

QRM

April
1987



Newsletter of the Tasmanian Division
of the
Wireless Institute of Australia

(Insert in 'A.R.')

Tasmanian Directory.

The new Directory of Divisional Officers will be included in the May edition of "QRM", the first one after the A.G.M. at TARC.

Northern Branch Officers for 1987/88 are:

President: Gra VK7ZGG. Vice-President: Mike VK7MA.
 Secretary: Rick, VK7ZZ. Treasurer: Bob VK7NRR.
 Broadcast co-ordinator: Bill, VK7AV.
 WICEN co-ordinator: Phil, VK7JJ.
 QSL co-ordinator: Col VK7LZ.
 Education Officer: Peter, VK7ZPM.

Next two Northern Branch meetings: April 10th. and May 8th.

Northwestern Branch officers for 1987/88 are:

President: John, VK7KDR. Vice-Pres: Greg, VK7ZBT.
 Secretary: Tony, VK7AH. Treasurer: Bruce, VK7MB.
 QSL's: Steve, VK7EQ. Activities: Greg, VK7ZBT.
 WICEN: John, VK7ZPT. Stores: Rob, VK7KAB.
 Repeater: Andrew, VK7ZAP. Broadcast: John, VK7KDR.

Next two N.W. Branch meetings: April 14th. May 11th.

Southern Branch Officers for 1987/88 are:

President: Keven, VK7KV. Vice-Pres: Barry, VK7RS.
 Secretary: Stewart, VK7NXA. Treasurer: Phil, VK7BZ.
 Repeater co-ordinator: Anthony, VK7ZTA.
 WICEN: Alan, VK7CI. Stores: Mike, VK7ZBW.

Next Southern Branch meeting: May 6th.

Broadcast Information.

Time of transmission: 09.00 local on Sundays.

Frequencies: 80m: 3.570 MHz. 40m: 7.13 MHz.

2m: (FM) Repeaters, 2, 3 and 8 linked.

2m: (SSB) 144.1 MHz.

6m: (SSB) 52.1 MHz.

News items or other copy for broadcasts should be sent to:

N.W. B'cast Officer: John, VK7KDR, 004-372112.

North " " : Bill, VK7AV, 003-441584. (Temp).

South " " : John, VK7JK, 002-293402. (Temp).

QRZ? QRZ? QRZ? QRZ?

Someone was asking on the broadcast recently about a manual for the TS520S but the enquirer cannot be traced. If the need is still there, please contact the Editor, and your problem will be solved.

This saying was brought to our notice by the response of WIA members - or a certain proportion of them - to requests for nominations at recent A.G.M's:

We like work...it fascinates us....we can sit and watch it for hours on end.

"QRM" hit another disaster last month. In spite of the fact that the parcel of 375 "QRM's" was handed in to the Mail Centre in Hobart THREE days before the deadline laid down by the Automail firm who carry out the insertions, copies were still not distributed in "A.R." The Federal Office did its best to help - in view of the TARC requirements - by getting the parcel returned by courier, making up three separate parcels, one for each Branch, and then sending them back across the Bass Strait!! What do we have to do to achieve success?

The number of questionnaires returned has now risen to 33 - just about 10% of the Tasmanian membership. To summarise the opinions expressed will take some time, but some results will certainly be ready for the A.G.M. at TARC. There was most support (I was going to say "massive" but 95% of 10% isn't a landslide by any means) for "QRM" to retain its present format but with "more local news", "WICEN reports" (these are being published now under VK7CI's -Alan's leadership), "Branch doings", "Divisional reports", "repeater operations/problems", "reprints of past projects", "new calls" and "home brew articles". The interesting point to note is that nearly all these headings require an INPUT from a whole range of members. So, the Editor gives a hearty cheer at this point, expecting that those who wrote these headings (and took the trouble to send off their answers) will "put their money where their mouths are" and supply that input.

