

THIS NEWSLETTER IS PUBLISHED BY THE  
PORT ELIZABETH AMATEUR RADIO SOCIETY

P.O. BOX 10402  
LINTON GRANGE  
6015

**August 1997**

## NOTICE of MEETING

The monthly general meeting of the **PORT ELIZABETH AMATEUR RADIO SOCIETY** will be held on **Friday, 15 August 1997** commencing at 20:00 (8pm) in the Municipal Disaster Management Centre in Westview Drive, Mill Park, Port Elizabeth (Civil Defence Centre).

There will be a short debriefing on the recent VW Rally, so those who participated should make a note of any aspects that they feel need to be discussed with a view to improving matters in future events.

Refreshments will be available as usual.

An attempt is still being made to get a speaker to round off the evening. If you have any suggestions regarding topics for lectures/talks at our meetings, please pass them on to Dick ZS2RS or Lynne ZS2MM.

## Technical Talk

Don't forget the regular technical get-togethers that take place on the **Thursdays following the Club meeting nights**. The next one, therefore, will be held on 21 August, starting at 20:00. The venue is the clubhouse.

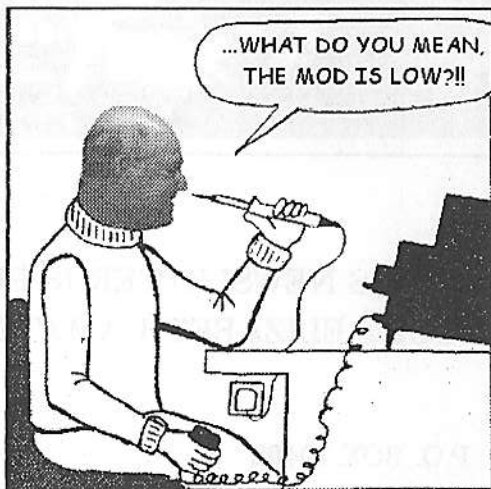
There will be a talk and demonstration on proper soldering techniques, with "hands-on" participation by anyone who wants to try his or her hand at making a few good solder joints.

Following this, the construction of power supplies will be discussed and one might actually be put together on the spot.

The evening should be helpful for newcomers to the electronic workbench, in particular, but even some of the older hands might well learn a few tricks of the trade.

**RIGHT- Ace constructor Viv Moore ZS2VM at his workbench** ↪

(Taken with thanks from Ham Radio Today [with a minor alteration to suit local conditions])





## A word

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### from the Chair

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**W**hat a privilege I have had bestowed on me by the PE Amateur Radio Society - to be voted as Amateur of the Year, 1997. I feel somewhat ill-appointed, as it is not only the efforts of one person, but many others too, that have given of their time and talents in the successful installation and running of the local repeater link system, and packet BBS network. My thanks go to you - the members of PEARS. Thanks also go to the Border Radio Club, for their support on the Eastern end of the link. May we expand still further into the Transkei... And also to the hams in the Southern Cape, thanks for your kind support given during the (many) trips to Buffelsnek.

**T**he PEARS action event of the year has come and gone, and a great deal of fun was had by all, from all accounts. Whilst many may only see the fun aspect of this event, it has great merit in brushing up on operational practices that one might encounter during an emergency situation, when the pressure is on to deliver rapid, accurate information. I am sure that many of those that assisted with comms may also have excellent suggestions for improvement of the overall planning and operation of future rallies, documentation etc. Because of this, the committee would like to open the floor at this coming general meeting, for you to air your views, so please come armed with your suggestions.

**F**inally, a note on the social aspect - I note with interest the formation of a youth section in the Border Radio Club, and would very much like to see a similar body started here, as an integral part of PEARS, but looking after their own affairs. One needs to remember that those new to the hobby need sensitive guidance, even if they themselves are somewhat bold in their approach. We need to create a welcoming atmosphere, where those that feel their ignorance precludes them joining a discussion on air will still be comfortable in doing so, but those that reckon they know everything will also not be chased away... Discussion at the next meeting?

73,

**Chris, ZS2AAW**

# HAMNET NEWS

## Hamnet membership.

In June QSX I reported on a conversation between Mike ZS2FM and Chris ZS6GM, our League President. Subsequent to this it was reported on a League bulletin that all Hamnet members must be members of the League.

Mike reports that, in a more recent conversation with the president, he taxed him on this apparent contradiction and was told that all amateurs may *assist* with Hamnet, but only League members would receive i.d. cards.

