

Q S X
P E

*Port Elizabeth Branch of the
South African Radio League*

P.O.Box 462, Port Elizabeth. 6000.



National Call	145.5 Mhz
P.E. Repeater	145.05/65
Grahamstown	145.15/75
Lady's Slipper	145.10/70

ZS2PE

Bulletin: Sunday 08h40
HF: 40m – 7098 KHz
VHF: FM-145,700 MHz

JANUARY 1985

Port Elizabeth Branch

>NOTICE OF MONTHLY MEETING<

MEMBERS ARE REMINDED THAT THE NEXT MONTHLY MEETING OF THE PORT ELIZABETH BRANCH WILL TAKE PLACE AT THE SCOUT HALL, CORNER OF RITCHIE CRESCENT AND VON PLETTENBERG STREET, KABEGA PARK, ON FRIDAY 18th JANUARY, 1985 AT 8.p.m.

COMMITTEE MEMBERS PLEASE NOTE THAT THE COMMITTEE MEETING FOR JANUARY WILL TAKE PLACE IMMEDIATELY PRIOR TO THE GENERAL MEETING AT 7.30p.m. AT THE SAME VENUE.

@@@@@@@@@@@@@@@@@@@@

Committee

CHAIRMAN: Brian ZS2AB (303498) VICE CHAIRMAN: Dick ZS2RS (322111)
SECRETARY: Marge ZS2OB (303498) TREASURER: Pete ZS2PJ (301493)
MEMBERS: Trevor ZS2AE (321746) Gordon ZS2GK(306776)
QX-PE: ZS2AB and ZS2OB.

@@@@@@@@@@@@@@@@@@@@



The Chairman and Committee of the Port Elizabeth Branch and Editors of QX-PE take this opportunity to wish all members, their families and friends and all fellow Hams a very happy, healthy and prosperous New Year.

@@@@@@@@@@@@@@@@@@@@

NEWS

Heartiest congratulations to Ron Herman, Dave Chidell and Lance Garcia who all passed the November P.M.G. exam with flying colours and who will be getting stuck into their cw as soon as possible. Hard luck to those who didn't quite make it, but there is always next time.



NEW
HAMS

CONGRATS

to Trevor ZS2AE and Julie Scarr who celebrated their Silver Wedding anniversary on 2nd January. May the silver turn to gold!



bulletin roster

20th January	Gordon ZS2GK
27th January	Brian ZS2AB
3rd February	Dick ZS2RS
10th February	Marge ZS2OB

"Can you send Morse?" the glow-worm was asked. - "No", it sighed, "It's just a loose contact".

"For the genuine snob there's probably nothing more interesting than striptease on the radio".

MINUTES OF THE GENERAL MEETING OF THE PORT ELIZABETH BRANCH OF THE SOUTH AFRICAN RADIO LEAGUE, HELD AT THE SCOUT HALL, KABEGA PARK, ON FRIDAY 16th NOVEMBER, 1984.

PRESENT: 30 members and visitors.

The Chairman welcomed all to the meeting, especially Garth and Ria Laaks S83A and S88A, Alf ZS2EC, Jimmy ZS2MK, Bill ZS2BY who had been on holiday and all the ladies.

APOLOGIES: ZS2BK.

MINUTES: The Minutes of the meeting held 19th October, 1984, having been published and circulated in QSX-PE were taken as read, proposed by Dick ZS2RS and seconded by Peter ZS2PD.

ARISING: With regard to the advert to be placed by Hamrad, a letter had been received from Hamrad whose intention it was to advertise in all Branch Newsletters and details would be finalised in the new year.

Gordon ZS2GK wished to make an amendment to the last minutes. Brian ZS2AB was to be thanked for his hard work on the technical classes.

FINANCE: Brian said that some very late subs had been received and he had been on his hands and knees to HQ to re-instate the members without a further entrance fee. It was somewhat awkward when HQ made a cut-off date and subs were still received up to two months later. Members were reminded to check their address labels and if not correct, then to return them to HQ suitable corrected. Colin ZS2AO said that Radio ZS was being received later and later and had heard that the next two copies would be posted together. Brian said he could not make an answer to that.