Other points made : there should be a Tasmanian Division News in "A.R." - we don't exist in it!! There should be a "bumper" issue of "QRM" once a quarter instead of monthly. There should be occasional personal portraits of local celebrities. And Finally, (as they say) more people would make use of the broadcasts if they were transmitted at 9.30 a.m.

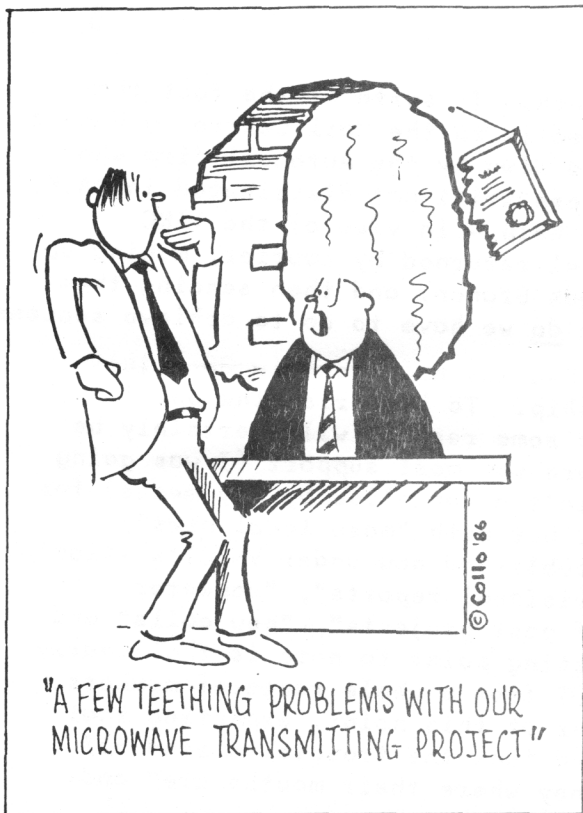
Your Editor is mightily encouraged by the expressions of appreciation incorporated in many of the questionnaires. As far as he is concerned, "QRM" can improve greatly if the suggestions are carried out. He has listed them all and will now be tapping the fraternity state-wide for the variety of topics outlined.

You may also be interested to know that the Ed. has received his first completely negative questionnaire return, anonymous, of course, but postmarked Zeehan. It would be embarrassing to print some of the words used (not to the Ed., but to some of his readers!) and there's not a positive suggestion in it. If only the writer had put his name on it, he would have proposed for next year's Editor. What an improvement there would have been then!!

Back to more serious matters: since our limit is 10 pages and 250mm by 190mm, an increase in the amount of copy will entail a reduction in the size of print - but go ahead, just the same - force the Ed. into packing more on a page. It will be a task in which he will take great delight!



4.



"When is an SWR not an SWR?" or
 "How to lead yourself up the
 garden path".

by Noel, VK7EG.

We all seem to have a pretty good idea of what an SWR is. We also understand that having an SWR means having a mismatch, and we know how to calculate from SWR readings what the mismatch is in terms of input to load impedance. Right?? WRONG!!

I thought I knew a bit about SWR until I started discussing the whole question with a VK5 (by rather protracted correspondence).

It has been my experience, and no doubt yours too, that it is possible to adjust the indicated SWR at the rig by altering the length of coax. The text books tell us that this is possible, stressing at the same time that such trimming does not alter the

mismatch at the antenna. No argument there. The problem came about because the VK5 (a learned gentleman) insisted that it was quite correct to apply the formula $SWR = \frac{R_L}{Z_0}$ and so calculate the load

impedance from SWR readings. He made the point that it mattered not where the SWR meter was inserted in the line, "because SWR does not vary along the line". This did not fit the idea of being able to trim coax length for a match. ... Of course, I knew he was wrong, but was he? And how to prove it if he was? This, then is where we started. He would quote one authority and I would have to read up on that point to get my thinking straight. As a result of my studies, I would then quote other authorities, and so it went on. I don't if HE is convinced, but I do know that I have a much better understanding of the problem. I know for example, that SWR is only equal to $\frac{R_L}{Z_0}$ when the load is purely resistive.

