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OF AUSTRALIA TAS. DIVISION.

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Here it is again, the December issue. They seem to come around quicker every year, maybe its the pace of life with insufficient time to do all that needs to be done, let alone some of the things we would like to do, or maybe its that we are getting older and slower.

Looking back on this year, we have had some sad moments with the demise of some of our pioneers in amateur radio.

But life goes on, and they would have been proud of the work that has been done in the Division as well as the Branches.

Firstly the Annual General Meeting and the Constitutional changes, this seems to work very well, maybe even better than we had hoped for, even some of the arguments it inadvertently caused brought some of the disinterested amateurs back in the foreground.

The Annual dinner in Devonport and the Jubilee dinner in Hobart were a pleasure to attend and credit must go to the people that organized these functions.

There is no need to say anything about the Hamfest other than that a combination of proven as well as new ideas plus your support made it the success it was.

The Northern equipment store is having its best year yet, with sales for the first 7 months already exceeding last years total.

As for QRM we have recently made some changes that are being appreciated by the members, these include an increase in the number of pages, offset printing and a better quality paper.

In the near future we may also change to a commercially printed cover to further improve its appearance.

At this time I would like to take the opportunity to thank all the people that have contributed articles and helped with the production of QRM.

On behalf of these people and myself, I wish you all a very happy Christmas and a prosperous new year.

John VK7JV

MEETINGS

- Dec. 4th North West Branch, Lakins Hall, Ulverstone
- Dec. 15th Northern Branch BBQ at the QTH of Joe VK7ZGJ
40 Lavender gr. Summer Hill, West Launceston.
bring your own meat, refreshments supplied, cost \$1.00
- Jan. 11th Northern Branch, AEB rooms High st, Launceston.
- There is no meeting in the North West in January.
- YRCS classes, dates for 1974 will be given in the February issue of QRM

37 members attended the November meeting.

Graham 7ZAQ had taken the trouble to drive down from Devonport to be our only visitor.

Business discussed included the increase in subscriptions to the division, quite a lot of time was taken by members to speak against the desirability of the division becoming a collection agency for what in the past has been purely a branch levy.

The usual reports were tabled and the meeting closed at 20.10 hours, after which some 30 slides, showing the workings, testing and launching of Oscar 6, were screened.

Joe 7ZGJ spent a few days in Sydney on business but managed to do some scrounging in his spare time, resulting in an RTTY machine looking for passage to Launceston.

Congratulations to Peter 7PF and Col 7LZ on having managed to accumulate the required number of points for their Oscar 6 award applications, Peter's certificate is in fact the first in VK/ZL. Notable characters seen in Flinders Island during the month were Wally 7ZWX, Tom 7AL and Joe 7ZGJ, no we wont tell you which was flirting with the air hostess on the way home.

As you may have noticed we now have HF notes written by Den 7DK and VHF notes by Joe 7ZGJ, if you have any information that could help them compile these notes please let them know and help others to work some of that rare stuff.

I had hoped, that after the few lines in last months QRM about the broadcast, some of you would have made an effort to supply Reg with some information, but I should have known better.

A couple of years ago Ron 3AKC came to Launceston to attend the annual dinner and finished up spending a couple of days in the Launceston General Hospital. This time Ron came over for the hamfest and everything went well untill he wanted to leave and found that his flight had been cancelled, after many phone calls he got away at 00.15 hours and upon his arrival in Melbourne had to take a taxi to get home in Geelong, he made it by 04.00 .

Robin 7RH aeronautical mobile in a light aircraft over the Western Tiers was having a ball on ch B, working amongst others Peter 7PS in Hobart.

Bevan 7CX has bought himself a 30ft yacht and will very likely be operating maritime mobile on HF as well as VHF.

Listening to 11 metres the other day made me wonder wether this band is going to finish up in the same sort of chaos as in the USA, there were two blokes talking using the usual type of invented call signs and describing their equipment, FT101's, makes you wonder doesn't it?

Cont. from page 5. The charging of NI-CADS

Trickle and float charge. Sealed NI-CAD batteries can be trickle charged or floated. Maximum continuous over charge current should not exceed the 50 hour rate. The trickle charge current required to keep the battery constantly in a fully charged condition should not exceed the 100 hour rate.

Notes. Charging rate data varies with different size cells.

Check manufacturers recommendations for the size cell you use.

Do not connect cells in paralell for added capacity or charging.

It is usually easier to arrange a charger with sufficient terminal voltage for series charging ie: arrange cells of the same capacity in series to suit terminal voltage source.

Ni-Cads are available in high rate and standard rate cells and range from capacities of 1.6 AH to as high as 23 AH with discharge currents to 2.3 Amps per cell.

Cut off voltage averages 1.1V on most sizes of available cells.

Charging voltage per cell averages 1.35 Volts to 1.5 Volts over the Ni-Cad range.

Notes from the North West Branch by VK7MX

Page 3

Thought Provoker for the month. Good on Alpha Romeo Jackson for his letter concerning the use of phonetics. However I think this subject is one best judged by active hams who often work under very difficult conditions. Regulation 128 of the official handbook for radio stations in the Amateur service states "For the purpose of uniformity it is desirable, though not compulsory, for Amateur station licensees to adhere to the phonetic alphabet given in the preceeding paragraph". This refers to an alphabet which is also used by a number of services, and a very good one.

