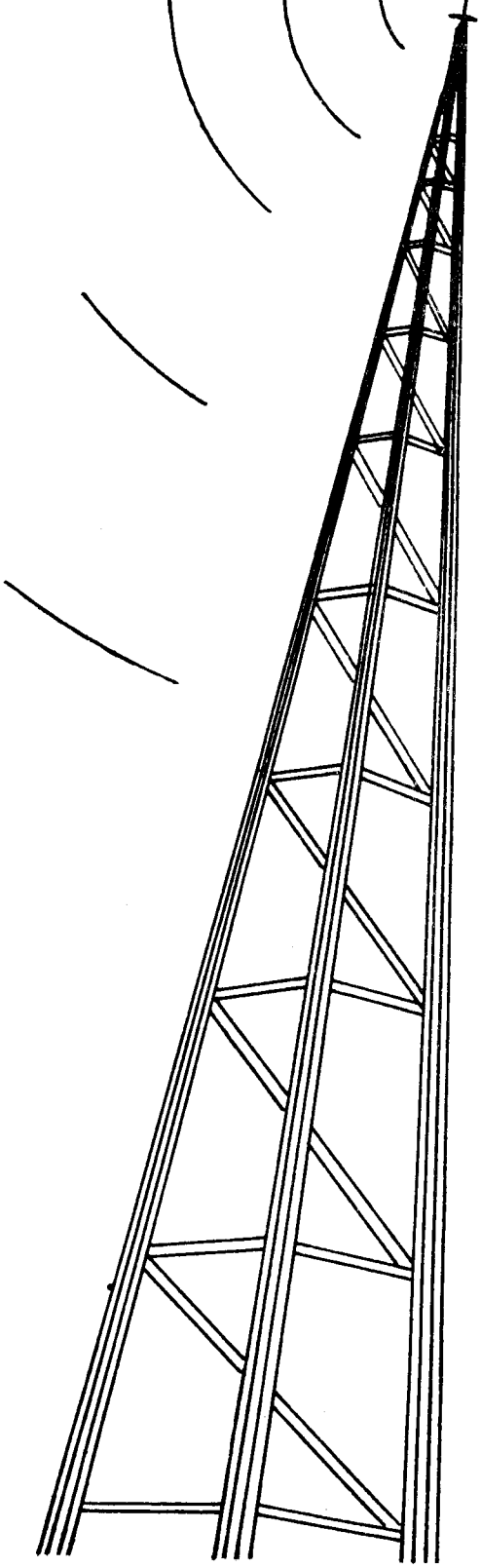
# Q S X
# P E



## ZS2PE

FREQUENCIES:

| | |
|---|---|
| Bulletin | 3640 Khz |
| | 7098 Khz |
| National Call | 145.5 Mhz |
| P.E. Repeater | 145.05/65 |
| Grahamstown | 145.15/75 |
| Lady's Slipper | 145.10/70 |

***Port Elizabeth Branch of the South African Radio League***

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

## PORT ELIZABETH BRANCH.

### NOTICE OF MEETING.

THE NEXT MONTHLY MEETING OF THE BRANCH WILL TAKE PLACE AT THE Y.M.C.A., HAVELOCK STREET, PORT ELIZABETH ON FRIDAY 19th MARCH, 1982 AT 8 P.M. MR. GARNER, AN EXPERT IN ELECTRONICS WILL BE GIVING A TALK, SO PLEASE COME ALONG AND BRING A FRIEND WITH YOU. HOPE TO SEE YOU ALL THERE.

**********

### INVITATIONS.

The Algoa Branch has extended an invitation to all members of the P.E. Branch to assist with operating at an Amateur Radio Stand which will be set up at the P.E Agricultural Show which takes place during the first week of April.
They will also be holding a Flea Market at the home on Chris Barnes, ZS2S at 15 Emerald Street, Mount Pleasant at 10h00 on Saturday 20th March and if you have anything you would like to sell, please contact Chris in connection with any further details. Phone 321968.

