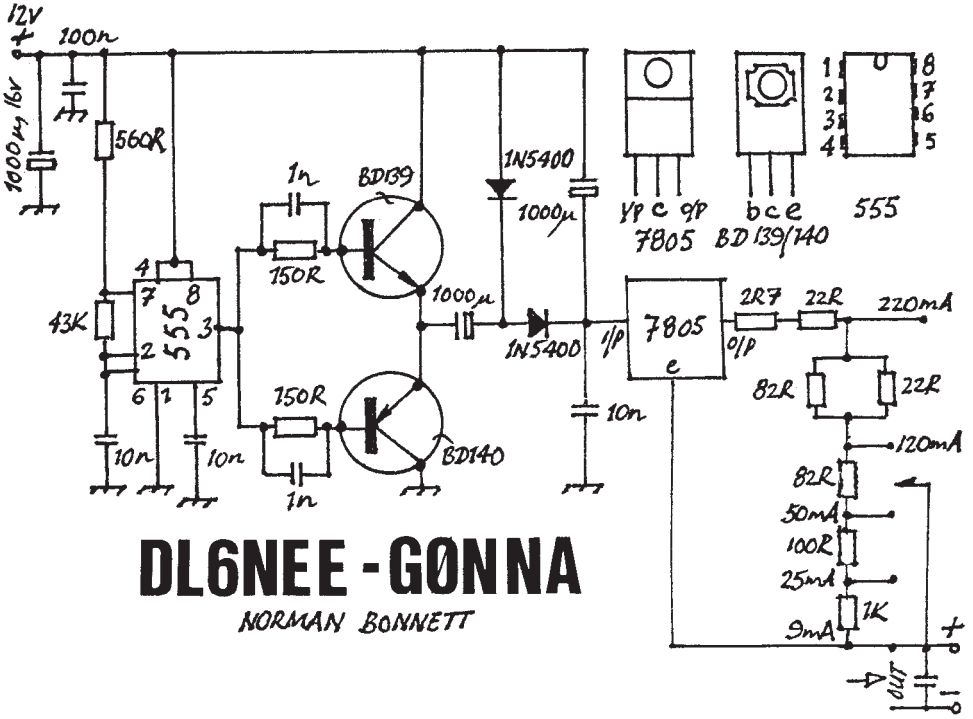
A NICAD CHARGER FROM THE CAR BATTERY

Norman Bonnett, DL6NEE (G0NNA) Weidleinsweg 14, 97222, RIMPAR, Germany

A small portable 2m rig such as the FT290R is a "must" when you go hiking or walking in remote areas. I am always amazed how accessible the Harrogate repeater is from the Yorkshire Dales and the Zugspitze repeater from most of southern Germany. You never know when you may need help!

12V Nicad packs don't charge well from a cigarette lighter socket in a car. Hence this simple charger. It originated in the Bradudderfax area of Yorkshire, for those not familiar with northern Britain this is a wild untamed area bounded by Bradford, Huddersfield and Halifax. During the removal to Germany the circuit got itself lost and so I developed it again.

No components are critical, you don't need a matched NPN/PNP pair of transistors. The 555 oscillates at about 1.5 kHz, the output is amplified by a complimentary pair, voltage doubled and rectified and passed through the ubiquitous 7805 to control the current. The BD139/140 need to case mounted via mica washers. It should be "worked first time" circuit.



BITE FOR THE QRP SPIRIT [AND OTHER HF RIGS]

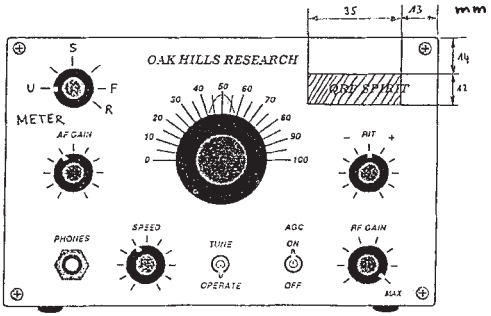
GUIDO GIANNI, HB9BQB, KLEINZELGLISTR.6, 8952 SCHLIEREN. SWITZERLAND

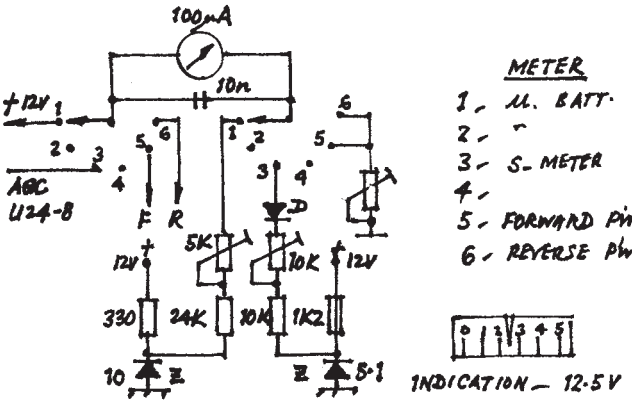
The Oak Hills Research Kit 'QRP-Spirit' is an excellent kit with high quality printed boards and components. After assembling the 500 parts you have a hot rig - it works fine. But to be perfect it needs some little gadgets: The BITE (Build In Test Equipment). There is plenty of room in the box. Actually thought about cutting the box to about half the height, but....

A Portable QRP-Transceiver needs:

1. S-meter 2. Battery-voltage monitor 3. SWR/PWR meter

On the front panel I cut out a rectangle to insert a small meter salvaged from old hi-fi gear. Cleaning the front panel with white spirit I found out that the black printing is easy to remove (sorry had to sacrifice the Label). Too easy - so needs a coating with transparent acrylic spray after the new labelling with press-on decals). I never use a power switch when I am portable so the place for the meter-function-switch is found without drilling a new hole. You can move the power-on switch to the back panel if you like and at the same time you can shorten the 12 Volt wires.



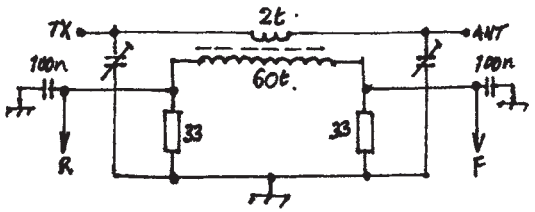


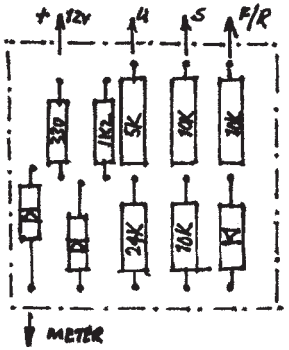
My meter had a scale of 0-1-2-3-4-5 and for battery monitoring it would be nice to read 10, 11, 12, 13, 14, 15 Volts. This voltage zoom is easy done with the z-diode trick: The voltmeter is biased with 10 volts and reads from 10 to 15 Volts.

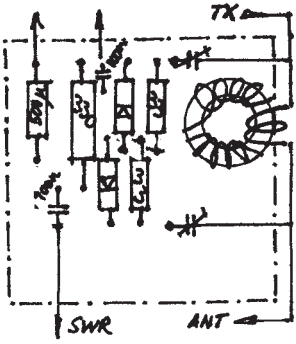
S-meter is connected to a low impedance point on the output of the AGC-Amplifier U244-8. There is a DC-offset of 5 Volts with no signal, on a small perfboard mounted to the side bracket.

Finally added on a small perfboard near the antenna-connector the SWR-Bridge (after Doug DeMaw W1FB in QST Nov 87, or use other design as you like) for checking SWR/PWR.

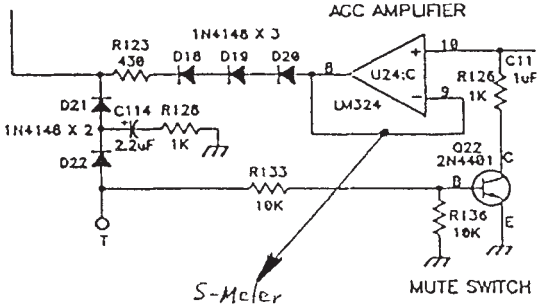
So my QRP Rig is ready for the Swiss Mountain Day on 80 meters but this is an other story).







METHOD OF CONNECTING S-METER TO QRP SPIRIT CIRCUIT



ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS-ADS

FOR SALE: TEN TEC ARGONAUT 515, Ex Condx, Manual, £250. Sale includes H/B adjustable voltage regulator (0-11v) and Active CW Filter. Tel: 01729 - 822299. Dave Hamilton G4GLC, "Rome Lea", Four Lane Ends, Gigglewick, SETTLE. BD24 0AG.

FOR SALE : HEATH HW9 TRANSCEIVER. 80-10 inc WARC bands, CW (some SPRAT mods) very good order. £200 inc carriage. Craig, GØHDJ, Tel: 01458 - 850373.

FOR SALE : TRIO TS130V, narrow cw filter + psu £350, RF27 unit [rough] £10, Command Receiver (good condx) £15, 1940's Valve Car Radio Pye P23 £15. Paul, GØEXF, Tel: 0114 - 2475524 after 6pm.

FOR SALE : JUNKERS MORSE KEY in very good condition £70 plus £7 postage & packing. DK4UH, Rudi Dell, Weinbietstr. 10, D 67459, Boehl-Iggelheim, Germany.

FOR SALE : KW2000E plus PSU, KW E-Zee Match ATU, KW SWR Meter 101, all good condition. GØLHM, Tel: 01302 - 859451.