I know that a simple SWR meter, such as we mostly use, will give an inaccurate reading of reflected voltage unless this voltage has a sine wave form. This inaccuracy becomes more pronounced the more the wave form departs from the sine wave. The wave form is only sinusoidal at points where voltage and current are in phase, and become less and less so, as the impedance becomes more and more reactive. .. Therefore our much loved SWR meters can and do lead us up the garden path!! .. So, do we throw away our SWR meters?? No, of course not. BUT we do need to be wary of their shortcomings and take these into account. We can use our SWR meter to check the match (into the rig) by having the meter within a couple of feet

of the rig.

5.

If we want to get all clever and work out what the load impedance is at the antenna, we should use an impedance bridge capable of measuring the reactive content. OR we should be sure that we are measuring at the resonant frequency of the antenna, this will ensure that we have a resistive load. We should connect our SWR meter at an exact electrical half-wave from the load, or multiples thereof. THEN and only then can we use our SWR readings as a basis for calculation.

Noel VK7EG, 30 Spencer St. Burnie.

Letter to the Editor.

Dear John,

The following is an account of the work that several amateurs do for the Royal Hobart Regatta Association...

For many years the Wireless Institute helped to provide communications for the Royal Hobart Regatta. The, due firstly to the lack of volunteers, and then the fact that the Association set up its own communications network, the amateur involvement ceased.

About three years ago, amateur radio was again called upon, but this time in a quite different role. Now it is used to provide a means of "on the spot" reports, which are relayed over the public address system.

The starts and first third of the course of many of the rowing races are broadcast direct to the public. This is very professionally done by Alan, VK7ZAR, from one of the Umpire's runabouts, using two metres or seventy cms. This signal is received in the announcers' booth at the Regatta ground by Shane, VK7BX, and on cue from the announcer, patched direct into the P.A.

In a similar way, the Trans-Derwent swim is covered, with the finish handled by Keven, VK7KV, and Warren VK7CV.

This year, for the first time, coverage of a presentation in the chopping arena was also accomplished.

One year we even had a "bird's eye" view of the Regatta by courtesy of Brian VK7RR, from a light aircraft.

Geof, VK7ZAS, has looked after the technical side of the P.A. for many years, and Mike, VK7FB, runs "Regatta Base" on the 27 MHz and V.H.F. marine bands, controlling some thirty patrol boats.

So, amateur radio is well represented at the Royal Hobart Regatta each year.

DE VK7FB.

Oceania Net.

Bill, VK7AV reports, courtesy Bob, VK7NRR, that the Oceania Net is being re-opened by Ivan, ZL1AQO, so here are the details:

VK/ZL OCEANIA NET, Saturdays, from 21st. March 1987 on 3.570 MHz at 09.00 Z.

6.

You ask for more Branch news in replies to the questionnaire - well, here you are!

Southern Branch News.

There was a memorable event recently, when W.I.A. Medallions were officially presented for long and meritorious service to the Institute, to

Edgar, VK7RY .. and Tom, VK7AL.

Congratulations to you both, and may your association continue for many more years.

Three new callsigns were reported: Stewart, VK7NXA, David, VK7NDO and Wynn, VK7NYW

Well done and welcome to the group. There are more to come - a clear indication of the effectiveness of the Novice Course held last year.

VK7CI, Alan says there is to be a WICEN exercise in the near future to take place before the really bad weather sets in (!) and details will soon be available to both participants and interested observers. Probable date: mid-April.

Shane Brian Alderton VK7NRT was admitted as a member of the WIA recently. We hope he will find a great deal to interest him in the activities of the Southern Branch.

Things are looking up! Mike VK7ZWW has indicated his willingness to be considered for nomination for a position on the Council. Thanks, Mike - let's hope your example will encourage others to follow!

The Activity Centre has been very busy lately, with alignment and testing of a goodly number of 151 2m. units. Crystals are now available for Rptr. 2 and Channel 50 for these units, giving a useful opportunity to get on the air on VHF.