I have always been under the impression that the main purpose of these i.d. cards is to allow Hamnet members access to emergency areas, particularly during major disasters. This means that non-League members may well have a problem accessing an emergency area and this could be a source of frustration to say the least.

It could have much more serious

consequences.

## Volkswagen Rally

This event has proved once more to be an excellent exercise in traffic handling, including emergency traffic and portable operation - in other words an excellent Hamnet exercise. No doubt not only our Hamnet contingent, but all amateurs who participated, have benefitted from this, apart from having fun.

## Modules

Congratulations to Mike ZS2FM who has passed all five modules and is now a fully fledged Hamnet member. Nice work, Mike.

73,

Al Akers  
Provincial Director,  
Hamnet East Cape.

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## VOLKSWAGEN RALLY.



Not only did we have good weather for the rally, but the comms went off well too. I understand that, at the prizegiving, Roger McLeery who was commentator in the Stannic vehicle claimed that the comms were the best ever for a Volkswagen rally.

As one of the main considerations when planning the rally comms was to speed up the passing of times, it was good to hear that the effort had borne fruit. Rally control comms was effective too. We did have *some* problems with comms (don't we always?), but nothing serious.

The rally is without doubt the branch/club activity that requires the most teamwork and I thank all those who, in one way or another, helped to make it a success. I wish to thank especially the following:

- Chris ZS2AAW for doing a fine job of the maps, and this at short notice too; also for his work on the excellent repeater network which we have at our disposal.

- Mike ZS2IC for the first class printing of all the instruction sheets, time logsheets, etc.
- Peter ZS2PF for his help with the recce run.
- Others too numerous to mention who did more than the minimum required. For example, several members constructed antennas or incorporated various innovations into their operating setups especially for the rally.

Hopefully, after such a successful effort, we are spurred on to do even better next time.

73

Al Akers ZS2U

## Our Chris is Ham of the Year

The SA Amateur Radio Development Trust elected our popular Chairman, Chris Scarr ZS2AAW, as Radio Amateur of the Year for 1997.

This distinction was bestowed upon Chris in recognition of his considerable contribution to Amateur Radio and, more specifically, his development of PEARS' facilities such as the sophisticated linked repeater system covering the south-eastern seaboard and our packet radio system, including the upgrading of the old digipeater to a ROSE switch.

The presentation was made to Chris at a function in Durban, which was also attended by his XYL Vanessa ZR2VM.

PEARS extends its hearty congratulations to Chris on this well-earned honour.

## Baycom & Windows

BRYAN HAEFELE ZR2BG\*

It has been the general opinion that the Baycom modem is not compatible with a Windows environment, particularly Win95. This is not entirely true, but many users have had problems with Baycom modems that will not receive but appear to transmit perfectly when running under a Windows environment, this even when one exits Windows and goes into a MSDOS mode.

Many reasons have been put forward for this. Some say that it has to do with the newer 16550 UART chip which has discontinued certain features of the older 8250 chip. Others say that Windows enables the FIFO protocol at the com port (FIFO=File In File Out).

There is a device driver that was developed to do various things to the com port including disabling a FIFO if it finds one, called BAYDRV.VXD. All one does is place this in the Windows directory and then place an entry of "device=c:\windows\baydrv.vxd" to the [386enh] section of the windows.ini file.

Some programs may not work directly from Windows, but you can then exit to MSDOS mode and from the still Windows environment run the program. I have tested this with TPK which refused to work before, but now works quite happily.

This may help other users.

\*Tel (041) 354100.

Ω

**MINUTES OF THE MONTHLY GENERAL MEETING OF THE PORT ELIZABETH AMATEUR RADIO SOCIETY HELD AT THE MUNICIPAL DISASTER MANAGEMENT CENTRE, MILL PARK, PORT ELIZABETH ON FRIDAY, 11 JULY 1997**

**Opening & Welcome:** Chairman Chris ZS2AAW opened the meeting and welcomed all present.

**Present & Apologies:** As per register.

**Minutes of the Previous Meeting:** Accepted – Proposed by ZS2LM, seconded by ZS2MC.

**Matters Arising:** Nil.

**Finance & membership:** Treasurer Clive ZS2RT reported:  
Savings – R2 804.83, Investment – R20 669.42  
Paid up members: just over 100.

**Correspondence:** The Secretary mentioned that no reply had yet been received from HQ about the % membership required for affiliation.