FOR SALE : SRX30 500kHz-30MHz Communications Receiver. Wadley Loop Control. Offers around £100. Ivor, G3JES, Tel: 01227 - 451441

WANTED : Cicuits and data, or source for same for : [1] NPR 900H 933MHz Transceiver, [2] SONIC E-07 10-4 ENVOY 27MHz Transceiver (also any 28MHz mods for same), [3] Any mods or data for 49MHz gear to 50MHz (or sources) All costs reimbursed. G3FCK, Mac, Tel: 01635 - 40750

THE PYTHAGORAS MEGA-KIT

Mark Palmer, GØOIW, 28 Westfield Road, Caversham, READING. RG4 8HH

There seems to have been a lot of interest lately in the use of kites in amateur radio. Here's a home made design that'll support a topband quarter wave (if not more), will fly in quite a moderate breeze doesn't need helium and won't cost you £210 (+ postage)! It's not a particularly original design, but it WILL work.

You'll need:

1. A sheet of tough polythene 36 x 38", such as a garden refuse bag (an ordinary bin liner probably won't be tough enough)
2. Two pieces of quarter inch wood dowel 36" long
3. Two "cover buttons" (from haberdashers shops)
4. PVC or masking taps, string etc.

First step is to cut out the sheet according to fig 1. Polythene can be a bit tricky to cut straight - you need some good sharp scissors, or better still, some dressmaker's electric scissors. Take particular care over the holes. Then use tape to attach the two dowels as in fig. 2.

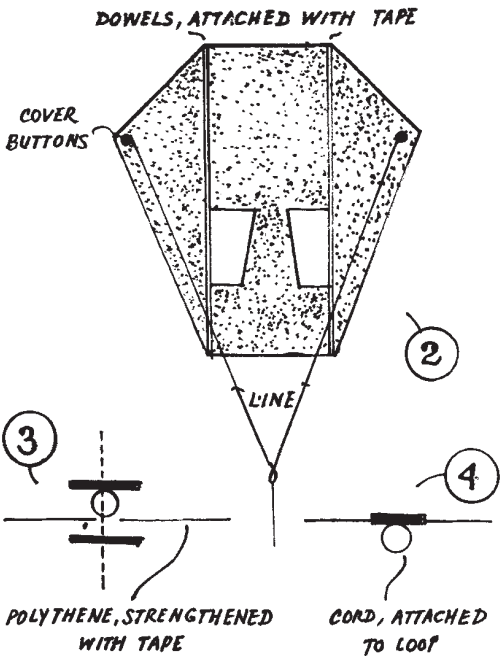
The next step is to use plenty of tape to strengthen the corners where the cord will be attached. Use a layer on both sides of the plastic, then make a small hole and attach the cover buttons (fig 3). The loop on the buttons should be on the same side as the dowels, i.e. facing towards you as the kite is flown.

Finally, cut a piece of cord about six feet long, tie a loop in the centre (where the line will be attached), tie the ends to the loops on the cover buttons, and your Mega-Kite is ready for flight!

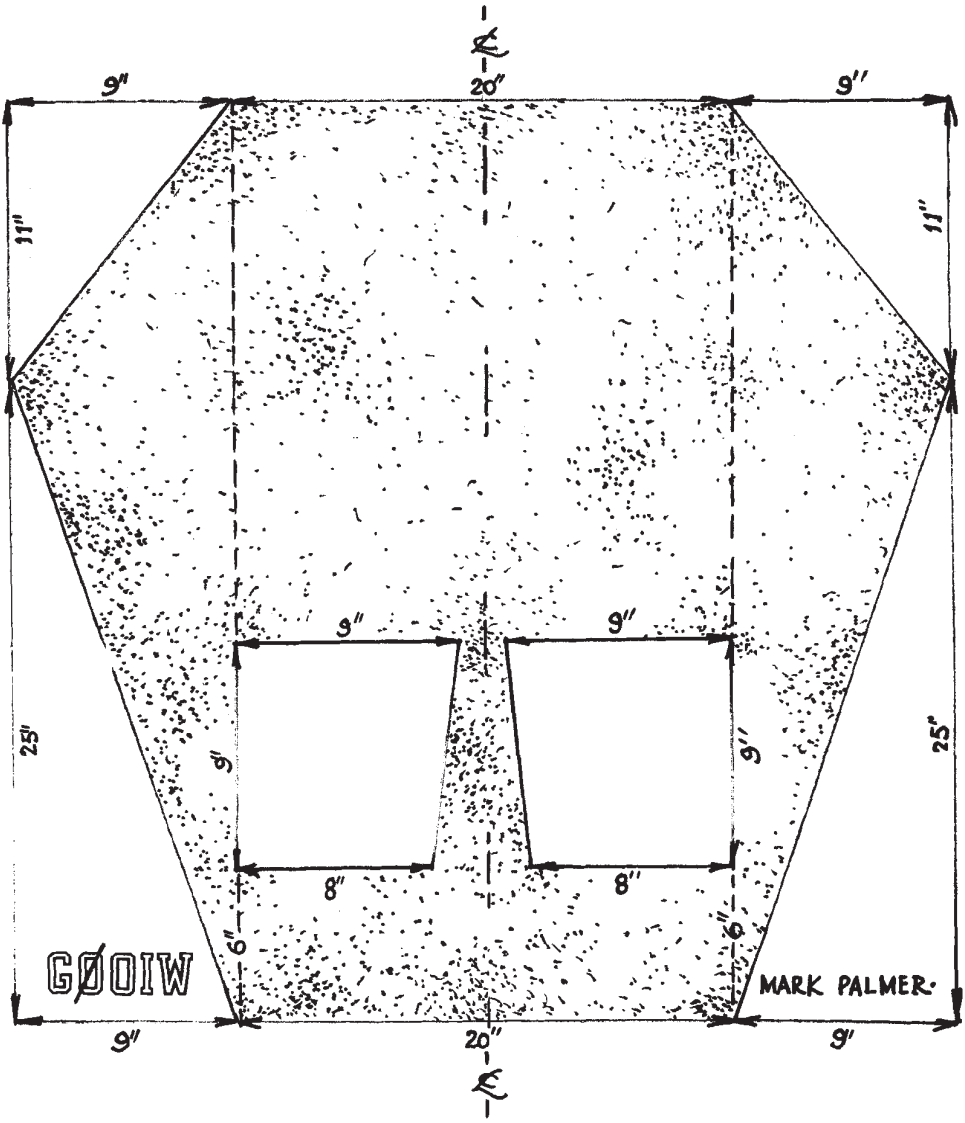
The line needs to be lightweight but strong. I use the bright orange "string" from hardware stores, although you could buy proper kite line from a good toy shop. Remember, it's the line, NOT the wire that takes the strain - if you just attach a piece of wire to the kite it'll just stretch and snap. The wire needs to be thin and multi-stranded (e.g. Maplin's 7/0.2), since single-core will probably break./

There's umpteen arrangements of kits and aerial that will put out a good signal, so I'll leave that side of things up to you. I use a 40m wire as a halfwave on 80m and a quarter wave on topband. A counterpoise wire running along the ground can also be added, especially if the ground is dry.

One warning. Obviously, you won't be suicidal enough to go kiting in a thunderstorm a la Ben Franklin. However, even on a sunny day the wind blowing can generate enough static to damage solid-stage front ends. It's essential that this can discharge to an earth spike. Either use an ATU that is DC short to earth, or else allow the static to discharge through a high-ish value resistor (e.g. 22k that won't absorb too much RF).



If, like me you're used to a grotty sort antenna in an area of high time-base QRM, you'll find working /P in the countryside with the Pythagoras Mega-Kite a total delight. Good luck!



WANTED : RADCOM Dec. 1975 of copy of Tech Topics from same with details of DJ2LR Tuner, Also need copies of RadCom for Dec. 93, Jan. 94, Apr. 94 and may 94. Complete copies or photocopies of Tech Topics, EMC, Eurotech and technical articles/equipment reviews. Will pay postage/copy costs. Needed due to subscription foul up.

WANTED for my small collection : 123 SET and MKIII SET. Also wanted any HF Military Pack or Ground Radios, and circuits or schematics related to spy radios.

D.A. Michael, W3TS, 129 Church Lane, POB 593, Halifax PA 17032-0593 USA.

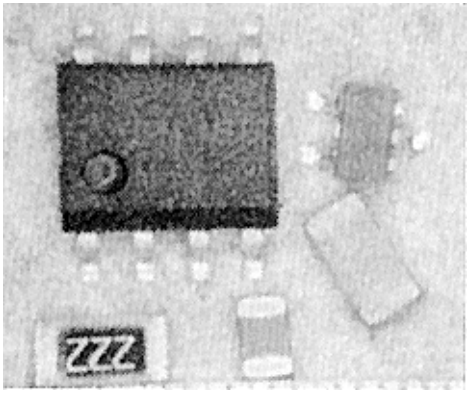
SURFACE MOUNT TECHNOLOGY

R. J. Harrison, G3TMQ, 28 Briar Hill Rd. Northampton. NN4 8LJ

Although not strictly related to QRP operating or techniques it is and will be very important to all electronics used in the future. The QRP operator/builder has always the objective of having the smallest/best/cheapest rig compatible with current technology and the use of surface mount components will assist in this pursuit.