However the object of the exercise is to communicate and get information through. Having been through this countless times and battled to pass information I have found that often a change of phonetics does the trick. Example, my call sign 7 Mike Xray has been finally understood when I switched to Mexico Xray or to Musical Xylophones. It depends on the conditions and the type of interference etc. O.K. use official phonetics untill they fail then switch to a desperation alphabet.

Now the News. Drama of the month. Time, Sunday night.

Scene, Devonport Airport. 7MX receives a call per twisted pair, 7AX here I've locked my keys in the car, can you contact 7ZIE. He is contacted promptly and takes off for Ulverstone for spare keys. In one hour flat 7AX is presented with a bunch of keys. Have you ever waited around a deserted airport for your car keys? Also a 2 and 6 Meter rig doesn't seem of much use in a locked up car.

The monthly meeting went off like a rocket once again with Steven 7ZSF present from the North. Important business was dealt with and at the conclusion a colour slide exhibition was held, with a prize for the best set of slides. This was carried off by associate Bernard Turner for some very fine night shots.

Later some slides showing Oscars innards were well received ably described by Steve. It would be interesting to know who slipped the art studies into the box of Oscar slides.

7MS donated a door prize for the night which was won by 7AX

Tony went home with a pumpkin roughly 20 over 9.

We were pleased to hear Bob 7ZJS come up on 2 metres F.M. from Somerset, quite reasonable copy in Devonport, so we have Burnie communication at last.

Ken 7KH has been looking for final tubes for his SSB rig.

Seems he dashed out and left the rig on Tune. When fused tubes become antiques Ken will be in the big time.

We have discovered several young lads in our area who are taking more than a passing interest in radio. We are making a move to assist these boys in their hobby.

Finally a shot at council. Why the 22½% increase in Subs?

How does this compare with other Divisions? Is it dictated in retrospect or anticipation? Our Branch and possibly others would be interested. Well this is QRM isn't it?

73 MAX VK7MX

From the estate of the late L.R.Jensen (VK7LJ) the following items are listed-

1 AWA Voltohmyst	\$90.00
1 Antenna noise bridge	\$15.00
1 Coaxial switch	\$10.00

Various meters

Quite a collection of miscellaneous pieces and components for which I understand offers will be received.

Any inspection or negotiation can be made by appointment with Mrs L.R.Jensen, 313 Park st. New Town 7008 Phone 281369

H.F. DX Notes by Den VK7DK

Page 4

This is the first of the DX notes for QRM.

I only hope conditions hold well enough to enable some of us to work some, but as you know the sunspot cycle is approaching a minimum and we may have a bleak winter period in the coming year. We have just been through a period of high contest activity. Two very popular 'tests' are the VK/ZL and the CQ world wide contest. The VK/ZL yielded a good quota of DX, the 20 mx band being open to most parts of the world during the contest period.

The CQ is a good contest, no matter if you are interested in hunting zones, prefixes or rare DX.

Some of the prefixes heard are listed together with the normal prefix. HG5 (HA), CV4 (CX), SL2 (SM), 9Z4 (9Y4), 4C9 (XE).

Other rarer ones were FL8, 5Z4, FS7 .

Ever noticed how quiet the band becomes after a contest? Where do all the stations go ? During the above test the 14 mhz band was wide open to all parts, but the following day nary a signal was heard.

There is a rumour that 3Y-Bouvet Island is to be activated by WB5BID and group. Unfortunately I have no info as to date, time or frequency. Kamaran Island VS9K is to be activated on Nov. 24 and 25 on 14.177 and 7.085 mhz. Bhutan is to be visited by Venkat VU2KV, using the visitors prefix of A55.

After many years of being the most wanted country in the world, it is rumoured that the French authorities may grant licences to French stations to operate from Clipperton Island. I do hope this comes to pass. Whilst on French stations, they are permitted to use the prefix HW for an unknown length of time, in commemoration of the first French-American radio contact .

The Hamfest committee would like to thank all those manufacturers and suppliers who contributed to the interest and success of the Hamfest by their generous donations of trophies and the supply of technical literature and catalogues.

To Fred Bail of Bail Electronic Services who came over in person to display and demonstrate a wide and interesting range of equipment the committee would like to especially express their appreciation and thanks.

And to the following firms who heightened the interest in the various contests conducted at the Hamfest by their donations of prizes the committee gratefully acknowledges their gestures of goodwill to the amateurs of this State.

Dick Smith Electronics Pty. Ltd., 162 Pacific Highway, Gore Hill, N.S.W. Suppliers of all amateur from a screw to an integrated circuit.

Watkins Wynne Pty. Ltd., 32 Falcon st. Crows Nest, N.S.W.

Well known by all amateurs over the years for the tried and tested JABEL range of accessories.

R.H.Cunningham Pty. Ltd., 493 Victoria st. West Melbourne, Vic. Australian distributors for the world famous range of Eddystone receivers.

S.T.C. - W.&G.Genders Pty. Ltd., 53 Cameron st. Launceston.

State distributors for the well known and comprehensive range of S.T.C. products.

J.&T.Gunn Pty. Ltd., 50 Brisbane st. Launceston.

Suppliers of all your hardware requirements.