GENERAL: 1) A report was given on the JOTA activities. Over 50 JOTA stations were worked, together with several others. Dick was praised for his sterling work to contact the UK. Operators had been provided with a very nice lunch by the Scouts. ZS2JAM had qualified for all the certificates to be awarded.
2) Field Day. Athol ZS2CM had organised the use of the Sunridge Scout Hall for toilet and kitchen facilities but the station would be set up on the vacant ground at the back of the hall. A caravan and tent would be used and the time of operation was from 10a.m. till midnight. The following volunteered as operators for the day: ZS2DK, RB, PJ, GK, RT, AE, PD, WG, RS, AB, GW and OB.
3) Branch Christmas Party. This would take place at the QTH of Trevor ZS2AE and would cost R15 per couple. The ladies would assist with the catering and Toff ZR2EY would provide the music. Date: 8th December.
4) Childrens Christmas Tree. This is to be held on Sunday 2nd December at 63 Butterfield Road and Fred the Clown would be in attendance. The ladies would be doing the catering.
5) There would be no general meeting in December and the next general meeting is on 3rd Friday in January preceded by the Committee meeting at 7.30p.m.
6) A suggestion had been made at the Committee meeting that a general QSL card be printed on behalf of the branch and members could then overprint whatever they desired. An initial cost of a partial coloured card was estimated at R60-80 for 500/1000 cards with the standard format on the front. At least 10 to 20 thousand would have to be printed to make it worthwhile. This generated a fair amount of discussion and it was

suggested that a competition be held among members and the best card chosen with a prize for the winners. The card must be the standard postal size.

7)Cockscomb repeater. Everything was just about ready and the helicopter had been organised for early in December. It was available for the whole weekend at no charge to the Branch. Trevor had been running the repeater testing solar panels and batteries. Assistance would be needed with the erection of antennas and the repeater, but the helicopter would not fly in bad weather.

There being no further business, the meeting was declared closed and tea was taken. Thereafter the video showing the trip of Owen Garriott in space was shown.

signed:
B.A. Weller ZS2AB
Chairman

signed:
M.T. Weller ZS2OB
Secretary

@@@@@@@@@@@@@@@@@@@@

Contagious Diseases The "There" Syndrome

"ZS2XYZ, ZS2XYZ....ZS2YZX do you copy THERE George?"... pause...
ZS2YZX from ZS2XYZ Ja, copy you fine THERE Doug, how do you read me THERE?"....."ZS2XYZ, ZS2YZX OK no fine THERE George, hope you folks are all well that side THERE; we are all OK here THERE, so what you been doing this week THERE since we last talked to you THERE? I have been very busy THERE painting the QTH THERE... boy! what a job THERE... sorry I didn't give the job to a painter THERE. Haven't been on the air much THERE so don't know what the bands are like THERE. Hope copy is still OK THERE, George. ZS2XYZ, ZS2YZX"....."ZS2YZX, ZS2XYZ right back THERE. Solid THERE Doug and all noted THERE. I don't envy you that painting job THERE but I suppose its got to be done THERE, HI.....
..... and so it continues, a QSO between 2 of the far too numerous sufferers of the THERE Syndrome.

The real tragedy of it is that most of the sufferers are totally unaware that they have the disease, many new hams contract it as soon as they come onto fone. (CW QSO's are thankfully free of this germ). But what causes it?? I strongly suspect that it has to do with the lack of technical material for discussion on the air these days, with Black Boxes and endless cheque accounts and a complete lack of knowledge of the workings of most items in the shack making discussion on any serious ham-radio subject unknown to most operators these days, and copious use of the WORD helps to pad the QSO a bit. I once had the doubtful pleasure of listening to a QSO on 2 metres where the WORD was used by one of the operators no less than 37 times in 1 over !!!

Next time you are on the air, listen carefully to the QSO and see if you can verify the existence of the disease in the operators, and listen carefully to your own transmission - YOU may be amazed to find that you have a bad attack of this strange disease.

Very best 73 THERE and Happy 1985 to you all THERE
George ZS2YZX.

A Rose by any

by Pak Hawker G3VA. (R.S.G.B. Radcom Nov. 1984)

Technical Topics is perhaps not the medium for discussing semantics but the column has somehow been caught up in what I believe to be a fruitless debate on the terms "amateur radio" and "ham radio". Personally I feel that, whether we like it or not, you cannot dictate to the media what words they use. No hard-pressed sub-editor is going to spend time devising a dignified headline when he has at hand the conveniently short word "ham" requiring only three letters yet widely recognised (if not fully understood) by many readers. And while "amateur" no longer has the status it carried in the days when cricketers were carefully segregated into "gentlemen" and "players", I cannot believe that many people confuse it with "amateurish". I have been called far worse things than an "amateur" or even than a "ham".