Before diving into the use of surface mount devices, a brief outline of what they are and how they are used would be useful. Basically a surface mount component or SMD is a resistor/capacitor/indicator or what ever - but without any leads or with leads just small enough to solder.

Figure 1. TYPICAL SMD DEVICES



So why use SMD components well,
here are a few advantages and disadvantages.

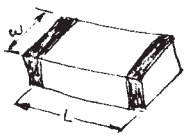
FOR	AGAINST
Small, less PCB area	cost
laid onto board	availability
(No holes to drill)	need good eyesight
closer circuitry	
(less prone to oscillation)	
new design challenge	

The obvious disadvantage is the cost and availability, however the author is planning to stock a range of 'common' items in small quantities so the future constructor should not be disillusioned.

Resistors/Capacitors/Inductors

These come in the same values as 'normal' resistors, capacitors and inductors i.e. E12 or E24 range and tolerances.

However here the similarity ends for the SMD parts have a fixed 'footprint' or the PCB land size required, the most common and useful size for QRP'ists are the 0805 (1/10 watt) and 1206 (1/8 watt) range.

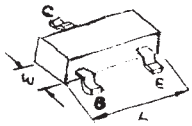


	LENGTH MM	WIDTH MM
0805	2.0 +/-0.2	1.25 +/0-0.2
1206	3.2 +/-0.2	1.60 +/-0.2

In fact the identity 1206 means 12 X 06 in the old inches measure (I3 3.2/2 54=-1.6/2.54=0.5)

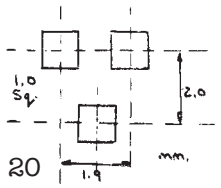
Diodes/Transistors

The diode and transistor style in SMD technology are usually in SOT23 (or similar SC59) size



	LENGTH MM	WIDTH MM
SOT23	2.90+/-0.2	1.3+/-0.2

and are mounted on the PCB with pads of dimensions.



INTEGRATED CIRCUITS

These are in the usual style in Dual in Line and the dimensions are usually defined by the lead spacing which is normally 0.1 inch or 1.27mm. There are now more SMD components which entail more than 14 or 16 pins and the use of 24 or 40 pin Quad packs is becoming common in the state of the art, however the QRP'ist is recommended to start with the simple devices first.

SMD Use

The devices are used in the normal fashion of R's/C's etc. However no drilling is required (how many drills have you broken in the last 10 years?) The layout requires a land pad to suit the device to be used. Often the size of the device e.g. 1205 allows a through track possible, since the underside of the components are insulated or non conductive.

The method of soldering differs from 'normal' components in that a fine tip soldering iron is MANDATORY (e.g. ANTEX 12 w from Maplins) and a good mechanical and electrical joint is required.

The method of soldering preferred is to slightly tin the land pads with a small amount of solder and to hold in place the components to be fitted, with either a cocktail stick or a fine pair of tweezers. Then apply a small amount of heat together with some fine solder e.g. 24/26 swg from a fine tipped soldering iron until a uniform solder fillet is achieved.

FUTURE

How about building the OXO, ONER or a TRF in SMD form, and then progressing to a full blown transceiver e.g. the G3TXQ Malta, the challenge is well worth while, go on give it a try and be ready for the future.

WANTED : QRPp COMPUTER Sinclair ZX80 (not 81) and Timex TS1500 (not 1000) in any condition. Peter Liebert-Adelt [DK4BF@DKØMAV.NDS.DEU.EU], Luetzowstr. 3, D-38102 Braunschweig, Germany.

WANTED : Desperately! Disk Drive for C64, Wanted (only urgently!) Circuit diagram for 2m CW transceiver or old 2m am/cw rig [valved OK]. Ring [evenings before 9.30] Doug 0117-9409684

WANTED : Service manual for RACAL MINICAL SSB PACKSET TYPE TRA6929 or even a circuit diagram. 9M8ST, T.C. Siong, 171D COOKES DRIVE, KUCHING, 93150, SARAWAK, MALAYSIA.

WANTED : WWII R1155 receiver. Dong-Hyun Cho, Biology Dept. Kang Won National University, ChunChon 200-701, South Korea.

OM9MV - A SLAVAKIAN INTERLUDE

Fred Garratt, G4HOM, 47 Tilshead Cl. Druids Heath. Birmingham. B14 5LT

Fred responded to an invitation in SPRAT to a QRP Convention in Slovakia. Although we usually do not run large text-only items in SPRAT, this is published to encourage our links with Eastern European QRPers

"But aren't they killing each other over there?"

That was the reply I got from non Amateur friends when I told them I was going to Slovakia, suggesting perhaps a great ignorance among people here of the geography of the newly independent East European states

Having always wanted to make close scrutiny of the Amateur Radio scene over there I had originally planned to visit Belarus, the birthplace of my grandparents but had to defer that till next year. It was then I saw a notice from Alex G4FDC in sprat for a QRP Convention in Vrutky Slovakia and as I was going to be in Europe anyway, staying with my sister in Hamburg, I made a hasty phone call to Alex and with a months vacation at my disposal, the trip was 'On'

A few days later a chance QSO was made with Peter OK1CZ/5B4 on holiday in Cyprus and he suggested "why not spend a few days in Prague en route"? An opportunity eagerly accepted. As there was going to be a Home Brew equipment exhibition, I hastily completed my latest 40 meter transceiver literally the day before I left).

Arriving in Prague by train from Hamburg I met Petr and XYL Blanka for an overnight stop before proceeding by train to Slovakia the next day, promising to return for a few days after the convention.

On arriving in Vrutky after an eight hour train journey I was met by the smiling faces of Alex and his lovely XYL Luba, both Slovak nationals whose efforts in conjunction with the local Klub OM3KFV were considerable.

Visitors were accommodated at the rather unsportingly title 'Zelenznicne Ulciliste' - The Railway College! Home for the Convention (and mine in the 'Penthouse suite' for the rest of the week). Delegates came from G,PA,OK2 and LZ.

Presentations on QRP construction and design were eagerly received by all in attendance and many of us had the opportunity to give presentations of our own and share our ideas on QRP construction (with the indefatigable Alex doing the translation).

Some of the home-brew equipment on display was stunning as regards the resourcefulness of the local amateurs whose access to the components that we take for granted was very limited, in particular, the equipment built by OM6TN on his kitchen table would leave our professional engineers gasping.

All too soon the Convention came to a close and addresses were swapped, skeds arranged and endless photos snapped and everyone went home... All except me!

The delights of the area now awaited. The town sits in the splendour of the Malo Fatra mountains and being there was like stepping back in time, about 40 years to be precise with a way of life that is very laid back and unhurried, a most agreeable situation as far as I was concerned and the charm and hospitality of the locals is a secret I would have liked to have kept to myself. There can be few places where I have felt as 'at home' as this, so I spent the rest of the week exploring the region punctuated with QRP operation from the local Klub and homes of various amateurs and yes, they really do hang antennas from the tower blocks. A real Radio Amateurs holiday this!

The weekend arrived. NFD weekend and this also coincided with a local VHF contest. So with the local Klub and their old ex-army truck we all piled in with VHF equipment. Alex's Argosy and my QRP rig and headed off up the mountain to Klacianska Magura with the special event call OM9MV (MV=Malo Velkon = Low Power).

We arrived at the ski lodge at dusk and after a hastily improvised Barbecue we groped around in the dark trying to throw a wire over a tree so as to spend the evening gainfully. Having succeeded, we fired up the Argosy, called CQ and LW2DFM in Buenos Aires obliged.

The following day a top Band doublet for all bands was erected using Alex's 'U' shaped mast (I kid you not..... pictures have been taken!) and a search was made of 3560 kHz. Suddenly OK5SLP appeared at S9+ with Pavel OK2BMA at the key giving the OK QRP-C bulletin. I had been trying to contact Pavel since arriving in Slovakia and here he was, so I made arrangement to visit him in Zlin, Moravia on my way back to Prague.

