

Q S X
P E

ZS2PE

FREQUENCIES:

Bulletin	—	3640 Khz
s20 National Call	—	145,5
s22 2nd Simplex	—	145,55
r2 P.E. Rep'tr	—	145,05/65
r8 Ght. Rep'tr	—	145,20/80



*Port Elizabeth Branch of the
South African Radio League*

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

15 MAY 1978

MINUTES OF THE MONTHLY GENERAL MEETING OF THE P.E. BRANCH
OF THE S.A.R.L. HELD ON FRIDAY 21st APRIL 1978 at 20H00.

PRESENT: A total of 26 members and visitors. A welcome was extended to Neil ZS2AI, Basil ZS2FG, and Ralph Guthrie.

APOLOGIES: ZR2BE, ZS2GR, ZS2MJ and ZS2JJ.

MINUTES: The minutes of the last meeting have been published in QSX. ZS2DD proposed and ZS2KT seconded their adoption.

ARISING: Nil.

FINANCE: The Treasurer's statement showed an amount of R103,75 spent

CORRESP: No correspondence received.

GENERAL:

- (1) The Chairman extended best wishes to all candidates who will be writing the ~~PMG~~ exam. This takes place before the next meeting. As far as is known, about 10 or 12 people will be sitting the exam
- (2) There will be a DF hunt on Sunday. Members attention was drawn to the amended rules published in QSX.
- (3) The Chairman thanked Alan ZS1AV for the article on antenna tuning unit which he sent in for QSX.
- (4) A request from the floor concerning the outcome of the AGM resulted in the Chairman giving a brief run-through of the motions.

There being no further business, the meeting was closed at 20h42, and, after tea, a film show was held.

sgd.
R.W.Schonborn ZS2RS
CHAIRMAN.

sgd.
B.A.Weller ZS2AB
SECRETARY.

FOR SALE.

- 1) 3 element wide-spaced 10 metre beam. Gamma match. Very little used. R20,00
- 2) 3 element 20 metre beam. Gamma match. R20,00.

Contact Brian ZS2AB. Home phone 30-3498.

- 3) Hallicrafters SX25 Super Defiant receiver with speaker. R25.
- 4) Hallicrafters SX28 receiver with speaker R50.

Both units in working order.
Contact Brian ZS2gf. Phone 53-1759

- 5) 2 only remote-controlled Philips Zephyrs. 25 watt single channel. Complete with control units, microphones etc. R40 each. Both in working order. High band. ZS2AB.

WANTED.