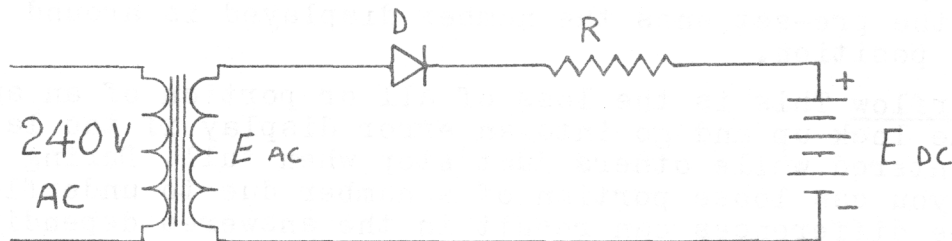
THE CHARGING OF NI-CAD BATTERIES by VK7NR

Page 5

Last month we looked at some of the more important characteristics of NI-CADS and it is hoped that the notes have been of assistance to our members.

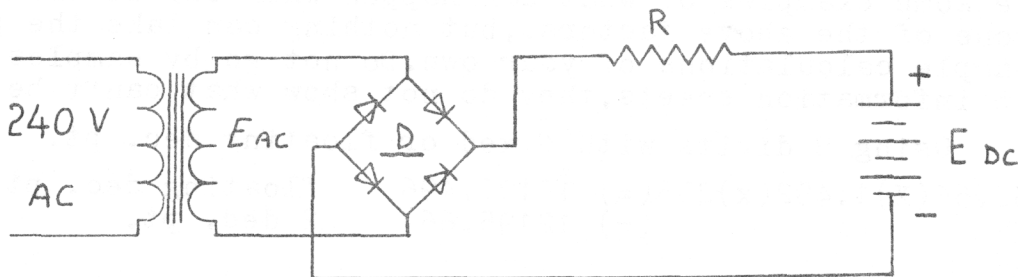
Charging Ni-Cads. We firstly state the obvious and say that the basic requirement for a battery charger is a source of direct current having a voltage higher than that of the fully charged battery. The positive terminal of the charging source is connected to the positive terminal of the battery so that the charging current flows through the battery in a direction opposite to that of the discharge current.

Constant current charging is not only the cheapest and simplest method but is recommended to prevent the possibility of thermal runaway. Constant current charging is obtained by making the supply voltage much greater than the battery voltage and limiting the current flow with a large amount of series resistance.



The above circuit is a typical half wave constant current charger and no filtering is required as the Ni-Cad cells have a large equivalent capacitance.

This circuit can be used for currents up to 0.5 amp only.



For charging currents above 0.5 amps this circuit should be used. The charging factor is 1.4. For fully or partially discharged cells, 1.4 times the capacity removed must be replaced. Charge currents should not exceed the 10 hour rate, 14 hours charging at this rate will fully charge a discharged cell. To determine circuit components calculate the battery voltage as 1.5 volt per cell to find E_{DC} .

Use a transformer with at least twice this voltage and an AC current rating about twice the DC charge current value. Select diodes (silicon or selenium) with a conservative PIV rating and able to handle at least twice the maximum anticipated current. Subtract E_{DC} from E_{AC} and use this value for E , and the 10 hour rate for the value of I and then find R using $R = \frac{E}{I}$.

The wattage rating of R should be at least twice the product of E times I . Adjust the value of R if the DC charge current exceeds the 10 hour rate at the end of the charge time.

continued Page 2

Sorry about that, but couldn't fit it in anywhere else.

Choosing an Electronic Calculator by VK7PF

The choice of a suitable calculator for your particular needs is made very much harder by the rapidly expanding range of models, together with reduction in prices, of calculators on the market.

Some months ago I looked into what was available; I wanted one that I could use for calculation of OSCAR orbit times which are mostly tedious repetitive calculations. From my studies I would like to pass on some pointers to watch for in buying a calculator and also show some functions that can be done on a simple four function machine that the instructionbooks do not include.

Number of digits This means the number of digits used in the calculations which is at times more than the display shows.

Decimal point This can be fixed, pre-set to 2,3,4, etc or fully floating. This latter means that the most significant digits are shown first before any decimal and read from the left hand side of the display whereas with the pre-set ones the number displayed is around the decimal point position.

Under and overflow This is the loss of all or portion of an answer or entry. Some lock up and go into an error display if too large a number is entered while others just stop when full. During calculations you can lose portion of a number due to underflow and quite some differences can result in the answers depending on the order of calculation in chain calculations.

In overflow answer conditions some just give an indication and all calculations are lost while others will give the most significant digits and indicate that the decimal point is to the right, out of the display, either by a fixed amount or ways can be used to find its position.

I'll give some examples of what can happen when calculations are limited by one of the above factors., but nothing can take the place of actual sample calculations of your own. Do not go by samples given in the information sheets, they do not show what can't be done.

Example 1 Using 8 digits with fixed or floating dec. pt.

32.56(X)1.452(x)258(=) 12197.496 floating dec. pt.
(=) 12195.66 2 dec. pt.

Example 2

356.56X 634.73 X 6.14
256.32

356.56 (X) 634.73 (X) 6.14 gives overflow if 2 dec. pt.
used but if a different order
used in the calculation

356.56 (X) 634.73 (+) 256.32 (X) 6.14 (=) 5421.32 2dec. pt
(=) 5421.3505 floating.

Example 3 3.56 X 6.66
1.32

(a) 3.56 (+) 1.32 (X) 6.66 (=) 17.92 2 dec. pt.