**********

### *BULLETIN ROSTER*

| | | |
|---|---|---|
| 28th March | Marge ZS2OB | 303498 |
| 4th April | Frank ZS2CY | 311259 |
| 11th April | Colin ZS2AO | 312471 |
| 18th April | Fred ZS2EQ | (0422)32429 |

Please let the bulletin readers have any items of news or interest. We like to know birthdays, anniversaries, hospitalization, visits out-of-town, etc.
Thanks in anticipation.

**********

We were very sorry to hear that Peter ZS2PD and Trevor ZS2TJ were both in hospital recently and hope that they have both fully recovered. Gay, xyl of Dick ZS2RS, was also in hospital for an operation a while ago and we hope that she will be out and about soon.

We would also like to take this opportunity of wishing Dick and Gay a good trip to Johannesburg and much good delegating to Dick at the League A.G.M.

**********

FOR SALE: Multitap HT mains transformer 1300V with matching LF choke, ideal for 1,2 KW linear. R15,00. Contact Dudley ZS2AW, in Grahamstown.

**********

### BRANCH BULLETINS.

Strange as it may seem, it appears that some of the members are not aware when the Branch bulletins are read. At the moment, these follow immediately after Headquarters bulletin and are read on 7098 with a relay on 2 meters and on 20 meters on 14,135kHz. There has been some discussion lately that the Branch bulletin start at 8 o'clock, with a call-in first. Another suggestion is that a branch net take place on 2 meters in the evening, at a time as yet unknown. If you have any ideas on either of these suggestions, please let us know, either at the next meeting, or in writing, or on the air. We can only do what you want, if you let us know.

**********

We would like to wish everyone who had a birthday or anniversary this month many happy returns and the very best of good health and happiness for the next year.

**********

MINUTES OF THE GENERAL MEETING OF THE PORT ELIZABETH BRANCH OF THE SOUTH AFRICAN RADIO LEAGUE, HELD AT THE Y.M.C.A., HAVELOCK STREET, PORT ELIZABETH ON FRIDAY 19th FEBRUARY, 1982.

PRESENT: 19 members and visitors.

APOLOGIES:ZS2TJ, ZS2LO, ZR2ED.

The Chairman extended a welcome to all those present and especially Paul Smith and Langley Lookwhy.

MINUTES: The Minutes of the meeting held 15th January, 1982, having been published and circulated in QSX-PE were taken as read, proposed by ZS2PS and seconded by ZS2KX.

ARISING: Peter ZS2PS asked what was happening about the QSL cards for the Ciskei operation and the Chairman said, that although these had been printed, they had not yet arrived.

FINANCE: The Treasurer had no report to make.

GENERAL: The Chairman said that the trip to Grahamstown for the social gathering was not too far off and asked that those who intended travelling on the bus to let the Secretary have their names. Several names were given.
The Chairman tabled a letter from the E.P. Veteran Car Club asking for communications at the Total National Vintage Rally and it was decided that the Branch would undertake this and 4 members expressed willingness to assist.
The Chairman read out interesting portions of the BACAR Newsletter.
Attention was drawn to the advertisement in the Newsletter for a KW Viceroy Transmitter which was for sale for Branch funds. Anyone interested to contact Brian ZS2AB.

It was then proposed that the Chairman Dick ZS2RS be appointed as Branch Delegate for the League A.G.M., proposed by Cyril ZS2KX and seconded by Peter ZS2PS. Peter ZS2PS was appointed Alternate, proposed by ZS2KX and seconded by ZS20B.
Discussion then took place on the A.G.M. motions and the Branch decided as follows:

MOTION NOS:

1 and 2 Agreed.
4 and 5 Agreed
6. Against. It is the constitutional right of every member to be able to vote.
7, 8, 9 (a) and (b) Against.
3. Delegate's Discretion. Trevor ZS2AE said that at the present rate of escalation, it was wise to invest in property, but that it must not then tie the League to H.Q. in Cape Town. There must also be no increase in subs.
10. Agreed. It was thought that various branches might advertise discount and cut-rate subs on H.Q. bulletin and the branches with higher subs would lose members.
11 and 12. Agreed.
13 (a) and (b). Against. This denied the members who lived in areas where they could not attend the meetings, their right to vote. The Delegate was nominated by the Branch to vote on their behalf.
14, 15, 16. Agreed.
17. Delegate's Discretion. Provided that no extra costs were involved.
18. Delegate's Discretion. Was it necessary to make the job easier?
19. Agreed.
20. Delegate's discretion. The idea in principle is good.
21, 22, 23. Agreed.
24. (a) and (b) Fall away.
25. Amend - leave to the P.M.G. to decide requirements.