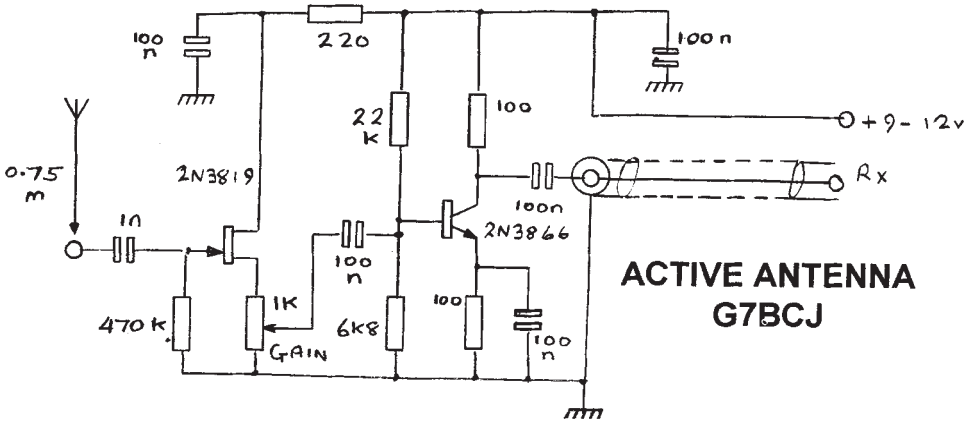
NFD time loomed and we got down to serious business, operating being shared between Alex, myself and Jirka OK2MJ....a real character. The rest of the club being busy in the back of the truck on VHF.
We about 250 contacts on HF, not a too serious attempt given the distractions of the scenery and wild Bears also roam here. But a very satisfactory QRP effort and a great deal of fun. Copious supply of 'Pivo' was on hand to 'lubricate' things.
The following day, along with Jirka, Luba and a few Club members I climbed the peak Sluchy, at 4,500 ft. The views were breathtaking and using a 2m handheld it was possible to lift repeaters in Moravia and Southern Poland.
We came down from the Mountain on Sunday Evening, I spent the next few days as a guest of OM6TN and then, most reluctantly, left Slovakia fro Zlin to see Pavel OK2BMA and his charming XYL Micha who made me very welcome indeed. I seized the opportunity to inspect at close quarters, the famous HMW8 along with first class home brew stations belonging to Pavel. We kept late hours that night putting the world of amateur radio to right. I then spent the next day exploring the town. A visit to the local club was most impressive and to see so many young boys (and girls) learning 'the topes' of construction shows they have their priorities in order over there. Again, another departure and a promise to return and I was on the road (at 5am) to Prague passing through the awe-inspiring Bohemian forests on the way to descent on Petr and Blanka and the magnificence of Prague
Petr and his family were the perfect hosts. I used Petr's station while there and also my now well travelled 40m transceiver to his monster Delta Loop to make many QSOs in between sightseeing the many attractions in Prague. Finally, back to Hamburg to my sisters place before taking the ferry to Harwich.
My observations:-
Real Amateur Radio and QRP operating is alive and well in Eastern Europe, but unfortunately, the encroaching Western Lifestyle has left people with little time for themselves and such pursuits and the black box syndrome is taking hold and so conventions like the one we had will be more important to help redress the balance.
I will be returning to Slovakia maybe this year, certainly next year. The place has a pull on my. The language is very difficult for a westerner to learn, I found the 'Slovnik' (dictionary) my best friend. Even so, I found the hardest word to say was 'Dovidenia'.....Good-bye.

The OM9MV Crew : L to R Standing: G4HOM, G4FDC & XYL Dusan, Dano
Sitting : Jirka, Viktor, Peter, Ico. Outside the Klub station

An Active HF Receiving Antenna

John Young, G7BCJ, 19 Wycombe Rd. Princes Risborough, HP27 0EE

I wanted a simple HF receiving antenna for use away from the shack, an alternative to the usual roll of wire and an ATU. An active antenna proved to be one answer. The circuit shown was put together and first tried using only (0.75m) of wire as the element. With the wire hung out of the upstairs shack window, results exceeded all expectations. Little difference in performance was noted when switching between the active antenna a d an 85' W3EDP. For anyone unable to put up an outdoor receiving antenna or, like me, enjoys operating the receiver away from the shack and when mobile, this antenna is well worth trying. Like any antenna it will work better out in the open than inside buildings, move it between horizontal and vertical to find the best position. A gain control is provided and this should be set below the level at which the shortcomings of your receiver front-end become evident. You may try increasing the length of the antenna wire, but again, don't overload your receiver. The antenna element is connected directly to the input of the amplifier and not via coax cable. A 6' length of coax connects the active antenna to the receiver with the dc supply run via a length a wire taped to the coax and fed from the receiver batteries. The gain pot is carbon not wirevound.



Email and QRP

Two QRP email mailing lists exist : the American QRP-L and our own GQRP-L

To join the QRP-L list send mail to **listserv@Lehigh.edu** with the message "subscribe qrp-l [name] [call]"
To join the GQRP-L list send mail to **Majordomo@blacksheep.org** with message "subscribe gqrp-l"
Neither of the above require anything in the subject line and the instruction must appear in the body of the message. Both lists send an initial welcome message explaining the aims and procedures of that list.

WANTED : 300Hz CW Filter for FT707. Information/price to Zdenek Vojàcek, OK1DZD, 28507 RATAJE. N.Saz 155. Czechoslovakia

WANTED : KW Q-Multiplier to sharpen up a KW201 receiver, or circuit diagram to make one. Malcolm, G7SGF. Tel: 01708 - 250578.

WANTED : Loan / copies of, manuals, alignment info, circuit details and mods that might help me resurrect a HEATH HW7. Martin Ward, G4ZXN, QTHR, Tel: 01203 - 651152.

WANTED : T1154 fair to good appearence. Urgently sought, would make good offer. Phil Beckley, GW6CDO, Tel : 01633 - 853906.

FLEXIBLE IMPEDANCE MATCHING FOR W3NQN AUDIO FILTERS

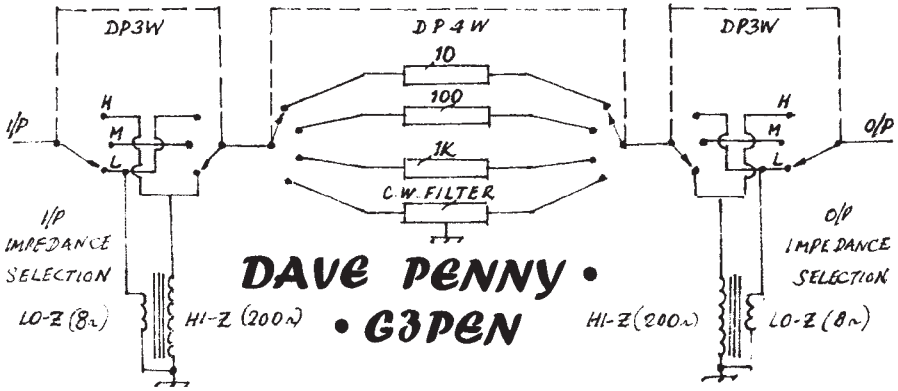
Dave Penny, G3PEN, 13 Newnham Close, BRAINTREE. Essex. CM7 2PR

My intended uses of a **W3NQN CW Filter** from G-QRP required connection to various Rxs and audio amplifiers, headphones, loudspeakers and even a Datong FL3 (on the input side). The impedances these were likely to present to the input or output of the audio filter were very varied, from a few ohms to several thousand ohms. To provide improved flexibility (if not perfection) in matching, I made use of two extra 3-way 2-pole wafer switches to change around the input and output transformer connections as needed.

Each switch can use the transformer connections as shown in W3NQN's design for 8-ohm output or input impedances, or bypass the transformer to provide the filter impedance of about 220 ohms, or reverse the transformer to give a 5000-ohm match. While the matching is probably very approximate in many uses, this extra switched facility makes it easy to adjust for many conditions met in shacks, on field-days etc. When using different rigs and accessories and if the filter performance is degraded. (I haven't noticed any real problems so far), its far better than not being able to use the filter at all. In use, just adjust each switch for best audio level or quality.

I also found than an increased choice of series resistor values was useful in some situations, when by-passing the filter, so I use a four-way wafer switch with 10-ohm, 100-ohm and 1,000 ohm resistors to give a wide range of level control (you may need different values, of course). However, I do recommend you wire it so that the first resistor used instead of the filter is the highest-value, and then down - this minimises any possible excess audio in the ears !

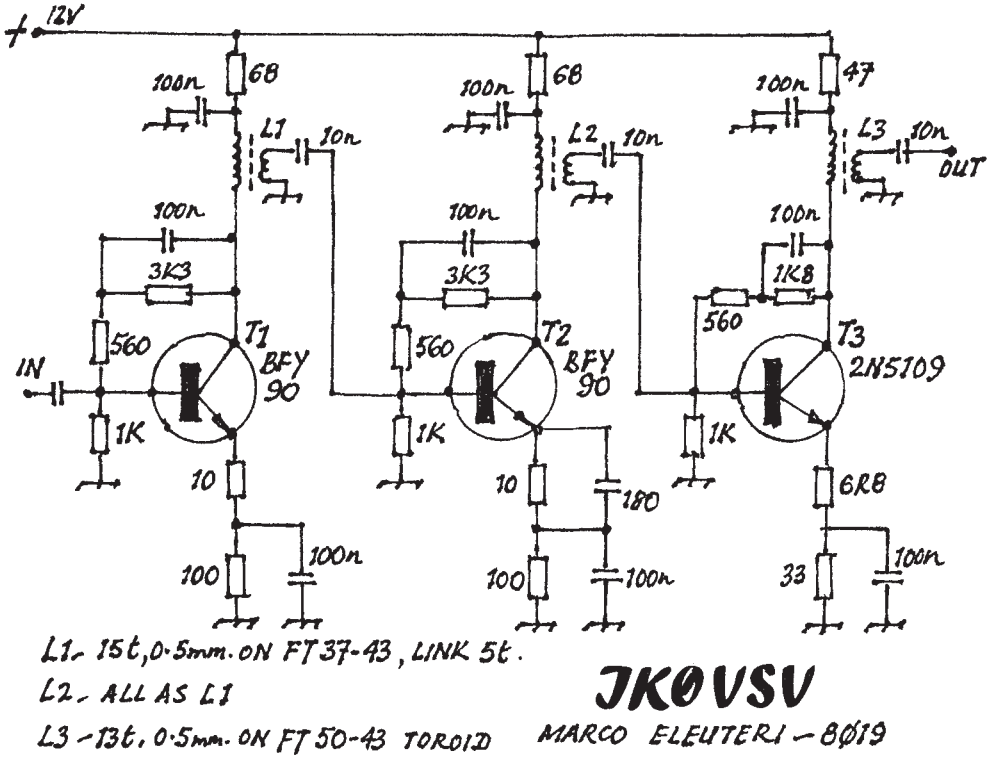
I hope you find this extra facility adds value to a very good piece of shack equipment - and apologies to W3NQN for being so cavalier with his precise impedance matching.