(b) 3.56 (X) 6.66 (+) 1.32 (=) 17.95 " " "
(=) 17.961817 floating dec.

With the 2 dec. pt calculations the errors are due to under-flow losses the amount depends on the order of calculation.

Example 4 Crystal frequency calculations.

146.4 (+) 36 (=) 4.06 mhz. 2 dec pt.
check 4.06 (X) 36 (=) 146.16 mhz " " (grossly in error)
146400 (+) 36 (=) 4066.66 khz. 2 dec pt.
check 4066.66(X) 36 (=) 146399.99 " " " " (better)

Electronic Calculators cont.

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146.4 ($\div$) 36 (=) 4.0666666 mhz. floating dec.
 check 4.0666666 (X) 36 (=) 146.39999 mhz.

These examples show that for scientific use a calculator should have the most number of digits as possible plus floating decimal point to give the correct answer with the least trouble.

Now to other functions, take the calculation of a 3.9K resistor in parallel with a 5.6k .

$$R = \frac{3.9 \times 5.6}{3.9 + 5.6} \times 10^3$$

This can not be done on a simple calculator, without committing to paper the intermediate result, it requires one with a memory or at least a constant function that can be used for temporary storage.

step 1 3.9 (+) 5.6 (=) 9.5 (K) or (M)

step 2 3.9 (+) (K), rel K, or (+) (MR). (X) 5.6 (X) 1000

(=) 2298.9473 ohms.

K or constant function. This function enables you to enter a constant for use in (X), (+) and in a few calculators to be used in (+) or (-). IN the four function K, only the the number is entered the function is entered in during the calculations while with the two function type the initial entry includes the instruction to (X) or (+).

Example of four function K calculations.

256 (=) (K) puts 256 into store
 36(+) gives 292
 2(X) " 512
 56(+) " 0.21875
 56(-) " - 200

The powers of the store can also be found eg
 (X) 65536 (X) 16777216 this being 256²

Example of two function K calculations.

(X) 256 (=) (K) puts X256 into store
 2 (=) 512
 (+) 256 (=) (K) puts + 256 into store
 56 (+) 0.21875

The powers on the store are found by using (=) (=) ...

Now after all that I will describe the calculator I finished up buying. It was one put out as a kit by SCS of UK. and uses a chip, made by General Instrument Microelectronics, which appears to be in a class on its own and probably represents the European side of calculator techniques.

Here are some of the specifications.

8 digit, fully floating decimal point.

4 function with a constant on all functions.

Does not limit on over or underflow, provides 8 significant figures plus decimal point in range $1.0000000 \times 10^{-20}$ to $9.9999999 \times 10^{+79}$

Raising to power, partial results can be made a constant,

For those that may be interested I believe from the specifications that the SINCLAIR cambridge calculator kit, advertised in several UK publications, could be using the same chip. The landed price less sales tax (they are free of import duty) would be about £50.

to be continued

THE JUBILEE HAMFEST by a Participant.

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As I came onto the Western Junction rd. from the Midlands Highway I noticed a sign "HAMFEST" on a post. Following that I arrived at the Hall where another sign turned me into the gates.

As I drove in my eye caught sight of the vast antennae array, it would sure do credit to any home installation.

With dipole, TH3JR beam, VHF beams, cloverleaf etc. it was very impressive and what a feat of work.

Wondering in through the side door I stuck my head into the kitchen with a hello and was greeted by a chorus from a cheerfull army of XYL's already working on the evening dinner, and what a meal. Continueing into the hall with a request from Kevin 7ZAH to sign the book, it was certainly a sight to gladden the eye of any Ham at the far end of the room was an array of some of the finest and most sophisticated gear available today, one could fiddle devices to get the feel of a possible Xmas present from Mum.

Round the corner and along the side was a range of home brew apparatus and a complete amateur station in operation.

It makes me envious to see such examples of beautiful workmanship done by various chaps on amateur gear, HF, VHF and ATV were all in evidence.

Opposite along the stage, great panels were devoted to history, with old pictures, articles and photographs, producing mixed feelings, it created a lot of attention.

Everywhere one saw groups of amateurs in earnest conversation including locals, VK3's, VK5's and a ZL, and every opportunity was taken to meet as many as possible. XYL's and harmonics were there brightening things up with splashes of colour and lively conversation. I felt that the outstanding feature of the whole show was a universal desire to communicate and this we did, face to face.

One could not help but notice the hard, quiet efficient work that went on behind the scenes, there is no need to mention names, we all saw them and appreciated their efforts.

To illustrate, the time taken to set up tables and present a meal must have been something of a record.

After dinner we all enjoyed the cabaret and couples dancing appeared to be having a wonderfull night.

On Sunday the enthusiasts dashed off to fox hunts etc. while those remaining carried on with the eyeball QSO's.

The wonderfull weather made a perfect setting for the midday barbecue and the multitude was fed once again in record time.

Later in the afternoon as I drove away, thoroughly satisfied I mused to myself that a lot of work remained for the organizers, taking down the multitude of antennae, packing up and leaving the place ship shape, but I'll bet they not only did it cheerfully but got a great deal of satisfaction in doing it.

Thanks everybody and I trust that I am around for the next effort.

More Hamfest by Reg 7KK.

For those who couldn't keep up with events, following are some of the highlights. 148 persons were recorded in the visitors book.

As this included wives and children some sorting out of these figures would probably be interesting.