Northwestern Branch News.

Andrew, VK7ZHA, is involved in the construction and programming of a RTTY Mailbox system, utilising the repeater on Mt. Duncan. For this to be successful, interest and input besides cash will be required. The reaction so far is disappointing. Is it because you don't know what a RTTY Mailbox can do for you? Or do you need thinking time? Mt. Duncan repeater is very accessible over a wide area, including across the Ditch. Many in the north would have no difficulty in getting in, so have a word with Andrew VK7ZHA and discuss the project with him. There are several Siemens 100's around collecting dust, or you could go via computer. So give the programme some positive consideration and Andrew something worthwhile to look forward to. Software is on hand thanks to our Victorian cousins, as is technical advice and participation in using the system.

VK7ZAP is anxious to help with conversion of carphones or RTTY terminals. Please advise him of your need and be prepared to set up at the school.

Amateur Radio

Where North Meets South

VK7 STAGES A STATE FIELD
DAY.
By 7PA.

7.

As the outcome of an inspiration of some 12 months ago, a committee of three, Messrs. C. Wright (7LZ), C. Parish (7CP), and J. Wallis (7JW), representing the Northern districts, met Messrs. H. Moorhouse (sec.), W. T. Hooker (7JH), and J. Morris, who represented the South, at the club rooms, Hobart, on March 9th last, and as a result, a State Field Day was arranged—the first of its kind in Tasmania—to take place on Sunday, March 31st.

The district of Campbell Town (approx. 80 miles from Hobart), was chosen as a satisfactory area although nearer to the Northern end, the reason being, that the North Western members would be better met for travel distance.



The VK7 Gang
(Pop Medhurst is the guy with the striped tie in the centre.)

The arrangements were well carried out, and the enthusiasm with which the whole affair was accepted is manifest in the muster that resulted. Here I would like to say, that, as all who know him are aware, a big proportion of this success must be attributed to the untiring effort of our very active secretary, and with due credit to the committees that assisted him.

Cars were all at the starting point in time for a line up at 09.45, when those with cameras indulged themselves in photography. Then sealed instructions as to location of transmitter were issued to each car, these for use of unsuccessful searchers, and a start was made.

Weather conditions were perfect, although earlier a heavy fog had made the prospects look bad.

The transmitter was in the hands of 7LZ and 7JW. The 80-metre band was used, and 'phone, the order of the day, the limit being 20 miles radius from the starting point.

The time set out for transmission was 10.00 to 13.00, and a punctual start was made. Unfortunately, either owing to local conditions of some sort or other, or the position of the transmitter itself, signals at the start were nothing more than a very weak carrier, and it proved to be a pretty knotty problem, and although the winning car was in within an hour and a half, most were forced

to take full advantage of the time, in fact, the transmission was carried on till 13.05, owing to a couple of the cars being seen approaching the locality at the time scheduled to close down.

The transmitter was situated on the road between Epping Forest and Cressy, approximately 13 miles air line from Campbell Town, with two roads by which it could be approached, one, an open road from Epping; the other, a road from Campbell Town, barred by gates innumerable, much to the annoyance of those who happened that way.

It was not until within about three miles of the transmitter that the modulation became readable, but from then on, the location was easily made.

It was an ideal situation, a small clearing surrounded by low trees of wattle and honeysuckle, good, both as a hiding place and also as a picnic ground.

The transmitter consisted of an Electron Coupled Oscillator 224, and a 59 Power Amp., with 10 watts input, Suppressor Grid Modulator was used, power for the F.F. end was taken from a 500-volt generator, driven from the rear axle of 7JW's car, the wheel being removed and a pulley fitted in its stead, while the Audio Amplifier and Modulator were battery fed. The outfit was complete even to a grammo. motor, and the microphone was of the P.M.G. variety.

All cars in, lunch was the next on the programme, and all did justice to this very necessary adjunct, which, in some cases, even consisted of grilled chops, done by the use of the camp fire, and with the aid of a forked stick.