A CLASS A BROADBAND AMPLIFIER

Marco Eleuteri, IKØVSV, Via Paolo Rolli 18, TODI, 06059 (PG). Italy.

Some time ago I had need of a broadband RF amplifier for my test bench. A suitable commercial amplifier was too expensive (about £3000 !) and the bandwidth too great (100kHz to 1Ghz). I remembered a circuit by IK6HXA which was part of a three band transceiver project in the magazine *Radio Rivista* and decided to try this. My test set's power output limit is -16dbm and with this amplifier I get 200mW out. It is useful for any application where a broadband amplifier is required : transmitter interstage or test bench applications. It has a flat response from 400kHz to 35MHz. My version was built on a multipoint board.



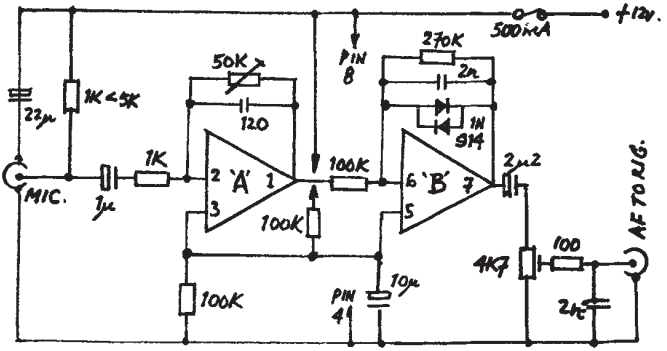
A "KISS" SPEECH PROCESSOR

Reg Moores, G3GZT, 117 Horton Rd. BRIGHTON. BN1 7EG

This is very cheap simple but very effective speech processor, which I developed many years ago for mobile operation.

I used a miniature electret but this is an excellent circuit, and when used with a dynamic microphone gives good quality coverage in the shack! Build and try it, you'll be amazed at the results.

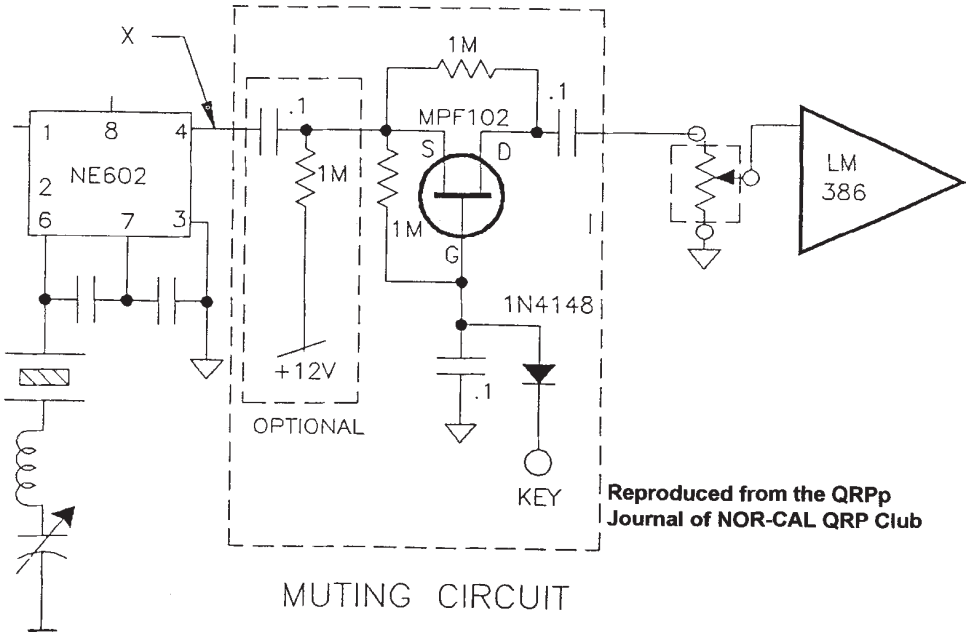
The circuit uses very few components. It is compact enough to be incorporated into the actual rig, or if used with a stand microphone can even be mounted inside its base. But remember, for moving coil microphones, the voltage feed for the electret is not required. The circuit uses a 1458 (double 741). The first op/amp providing the required microphone gain, with VR2 setting the output audio level to the rig!



RECEIVER MUTING CIRCUIT

Roy Lewallen W7EL : Described by Roy Gregson W6EMT

This mute circuit was originally designed by W7EL, and has been duplicated many times because it works well. It requires a small dc voltage on the source of the FET transistor from point "X" to work properly. If your circuit does not supply this voltage, add the optional 1 meg resistor to +12v and the .1uF capacitor for isolation from the preceding circuit. The 1 meg resistor from source to drain of the FET allows a small amount of audio to feed through to the audio amplifier during keying for monitoring your sending. The value may be lowered for more audio or raised for less. If you have a sidetone oscillator that you prefer to use, then the source to drain resistor may be eliminated for complete muting. Your key or keyer should ground the key line. The FET is protected by the diode in case it does not.



Reproduced from the QRPp Journal of NOR-CAL QRP Club

LM386 HINTS .....Nothing Flashy !

Wayne Burdick, N6KR, 1432 6th Ave. Belmont. CA 94002. U.S.A.

The following was culled from the qrp-l list on Internet - see elsewhere this issue on how to subscribe

The '386 is clearly not perfect, but is cheap and useful. Here's how to get really good results:

1. Use a balanced input configuration if possible (i.e. don't ground one of the pins). This is MUCH more stable in many cases than a single-ended circuit. In this case you can use a "common-mode" volume control - a pot between pins 2 and 3 - rather than one that is ground referenced, or you can put the pot at the output. A pot at the input is preferable unless you are using the '386 to provide an AGC voltage.
2. Use a low-pass filter between product detector and the '386. The simplest example of this can be found in the Neophyte schematic; a single resistor in one leg. Or, use two inductors, one in each leg, to form a balanced low-pass filter. Mouser and Digikey have 0.1 Henry inductors that, with a capacitor of around 0.2uF, make a decent audio filter for this application. (Be careful when using these inductors in a direct-conversion RX, however, since they're solenoidal and may pick up 50Hz quite well. Go to toroidal inductors in this case.)
3. If you're using the '386 at full gain (with a capacitor between pins 1 and 8), hiss is much worse. To fix most of the hiss, use a .005 uF cap and a 4.7K resistor between pins 1 and 5. Experiment with different values. You can make the part oscillate if the resistor is too small or the cap is too large.
4. To reduce large-signal distortion, use a 1uF or larger electrolytic from pin 7 to ground.
5. The standard LM386N or N-1 is not intended for supply voltages over 12 volts. If you want more power output, use up to 18 volts and use the LM386N-4 instead. Both parts are available from Digikey. This will help a lot if you're using a speaker and experiencing distortion. Just remember that the more power you're trying to get out, the more that goes in; the part will draw 100mA or more if you really push it into an 8-ohm load. Also supply bypassing and short lead lengths become become critical at these levels.

You don't need to do all of the above; in fact, that would be overkill in many cases. Let your ears be your guide.

Now, for those cases where a '386 hasn't got the distortion characteristics or drive capability that we need, what should we use? As a low-noise pre-amp, you can't beat the LM837 or LM833. But these are just barely adequate to drive Lo-Z headphones by themselves. (I'd be interested to hear what folks are using to get higher fidelity at high power.)

The QRP CLUB OF IRELAND IS FORMED

The International QRP Week at the Marino Institutes of Education in Dublin ended with the formation of the QRP CLUB OF IRELAND. During a reception for visiting radio amateurs, Bill Ryan EI8BC, the Acting Chairman enrolled G3RJV as the first member. 36 members were enrolled on the first evening. Those wishing to join the QRP Club of Ireland can write for information to **Bill Ryan, EI8BC, c/o Marino Institute of Education, Griffith Avenue, Dublin 9. Ireland**.

The International QRP Week was an outstanding success for those who attended. The M.I.E. could not have been a better location with its fine lecture rooms, electronics lab.,workshop and comfortable residential accommodation ... not to mention first rate food !

G3RJV and GØBPS, who led forums and practical sessions, also took time with their wives to visit the south-west and west coast of Ireland : a more than pleasant way to round off the QRP week. For those who missed the event this time, the good news is that their are plans to run another event in the future.

Watch SPRAT for details and try not to miss the next one.

CLUB ACCOUNTS

1st April 1994 to 31st March 1995

INCOME		EXPENSES	
Bank interest	137.30	Artwork & drawings	21.14
Miscellaneous income	108.40	Awards and trophies	75.50
Morse tapes	32.00	Bank charges	861.49
Sales at rallies etc.	2312.53	Books	527.06
Sales by post	3016.77	Capital expenditure etc.	285.52
Subscriptions	24410.28	Components for kits/sale	1177.45
TOTAL INCOME	**£30,017.28**	Duplicating & copying	18.34
		Miscellaneous expenses	1007.70
		Officers expenses	581.49
		Postage	2010.98
		Rally costs etc.	434.76
		SPRAT mailing costs	8623.45
B/f in bank accounts	£13,527.63	SPRAT printing	7779.00
Income less expenses	£5,444.29	Stationery etc.	1169.11
C/f in bank accounts	£18,971.92	**TOTAL EXPENSES**	**£24,572.99**

There is a return to a healthier balance this year largely due to the increase in subscription rate (though a handful of members have not yet paid the extra £1). More members are paying by standing order and this helps substantially to keep bank charges down. We have also introduced payment by VISA and MasterCard during the year and this has helped in that respect too. It has also eased the difficulty in making payments from certain countries for both subscriptions through John, GØBXO, and sales through Ian, GØOKY.