26. Against. 27. Agreed. Basically sound.
28. Agreed. 29. Lost
30, 31, and 32. Agreed.

The Chairman reminded members that Mr. Garner, an expert on Electronics would be guest speaker at the next meeting and asked for a for a good attendance.

There being no further business, the meeting was closed and tea was taken.

sgd: Chairman R.W. Schönborn ZS2RS
sgd: Secretary. M.T. Weller ZS20B

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FROM WHENCE CAME HAM?.

Gather a few hams together and you're sure to hear some reminiscing about the past - what great fun the old days were with primitive, home-brewed equipment and friends made around the world. But one issue there's never been much agreement on, is the origin on the word HAM itself. You would think, though, that with so many old-timers around, someone would remember. On the other hand, perhaps that's the trouble. Countless tales have been woven over the years - romantic yarns having only in common that they have nothing in common. Perhaps it's because we all remember how it was, that none of us really are certain any longer. Most amateurs now are resigned to the belief that we will never know.

Now that we are in our bicentennial year, and amateur radio has been with us for three-quarters of a century, it seems fitting that we should put this puzzle into historical perspective. While I cannot trace the origin of the word, I can tell you the origin of its use in amateur radio.

On the American railroads during the 1800s, ham was a slang word for a new or inexperienced telegraph operator and was used interchangeably in this context with the word 'plug'. Such jargon was used not only along the railroads, but in the commercial telegraph and cable companies as well. These terms continued among wireless telegraph operators as this new field began to open up about 1900 and amateur radio operators adopted the nickname for obvious reasons. Actually, the word 'plug' was the more commonly used term ofthe two. Why radio amateurs chose to be 'hams' instead of 'plugs', or for that matter, why one name didn't survive is not clear. I have been unable to determine how the words came to be used on the railroads but plug has several connotations which have the general meaning of 'green' or 'second best' as in a reference to a horse. So it is easy to see why experienced operators might refer to a beginner as a 'plug'. To this day, many dictionaries include a definition for a plug as 'an inexperienced telegrapher' (though I have seen some fairly recent ones which define it incorrectly as 'an incompetent telegrapher').

'73' ONE OF MANY.

Our nickname wasn't the only thing copied from nineteenth century railway telegraphy. The salutation 73 was just one of a long list of 'Numerical Wire Signals' in use at the time, and meant then, as it does now, 'best regards'. The abbreviation 'es' for the word 'and' comes from the American Morse character for &. (American Morse was used on domestic telegraph lines. International Morse, also called Continental Morse, has always been used for radio communication). Some American Morse characters have spaces within the character itself. The ampersand (&) is one of these, but when viewing the seperate elements as distinct characters themselves, it is equivalent to the letters 'es'.

Nineteenth century telegraphers spoke of duplex, quadruples, bugs-in-the-wire and knocking off - all of which had the same meaning as they do today. Traffic handlers and brass pounders will be interested to know of another expression 'getting old' which referred to telegrams that were being delayed. A telegram was considered to be old if it was delayed for longer than fifteen minutes. Incidentally, standard times signals were received from various observatories and transmitted daily to all points on the line.

Almost all the special telegraphic signals commonly used today (AR, AS, SK, K, CQ, DE) were in use since the very earliest days of commercial wireless. I have seen no evidence that they were used by the railroads but the possibility cannot be ruled out.

LIBRARIES - A GOOD SOURCE.

Much interesting history stands behind our hobby, and its real beginning starts even before Marconi - a slow evolution which began on the singing wires of the American railroads. For historically oriented radio buffs I recommend a visit to the local library in search of old books on telegraphy, railroad operations and wireless. The most informative ones, it seems, were published between 1880 and 1920.

