

The Propagator



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Club Broadcasts for 2006 – Each Tuesday, except Meeting night, at 7.30 pm with Geoff, Jack and Peter

EDITORIAL

Surprise – this issue is on time! Well, almost!

I hope you find this issue interesting and informative and that you get a smile. Apologies to Bob VK2 WRJ, but I think he will enjoy the cartoon on the last page. I spend quite a lot of time surfing the net to find interesting bit for the magazine, if you have any good sites, please let me know.

Thank you for your patience over the past few months, to Michael for his patience and immediate action to post the Propagator to the web and to those who have sent articles for the magazine.

Maeva Bennett
VK2HUG
Editor.

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Notice Of Illawarra Amateur Radio Society Inc 2006 Annual General Meeting

To be held on Tuesday 8th August upon the completion of our August Monthly meeting at our Club Meeting Rooms at Industry World Visitors Centre, Springhill Road, Coniston.

At this meeting Committee Reports will be tabled for 2005-6, a full yearly financial report and the election of Public Officers.

If any member wishes to bring any item to the attention of members at the AGM, please notify the Secretary in writing of you intention so that it can be added to the agenda for the meeting. Items for inclusion will not be accepted from the floor at the AGM,

An Easy Dual-Band VHF/UHF Antenna

Why settle for the performance your rubber duck offers? Build this portable J-pole and boost your signal for next to nothing!

You've just opened the box that contains your new H-T and you're eager to get on the air. But the rubber duck antenna that came with your radio is not working well. Sometimes you can't reach the local repeater. And even when you can, your buddies tell you that your signal is noisy.

If you have 20 minutes to spare, why not build a low-cost J-pole antenna that's guaranteed to outperform your rubber duck? My design is a dual-band J-pole. If you own a 2-meter/70-cm H-T, this antenna will improve your signal on both bands.

Hams throughout the world have built and used J-pole antennas for years. My design is simple, lends itself to experimentation and alternative construction techniques, and has the following features:

- A 1.7:1 SWR or better throughout most of the 2-meter band and less than 2:1 across the 70-cm band.

- Easy set up. You can put it on the air in a matter of seconds, or store it in a space no larger than a small paperback book.

- Simple construction. The entire antenna system can be built in less than 30 minutes using TV twin lead and coaxial cable.

All of the SWR data in this article was measured at the transmitter end of the feed line. The reference impedance is 50 Ω, since most equipment is designed for this impedance.

J-Pole Antenna Theory

The J-pole is a vertically polarized antenna with two elements: the radiator and the matching stub. Although the antenna's radiator and stub are $\frac{3}{4}$ wavelength and $\frac{1}{4}$ wavelength, respectively, it operates as an end-fed half-wave antenna. Here's how to determine the lengths of the J-pole's two elements:

$$L_{3/4} = \frac{8856 \cdot V}{f}$$

$$L_{1/4} = \frac{2952 \cdot V}{f}$$

where:

$L_{3/4}$ = the length of the $\frac{3}{4}$ -wavelength radiator in inches

$L_{1/4}$ = the length of the $\frac{1}{4}$ -wavelength stub in inches

V = the velocity factor of the TV twin lead

f = the design frequency in MHz

These equations are more straightforward than they look. Just plug in the numbers and go. My design assumes that 146 MHz is the center frequency on the 2-meter band. You may, of course, substitute a center frequency of your choice. Even though the antenna is designed using a 2-meter center frequency, it also works well on 70 cm—as you'll see later.

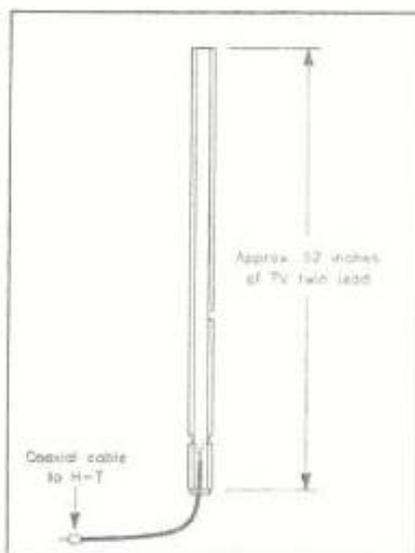


Figure 1—The J-pole antenna is approximately 52 inches long and may be hung from just about anywhere.