We must again express gratitude to all those members who have helped during the year by collecting subscriptions overseas. The list is lengthening and a large number of subscriptions are collected very efficiently and inexpensively this way; some are in exchange for membership of other clubs. Thanks are due to DK4UH, F5OQO, KG5F, OE6JAD, OK1CZ, ON4KAR, PE1MHO and ZL1ABS.

Mike Kilgore, KG5F, keeps a balance in an account in the US (currently at $2,714.24), Mike Sheffield, ZL1ABS, keeps one in ZL (currently at NZ$202.98), and Rudi Dell, DK4UH, keeps one in DL (currently at DM1,784.85).

The club has a "presence" at a number of exhibitions, rallies and conventions and these all pay for themselves by sales of club items and goodies on the stands. The value of these stands in other respects is hard to quantify but the high level of interest shown makes it all worth while as well as maintaining the morale of the club officers!!

Again we must thank our two auditors, Peter and Betty Jackson (G3KNU and GØNYL), for all their time and help. The work they do seems to be more complex each year.

G3PDL July 16th 1995

COMMUNICATIONS AND CONTESTS

Gerald Stancey G3MCK 14 Cherry Orchard, STAINES, Middsx. TW18 2DF

IARU REGION 1 QRP DAY No logs have been received.

160M COUNTIES LADDER

No entries yet received. I hope that with the coming of the darker nights I will receive some entries for the next SPRAT.

CHELMSLEY RULES

This trophy is to recognise QRP activity in the broadest sense and has not been too well supported in the past. To try and improve support I have changed the rules to make it easier for you to enter. In future all you need to do is to supply the following information:

Band	QRP/QRP	QSOs	QRP/QRO	QSOs	TOTAL QSOs
160					
80					
40					
30					
etc.					
10					
Totals					

A list and number of the DXCC countries worked. A country can only be claimed once and it may be a QRP/QRO QSO.

A NEW CONTEST

To encourage home brewing WALFORD ELECTRONICS have kindly sponsored the SOMERSET CONTEST. While anybody can participate entries will only be accepted from home brew and kit stations. Valuable prizes are to be won!! See the next page for the full rules. I will be grateful if overseas readers circulate copies of the rules to all interested parties.

1996 CONTEST CALENDAR

This will appear in the next issue of SPRAT

WINTER SPORTS 1995

As you may not receive the next issue of SPRAT before Christmas may I remind you that the Winter Sports will run as usual from 0001z 26 December to 2359z 1 January 1996. This is not a contest but a chance to enjoy QRP, meet old friends, make new friends; all modes, all bands.

NETTING

With many people using selective receivers it is not good enough to be "somewhere near" frequency. You need to be within 200 Hz. It is worthwhile checking that your rig does this. Just because it is new and expensive is no guarantee that it does. Failure to net accurately will reduce your chances of making a QSO. With direct conversion transceivers it is not only necessary to ensure that your off-set is the same as the note at which you receive but also to ensure that you tune the signal from the correct side. Another unpleasant side effect of poor netting is the chance that you cause unnecessary QRM to stations that commence a QSO on whichever of the two frequencies you and your friend are not using at that moment. I run separates for most of my QRP activity and I never cease to be amazed at the number of stations who not only do not net but fail to see that it matters.

RULES FOR THE SOMERSET CONTEST

This contest is sponsored by Walford Electronics who have kindly donated two prizes. By entering the contest you are agreeing that copies of your entry can be supplied to Walford Electronics.

1. This contest is open to all single operator QRP stations ***using home made or kit equipment***. It is not necessary for you to have built the equipment yourself. QRP is less than 5W CW output or 10W SSB pep.

2. Activity to be centred around the QRP frequencies:
CW 1843, 3560, 7030, 114060, 21060, 28060 kHz
SSB 3690, 7090, 14285, 21285, 28360 kHz

3. When 1200z 30 March 1996 to 1200z 31 March 1996

4. Call CQ HBC

5. Exchange. RST, Serial (starting at 001), Power, e.g. 579 047 5W

6. Scoring. Entries may be single mode or mixed mode but a station may be worked only once on each band irrespective of the mode.

Points	QRP/QRP	QRP/QRO
Within own continent	5	1
Outside own continent	10	2

Final score is the total points. There are no multipliers.

Unmarked duplicates will be penalised at 11 times the claimed score.
The organiser's decision shall be final.

7. Entries by 30 April 1996 to: **G P Stancey G3MCK, G-QRP Club Contest Manager, 14 Cherry Orchard, Staines, Middlesex TW18 2DF. England**

8. Entries to consist of station details including power, log sheets showing: date, time (utc), band, call worked, exchange sent, exchange received, points claimed, and a declaration that the station was operated QRP in accordance with the spirit of the contest.

NB!!
To encourage all Homebrew contest operators to submit logs, all complete entries will qualify for the second prize by including answers to the following questions with their entry.

A. What bands and modes does the rig used in the contest cover.
B. Give brief details of design and if a commercial kit, make and model.
C. What other bands/modes would you like to see available on a kit transceiver?
D. What do you consider is a reasonable price for the kit implied in (c)?
E. What is the most complex piece of test gear that is available for your use?

9. Prizes
First, for the highest scorer, a Taunton receiver kit equipped for any one band (160 to 15m) of your choice. The TX and other bands etc. Can be added.

Second, all entries received with complete answers to the five question (8a to 8e) will go into a draw, the prize for which will be a stand alone very high performance tuneable CW filter kit.

The organisers decision shall be final.

ANTENNAS - ANECDOTES - AWARDS

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

LOW SUNSPOT NUMBERS OR NOT there was some useful QRP work during the summer. In late May 3 watt stations were able to work to the USA in the late evening on 7 MHz, and in June similar contacts were made with stations in Asiatic Russia. There was another surprise on June 16th when WA3PTY appeared on 14060 about 2250 UCT and worked several G and EU QRP stations when running only 750 mW QRPp into a 3 element beam. The contest on 10 June also produced useful conditions with LU workable with QRP. The moral of this is simple. Monitor the bands regularly, especially during contests, and you may reap unexpected rewards.

DO YOU ALWAYS PUT YOUR POWER ON EVERY QSL CARD YOU SEND OUT ? If not, please do so from now on. Failure to show your power means your card is automatically disqualified if the recipient submits it for the Worked G QRP Club or Two-way QRP Awards. After all, QRP contacts are an achievment, and one should be proud to tell one's contacts the power being used.

Figure 1

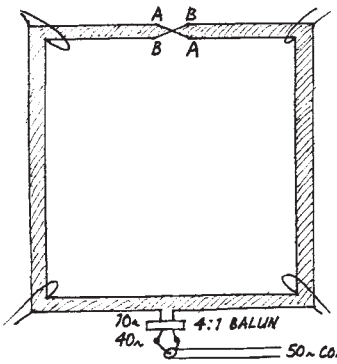


Figure 2

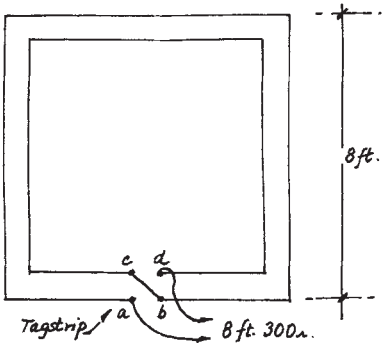
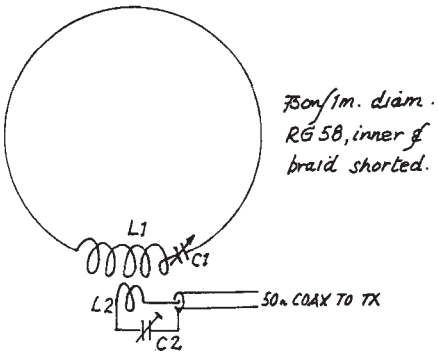


Figure 3



LOOP THE LOOP WITH AAA

THE G4VPF MOBIUS 5 BAND LOOP. (G4VPF, 16 Central Way, Horninglow, Burton-on-Trent, DE13 0UU.). This loop makes use of the Professor Mobius theorem that any material given a twist through 180° and with its ends joined together makes an object with one side and one edge. It is constructed from a length of 300 ohm twin feeder arranged in a square as shown in Figure 1. The twist is at the opposite side from the point where the feeder is attached.Feed is via 50 ohm co-axial cable and a 4:1 balun connected "backwards", with its low impedance side to the antenna and its high impedance side to the cable. When constructed from solid dielectric 300 ohm feeder the length is found by using 1005/f x 0.8. The version shown uses 7 MHz for f, and loads well on 7, 10.1, 14, 21 and 28 MHz bands. As a precaution a suitable atu is used at the rig end of the co-ax. The velocity factor of 0.8 in the formula above is for solid dielectric 300 ohm ribbon. It may be different for slotted ribbon. (Professor Mobius was a 19th century German astronomer).