One book you might enjoy is 'The Telegraph Instructor' by G.M. Dodge. This charming volume delves into considerable detail on telegraph and railroad operations. First published in 1889, several editions followed later. From it, you can learn meanings of slang words then in vogue, how to set up and care for a gravity battery and a host of other things. Incidentally for many years Dodge ran a school in Valparaiso, Indiana, called Dodge's Telegraph and Railway Accounting Institute, starting about 1891. In later years a wireless department, complete with a 2 KW Marconi Marien set, was added, and the name of the school was modified to reflect this. Apparently, he was also president of the Northwestern Indiana Telegraph company.

There may still exist in some obscure location, historical records of these and similar institutions. Perhaps somewhere out there lies the answer as to why, by some stroke of luck, we are called 'hams' rather than 'plug radio operators'!

Acknowledgements to Boyd ZS5W and
'South Coast QRM'.

---


Robert Glorioso W1IS
47 Edgehill Road
Stow MA 01775



This is the first part of a three-part article, so be sure to watch for the next exciting instalment of QSX-PE for the follow-up!
Many thanks to Alan ZS6BTI for this article.

# Two-Meter Antennas: Facts and Fables

## — the truth about omnidirectional antennas on two

Vertical antennas, especially for VHF, come in a wide variety of shapes, sizes, specifications, and price. Manufacturers' gain claims have created such confusion that one of the popular magazines does not allow an antenna manufacturer to publish gains in their ads, and magazine reviews rarely say more than "the antenna worked great." This only exacerbates the problem because we, the users/consumers, have no way of getting reasonable relative performance information short of listening to someone tell us how wonderful his great new XY-999**!* antenna is, or through the grapevine of information formed by our "oral tradition." This is where the fable part comes in. We all know how well a joke gets passed around a room when one person whispers it into the ear of the next. It usually is unrecognizable after passing through as few as a half-dozen people. This is the same way we get our information on antennas, and often the quality of that information resembles a joke!

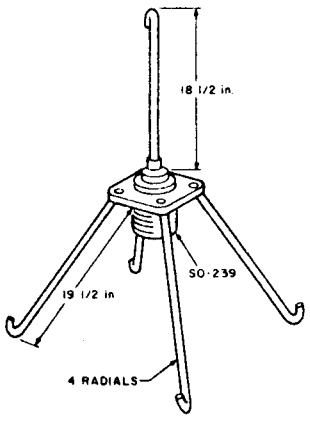



*Fig. 1. Simple 1/4λ 2-meter ground-plane antenna.*

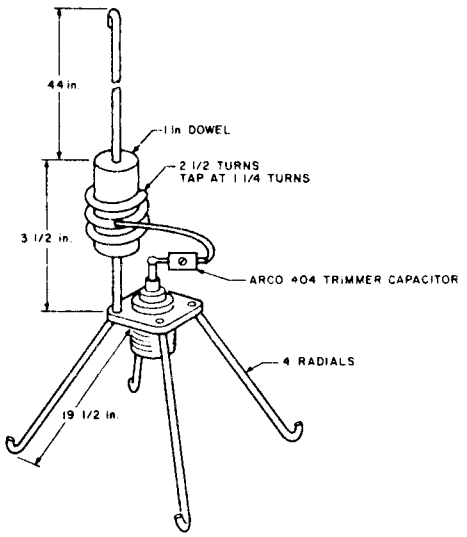



*Fig. 2. Experimental 5/8λ vertical with 1/4λ ground plane.*

I realized this recently when I was selling an old 2-meter rig to a friend and I wanted to make up a simple antenna so that he could use it right away. I have used the makeshift 1/4λ ground-plane antenna shown in Fig. 1 several times (it costs one SO-239 plus a few cents worth of old house wiring) and I was about to make one for him when I remembered something "we all know" — a 5/8λ antenna has 3 dB gain over a 1/4λ ground plane. Now, having purchased one of those more years ago than I