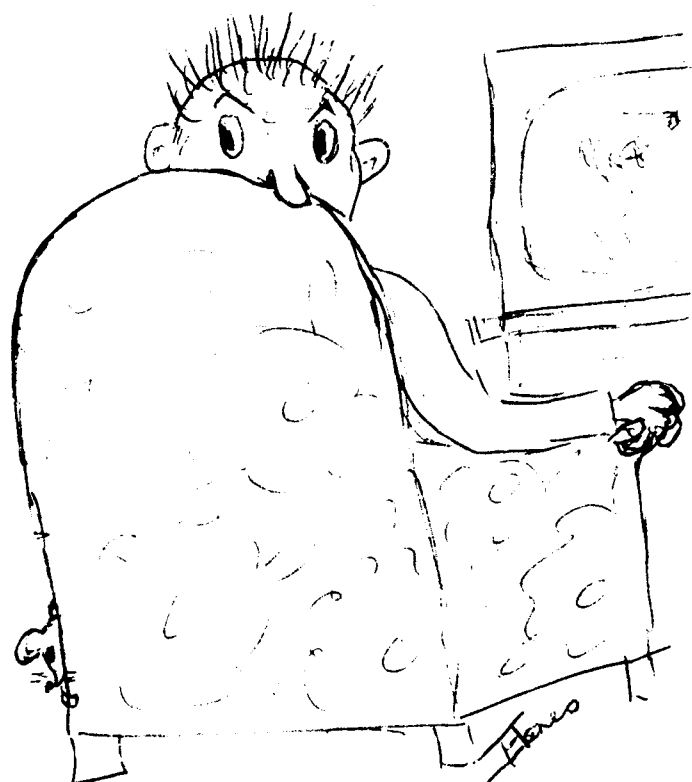
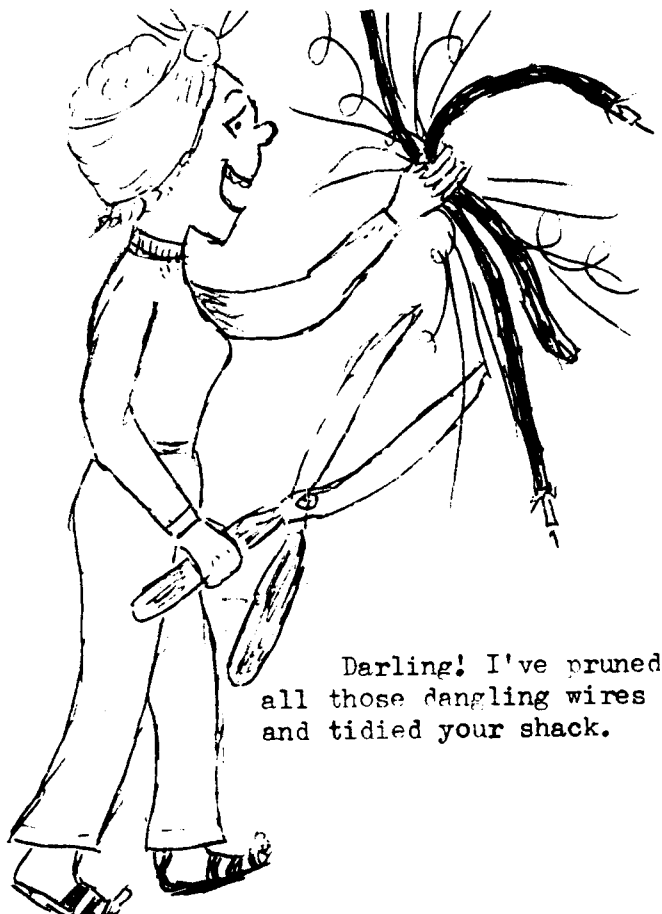
2AP1 cathode ray tube or similar type of same size (2"). Contact Brian ZS2AB. 30-3498.

BRANCH NET.

Members participating in the weekly net on 80 metres will have noticed the tremendous swing to 40 metres. Two weeks ago a relay on 40 was introduced in order to accommodate our "country" members who were not enjoying good copy on the regular net. However, on the second Sunday after introduction there were only four persons on 80 with the remainder plus a few extras on 40. I believe only one of those remaining on 80 is unable to operate on 7106 khz. Nevertheless there is no chance at present of discontinuing the original, well known frequency which will in all probability regain popularity once conditions improve. Thanks to Lionel ZS2DD for his able handling of the 40 metre net.

For those who are interested in the results of the recent VHF long range tests, here goes. Selwyn ZR2EE and I left P.E at about 7.30am and arrived at the starting point of the ascent at 9.00am. After a quick cup of coffee with the owner of the farm and mountain, one Jan Steynberg who incidentally proved to be more enthusiastic than Selwyn and I, we set off in his Land Rover. This portion of the journey was about 12 kilometres and took some 40 minutes. The final assault on foot commenced at 10.30. On reaching the summit of the first peak, a rather out of breath CQ was put out. The signals were tremendous. I was using my Icom 215 running 3 watts into a vertically polarized dipole. Chris ZS2CJ was in his workshop in Uitenhage using his KP202. Copy was crystal clear. Intermittent contact was made with Brian ZS2TY and Louie ZS2KT who were mobile near Graaff Reinet. At this point Selwyn made his way back to the vehicle and Jan and I tackled a higher peak. This we reached at about 12.15. From here I spoke to many P.E. stations and also to Bill ZS1J. Whilst talking to Bill I switched to low power - 300 milliwatts - and he could not tell the difference. His QTH is Plettenberg Bay. Solid copy with Brian and Louie was enjoyed in Graaff Reinet. Donald ZR2BJ put in an appearance whilst on the Lootsberg pass. All in all the eventual site which is approximately 300 ft higher should prove to be a winner. The descent, getting lost in the mist etc etc is another story. My sincere thanks to all those amateurs who troubled to give us a call. Unfortunately no contact was made with Alan ZS1AC who drove all the way to Bredasdorp to assist. Also Nico ZS1KT who tackled the Boland repeater site in the rain.