Don't let the *velocity factor* throw you. The concept is easy to understand. Put simply, the time required for a signal to travel down a length of wire is *longer* than the time required for the same signal to travel the same distance in free space. This delay—the velocity factor—is expressed in terms of the speed of light, either as a percentage or a decimal fraction. Knowing the velocity factor is important when you're building antennas and working with

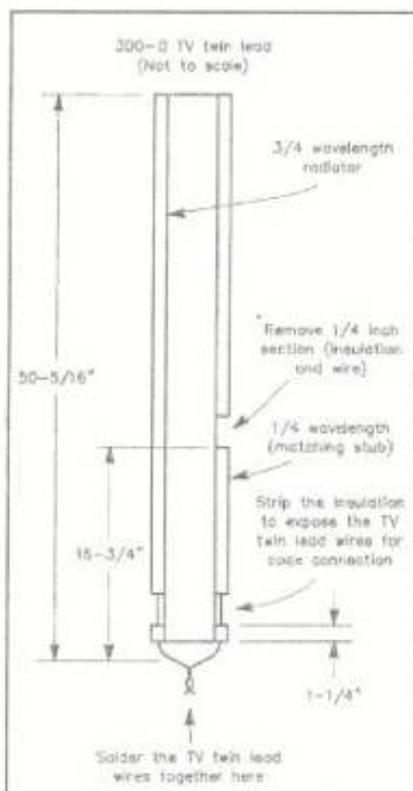


Figure 2—The basic J-pole layout. Note the areas where insulation and/or wire must be trimmed.

transmission lines. Because of the delay, 360° of a given signal wave exists in a physically shorter distance on a wire than in free space. This shorter distance is the electrical length, and that's the length we need to be concerned about.

Copper wire has a velocity factor of about 0.93, whereas TV twin lead has a velocity factor of 0.81 to 0.85 depending on who made it. If you're unsure about the twin lead you're using, just use 0.85 as its velocity factor. It's okay if it turns out to be too high. You'll be able to compensate by trimming the antenna. (It's better for the antenna to be too long than too short!) The TV twin lead I used had a velocity factor of 0.83. So, using the formulas, at 146 MHz the lengths would be approximately 50³/₁₆ inches for the $\frac{1}{4}$ -wavelength radiator and 16³/₁₆ inches for the $\frac{1}{2}$ -wavelength stub.

Construction

Because of the few materials needed to construct this antenna, you'll find it surprisingly easy to build. Start with approximately five feet of 300-Ω TV twin lead and about six feet of 50-Ω coaxial cable (see Figure 1) with a suitable connector (most H-Ts use a BNC connector). Use only flat 300-Ω TV twin lead, not foam core. RF can potentially short through the foam core.

Start by stripping off $\frac{1}{2}$ inch of insulation at one end of the TV twin lead (see Figure 2). Solder the two exposed wires together. This is the bottom of the antenna. Next, measure up 1¹/₄ inches from the soldered wires and remove the insulation from the twin lead to expose $\frac{1}{8}$ to $\frac{1}{4}$ inch of wire on both sides. Be careful not to nick or break these wires. They are your connection points for the coaxial feed line.

Now you're ready to measure and cut the elements of the antenna. On one side of the twin lead, measure up 50³/₁₆ inches from the center of the exposed wire and trim off the twin lead entirely (both conductors). This side of the twin lead is the radiator of the J-pole antenna. On the opposite side of the twin lead, measure up 16³/₁₆ inches from the center of the exposed wire and carefully remove a $\frac{1}{8}$ -inch section of insulation and wire. This is the $\frac{1}{2}$ -wavelength matching stub.

Turn your attention to the coaxial cable and strip the end without the connector. Separate and expose the center conductor from the braided shield. Attach the coax to the twin lead by soldering the center conductor of the coax to the longer element of the J-pole and the shield to the shorter of the two elements. Do this at the point where you removed the twin lead insulation and exposed the wire on both sides (see Figure 3).