There were 14 interstate and overseas licenced visitors.

Fred Bail 3YS and assistant Greg 3ZYT, Rob 3AUR, Harry 3AJE, Gil 3AUI, Norma 3AYL, Phil 3APO, Ron 3AKC, Lionel 3NM,

Trevor 5NC, David 5ZOO, Chris 5MC, Phil ZL1BMC now also VK7MC.

Licenced VK7's totalled 51 (16 Southern, 5North Western, and 30 Northern Branch) 27 associate members, 39 XYL's and YL's, and 27 children.

Fox hunts produced much entertainment, hiding places ranged from

sitting in a shelter watching a cricket match, river swamps and cattle sale yards (hold your nose) to behind the piano in the hall. Embarrassing moments for a few, Peter Feltham walked over the rig which was buried under a pile of leaves, yet didn't find it. Airport security guards got the impression something was lost and didn't seem convinced when told that we were looking for a transmitter hidden in their rose garden.

Ed 7HE asked Norm (the fox) if he was within 15ft of the highway foxy Norm had to whisper his "yes" into the microphone as he was hidden in the hedge less than 6ft away from Ed.

Congratulations to the following prize winners:

Fox hunts, 1) Jimmy Henry, a winner at 9 years old.
2) Tony Polowy
3) Lionel VK3NM

Raffle for SWR bridge, donated by Fred Bail. Brian VK7TX

Guessing competition, Frequency (4.5. mhz) John VK7JV

Weight (1005 gr) Lionel VK3NM

Capacity of PC board (300 pf) Kevin VK7ZAH

Best home constructed gear, 1) Brian VK7ZBY (receiver)

2) Bob VK7ZRF (TV camera)

Good to see the organizers got something for their efforts.

VHF notes by Joe VK7ZGJ.

52 mhz. The 6m DX season is back with us again and Ian VK7ZIF was about the first to take advantage of it by working VK5SU very early in the month. Since then we have had several good openings to VK2, 3,4,5 and ZL. VKØ was worked on the 21st of November by Malcolm VK700 and a few others. On the 18th the band opened around 01.00Z and stations in Launceston were very active, these included VK's 7ZAH, 7ZBY, 700, 7LZ and myself mainly VK2 and VK4 being worked. The 27th little DX although CHØ Brisbane was watchable on and off throughout the day, the band finally came good around 11.30Z with an opening to VK2 for about 15 minutes then VKØWWW popped up, he said the beacon VKØWI would continue running as there is another amateur going to the Island.

144 mhz. Things have been rather quiet although Kevin 7ZAH and Ron 3AKC have been maintaining regular skeds, they are on every evening at 8.30Z. Daniel 7ZDA has also been operating on 144.54mhz so when tuning the band take a look above 144.5 or you may miss a contact. CH4 still provides us with an early warning beacon and VK3's are quite familiar to us at this time of the year.

432 mhz. Activity in this area is very low with Kevin 7ZAH being the only active amateur on these frequencies in Launceston although Daniel 7ZDA hopes to be operating on 432 this season and has an 1296 mhz converter going with a 5 el. yagi mounted on top of it. Our congratulations go to Ron VK3AKC for his record breaking contact with W2NFA on the 6th of October, 1296 mhz moonbounce contact. Signal reports were 549 to Ron and 559 to W2NFA. Ron runs 160 Watts DC input using a pair of 3CPX100A5's.

Best of DX, till next month.

73 , Joe 7ZGJ

FOR SALE

EICO 750, 80, 40 and 20 metre SSB transceiver complete with heavy duty power supply, speaker and microphone.

For quick sale \$140.00 O.N.O.

J.Oliver VK7JO, 2 Luxmore Pl. Launceston. Phone 443314

Write an article for QRM in 1974 . How's that for a New Year's

RESOLUTION

THE WEISS FM DISCRIMINATOR

from various sources

A simple discriminator for NBFM can readily be attached as an adjunct to many tuneable IFs. But the difficulty that usually arises is one of availability of special components that inevitably accompanies many such circuits. These days of course ICs are available that can perform the function of FM detection. Either phase locked detection or quadrature detection (amongst others) is obtainable with ICs, the principal drawback here being cost in most cases. Availability can present its problems in this case also.