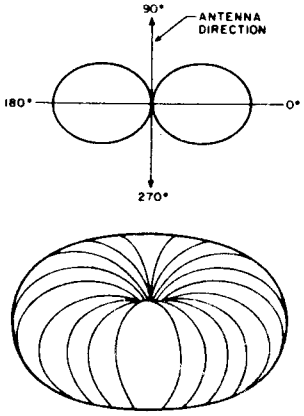



*Fig. 3. Radiation pattern representations of 1/2λ dipole antenna. Top—typical plot, cutaway; bottom—three dimensional sketch of toroidal radiation pattern.*

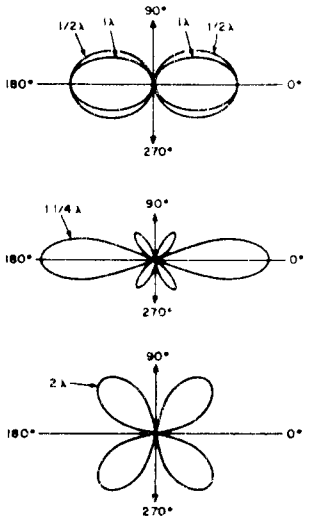



*Fig. 4. Radiation patterns for vertical dipole antennas of different lengths. The narrower major lobes of the 1λ and 1-1/4λ antennas imply gain over the 1/2λ antenna.*

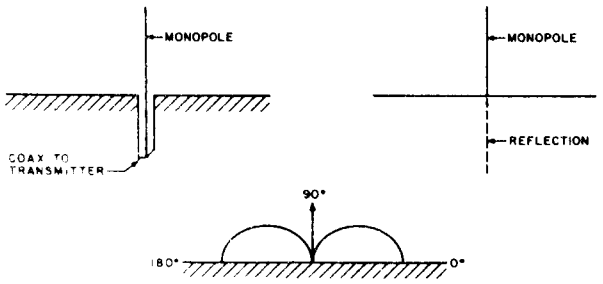



*Fig. 5. Ideal vertical and its radiation pattern. Left—vertical monopole over infinite perfectly-conducting ground. Note that the coax shield is in electrical contact with the ground. Right—electrical equivalent is a virtual dipole whose other half is a reflection in the mirror formed by the ground. Bottom—theoretical radiation pattern for 1/4λ vertical monopole over ideal ground plane.*

like to admit, I noted that it had four 1/4λ radials, a matching section, and a 5/8λ radiator, so I built the antenna shown in Fig. 2. It tuned up to 1:1 swr so quickly that I was sure it was working great. I put it on the air, and sure enough I was getting out. But, since I live on a fair-sized hill not all that far from repeater alley in the Boston area, I had no way of knowing for sure whether this antenna was really better than the 1/4λ ground plane.

Of course, everyone knows that the 5/8λ is better than a 1/4λ—even some of the antenna manufacturers' literature says so—but isn't that part of our fable? Anyway, I decided to perform a simple experiment by comparing the two antennas in exactly the same place using the signals from the various repeaters and the meter on my KDK 2016A to measure the relative performance. (I later discovered that this is called reciprocal testing: using a distant signal source and the antenna under test in the receive mode.)

The results of this test were baffling—the 1/4λ outperformed the 5/8λ in every direction! Surely something was wrong with my test, so I asked some of the guys in the area to give me signal reports with the two antennas. I used the same feedline and mount for each, so I had to run out and physically remove one antenna and install the other to do the comparison. The results were the same; reciprocity was proved again! (The reciprocity principle states that the relative performance of an antenna as a transmitting antenna and as a receiving antenna is identical.) Was our oral tradition wrong? Something surely was, so I dug into manuals and textbooks to find out the answer. Here is some of what I discovered.

### The Applicable Antenna Theory

First, consider the question: How can an antenna have gain? In order to answer this one must also ask: What is our reference for measuring an antenna's gain? Two references are used as a base for measuring an antenna's gain. The first, an abstract notion used in theoretical computations of antenna performance, is the so-called isotropic radiator. This is a hypothetical device which radiates energy equally in all directions simultaneously with a spherical pattern. However, to make real measurements with real antennas, the usual reference is a half-wave dipole in free space.