Norman Sedgewick G8WV seems to agree. In an eight-point resumé of this debate he stresses, inter alia, that there is nothing wrong in being called "amateurs" and thw word certainly does not imply ineptitude in the sporting world; "ham" meaning a bad actor is mainly confined to the theatrical world; nobody objected when the media referred to the excellent work done by "radio hams" in the Falkland Islands in 1982.

But the main point he makes is that amateur radio would in fact lose rather than gain credibility by suggesting to the public or the media that the RAE constitutes a "professional" qualification. This does not mean that amateur radio experience is not a valuable and desirable asset to countries in times of emergencies etc. As G8WV puts it: "In these days of vulnerable satellite and machine telegraphy, the man who can work basic dx with weak and fading signals and understands the problems presented by radio propagation, is to be far more prized than someone who merely types into a machine. The Russians and their Eastern Bloc allies do not normally pander to minority interests, but they certainly approve of amateur radio in a big way. It is the practical experience of amateurs that gives them "credibility" not the RAE certificate.

G8WV feels we must be careful not to be confused on this matter by those among us who hold recognised academic and/or professional qualifications; we need to think more about the many who originally had to worry about their chances of ever passing the RAE. Amateur radio always benefited from having many "professionals" within its ranks - but this does not mean that an RAE pass carries any real weight with selection or recruitment boards. He questions G3MQU's belief that "a hobby that requires considerable technical qualifications deserves dignity".

In the outcome, amateurs are, or should be, judged by what they do and how they conduct themselves on the air. It is no good blaming the media if in fact they sometimes give the impression that an amateur licence is a form of cb and vice versa, when in reality it is sometimes difficult to distinguish between the two! If cb had existed in 1936, my initial interest in hf radio would possibly have been channelled in that direction. There is nothing to be ashamed of in starting off as a cber.

If we want to show that amateur radio involves "considerable technical qualification" we need perhaps to take more care to keep technical gaffes off the air. As in many other walks of life, the term "dignity" needs to be regarded with circumspection; too often it serves as a substitute for practical know-how. Let us admit that most of us enjoy amateur radio or even hamming but can sometimes laugh at ourselves - and let cb look after its own reputation!

@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@

Code Proficiency Test

The third Morse Code test transmission for the S.A.R.L. Code Proficiency Award will be conducted by the Western Transvaal Branch of the S.A.R.L. at 1400 S.A.S.T. on Sunday 24th February, 1985. Transmission will be made from station ZS6RWT on approximately 7020 KHz and 14020 KHz.

Qualifying runs will be at the following speeds: 15, 20, 25, 30 and 35 words per minute.

Letters, numbers and punctuation marks and spaces between words will count as "character units". Six "character units" = one word. Therefore 90 units/minute = 15 words per minute, 120 units/minute = 20 words per minute, etc.

Transmission will run for five minutes at each speed and will be in plain language.

Certificates will be awarded for the initial qualification and endorsement stickers issued for advances to a higher speed.

RULES.

1. Anyone may participate, including non-members of the League and persons without amateur transmitting licences.
2. The full five minutes transmission at a particular speed must be copied. One minute of the copy must be underlined by the participant as the portion on which he wishes to be tested. This portion must be error free.
3. The original unaltered copy must be submitted for judging, but may be accompanied by a re-written copy if the original is difficult to decipher.
4. The copy must be accompanied by a note giving the date and time of the run, the station and frequency copied, and whether an initial certificate or an endorsement is required.
5. A statement must also be submitted, over the applicant's signature stating that the run was copied without assistance, either personal mechanical or electronic. (The use of a typewriter will not be considered to be mechanical assistance). Furnish complete name, callsign (if any) and mailing address IN BLOCK LETTERS.
6. The service is free to members of the S.A.R.L. Non-members should enclose a cheque or postal order for R2.00 for handling charges.
7. Applications must be postmarked not later than five days after the run, marked "Code Proficiency Test" and addressed to The Chairman, Western Transvaal Branch, S.A.R.L., P.O. Box 899, Klerksdorp, 2572.
8. The decision of the Committee will be final and no correspondence will be entered into.

@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@

Sunspots and Propagation

Sunspots are visible appearances on the surface of the Sun. Sunspots as such are not directly responsible for the radio fadeouts and enhancements which we experience. These are the result of Solar Flares which are colossal reactions occurring in the vicinity of sunspots. Solar Flares are not easily observed whereas sunspots can easily be seen and their number and size established.