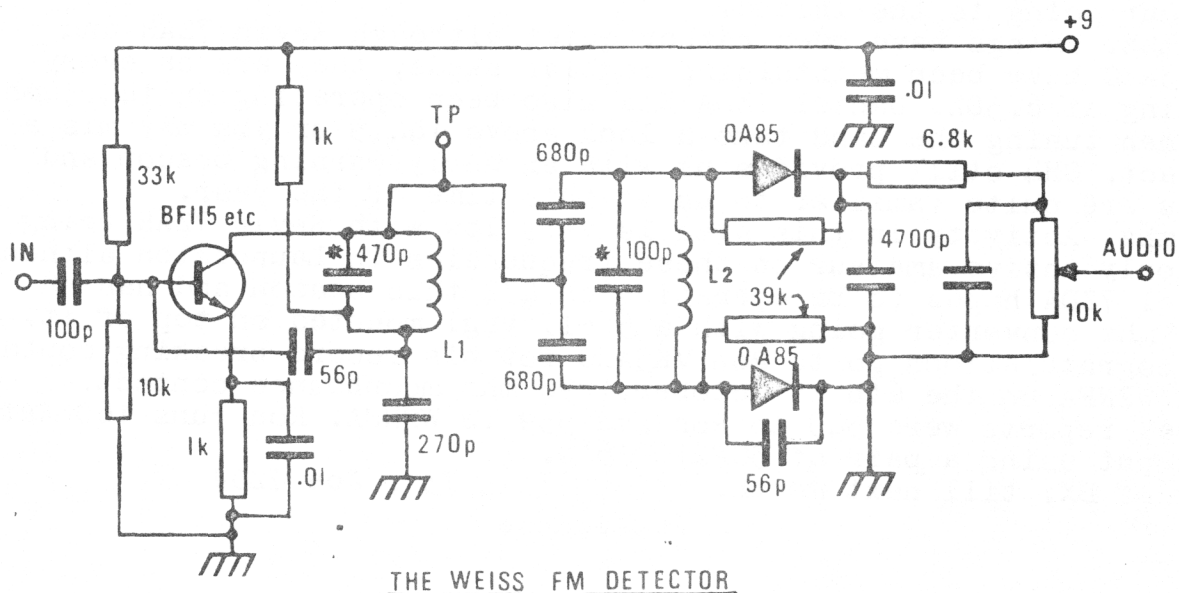
The Weiss FM discriminator is simple and uses readily available parts, not using a centre-tapped detector transformer or one with a tertiary winding. This detector has been used in much commercial equipment but has not attracted much attention in amateur circles.

This detector would find plenty of use in beginners' receivers, such as those SWLs or YRCS lads with an interest in VHF. Adding this circuit to almost any tuneable IF takes but an afternoon's work. The old B/C - SW set or more modern transistor receiver is easily modified and good results are obtained. With more modern receivers the IF may be a little too narrow for best results with the FM standards used in this country so that it should be connected after the first IF stage but before the last. Construction can follow the circuit diagram and no problems should be experienced. Coils L1 & L2 should be shielded from one another or a shield placed as indicated on the circuit diagram. These coils can be any suitable IF transformer winding with its appropriate capacitor. The resonating capacitor for L2 will have to be made up of the two 680pf capacitors in series plus a parallel capacitor as indicated on the circuit. In operation, L1 should be peaked on an unmodulated signal for maximum RF voltage detected at TP (transistor collector) and L2 adjusted for best clarity on a modulated signal. The audio control shown can be a set pot. or a fixed resistor and the audio amplifier in the receiver switched from the normal detector to the FM detector thus enabling the receiver audio gain to be used.

details taken from Radio-REF july 1969 (article by F9JR)
and Radio Communications september 69, p.617.

Q1....BF115, BC107/8, 2N3564/3 etc.