**General:**

1. Members congratulated Chris ZS2AAW on his selection as Radio Amateur of the Year. The Branch had decided to contribute R500 towards XYL Vanessa's air fair to Durban so that she could accompany him.
2. Ken ZS2BWB had collected R100 as a donation to Jim ZS2LR for all his hard work in maintaining the Branch's HF packet link. Rumour has it that the donation was presented in the shape of a bottle of Chivas Regal. (Enjoy, Jim!)
3. The meeting concluded with the main business of the evening: Al ZS2U gave the final briefing in respect of the VW Rally which was to take place next Friday/Saturday.

**Closure:** The meeting ended at 21:45.

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# One of Those Days

ROGER DAVIS ZS1J

Towards the end of the 1970's, when the honeymoon of the CB craze was over, prices of some CB sets tumbled to a point where it was cheaper to purchase a CB set than to buy a spare microphone.

Such was the case of a radio called the "Roadstar AC4000", which one of my companies purchased for around R20 each and sold off into the amateur market for R25. I kept three of these sets for myself due to the fact that they intrigued me, as their design was a complete hybrid using IC's in the phase locked loop, transistors in the oscillators and valves in the receiver RF, IF and audio stages as well as all RF stages in the transmitter.

In 1981, I converted the first of these sets into an eighty metre AM/CW transceiver, which I still occasionally use to this day. A six-page article was written on the modifications to the set and it was submitted to the Editor of Radio ZS in Cape Town, who promptly lost it. The second of these sets was modified for six metres CW and the last one has remained in my shack, waiting for a brainstorm to put it to some use.

After many years of looking at this set, last month I decided that its fate lay in becoming a 40 metre CW transmitter. I will use a simple one valve crystal oscillator and with the 250 volts available, should give me about 6 watts out to the antenna; but as I began to put pen to paper, I realised that it should also incorporate a simple monodyne receiver. More scribbling and it would not take that much more to make the transmitter VFO controlled and use the VFO for the monodyne mixer input.

Right, now we are on the right track. If I now make the PA stage linear, I could put in a couple of diodes as a balanced mixer/modulator between the VFO and the PA and have a double sideband rig. Wow, this is getting better all the time. Rather than use an EF91 as a VFO, I may as well use an NE602, great lil IC, got VFO and balanced mixer inside. I can use this as both the VFO and receiver mixer and also as the transmit balanced modulator.

Two hours later, I have a lash-up running on 7 MHz and the monodyne receiver working fantastically well when coupled to the antenna. A single transistor amplifier fed some tailored audio to the balanced modulator and some good sounding DSB was produced at the output of the mixer. This was hastily coupled up to an existing amplifier and the unit was given an air testing, and a quick QSO with Wally in East London. So far, so good; now all I have to do is to build a small two-stage RF amplifier, which will give me about a watt or so output and I have a tiny 12 volt transceiver about the size of a pack of 20 cigarettes.

Looking up on the side of the bench, I see the Roadstar AC4000 CB set and quickly put the covers back on and put it away for another brainstorm for the future.

One of these days.....

Q

# Indulge your NiCads

MIKE MORGAN ZR2MH

**N**ickel-cadmium cells employ a sintered-plate construction and their ability to retain a charge is poor. It is likely that little useful charge would be retained after two months or so.

The capacities of cells are not identical. When cells in series are charged and discharged there is the likelihood that the cell with the lowest capacity will become increasingly undercharged as cycling proceeds. An occasional sustained charge, called an equalising charge, counteracts this tendency. Charging with the circuit described here is accomplished by employing what is essentially a two-step constant current source.

The mains transformer should have a secondary rating at least three volts higher than the required battery voltage and a current rating of 300mA or greater.

When the battery is in a low state of charge, IC1 limits the charging current to about 200mA. The charge rate can be varied by changing the value of R5.

The state of charge of the battery is monitored at pin 4 on IC1. Preset VR1 is set so that the main charging current falls rapidly as battery voltage rises to the required voltage. NiCad cells have a nominal voltage of 1.2V but fully charged reach about 1.37V. So the charging voltage is set at 1.36V per cell, leaving the secondary circuit through R1 to do the topping up.

The current flow through R2 results in a voltage drop across the resistor which is sufficient to forward bias the emitter-base junction of TR1, causing it to turn on. Consequently the red LED (D5) is illuminated and serves to indicate that charging current is flowing. The red LED

extinguishes when the main charging current has reduced to about 50 mA.