73 Dick ZS2RS.



June. ZS2JJ

'SLIM JIM'

2-METRE AERIAL

F. C. JUDD FISTC, MIOA, Assoc. IPRE, A.Inst. E (G2BCX)

This is a vertically polarised omnidirectional free space aerial for two metres but which will operate in the same way for higher or lower frequency bands by scaling the dimensions accordingly. It has a radiation efficiency 50% better than a conventional ground plane due to its low angle radiation, is unobtrusive, has no ground plane radials, and therefore has low wind resistance. The name "Slim Jim" stems from its slender construction (it is only 60 inches long for 2 metre operation) and the use of a J type Integrated Matching stub (JIM) that facilitates feeding the aerial at the base, thus overcoming any problem of interaction between feeder and aerial. The feed impedance is 50 ohms.

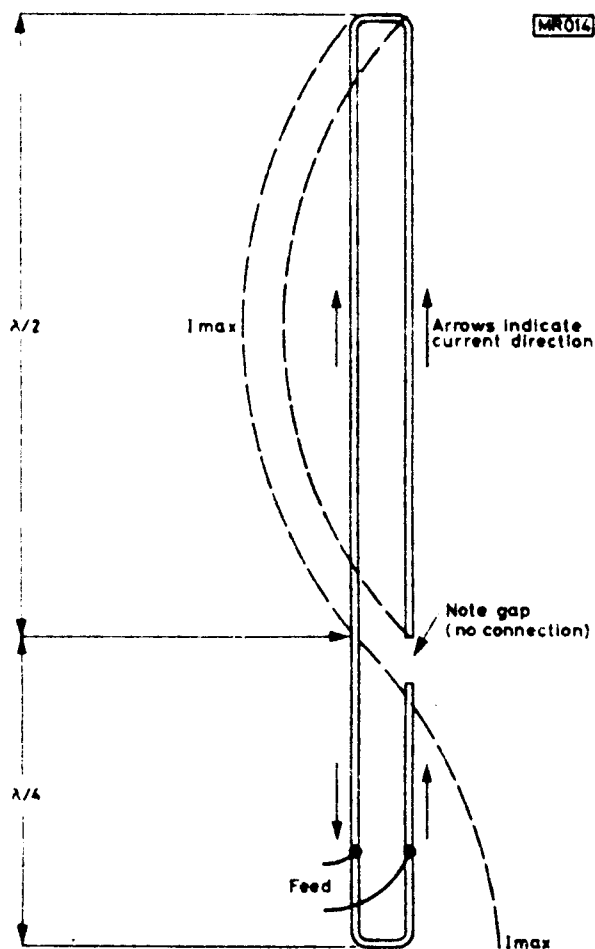
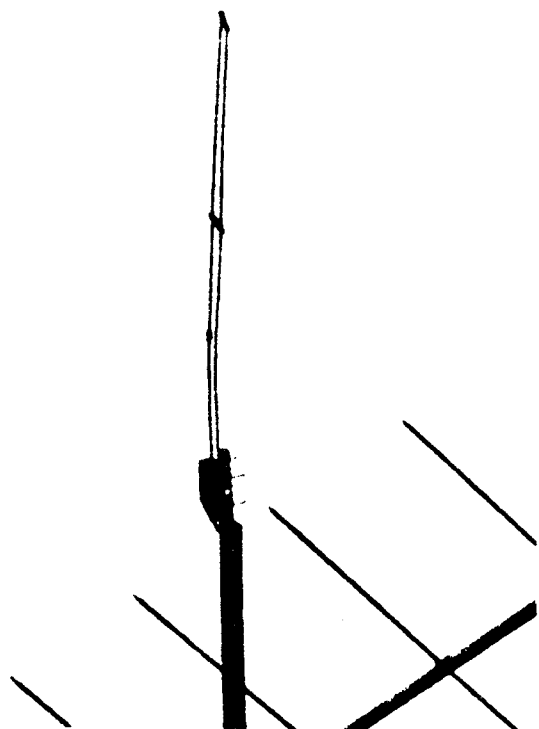


Fig. 1: The basic aerial, showing direction of current flow and phase reversal in matching stub.