The free-space dipole has a figure 8 radiation pattern in the plane perpendicular to the antenna and a circular pattern of equal radiation in all directions radial to the axis of the dipole as shown in Fig. 3. Now, the gain of an antenna is defined as the ratio of the magnitude of the maximum radiation to average radiation from the antenna in all directions if the losses in the antenna are negligible. The maximum lobe for gain measurement is independent of the direction of that lobe. The gain is diminished by the amount of losses in the antenna. (G = maximum radiation intensity divided by average radiation intensity.)

Note that the average radiation in all directions is the same as that from an isotropic radiator, which is why it makes such a good conceptual reference. The dipole has a theoretical gain of 2.15 dB as defined above, so we can say that a dipole has 2.15 dB gain over an isotropic radiator. (An isotropic radiator is only a theoretical notion and cannot be built anyway.) Now, when we use a dipole as a reference when studying some other antenna, we only need to add 2.15 dB to our measurements to reference our subject antenna's performance to an isotropic radiator. The gain or loss in decibels of a reference antenna with respect to a dipole is often written as dBD.

Before we consider verticals specifically, let's look at the radiation patterns generated by dipoles whose lengths are greater than 1/2λ as shown in Fig. 4. Note that the pattern radial to the axis of the antenna is symmetrical. The longer the antenna gets up to 1-1/4λ the narrower the major lobes get, which means higher gain. Beyond 1-1/4λ there are four major lobes which point more towards the ends of the antenna than perpendicular to it.

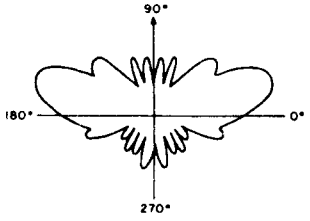
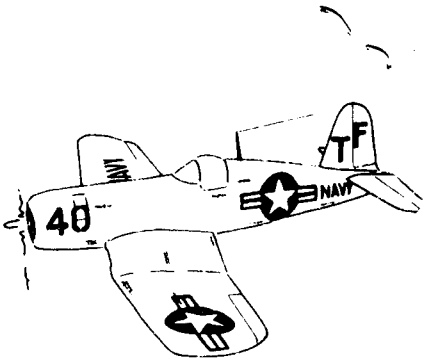



*Fig. 6. Radiation pattern of a monopole approximately 1/4λ long over a 6λ circular ground plane. Note that the major lobe is above the horizon.*

# DON'T FLY AROUND WITH FLY BY NIGHT OPERATIONS.

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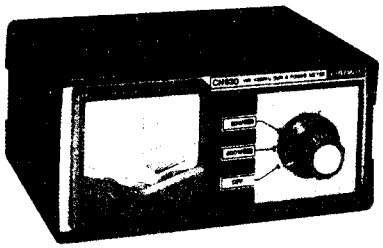

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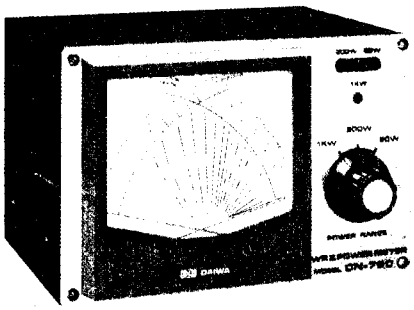

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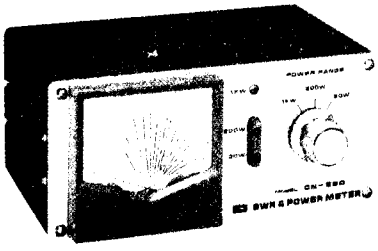

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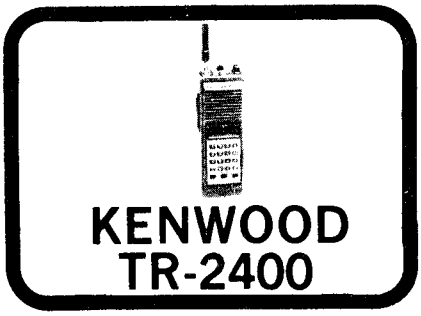

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