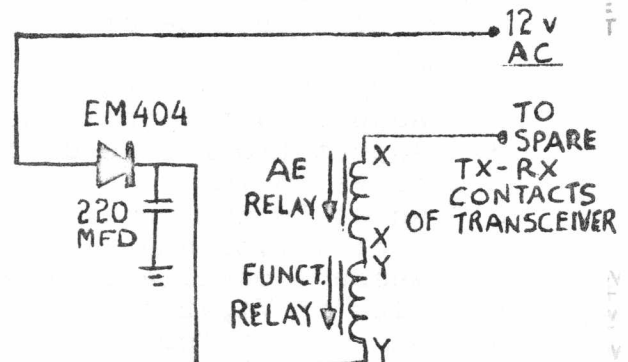
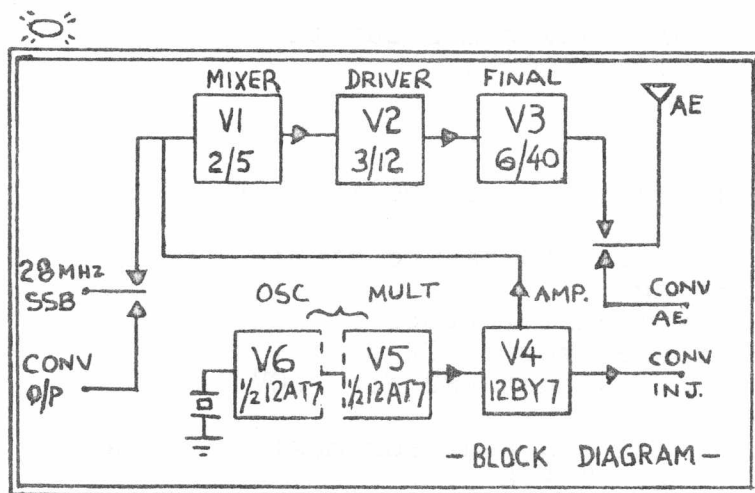
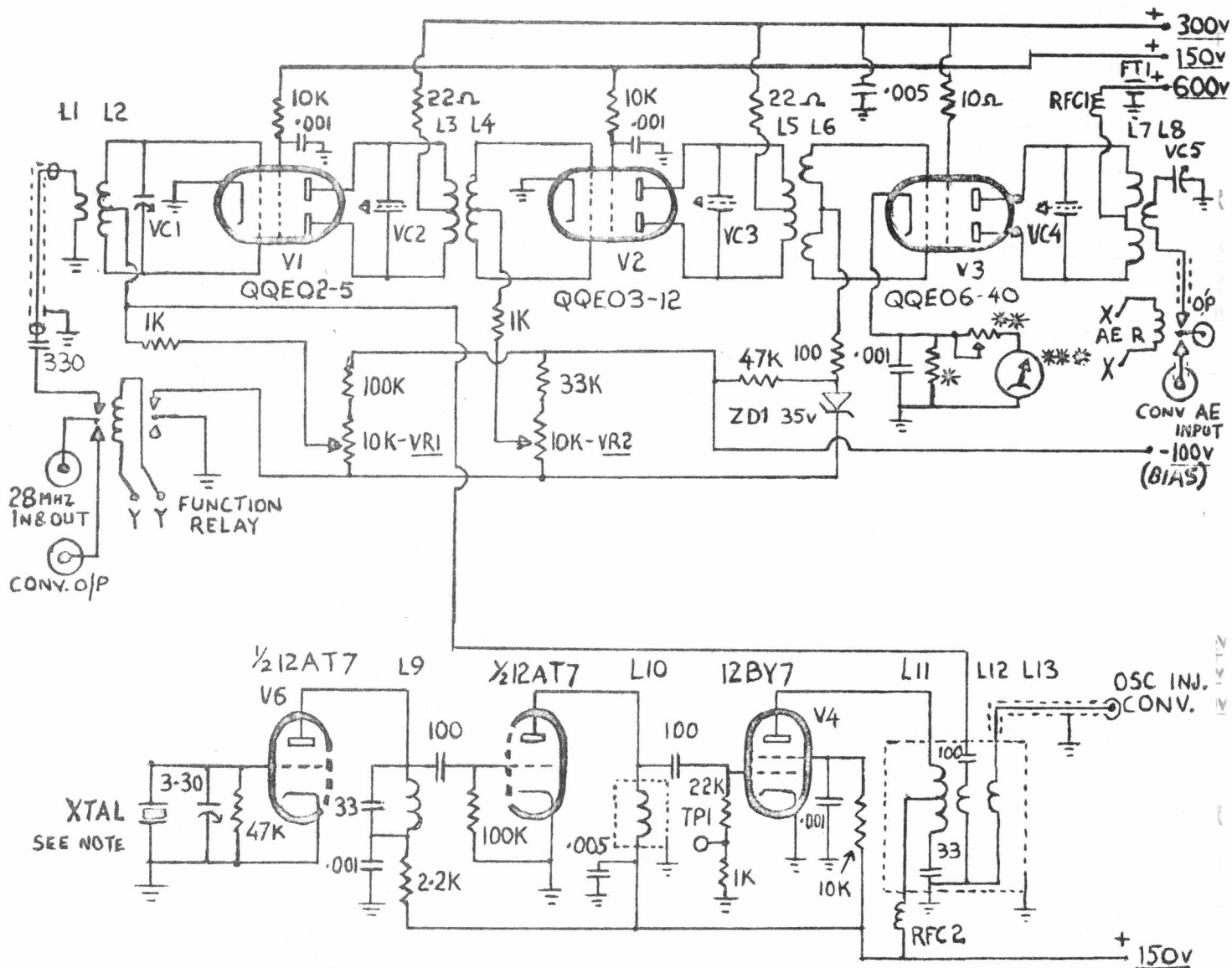
Capacitors marked with an asterisk may require adjustment.



THE WEISS FM DETECTOR

Subscriptions to 6UP are \$3.00 per year.

Write to: The Editor 6UP
47 Ballast Point Rd.
Birchgrove. NSW 2041



~ VK3ASQ ~

M.R. TRICKETT.

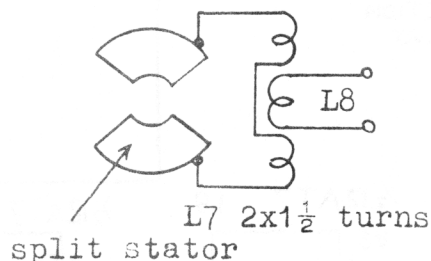
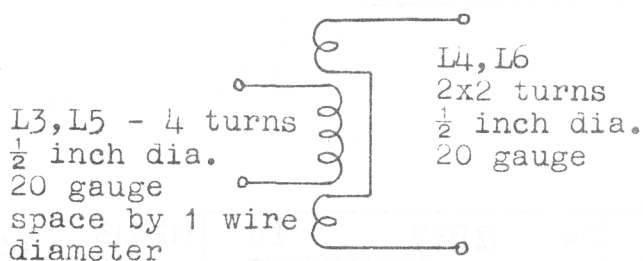
2 METRE TRANSVERTER. by VK3ASQ

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Courtesy Geelong Amateur Radio-Television Club Newsletter.

COMPONENT DETAILS.

- VC1 5-50pf compression trimmer.
 VC2 2x2-10pf split stator.
 VC3 2x2-10pf split stator.
 VC4 2x2-15pf split stator wide spaced.
 VC5 2-20pf trimmer.
 RFC1 2 turns 28 swg enamel wire through Neosid slug.
 RFC2 20 turns scramble wound on 1 Watt resistor over 100K value.
 FT1 1000 volt .001 feed through capacitor.
 XTAL 29.000 Mhz, multiplied by 4 = 116 Mhz.
 L1 2 turns of hook-up wire wound on L2
 L2 15 turns, $\frac{1}{2}$ inch dia. 20 gauge air wound & close wound.
 L3-L4-L5-L6. see diagram.
 L7 2x $1\frac{1}{2}$ turns, 14 gauge, 1 inch dia. spaced 1 wire diameter.
 L8 2 turns, 14 gauge, 1 inch dia., adjusted in conjunction with VC4 and VC5 for more RF out.