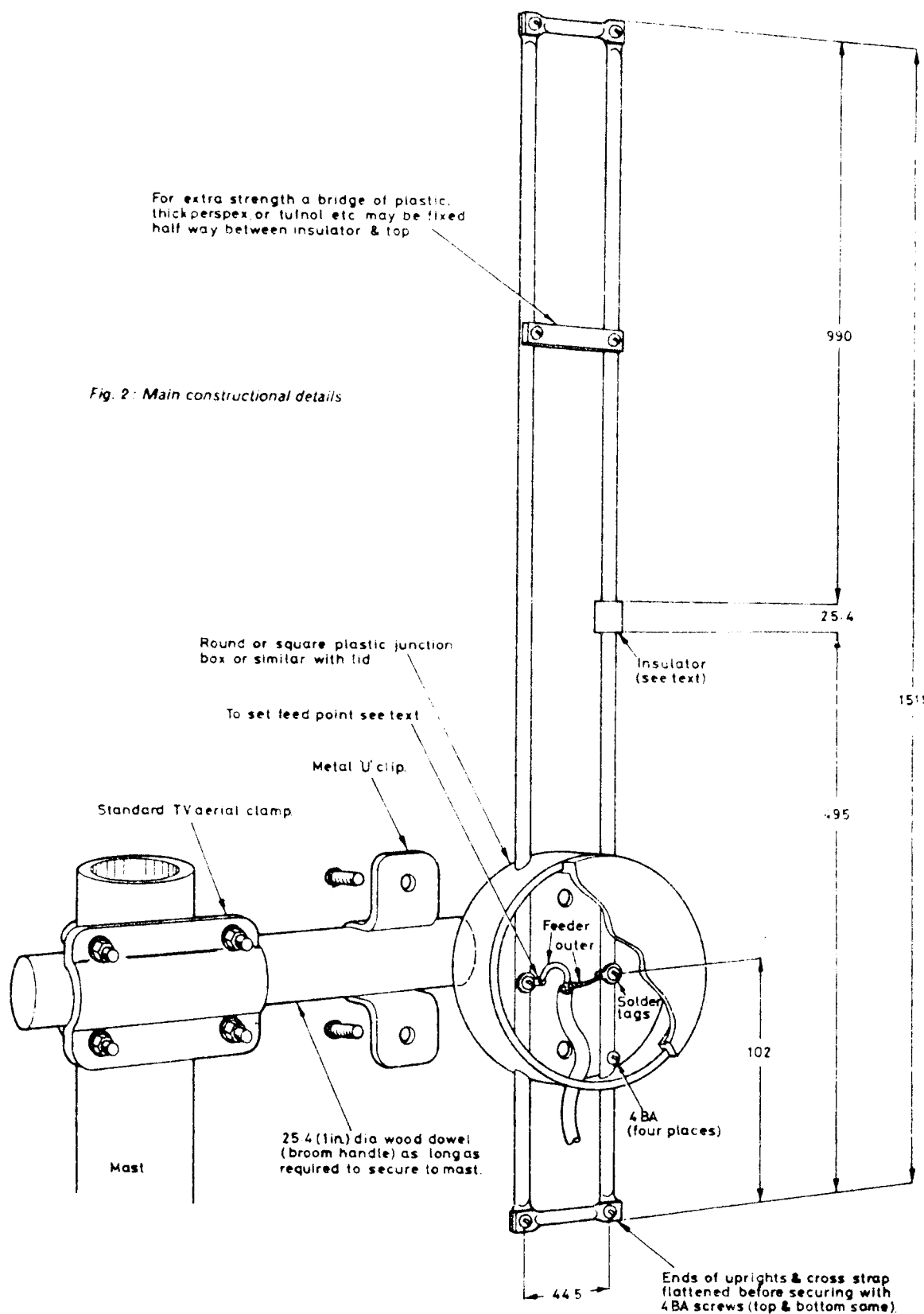


How the 2BCX "Slim Jim" operates

Basically it is an end-fed, vertically operated, folded dipole (Fig. 1). As with all folded dipoles, the currents in each leg are in phase whereas in the matching section they are in phase opposition, so little or no radiation occurs from the matching stubs. Correctly matched the VSWR will be less than 1.5 to 1 and will remain so across the band. It can be constructed for use as a fixed home station "omni" or for portable operation, and the aerial has been used for mobile operation mounted on a short stub mast attached to a rear bumper; at sea a special version is used, completely enclosed in a plastic tube for protection against salt water.

Construction

The "Slim Jim" may be constructed from $\frac{1}{4}$ or $\frac{3}{8}$ inch diameter aluminium tube, stiff coathanger (galvanised iron) wire or 300 ohm ribbon feed. The spacing between the parallel elements is not critical



All dims in mm.

and neither is the overall length, providing this is within $\pm 1_4$ inch.