A current of about 5mA to 10mA bypasses IC1 and flows in the circuit R1-D6-D7 and illuminates D6, the green LED.

Split-rate constant current charging is accepted as one of the best methods of charging. When the battery voltage is low, charging is at a high rate. When the battery is nearly fully charged, charging is switched to a safe low rate.

It will be noticed from Fig.1 that if the charging circuit is permanently connected to the battery B1, the diodes D7 and D8 prevent the battery discharging through the charging circuit when the mains supply is disconnected.

Connect the circuit to the mains with the battery in place and test that both red and green LEDs illuminate. These indicate respectively that both main and trickle charging currents are flowing in the battery circuit. Adjust VR1, and the red LED should go from on to off as the preset "wiper" is rotated clockwise.

For maximum battery life it is necessary to control the charge processes fairly closely. A 150Ω one watt "test" resistor is used to facilitate the adjustment of the preset VR1. Disconnect the green LED and the battery and connect the "test" resistor in place of the battery. Switch on the mains supply and measure the voltage across the resistor. Adjust VR1 to get the required charging voltage.

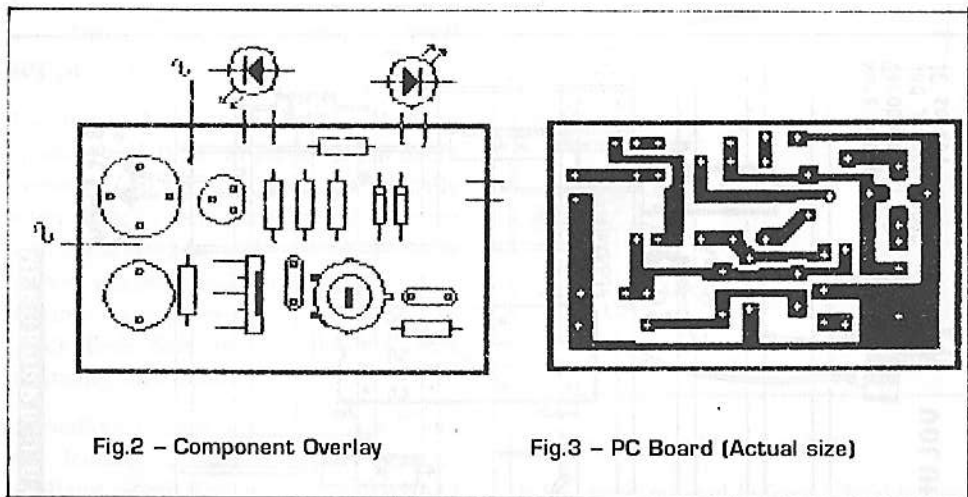
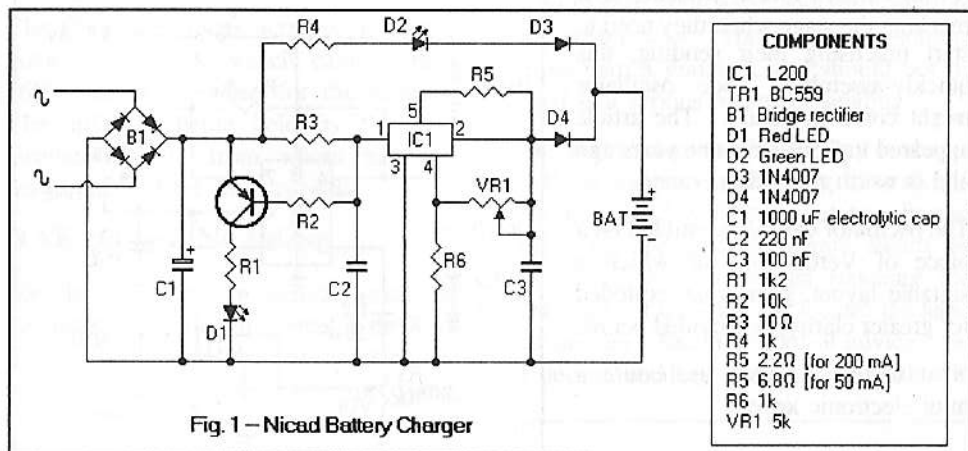
After this adjustment the charging



circuit will provide a charging current of the order of 200mA at battery voltages below what is required and a trickle charge of about 10mA until the correct

voltage is reached.