NEVER LOOK DIRECTLY AT THE SUN THROUGH ANY TYPE OF OPTICAL INSTRUMENT - TELESCOPE, BINOCULARS, ETC.- EVEN THROUGH DARK MATERIAL. INSTANT BLINDNESS WILL RESULT. THIS INSTANT BLINDING EFFECT IS COMPLETELY PAINLESS AND THERE IS NO WARNING FELT.

The best method for the beginner to observe sunspots is to project the image of the sun through a telescope or binoculars onto a white card. The sunspots can easily be seen on this projection. Solar flares are actually very large explosions or outbursts from the sun and when observed with the correct equipment look very much like large explosions or flames. These "flames" are extremely large and their comparative size easily dwarf the size of the earth.

Solar flares emit various particles of radiation of which the speed of travel vary. Various delay times pass between the actual solar flare and the effect of these various particles on the earth, because of their different speeds of travel over the approximately 149,6 million kilometres which separate the earth from the sun. Firstly, there is electro-magnetic radiation which is probably the largest emission. The delay time for electro-magnetic radiation is approximately 8,3 minutes. Electro-magnetic radiation can in turn be divided into three variants.

Ultra violet and "X" rays: radio waves with wavelengths from about 3cm to 10cm or slightly higher; and visible light which we can see and feel. These result in occasional "F" layer increases, and frequent "E" and "D" layer increases.

These effects on the ionosphere all affect our radio propagation. With "D" layer increases we get sudden ionospheric disturbances, shortwave fadeouts and magnetic crashes which are registered on a magnetometer. There are sudden enhancements of atmospheric which are what we hear on very low frequencies. During "D" layer increases we get sudden cosmic noise absorption, absorption of the cosmic noise which is coming in.

The visible light on the Hydrogen Alpha part of the spectrum is not quite visible. This is around the wavelength of 656 nanometers. The Hydrogen Alpha flame is recorded by the Spectro Helioscope. This is a type of telescope which allows us to see these solar flares which can't be seen with an ordinary telescope. The flares can only be seen in the narrow bandwidth of a Hydrogen Alpha filter, right on the red end of the electro-magnetic spectrum. This is similar to a radio receiver but only on the visible part of the spectrum.

The noise bursts are recorded by a radio telescope.

Secondly we have radiation of cosmic ray particles which have a delay time of from 15 minutes to several hours. Cosmic ray particles are positively charged and culminate in delayed effect such as polar cap absorption in the polar regions, the Aurora Borealis and Australis.

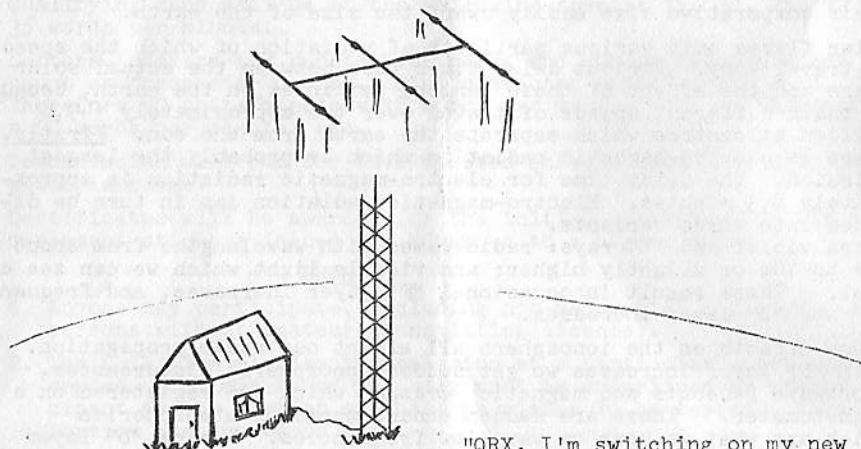
Thirdly a type of radiated particle, magnetic storms which have a

delay time of from 20 to 40 hours. They consist mainly of positively charged protons and negatively charged electrons, sub atomic particles which create our 10m DX enhancement. They give us high electron density in the 2F layer and culminate in delayed effects. These magnetic storms are recorded with a magnetometer which is a relatively simple device consisting of a compass needle suspended on a torsion wire which forces the needle to cut the earth's magnetic field and face east-west instead of north-south, the normal position of a compass needle. Magnetic storms cause the compass needle to vibrate. These vibrations are amplified and recorded. Magnetic storms show up as Auroras in the polar regions as well as ionospheric storms resulting in noise but also enhanced 10m conditions.

In short, if high electro-magnetic activity is recorded it indicates that a flare has occurred about 8,3 minutes earlier and could result in good communication on the higher bands in 20 to 40 hours.