Appetites appeased, and a rest taken, cameras were again produced.

A variety of receiving equipment was to be seen, from the detector and one, up to a four valve with an R.F. stage, also, loop aerials of all sorts and sizes, some outside the cars, others inside, directly attached to the receivers, were used.

7CK "landed the bacon" an hour and a half after the start, and this is possibly attributable to some extent to his using an R.F. stage, giving him a better lead off in the early stages when signals were so weak; not wishing in any way to discredit his ability, for he was far ahead of the rest. 7PA was second in for the day, and first for South, others following in fairly close succession.

1st May, 1935.

Our secretary and others, visited Lake Leake, to investigate the possibilities of a fishing excursion—hi!—but owing to it being in the opposite direction to the transmitter, they were nearly late for the kill!

Lunch and photos finished, an hour was spent in general chatter between Northern and Southern gangs, after which, owing to the distance from home, au revours were exchanged, and a start for home was made, each as the mood suited.

There was the variety of incidents usually associated with such gatherings, some amusing, some printable, and others not so printable, as those concerned will recall. Of course, one or two mishaps must be, or things wouldn't be complete; amongst these one car had to be towed home after an attempt to run without lubrication—another wrecked a couple of wheels and a running board and mud guards, but was fortunate in being able to procure a second spare wheel in time to take part in the even these two were the major troubles others had tyre and other minor troubles.

Nostalgia Column.

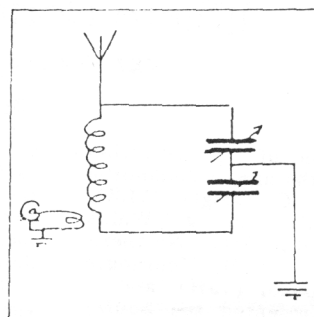
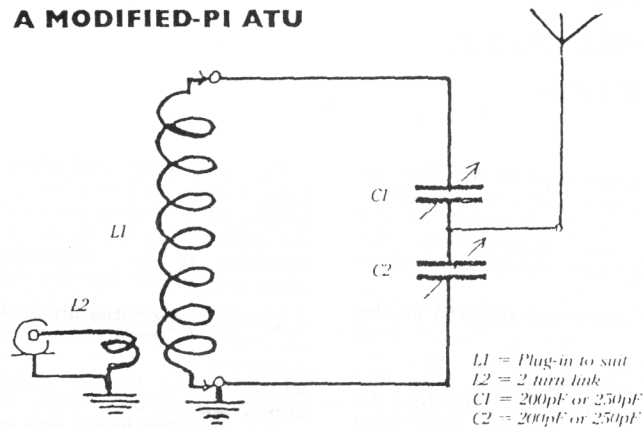
Without any comment at all from the Editor, present-day readers may find a great many points giving food for thought on this page.

52 years ago!! Think of it!

(Anyone who can sort out who is who in the photograph - even "Pop" Medhurst - must have a better magnifying glass than the Editor).

Later in the year, we hope to publish a 50-year-old Dinner Menu which has some very interesting signatures on it. Let's hope the archives of the Southern Branch in Newtown Road will have some equally reportable items for "QRM" in 2035.

A MODIFIED-PI ATU



Conventional Pi coupler

The beauty of the modified-Pi is that by using two independent capacitors in series it allows an infinitely variable 'tap' down the coil as the proportion of the two capacitances varies. With equal capacitance the 'tap' is effectively half way down the coil. When the lower capacitor C2 is greater than C1 the tap is more 'earthy' and the impedance at the feed point is lowered. Both capacitors must be adjusted to maintain resonance and cannot be ganged to a common spindle. Their frames and spindles are also not at earth potential and must be insulated from the chassis or panel. A pair of 200 or 250pF variables are ideal in this circuit and the coil inductance for each band will be as suggested in the earlier article describing a simple parallel tuned circuit. The total capacitance in circuit for each band should give resonance with this capacitance in pFs being equal to the band in metres; ie 40pF on 7MHz or 40m. Plug-in coils are essential, for most attempts at switching can prove to be lossy and shorted coil turns must certainly be avoided.