THE JAILHOUSE SPECIAL (G8PG). Shown in Figure 2, this loop is designed for those forced to operate from a prison cell, a one room apartment, or a confined outdoor space such as a fire escape platform. It is an 8 foot square,two-turn loop made from 300 ohm ribbon feeder, and fed via an 8 foot length of this feeder and a Z-match. It can be erected either horizontal or vertically, and loads on all bands from 3.5 to 28 MHz. If cord loops are fitted at the corners and self-adhesive plastic hooks attached to the walls of a room,it can be erected or dismantled in under two minutes. The 8 foot feeder length was found to give all round matching via the Z-match but may need to be trimmed for best results at other locations. On 3.5 MHz it is about 15 dB down on a large, outdoor loop, but its performance on the higher bands was very good.

THE G3WQW HULA HOOP SPECIAL (G3WQW, 71, Lambley Lane, Burton Joyce, NG14 5BL.) This one is designed for restricted space, portable or transportable use. It is shown in figure 3. It consists of a length of RG58 co-axial cable taped to a discarded Hula Hoop or similar circular former. The two ends of the co-ax are joined via a loading coil consisting of 17 turns of 16 swg enamelled copper wire wound on the Hula Hoop and connected in series with a wide spaced 50p variable capacitor. A two turn coupling link is wound over the centre of the loading coil and connected to the co-ax cable from the rig via a 250p trimmer to tune out line reactance .Built in this way the loop has given good results on 10.1, 14 and 18 MHz ssb and cw. Bandwidth on 14 MHz is some 180 KHz. The inner and outer of the co-ax forming the loop are soldered together. This and all other soldered joints must be made carefully, to reduce dc resistance to a minimum, and the 50p tuning capacitor should have low dc resistance connections.

LOOPS OF MANY DIFFERENT SIZES can offer a great deal to those hampered by space limitations. They allow a maximum amount of wire to be erected for a given space area, they can usually be made to work on a number of different bands, and they usually give excellent results, some amazing stuff having been worked with low horizontal loops.

LET'S HEAR IT FOR LOUIS ! John, GoKCA has recently derived some interesting statistics. Analysing QSL cards from some 300 members he obtained the following results. On the equipment side one member in three was using home built equipment, showing that genuine amateur radio is not dead. Of the remainder, 27% were using American made equipment (87% of it by Ten Tec), and 40% Japanese made equipment. When one turns to antennas two types dominate the scene, namely the dipole and the G5RV, both used by 20% of the members surveyed. The next most popular antenna was the long wire at 10.6% . Only six out of every hundred of our members was using a beam. There were 17 other types of antenna listed, ranging from a W3EDP to a whip. The G5RV was of course developed by OT Louis Varney, G5RV. If one extrapolates the figures quoted above there are probably some 800 G QRP C members using the G5RV. Extrapolating to the world-wide amateur population is more difficult, but 8 000 G5RVs seems ridiculously low, 24 000 very probable, and a higher figure quite possible.It is only when one looks at these figures, and also remembers his contribution in the field of TVI proof transmitters, that one fully realises the contribution made to our hobby by Louis.

AN ANTENNA RUNNING FROM HIS FLAT ACROSS A BANK CAR PARK is providing good results for Duncan, ON9CHU (also GoUTY).Looking for an end-fed wire which would present a reasonable feed point impedance on all 9 hf bands, Duncan came up with a length of 182 feet, and is getting good results. He also mentions some peculiar Belgian regulations. You can only use home brew gear from your permanent QTH. For /P or /M one must used an approved type of commercial rig - and at present this does not include new rigs such as the QRP-Plus. Strange to find such petty restrictions in a country one always thought was so democratic !

QUOTE OF THE WEEK. "QRP is not a hobby,it is a way of life" ,HA5CIU.

WANT TO MAKE AN ANGEL HAPPY ? If you have the circuit of the Collins 75S-2 receiver you can do so by sending a copy of it to our friend Angel Gerasmimov,LZ1SM at BL234 WH.2 Mladost-2, 1799 Sofia, Bulgaria (or via G8PG if you prefer).

AWARD NEWS

QRP MASTER. We welcome IK5SRD and SM5DQ to the Worshipful Company. Well done both !

QRP COUNTRIES. 100 IK5SRD;75 SM5DQ,25 G3JNB,G5HD,GoTYM,HA5CIU.

WORKED G QRP C. 700 G2DAN;680 GoIFK;460 G3MBN; 180 GW3SB,GoKJN; 140 G4ICP,G3ZHE; 100 F5NZY; 80 G3KCJ,GoSWU,IK5SRD,GoTYM,SM5DQ; 20 IK3VZK, GMoUWM,US1REO.

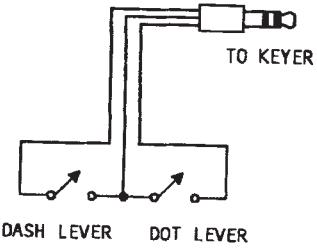
I WANT TO WORK IN THE WEST for a few months, any job for keep and pocketmoney, says Peter Gritsay, US1REO, of 15B Moskovska St, Apt 58, Nizhyn,Chernigiv Region, Ukraine. Any offers ?

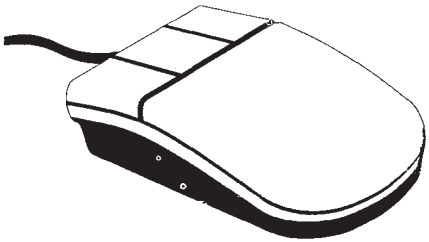
NOVICE NEWS

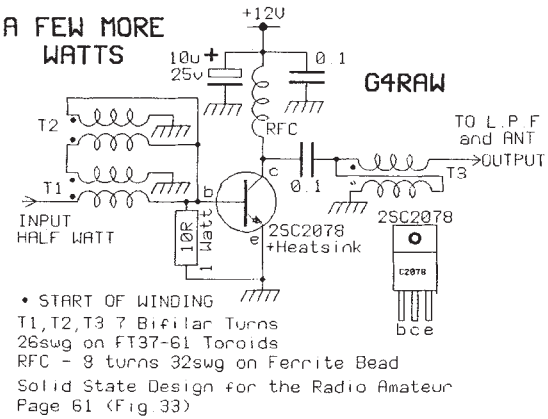
Steve Ortmayer G4RAW
14 The Crescent, Hipperholme, Halifax. HX3 8NQ. Tel: 0422-203062

Cris 2E0AFK/G1TCD and Dave 2E0ALN/G1TDA have written regarding the position of a Class B licence holder who on passing the Novice 5 wpm Morse test can also hold a Class A novice Call. They would like to see a special callsign which would indicate their status e.g. G1TCD/N or/2. Chris and Dave get on air remarks such as "Good luck with the full RAE" or "Are you going to take the full RAE" so they then have to explain Chris and Dave would also like to see the 80m novice allocation include GB2CW on 3.550 and GB2RS on .3.650 so that they can join in the net after the local news on a Sunday.
I have heard moans at the local Club from members who say "I can't expect to work DX I only have a small garden and poor antenna".. Well Jim 2E0AGP has a much folded G5RV and has worked some good DX on 21 MHz. USA. Canada. Brazil. Tanzania etc. Jim has discovered the thrill of making these DX contacts with low power and simple wire antennas. Jim is modest however and explains that he is an ex RAF WOP so has a good command of CW.
I had a nice QSL card from Dave 2E0ALN with the motto TURRIS FORTISSIMA EST NOMEN JEHOVA.....
How many transistors do you need to communicate?? 5 million or so in a computer on Packet or just one in "10 Min TX". George G4AWT has built a "10 Minute TX" and has good results, his best DX being WD8 with 1/2 a Watt on 20m.

HANDY HINTS FOR A HAPPY SHACK
Bill KD7S has sent details of his "MR MOUSE KEY" (it was mentioned in QST). The twin paddle key is made from a redundant computer mouse. The two click switches are hooked up to your keyer as shown.







A FEW MORE WATTS....
Builders of many simple transmitters like the Universal QRP Transmitter will notice that the power can drop off at the higher frequencies 21 and 28 MHz. I have used the following circuit from "Solid state design for the Radio Amateur" to good effect it should give the permitted Novice 3 Watts on 21 and 28 MHz when used after a transmitter giving about 1/2 a Watt out.

That's all for now, please keep sending me your news and hints.

SSB COLUMN : Dick Pascoe GØBPS

Seaview House, Crete Road East, Folkestone. CT18 7EG. Tel: 01303 891106

The first bit of news this time is from Pat G3OUC who has built three SSB transceivers to use with his kites. He calls them skyliners! His 160m version can deliver 15 watts PEP with a 455 Toko mechanical filter. His eighty metre version will deliver up to five watts out and is built around the 10.7MHz crystals filters. The forty metre version is base around the clubs 9MHz filters. Using a delta kit in one hour he worked G3STD, DF8UH/M and several other "G" stations. These rigs are run from an 11Ah motorcycle battery. His main interest has always been much like my own in the winter months, top band. but he is getting pulled more and more towards eighty now and professes to have never used commercial equipment!

During our trip to Friedrichafen George RJV and I met a lot of members including Norman, G0NNA / DL6NNE who lives in Germany now. He has an interesting idea about the filters used in SSB. If the bandwidth of our SSB signals could be reduced to about 800Hz to 1KHz where most of our audio power is anyway. This restricted bandwidth means that our power output is concentrated into the narrower bandwidth. Norman has tried several times to emulate this and with some success. With a bandwidth of 1kHz it was far easier to copy speech with QRM and "monkey chatter" present. The speakers voice was not recognisable though. But... using a 1kHz two pole filter in front of the transmitter lifted received reports by 1 and 2 "S" points a massive 6 - 12dB gain

Some critics have said that the audio does not sound great, but... 6 - 12dB better! Any system would need to be tailored to a particular persons voice but the gains are not small. He suggests fitting this filter as an addition so that it can be switched out when not required. As Norman said, "one to two "S" points couldn't be easier to find. Now, I wonder if this will work on my IC202S?