A suitable actual-size tracing for a printed circuit board, together with its component overlay, appears below. Ω



**Effective Communications** (with thanks to Air Malawi's "Reflections")

- When a shell suddenly burst in front of an aircraft towing a drogue target down a line of British cruisers taking part in an anti-aircraft exercise, the pilot immediately blurted out by radiotelephone: "I AM *PULLING* THIS B.... THING, NOT *PUSHING* IT!"

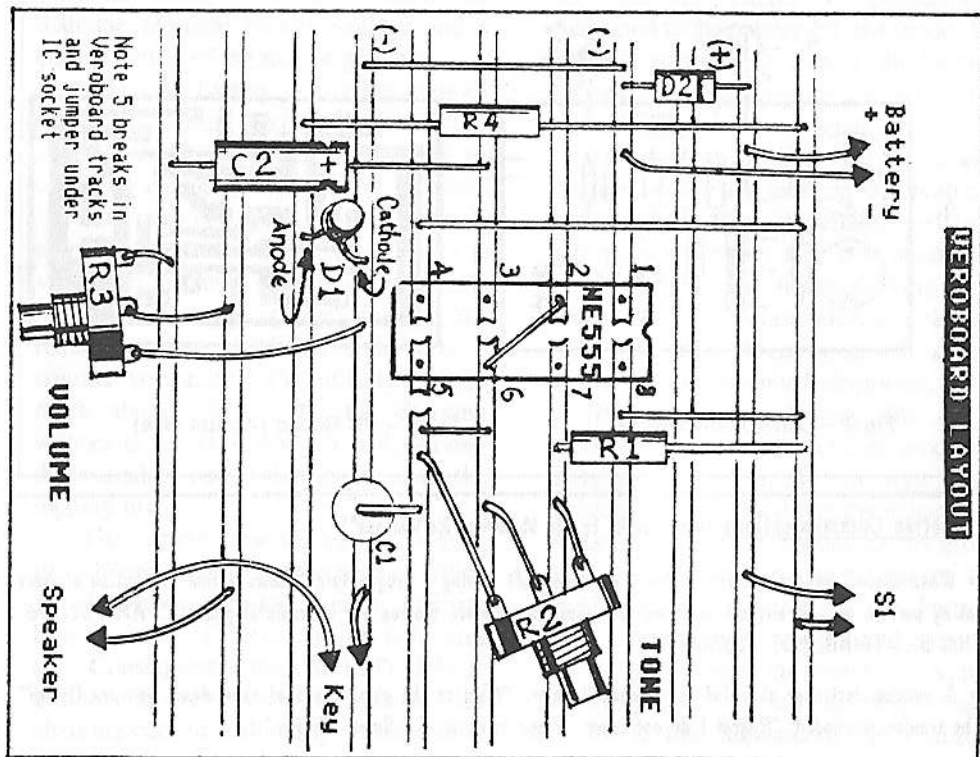
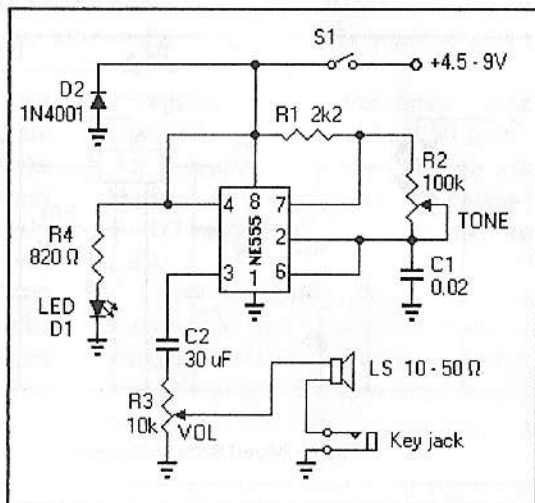
- A passing destroyer signalled an unknown trawler: "What is the significance of that signal you are flying?" The trawler responded: "Regret I do not know. Flags being aired. Smelt of fish."

## Morse Oscillator

With Chick's morse students now reaching the stage when they need to start practising their sending, this quickly-assembled code oscillator might come in handy. The article appeared in QSX-PE some years ago and is worth reprinting.

The oscillator can be assembled on a piece of Veroboard, for which a suitable layout, somewhat exploded for greater clarity, is provided below.

Next month we plan to feature a mini electronic keyer.