The G3BRD 'Special'

Another good friend of the writer is G3BRD (with whom he once shared a house many years ago) and with his permission I shall attempt to describe his off-centre feed antenna which is proving to be almost miraculous in its DX potential. This antenna has not been tried at the writer's QTH but I have seen the original, operated with it, and can testify as to its great performance. John, G3BRD developed the aerial when living in Canada operating as VE3BRG and he refined it for use on 14MHz when he returned to live in the UK.

A top, one wavelength long on the operating frequency

It has a top one wavelength long on the operating frequency and a 75 Ohm coaxial feeder which is connected a quarter wavelength from one end at a current maxima

point. No balun is used and the mean aerial height is about 30 feet. Although simple in concept the actual setting up of the system demands some patience if it is to perform properly. The resonant top starts off about 68 feet long before testing and 'pruning' and it is broken by a small pyrex insulator 16ft 8in from one end; that end nearest the shack window. Across the insulator the coax is connected, which for the 100 watt output levels used by G3BRD need only be standard TV aerial type cable. End insulators are used and one end of the wire goes to a convenient pine tree. The other end goes over to a 20 foot pole fixed to the garage and the feeder drops straight down at right angles for about 16 feet to the shack window below. This feeder must drop vertically.

"Each inch of the top at the far end raised the resonant frequency by about 100kHz."

With low power and an SWR meter in the feed line at the shack SWR readings are taken over the band. If as suggested the top is too long the best SWR will be at the LF end beyond. Considerable pruning next takes place but no wire is cut at this stage; the top is dropped and some excess wire is pulled through the insulator at the far end furthest from the feed point and wrapped around the top temporarily. By continuing this procedure the SWR will come down. G3BRD initially found that his SWR was much too high (more than 1:4) but pruning brought this down to 1:1.1 on 14.2MHz. He found that each inch of the top at the far end raised the aerial's resonant frequency by about 100kHz.

When finished the aerial was quite flat across the band and the SWR only went up to 1:2.1 at the band edges enabling SSB and CW operation. It is important that to begin with the top is longer than theory suggests and also that all pruning takes place at the far end away from the feed point.

The Modified-Pi ATU allows an almost perfect match to the 500-600 Ohm feed lines of Windom or VS1AA aerials. It is very similar to the standard Pi coupler circuit.

This off-set feed dipole has enabled John to work some fantastic DX and has left many stations with beams spluttering when he raises the rare ones before they do! He never uses more than 100 watts PEP and finds that the four lobed radiation pattern of a full wave antenna does him proud over the major land masses. A long list of prefixes would be needed to amplify the results gained from this antenna, but mouth watering items such as VK0, JT, 3B8, 3B9, KH6, C31 and etc. are just a sample. The reports received average S6-7 which is very good for a wire antenna at that power level.

Should the reader like an efficient mono-band aerial for 14MHz which does not need an ATU and the coffers do not run to the purchase of a tower and beam, the G3BRD is worthy of investigation. It is a real DX antenna, cheap, not too difficult to set up and ideal for the average garden.

Other systems and things

Descriptions of aerials which use off-centre feed with 300 Ohm ribbon feeder may be found (eg the W9GJY and others) and DJ2KY has described a version which uses a 1:6 balun at the feed point and has 60 Ohm (where do you find this?) coax feeder. No description of these aerials given for they have not been seen or tested by the writer and no guarantee of their effectiveness can be offered.

Before leaving the topic of asymmetrical feed some mention must be made of the fact that they can be used as Marconi aerials and tuned against ground on the LF bands. Then the feeder acts as the radiator and the top becomes a top loading capacitance which contributes little to the radiation. The system then becomes a top loaded 'T' aerial and is vertically polarised; just the job for 160m DX!