Tony ZS6CCD. in "Watts" Pretoria Branch.

@@@@@@@@@@@@@@@@@@@@@@@@



"QRX, I'm switching on my new 2kw linear now"

(Thanks to Clive Fife ZS2RT)

		Instant Printing	
TELEPHONE 22614		9 ST. PATRICK'S ROAD PORT ELIZABETH 6001	
FOR ALL YOUR COMMERCIAL PRINTING REQUIREMENTS TRY US FOR YOUR QSL CARDS!			

SIX METRE REVIEW - 1947 to 1984.

by Mike Bosch ZS2FM.

Here is a review of some of the outstanding achievements made on six metres since 1947 until the present, via (a) the ionosphere and (b) the tropospheric types of propagation.

The ionospheric propagation modes include the F2 layer, sporadic E and T.E.P. all of which produce fantastic DX results around the peak of the sunspot cycle. In 1947 Henry ZS1P became the first ZS amateur to work DX stations on the new 6 metre band when he made two-way contacts with PAØUN and G6DH. This distance was exceeded in 1958 by Denis ZS1B with the first ever QSO with Japan i.e. JA1AXE. Around this time OM's Garry ZS6ASO, Bert ZS6HS, Arthur ZS6EU as well as ZS6AKI, ZS6V, ZS6BG, ZS6AA and ZS6GX came on the air with regular skeds at night. It is believed that ZS6GX OM Errol was the first amateur to construct and test a crystal lattice filter type SSB rig for 50 MHz in the world, and as early as 1956. But they all had great difficulty tuning him in.

Garry's beacon has been running for about 18 months on 50,01 MHz and it was heard as far afield as Ian ZS5JK, Kosie ZS3E and Bramie ZS3G. Eventually he established contact with all three of them. In Port Elizabeth Van ZS2Y and XYL Doreen ZS2LM QSO'd VQ2PL in Livingstone and ZS2Y also worked ZS3B in Luderitz. Later Frank ZS2CY hooked up with ZS3G in Tsumeb via sporadic E. During the October/November season of 1960 and 1961 ZS6ASO established contact with 5B4CY in Cyprus. With the advent of solar cycle 21, the ZS6VHF beacon now operated by ZS6ASO, was heard all over Europe and he managed to QSO many continental stations crossband, i.e. six to ten metres. It was in November 1979 that G4FXB on 70 MHz worked ZS6ASO on 50 MHz for the first and only Africa crossband contact.

In 1978 Jack ZS6LN commissioned his first 6 metre beacon and it paid off. His best DX occurred in April 1979 when he QSO'd KH6HI for first ever Hawaiian contact which was followed by KH6NS, KH6JSI, KG6DE and KH6IAA. The latter contact gave Jack a world record which stood until 1982. Gary ZS6ASO, Leroy ZS6XJ and Gerry ZS6AUB also worked KH6NS in November of the same year. Gary also made first ever contact with Canada in 1979 when he hooked up with WB2RLK/VE with S9 reports both ways.

In the meantime Kosie ZS3E of Outjo continued logging many stations especially W's, and finally ended up with 38 countries but only short of VK for 6 metre WAC. Jack ZS6LN fared a great deal better and logged numerous stations worldwide such as G6QE, HB9QQ, I9ALG, DK2ZF, 9H1BT, F6FHP, OK3CM, EA3BT, VK5ZK etc. all crossband. But 2 way contacts were also made with W1HDQ (first ZS/W ever), KH6XX, 5B4AZ, SZ2DH, VE1AVN, KØGUV, JR6Mgg, LU3EX, VK6RO, I5TDJ and so on. His final DX score is 40 countries plus three times WAC.

During cycle 21 many other ZS hams worked DX stations too and the following were often heard via backscatter namely Alan ZS5TR, Ben ZS5QM, Sel ZS2SS, Fred ZS6PW, Mike ZS2FM, Jack ZS6LN, Dave ZS6DN, Leroy ZS6XJ, Bert ZS6HS, Arnold ZS6BMS etc. ZS2SS now ZS6SS, logged no less than 75 Japanese stations in a fortnight. Although the MUF took a dive, many ZS6 stations continued hearing and/or working 5B4CY, SV1DH and I5TDJ on T.E.P. even long after the peak F2 period had passed.

The current South African records for ionospheric propagation modes stand as follows:

F2 layer:	1979	ZS6LN - KH6IAA	20 000 KM.
Sporadic E:	1957	ZS2CY - ZS3G	1 770 KM.
T.E.P.:	1982	ZS6AXO - I5TDJ	7 932 KM.