# PEARStalk

## ARRL Handbook and Software

The Club library has acquired the latest ARRL Handbook, which came with a stiffer full of programs for the amateur. The stiffer is being held by Secretary Beavan ZS2RL, from whom members may borrow it for short periods.

## RAE classes: No takers ...

For the first time in several years, no candidates have shown interest in the RAE classes that were planned to start last month. Thanks nevertheless for trying, Des. Perhaps the lecturers deserve a rest anyway.

## ... but Morse classes well supported

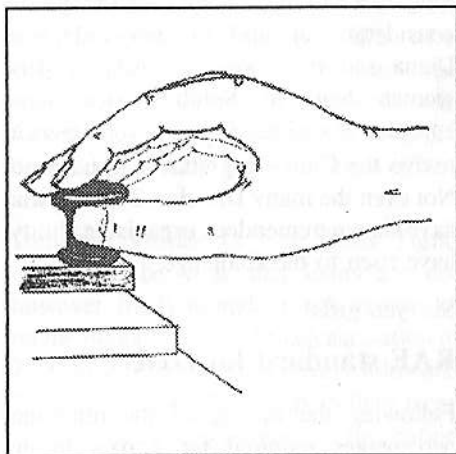
The morse classes from 10:00 to 11:00 on Sundays and 19:00 to 20:00 on 2m every evening, (except the week periodically when Chick's salt-mine duties interfere with his hobby) are well patronized. Nine known students and some possibles are making good progress, so much so that Chick feels that they should now start practising their sending too.

In Fiddlers' Corner on page 10 this month we feature a simple code practice oscillator circuit that students may wish to throw together on a piece of Veroboard. Next month we plan to publish an easy-to-construct electronic keyer project.

However, students should actually start out on straight keys (aka "hand pumps"). *On no account should you think of using the facility provided by some computer morse programs for tapping out morse code on*

*one of the keyboard keys!* That is a sure way to ruin your wrist and learn sending the *wrong* way. The facility is nothing more than a gimmick and should not be used as a serious means of sending.

The correct way to hold the key is shown in the accompanying drawing. One should *not* grip the key tightly, but merely rest the fore- and middle fingers *lightly* as indicated, the thumb just touching the underside of the knob to "locate" the hand on the key. Another word of advice: get a decent, real key with a knob as shown,



not a "tapper" with a flat disk!

It has been mooted before: shouldn't we have a "CW" evening to show newcomers the right way - and the pitfalls of addressing the key incorrectly?

## BRC revives Newsletter

We hear that the Border Radio Club has resuscitated the old EL Branch's newsletter "Feedback" after an absence of many

years. Congratulations, BRC. As an editor of Feedback myself for a while back in '06 - no, it was actually around '60 - I look forward eagerly to seeing your Newsletter, so please put PEARS on your mailing list.

## **SA Women's Radio Club**

On page 14 we record the passing of Diana Green ZS6GH, a founder member of the SA Women's Radio Club (the second such organisation in the world) and caretaker of that Club's assets since it went into recess many years ago due to the declining numbers of ladies coming into the hobby following the introduction of the RAE.

Since XYL/YLs have again grown considerably in number countrywide, both Diana and Iris Hayes ZS2AA, the first woman ham in South Africa, have appealed at various times for volunteers to revive the Club - regrettably to no avail. Not even the many Division 2 ladies, who have shown tremendous organising ability, have risen to the challenge.

Sis, you girls!

## **RAE standard lowered**

Following the raising of the minimum percentages required for a pass in the RAE we were informed that there had been a 76% pass rate in the recent exam. This accords with the pass level normally encountered in examinations in general as opposed to the rather high pass rate experienced in RAE exams in recent years and which was a source of concern to the Regulator. However, battling with a seriously depleted staff complement, the Regulator has not yet amended Radio Regulation B13, which specifies the minimum marks required for a pass, and

it was necessary to revert to the previous minimum pass levels. This brought good news to a further 16 candidates, and it once again brought the pass rate percentage up into the high 80s.

A spokesman for the Regulator told QSX (doesn't that sound grand?-Ed.) that the Regulations might be amended before the next RAE but it will more likely happen only at the end of this year.

## **Callbook here soon (?)**

The long-awaited ZS Callbook has at last been printed and is being wrapped and labelled as QSX goes to press, so you should find it in your letterbox soon. Provided that you were a member during the 1996/97 League year you are entitled to a free copy, even if you have not renewed for the current year, according to President Chris Turner ZS6GM.