Dear John,

On the 15th Feb broadcast, under the heading "Federal notes from VJ7JG", mention was made of the recent readers survey carried out by ARA and, from the published results, certain conclusions were quoted.

For example, it was stated that because 47% of those responding only agreed "to a point", it appeared the Linton/Harrison proposals "would not be a goer". It was also stated that because only 21% felt CW should be dropped, there was "still an interest in CW".

Having been caught before by statistics I know how easy it is to fool ourselves and, while we are all entitled to our opinion, the fact that the remarks were made at all, seems reason enough for us to examine the whole survey more closely. If only to remind ourselves of how careful we must be in reading statistical data.

Firstly, we must look at the stated reason for the survey. This was introduced by the statement that, "Every now and then we like to make sure we are steering a course that complements the views and interests of the readers." To me this means they simply wanted to know how to make their magazine more saleable.

Secondly, lets look at the size of the sample. That is, how many replies they received. 751 were received by 30 Oct 1986, and 500 were evaluated to provide the results published. What does this mean in relationship to the amateur population of Australia? The survey polled only 385 amateurs out of a grand total of 16474, representing 0.0233%. So we are looking at the opinions of less than 1/4 % of the licenced amateurs. Hardly a meaningful proportion! As for the 115 non amateurs, my calculator became confused when I asked it to work out what percentage of the Australian population they represent!

Do you wonder why I become a little wary when the opinion of such a minute fraction of licenced amateurs is used as a basis for saying the Linton/Harrison proposals will not be a goer?

As far as CW is concerned, while there is certainly "still an interest", it is significant that 48% of limited and combined licencees are in favour of it ceasing to be a requirement. (I wonder why?). On the other hand, 94% of the full calls want it retained. (Could this be construed as an "if I had to do it, so should you" attitude?)

I suggest we get the survey results in perspective before we draw too many conclusions. It is too easy to be lead astray by statistics, especially when the sample is only 1/4 %!!!

Let us always remember two truisms about statistics.

"You can prove anything with statistics" and;

"There are three kinds of liars, liars, damned liars and statisticians"!

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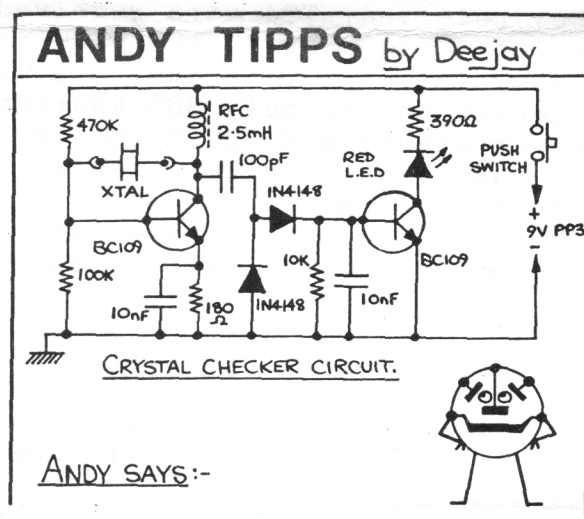
from VK7RM QTHR or phone 002.232808.

May Issue Closing Date.

Please let the Editor have all copy for May "QRM" by Thursday 16th April. Either by phone to 002.293402, by 2m. FM via Rptr. 2, or by letter to: 1, Darville Court,
Blackman's Bay, 7152,
Hobart.

ERRATA.

Our more salubrious technical magazines aren't the only ones to make errors. In our March edition, we reported that crystals for R7 could be bought for the 151 units. This should, of course, as all you boffins knew all the time, really have been R2. And under WICEN News, once again R7 should be R2. Hope some of you haven't been searching through all the info books to find what frequency R7 is on!



"This is very useful gadget for you to carry around when visiting exhibitions, rallies or second-hand dealers:- a pocket crystal checker.

Plug in a crystal, press the switch, and if the crystal oscillates, the L.E.D. will light".

(with acknowledgments to "Amateur Radio" U.K.)