The tropospheric modes and the other lesser-known forms of propagation did not receive the same attention until recently when the Div 2 stations made a deep and systematic study of this field during the "quiet years of the sun" i.e. low MUF period. The Tropospheric modes cover Temperature inversion or Tropo and Tropospheric scatter, and we also included Meteor scatter in this project. These modes are much more difficult and produce weaker signals, yet they are not affected by the MUF and do manifest consistently throughout the four seasons of the year. The equipment in use has to be much more sensitive than is needed for Ionospheric work. This applies particularly to tropospheric scatter which is certainly the most difficult mode at present, since it requires low noise receiving equipment. Yet signals from ZS6LN in Pietersburg can be heard at all times in P.E. at S1-2 above the noise level.

During the past 2 years, numerous Tropo openings have been observed and many long distance contacts have been made. For instance, Hans ZS3AK of Windhoek worked ZS6AXO, ZS6HS and ZS6OB on SSB and FM, and later contacted ZS5QM of Pietermaritzburg. But the most startling contact took place when Mark ZS5BN of Camperdown with only 3 watts FM and a 5 element yagi hooked up with Bill ZS1ABD in Simonstown. Ten minutes later Craig ZS5AV of Illovo duplicated the QSO with his 10 watt FM signal. QSO's take place almost daily between Gordon ZS2CO of East London and Johan ZR2EC, Hannes ZS2BE, Mike ZS2FM, Graeme ZS2OD and Al ZS2U all of P.E., on a frequency of 51,4 MHz FM.

Meteor scatter produces some fantastic results whenever the Earth passes through a meteor shower. For example, Neville ZS2NR worked ZS6OB in Pretoria, Graeme ZS2OD contacted ZR5HZ in Stanger, Ben ZS5QM of PMB worked both ZS2FM and ZS2OD in P.E., etc. But the longest distance was recorded when ZS6OB operated their club station ZS6XPS at Thabasimbi and logged ZS2FM in P.E. Recently we started experimenting with Aurora propagation and obtained some very interesting results. The current South African records achieved on the previously mentioned modes are:

Tropo:	1984	ZS5QM - ZS3AK	1 570 KM.
Meteor Scatter:	1984	ZS2FM - ZS6OB/ZS6XPS	1 045 KM.
Tropospheric Scatter	: 1983	ZS6BZT - ZS2FM	917 KM.

At present there are over a hundred 6 metre stations active throughout South Africa and we believe that with the current interest being shown in 6 metres, this number could double within a year or two. Apart from its unique qualities, the 6 metre band offers the VHF enthusiast an opportunity to construct and test some of his own equipment - JUST LIKE AMATEUR RADIO USED TO BE!!!! Furthermore, he could modify ex-army surplus VHF gear at low cost.

Finally, what can the 6 metre hams look forward to in 1985?

- 1) The 6 metre band will be returned, at least in part, to the U.K. and Australian hams sometime this year. Weekend skeds with VK 6 metre stations are currently being arranged.

- 2) Aurora tests will continue from March 1985 with VK stations monitoring at the other end.
- 3) Moonbounce has been accomplished in the USA on 50MHz but it has never been attempted in Africa.
- 4) Solar cycle 22 will commence shortly and it promises F2 DX within the next few years.
- 5) Packet radio will become the in thing in Amateur radio of the future and the 6 metre band lends itself to this project since it could ensure country-wide Packet Radio contacts daily. ZS3B of Luderitz is already equipped and rearing to go !

WELL, I HAVE TOLD YOU BEFORE THAT THE SIX METRE BAND IS UNIQUE IN EVERY WAY - BUT YOU AIN'T SEEN NOTHIN' YET.....HI !

@@

Related to the above, did anyone notice in the December Radio ZS that 4 of the VHF/UHF records mentioned are held by P.E. Branch members ? (Ed)

Technical Classes

The Technical Lecture series for the P.M.G. Amateur Radio Operators Certificate examinations for 1985 will commence in February. If you know of anyone who would like to attend the course, please contact Brian ZS2AB BEFORE THE END OF JANUARY, on telephone 30-3498.

ZX81 De-glitcher

Users of the Sinclair ZX81 computer might be interested to know that a circuit was published in a recent magazine for a unit which will process the data pulses from cassette tapes prior to loading into the computer. It cleans up the pulses and apparently eliminates most of the tape loading problems which all users seem to encounter. If you would like more info. please contact Brian ZS2AB.