The well-known name "callbook" appears to be no longer a worthy title for the publication. It has now gone posh and is being referred to as the ZS "Directory". On the other hand, what has happened to the title "General Manager"? We have heard Len being referred to as the Secretary. Also, an item in a HQ bulletin informs us, without elaborating, that John Airey ZS6CDI has been appointed as an "Administrator". No, I dunno what 'e administers, so don't ask me. All I know is that he has supplemented the human resources complement at the SARRL's principal administrative operations centre.

## **Digipeater off the air**

The packet radio digipeater/rose switch at Grahamstown has been off the air for a week or so due to it having had to be removed from the site, which has been sold. Hopefully it will be re-erected at an

alternative site soon.

## PEARS Membership

At the time of going to press, PEARs had 111 paid-up members, with another four or five having indicated that their cheques would be posted shortly.

Those who had not paid by the time of posting of the July issue of QsX were excluded from the mailing list. Sadly, some of them have been staunch members in the recent past, and we hope that they will not drop out of our circle permanently.

## Attention all Clubs

We asked SARL HQ for a list reflecting the names and addresses of all the clubs that were formed following the demise of branches. Unfortunately, the list that was provided did not give what we needed, so we appeal to all clubs that receive QsX-PE, and which *do not provide PEARs with a copy of their own newsletters*, to let us know their full titles and postal addresses.

We naturally have obtained the required information in respect of those clubs from which we receive newsletters, for which we thank them.

## BRC elects new Committee

Congratulations to Gerald Berlyn ZR2GB, recently elected Chairman of the Border Radio Club, and his new committee. We wish them and the BRC every success for the year ahead.

## Rare DX on 2 Metres

ZS2AB, Brian Weller, was heard on the repeaters t'other day. Luckily his electrolytics didn't blow up on him after having no potential across their terminals

for what seems like years.

## SARL AGM still a non-event

It's nearly five months since the SARL AGM and there has still been no report on the event. Radio ZS for June apologises for the absence of a report because "the material did not arrive in time to be printed in this issue." Wonder where it had to be posted from?

Presumably the contest results also arrived too late, which would account for their inclusion - in their entirety - in a HQ bulletin.

## Give 'em QRM!

Referring to the serious intrusion into our bands by non-amateur stations, SARL HQ recently chided hams who QSY when illegal stations muscle in on their frequencies, leaving the intruders with interference-free spots. Hams are urged to remain where they are, reverting to CW if necessary.

During a President's Net, Chris Turner expressed the view that hams are not, however, likely to make much impression on the illegal Angolan broadcast station on 7090 kHz because it runs many kilowatts. I disagree - not all listeners in their target area are in close proximity to the station, and, considering the size of the territory, most are perhaps in areas where skip conditions reduce the strength of the signal, at least for much of the day. Amateur signals from South Africa, even at our legal limits, could well be received more strongly.

Moreover, the power radiated from multiple transmissions is additive, so the more amateur stations that talk or rattle their keys on the frequency, the higher the power level reaching distant listeners. Q

**Condolences** – We learned with regret of the passing in recent weeks of the brothers of Marge Weller ZS2OB and Bryan Marshall ZS1NQ, and also the demise of two prominent South African hams in Diana Green ZS6GH, doyen of the SA Women's Radio League, and Tinus Lange ZS6TL, a former Councillor of the SARRL and a leading Hamnet supporter. To all the respective families we offer our condolences.

## *Congratulations...*

### on your birthdays:

#### *August*

- 18 Al Akers ZS2U
- 21 Martie Borello XYL of ZR2RB
- 23 Owen Thomas ZS2AZ  
Mike Bentley ZS2IC
- 27 Alan Smith ZS5AG

#### *September*

- 2 Mel Gwilt XYL of Beavan ZS2RL  
Reinette van Deventer XYL of Andre ZS2BK
- 3 Allan Bent ZS2BBR
- 6 Gerhard Baum ZS2UM  
Irene Middendorp XYL of Lou ZS2UI
- 8 Phil Hopper ZS2PP  
Sandy Bartlett ZS2LN
- 9 Gail Mosley ZR2SGT
- 10 André van Deventer ZS2BK  
Belinda Herselman ZR2CH
- 11 Jane Fife XYL of Clive ZS2RT  
Joan Bowes XYL of George ZS2QN
- 12 Jo Akers ZS2W  
Pam Hopper ZU1PAM
- 13 Dick Schönborn ZS2RS
- 14 David Grunewald ZS2DCG
- 15 Hanni Baum ZR2JB
- 16 Rietjie Staples XYL of Sel ZS6SS
- 20 Pierre Knobel ZS2ABC