Eric G0KRT reports that his Index Plus has been giving him a lot of pleasure with contacts into DL, I, UX and G. Not so happy is Larry W1HUE/7 who also has a Plus, but has "fried" his final FET and receive mixer not once but twice, has any other member had problems like this I wonder.

Finally, during the trip to DL George and I had several QSO's whilst driving. Calling CQ on a motorway with LX/G3RJV brought forth a lady member from North Wales who's callsign I lost. Our LX prefix did not bring forth the pile-ups we expected but as soon as we crossed over the border into Germany it started.... Oh well, at least we had fun.
The show is reported elsewhere but for those who are contemplating the trip, DO GO, a very worthwhile experience, even if it did cost me both arms and a leg.

That's it for now, your news and views to me please at Seaview House, Crete Rd E. Folkestone. Or to GB7RMS, or even Email me at Dick@kanga.demon.co.uk. 72 es TTFN

MEMBERS' NEWS

by Chris Page G4BUE

"Alamosa", The Paddocks, Upper Beeding, Steyning, West Sussex BN44 3JW.
Tel: 01903 879750
Fax: 01903 814594
Internet: g4bue@pavilion.co.uk
Packet: GB7DXS on UK DX PacketCluster

It's hard to imagine that this is the Autumn edition of SPRAT and the QRP Winter Sports is only four months away! I shall be applying to use the special call GBØQRP again. Why don't some of you think about obtaining a similar call for the Winter Sports, it all adds to the interest of this unique and super operating event.

DL2FI is using a new transceiver from Poland, called the Digital 942 and will be pleased to pass on information about it to interested members. He also uses the HW9 and the QRP-Plus which, by hacking the Eprom, has now got the CW speed in 1wpm steps. Peter is the founder and Chairman of the *Activity Group QRP Berlin* and the writer of *QRP QTC* in the German *Funkamateur* magazine.

G4ZHI confesses "that until last month I hadn't touched the key from the day I passed the test". Bryn says he has now "broken his duck with CW contacts"! Ralf, **DL9GTI,** was working portable SV5 in July with QRP to a GP and LW antennas. Look for **DL1FDF** on the QRP frequencies (CW and SSB) as VY1QRP/P until the 16th October. Steve will be travelling through VE3-VE8 and finally the Yukon Territory.

A couple of replies to my request for captions to the photographs of Dick, GØBPS and me in the last SPRAT made me chuckle: from Rich, **WØHEP**: "I'll get that darned mouse. Just a little cheese across these terminals....." and from Phil, AD5X: "I should probably do a better job of hiding my linear!" Actually Phil, I have an Ameritron AL-1200 amplifier on the shelf just above my head which causes eye brows to raise when QRPers visit my shack for the first time!

G4JZO has a Butternut HF5B Butterfly antenna but has not used it yet as he is concerned about possible planning problems. Martyn would be interested to hear from members using this antenna. **2EØADM** has been working into Europe on 50MHz and 10m this summer, all on SSB. Les modified his half size G5RV by making an adapter to change it into a top loaded vertical for 80 and 160m giving it about 10dB advantage, while also tuning well for 30m.

G3OQF took his 2W 40m home-brew rig on holiday to Noirmoutier Island, off Nantes and made many QSOs using an end-fed inverted vee antenna hung from a 6 metre telescopic fibreglass fishing pole. Even with the 20m long wire strung round the hotel bedroom, Dick got as far as Berlin. For obstructed sites (eg a back garden) a 9 metre pole is necessary. All these poles collapse down to 110cms and can be taken anywhere, even as aircraft hand baggage.

Andy, G4VPM recently visited George, GM3OXX at his new QTH.

Recent member **CT1EET** says he is not a "full time QRPer", but over half of his QSOs are on QRP CW. Rogério used a MFJ 9020 to an indoor dipole while on holiday at the Algarve and worked around Europe and to the USA with it on 20m. He also used it to a centre fed Zepp at La-Faute-Sur Mer in France while on another holiday. Rogério

also uses a homebrew Coker for 80m and a LCK for 40m and is waiting for a QRP Plus to be delivered from the USA. **DL6YCG** has been using a QRP Plus to an inverted vee on 40m and a 27m longwire for other bands, with good results. Ben has just got a Racal 17L receiver and also uses a Telefunken GRC9. He is a member of the Military Wireless Amateur Radio Society and enjoys using old military equipment.

Rogério, CT1ETT, at La-Faute-sur-Mer while four years old Pedro looks on.

Congratulations to **GØKCA** on being awarded only the second *EUCW QRP Certificate*, the first being awarded to DL2LQC. Congratulations also to SWL Gary Fisher and Michael Austin of Dunstable, Beds on passing the RAE. They are both studying Morse so they can obtain GØ calls and take part in this years Winter Sports. **VE7BS** put the following message on the internet on 1st August: "Whoever was managing the ionosphere this morning was doing a good job. Among the VKs worked on 1832kHz was **VK5EDM**, 5 watts SSB to a 30 ft vertical surmounted by a frying pan". David, **G3OEP**, was again organising the *QRP Beside the Seaside* meeting at Gorleston on the 16th September. **G3DNF** worked 3V8AS recently for a new QRP country and I had to break the sad news to Gordon that the ARRL DXCC Desk won't count it as the station is not legally authorised by the Tunisia authorities.

G4ZHI says many amateurs use the G5RV as a multi-band antenna because (a) it works, (b) it is simple and (c) they can be bought ready made. The disadvantage is that it is not efficient on many bands especially the non-WARC bands. ZS6BKW redesigned the G5RV a few years ago using computer programs to optimise the dimensions. This results in a much better match over a wider range of bands, including the non WARC ones. The disadvantage is that the downlead is 400Ω feeder which has to be made up, though this is very easy. W.H. Westlake sells 450Ω feeder which should be OK. Bryn will be happy to supply the dimensions to members interested.

Dave, **NFØR**, is planning to build the HF9 receiver in SPRAT 82 and would like to hear from others who have built it. **W1HUE/7** has twice had the final FET and receiver mixer 'fried' in his Index Labs QRP Plus. Larry would like to know from others who have had this happen and the circumstances in which it occurred. **ON5LJ** has built a replica of a *Whaddon Mk 7 Paraset* used by S.O.E. in WW2. Between January and July Joe used it on 80m to work around Europe. He is offering details of the rig and a schematic diagram to members free; write to him at J. Lesuisse, 3 Rue de la Passerelle, 4031 Liege, Belgium.

G3RHP would like to hear from *Ten-Tec Scout* users. When using a borrowed rig on 20m, John says there is an audio hiss, the break-in keying chops off most of the first dot, the VFO stability is poor and the VFO knob and spindle is not mounted rigid enough. He spoke to Ten-Tec and they said he must have a faulty rig, and a replacement rig was much better. John thinks the keying and stability is inferior to the *Century 22* but likes the variable bandwidth filter. This is the Jones Filter, the same as used in the *Argonaut II 535*, and I agree with John's opinion of it. **G3KJX** took his *Scout* on holiday with him to Portugal in June and managed to work **D44/CT1RL, FY/DJØPJ**, HP1AC on two-way QRP plus some VKs on 20m. Brian was using 5W to a G5RV or a doublet and was also QRV on 50MHz.

DL2RM would like to hear from more members using a windom antenna for QRP. Rudi has been using a FD3 but with a 1:4

John, GØFSP operating from Sark as GUØFSP/P at the beginning of May with 5 watts from his *Ten-Tec Scout* and the 30ft vertical reviewed by G8PG in SPRAT 80. John made over 100 QSOs in five days operating, the best being with club member KB1FKI, Al who was running 4 watts. John promises to let us know in advance the next time he goes on a QRP DXpedition!

balun and 75Ω coax to an ATU and then 50Ω to the transceiver instead of the usual 1:6 balun and 50Ω coax direct to the transceiver. **DJ1ZB** helped him develop this arrangement and Rudi says it works very well from 10 to 80m including the WARC bands. G3BSK uses a windom antenna on 20, 40 and 80m. It is 195½ feet long tapped at 40 feet and fed to the ATU via 300Ω twin feed. Max uses an FT890 at 5W and sent in an impressive list of European stations worked with the windom. He returned to amateur radio 2½ years ago after an absence of 40 years and is enjoying QRP.

GØKCA keeps a card index of members worked and when John reached 300 members, he did a survey of the equipment and antennas used by them. He found 28% were using homebrew equipment (which is very encouraging), 24% using Ten-Tec, 17% Kenwood, 15% Yaesu, 6% Heathkit (which is surprising low) and 5% using Icom. Dipoles were the most popular antenna used by 21%, with the G5RV coming a close second with 20% followed by longwires with 11%, doublet 8%, beam 6%, inverted vee 6% (which is surprisingly low), delta loops and verticals 4% and end fed wires on 3%. **DL2RM** may be interested to know only 5 out of 310 members were using windoms!

That clears the files again. Please keep your news (and photographs) coming, and don't forget I am now on the Internet. Let me know how your autumn goes, by the 20th November, please.

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