Details for a strongly made version for fixed station use outdoors are given in Fig. 2, in which the diagrams are self-explanatory and dimensions are included. The only comment called for is on the insulation between the return half of the folded radiator and the top of one side of the matching stub. This may be a piece of thick perspex, tufnol or p.t.f.e. drilled to take the rods (they must not touch), which can be set in with Araldite.

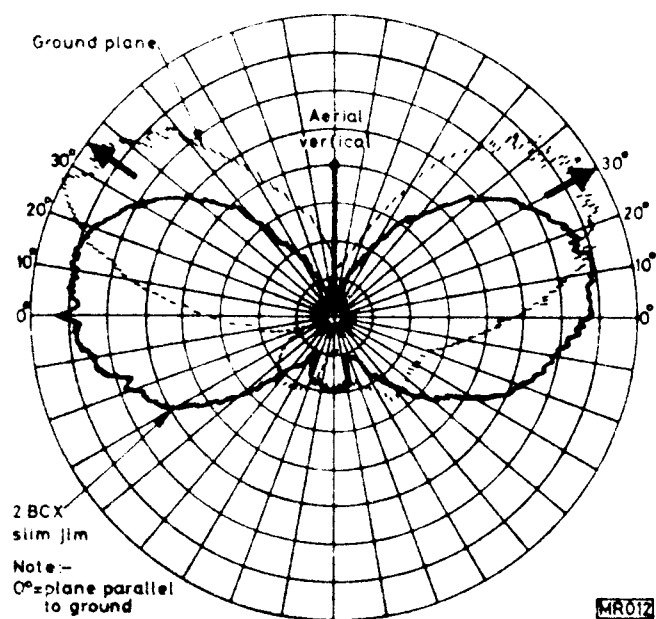
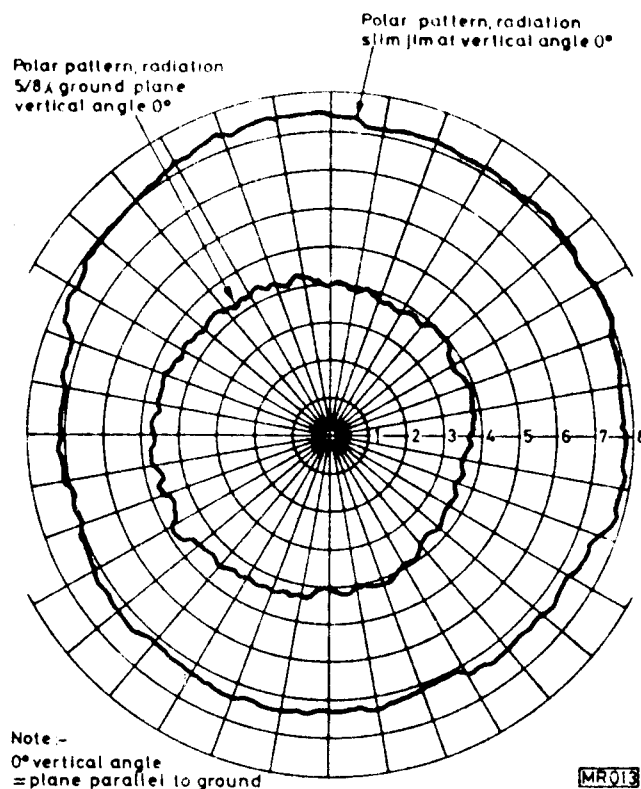


Fig. 3, above, where the $5/8$ wavelength ground plane radiation angle is 30° or more (dotted line), and the "Slim Jim's" at virtually 0° . Fig. 4, top right, providing omnidirectional patterns of a $5/8$ gr.p. at 0° vertical angle. Both patterns from models at 650MHz.

Response

The polar diagrams shown in Figs. 3 and 4 explain the "Slim Jim's" improved efficiency over the $5/8$ wavelength ground plane, in spite of its claimed 3dB gain over a dipole or similar ground plane. Fig. 3 shows that the "Slim Jim" vertical angle of radiation is almost parallel to ground, so maximum radiation is therefore straight out (and all round) which is what we want. With all ground plane aerials, including those with radials of more than 1_2 inch length, radiation is tilted to an average angle of 30° or more. The dotted line in Fig. 3 is that from a $5/8$ wavelength Gr.P aerial with 6 quarter-wave radials.