### on your anniversaries:

#### *August*

- 20 Ria & Paul de Vos ZS2ABY

30 Elizabeth & Andre Oliphant ZR2BC

#### *September*

- 2 Joan & Alan Bowles ZR2ABA & ZS2BO
- 3 Johanna & Piet de Jongh ZS2NQ ?
- 12 Iloncka & Henk-Jan Busse ZS2-273
- 15 Rosemary & Colin Robertson ZR2RR and ZS2CR

on your new callsigns Neil Thomas ZR2NT, Nicolas Thomas ZR2NDT and Gavin de Villiers ZR2GBV (and also on your B aggregate in the RAE, Gavin);

*Sick list:* Graham Griggs ZS2ABK of Somerset East, in Greenacres Hospital with a heart problem. Hope you're well on the way to recovery by now, Graham.

Jeffers ZS1VS, sounding a little better on the after-bulletin net. Nice to hear your cheery voice again, Jeff.

*Farewell* to Alan Bent ZS2BBR, who has moved to Cape Town. Don't forget us, Alan!

*Commiserations to* Dick ZS2RS, whose house was burgled while he was away overseas, to Gus ZS2MC whose car was damaged when a motorcyclist jumped a stop-street, and to Jacques ZR2JH who slid off the road en route to his rally control point and severely damaged *his* car. Ω

□ We don't have the names and/or birth dates of several members' wives or anniversary dates on record. Please furnish these on the form provided at Club meetings—Ed.



## Your Society's Committee

Chairman, Repeaters, Packet	Chris Scarr ZS2AAW	38-1344
Vice Chairman; Social	Dick Schönborn ZS2RS	38-5070
Secretary; Awards	Beavan Gwilt ZS2RL	30-6968
Treasurer; Assets Control	Clive Fife ZS2RT	32-3203
Social; Assisting with Assets Control	Lynne Crothall ZS2MM	35-4671
assisting with refreshments at meetings	Bill Hodges ZS2ABZ	51-2580
QSX Manager	Trevor Scarr ZS2AE	32-1746
assisting as QSX Editor/layout	Garth Laaks ZS2HB	38-1101
Technical Classes	Des Herselman ZR2DH	54-2911 (W)
	Cell 083 261 5402 (All Hrs)	

## PEARS' VHF & Other Services

### REPEATERS

Town VHF	145,050/650	Kareedouw	+ 145,125/725
Town UHF	431,050/438,650	Knysna	*145,150/750
Cockscomb	145,000/600	Lady's Slipper	*145,100/700
Cradock	145,050/650	Uitenhage	145,075/675
Grahamstown	*145,150/750	Theescombe	+ 145,175/775

\* The East London 145,125/725 MHz repeater and the George repeater on 145,100/700 are linked to PE's long-range 2m repeater system.

† These are privately owned repeaters and are not included in the PEARS linked repeater system.

### OTHER SERVICES

Packet Bulletin Board (ZSØNTP)	144,625
Packet Rose Switch (ZSØGHT-3,046101/046102)	144,675
2m Beacon (ZS2VHF CW ID)	144,910
6m Beacon (ZS2SIX CW ID)	50,005
6m Link with Lady's Slipper 2m Repeater	51,400
Wefax Relay (Meteosat)	145,350

## Sunday Bulletins

PEARS bulletins are transmitted on Sundays immediately after the SARL English transmission, i.e. at about 08:45, on 7098 kHz as well as the 2 metre linked network that provides coverage from East London to George and environs via repeaters on 145,750 MHz (Grahamstown), 145,700 (PE Slipper), 145,750 (Knysna), George's 145,700 and East London's 145,725. PEARS' 7098 or 3640 kHz transceive facilities are also remotely linked as needed. In addition, the SARL's 40m transmissions on 7082 or 7066 kHz can be remotely patched into the 2m network.

Date	Prepare and Read on 145,750	DIARY DATES
17 Aug	ZS2RS	<b>AUGUST</b>
24	ZS2RT	15 PEARS Monthly meeting
31	ZS2AE	21 Technical get-together
7 Sept	ZS2MM	24 SARL CW contest
14	ZR2DH	<b>SEPTEMBER</b>
21	ZS2AAW	6-7 HF Field day
		20-21 VHF/UHF contest

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