Oscillator chain

- L9 10 turns, 26 gauge, Neosid former with slug, glued to centre spigot of valve.
 L10 5/16 inch former in can, 4 turns, 22 gauge spaced 1 wire diameter, slughtuned.
 L11 4 turns, 22 gauge, on 5/16 inch former with slug.
 L12 2 turns, on same former next to L11.
 L13 2 turns, on same former next to L12. L11 closest to chassis
 Coupling C on L12 inside can comes out to bottom tag.
 Series C on L11, comes out to common earth.
 Converter oscillator injection co-ax comes out through hole in side of can, EARTHED INSIDE CAN.

Alignment details.

- 1) Plug in V6 and V4
- 2) Adjust L9 for oscillation
- 3) Adjust L10 for reading at TP1, which should be 1V equals 1ma drive to V4
- 4) Reset L9 and remove xtal, in and out to assure stable oscillation and reliable starting.
- 5) Measure oscillator injection by means of probe or lamp, peak L11.
- 6) Plug in V1, V2 and V3, switch transceiver to TX position.
- 7) Adjust VR1 for -4V on centre tap, adjust VR2 for -20V on tap.
- 8) Check Final bias on zener diode as -35V.
- 9) Switch transceiver to TUNE position and peak for maximum output at 28 Mhz. This should be approx. 1W P.E.P.
- 10) With absorb. Wave meter approx. 1 inch from L2 adjust VC1 for maximum at 28 Mhz.
- 11) With absorb. Wave meter at 144 Mhz coupled to L3, adjust VC2 for maximum.
- 12) With absorb. Wave meter coupled to L5, adjust VC3 for max.

Cont. Page

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- 13) With a wattmeter connected to the output, adjust VC4 and VC5 and coupling for maximum power out.
Repeat and adjust coupling on all intermediate stages.
Power output should be more than 50 Watt P.E.P.

NOTE. * 4.7 Ohms; ** miniature pot.; *** suitable meter.

These three items can be varied to suit available meter.

Prototype used 10 ma. It is advisable to bypass meter and fit a silicon diode in forward direction across it to avoid damage in case of bias failure or faulty final.

12 volt supply into EM404 for the relay is AC from filament supply. Filaments wired for 12 volts.

Connections for use with FT200 and FT101.

These two units have the same connections and set up with their accessory socket. By removing the dummy plug the final heaters are disconnected, power for the transverter can now be taken from this socket. A cable with 9 conductors was used with the same type of plug (11 pin) at the end.

ACCESSORY PLUG CONNECTIONS.

PIN No		PIN No		PIN No	
1	no connection	5	+ 600 volts	9	Relay TX
2	12 V heaters	6	- 100 volts	10	Relay common
3	+ 150 volts	7	ALC no connection	11	Relay RX
4	+300 volts	8	Earth		

Relays. X Pye aerial change over relay.

Y 2 pole WIA disposals.

Receiving converter modifications.

The receiving section of the transverter uses a WIA VK3 VHF group 2 metre converter, modified to use external oscillator injection. While this is not strictly necessary, it is most desirable as it ensures that the transverter actually transmits and receives on the same frequency, it also saves the cost of one xtal and gives the converter a little more oscillator injection, improving performance a little.

Fig. 1 gives the original circuit, while Fig 2 shows the modifications required.

FIG.1
Original

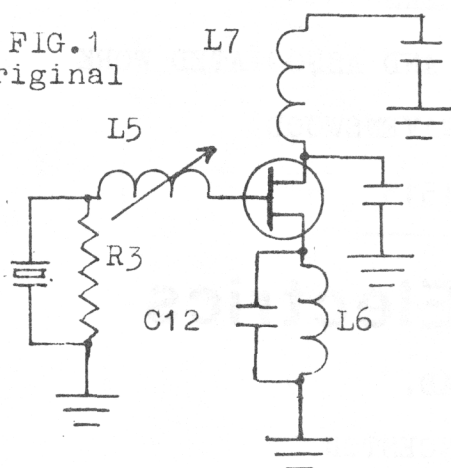
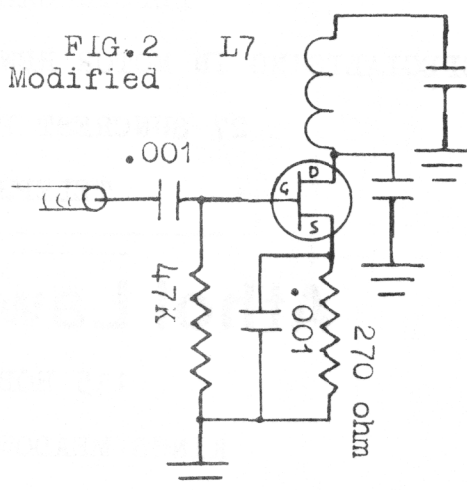


FIG.2
Modified



The L6 coil form etc. is replaced with the 270 ohm and .001 utilizing the holes in the PC board where the coil would go. The gate circuitry is added in place of L5, again using the existing holes in the board. The coax which comes from L11 comes through the side of L11 can, across the chassis and is soldered to the bottom of the converter, which is mounted on stand-offs above the main chassis.

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