Now examine Fig. 4. The outer line is the (omni-directional) radiation from the "Slim Jim" at a vertical angle of 0° e.g., on a plane parallel to ground. The inner line shows the loss of radiation, by comparison, from a $5/8$ wavelength ground plane at the same angle and that loss can be around 6dB! This has been verified with full size 2 metre aerials as well as with UHF scale models on the writer's aerial test range. Many 2 metre operators already using the "Slim Jim" in place of a ground plane will confirm its efficiency.



Setting Up

The feed point may be protected from rain as shown in Fig. 2, by a circular plastic junction box, with a screw-on lid, but the correct feed point must be found first. The best way of doing this is to complete the construction of the aerial and stand it upright in the room near the transmitter but clear of other conductors. Use the full length of feeder required to reach the aerial when finally in situ. Clip on at about 4 inches up from the bottom as in Fig. 2. Adjust slightly up or down for minimum S.W.R. and maximum power into the aerial. Note points of contact and then fit solder tags as shown ready for the feeder soldered connections. The plastic box may now be fitted and the completed aerial and feed protector box can be given a coat or two of polyurethane varnish before final installation. Fig. 2 shows methods of mounting on a mast with a TV aerial claw clamp such as those made by Antiference.

Positioning of the "Slim Jim"

Ideally the aerial should be as high as possible and clear of other aerials or conductors. It will, however, operate quite well indoors in the loft, or even in a living room, but obviously with a lower range.

If the "Slim Jim" is constructed from coathanger wire, galvanised iron wire or 300 ohm ribbon feeder, while other considerations remain the same, the space between the elements may be reduced to about 1 inch. The whole of the aerial, made like this, could be housed in plastic water pipe. Being compact, the "Slim Jim" can be carried around quite easily for portable operation on holidays, etc. Please note the name "2BCX Slim Jim" is copyright and the design is exclusively that of the writer.

D. F. H U N T

Last month's hunt was a very enjoyable Go apart and Get together. 0.m. Lionel, who thumped the key, had a couple of us foxed for a while and the last man in was just too late. Thanks for the hard work, Lionel.

We were pleased to welcome a newcommmer to D.F.Hunting - and to Ham Radio - namely o.m. Johan Coetzee. Thanks to Al's classes, he sits the exam.this month.

THIS MONTH's D.F.HUNT.

Note the date: One week later than usual: SUNDAY 28/5/78
2.30 pm

RULES: No sense-antennas. No sniffers. No bloodhounds.

Some D.F.Sets will be available at the starting point. Please bring four pen-light cells if you wish to borrow one.

WHERE TO START OFF: Corner William Moffat Freeway and Bayley Street, Charlo.

WHEN: Half-past-two (2.30pm)
on Sunday 28/5/78.

WHEN THE FOX WILL TRANSMIT:

Full Power: For a generous minute at 2.30.
Then for a generous minute every five minutes
until and including 3.10 pm.

Low Power: For a v.g. minute at 3.15.
Again at 3.20.
Then continuous from 3.25 to 3.30 pm.

TEA AND CHIN-WAG at Grey Dawn Bird Park Tea-room after the hunt.

We are looking forward to seeing some of the 'old hounds' back on the trail. All are welcome. The more the merrier.

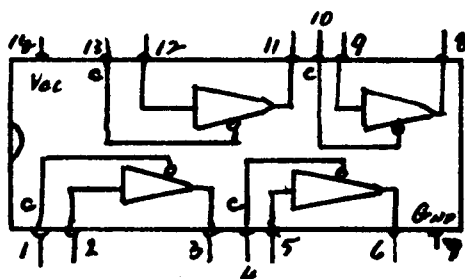
T.T.L. NOTES.

Many of you will be conversant with open-collector type devices of the 7405 type. (The outputs of these devices can be joined together onto a common line with a pull-up resistor).

Another type on similar lines, but perhaps not so well known, is the 74125. This is a Quad TRI-STATE Buffer. (Four buffers in the package). As usual, the input presents a normal T.T.L.load, and the output loading factor is 10 as usual. But in addition to the input and output, there is also a control line. When the control is LOW you have a normal buffer (non-inverting). However, when the control is HIGH, the output goes into its third state - High Impedance. In the HI-Z state, the maximum leakage current is only 40 micro-amps so a very large number of these buffers can be joined onto a common line. It is necessary, of course, to ensure that the circuit in which they are used will permit only one buffer on a common line to be active at any one time. (No pull-up resistor needed).

The Pin-out diagram is given:-

74125



73. Bert, ZS2EA.