Apply a generous amount of weatherproof silicon sealant to the exposed coax to prevent moisture from seeping into the line. Now tape the coax to the twin lead to relieve strain on the soldered connection

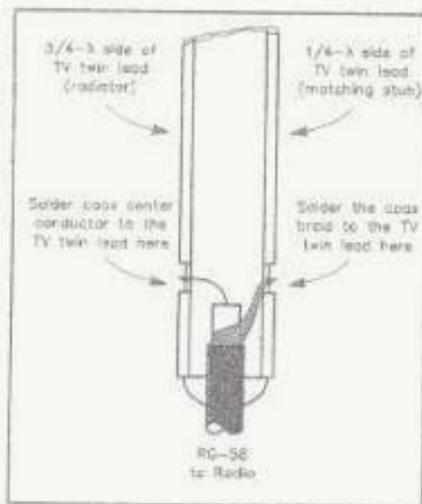


Figure 3—The coaxial feed line is connected directly at the antenna. Be careful to observe that the center conductor is soldered to the side of the TV twin lead with the longer conductor. The braid is connected to the side with the shorter conductor.

points. Heat shrink tubing also works well for this application.

Tuning

Hang your J-pole vertically by making a small hole at the top of the antenna and tying a length of twine or fishing line. Take care to keep the antenna away from metal objects that could detune it.

Tuning the J-pole is easy. Using a high-accuracy VHF/UHF SWR meter (borrow one if necessary), simply trim the length of the elements until you read a 1:1 SWR—or as close as you can get. Trim in very small increments; don't chop off an inch at a time! Remember to trim in a 3:1 ratio to maintain the $\frac{1}{4}$ - to $\frac{1}{2}$ -wavelength proportions. For example, if you cut $\frac{1}{8}$ inch from the $\frac{1}{4}$ -wavelength stub, you must cut $\frac{3}{8}$ inches from the $\frac{1}{2}$ -wavelength radiator ($\frac{1}{8} \times 3 = \frac{3}{8}$).

I should mention that this design can cause RF coupling to the feed line. To avoid this, you can place ferrite beads on the coax at the feedpoint. An alternative is to use 3 to 5 turns of coax (1 to 2 inches in diameter) to create an RF choke at the feedpoint.

Results

Figure 4 shows my SWR measurements on 2 meters. As you can see, the antenna displayed a fairly flat SWR over most of the 2-meter band. At no point did it exceed 1.7:1. I achieved slightly higher, but useable, results on 70 cm (see Figure 5).

After hanging my J-pole from a tree limb and connecting my H-T, I switched to the frequency of a nearby repeater and gave it a try. I was able to talk with several local hams and they all said my signal sounded strong and clear. So far so good, but

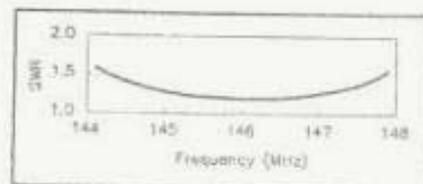


Figure 4—The SWR of the J-pole over the 2-meter band.

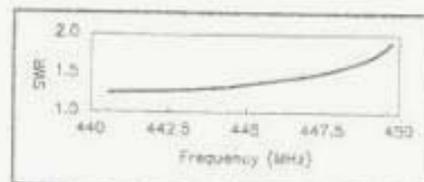


Figure 5—On the 70-cm band, the J-pole still presents a useable SWR.

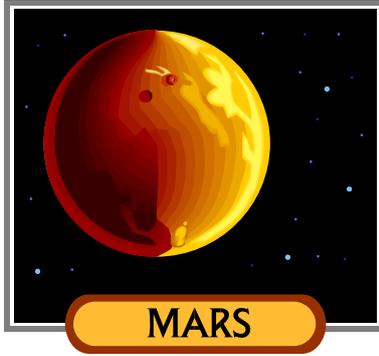
now came the true test. I switched to a repeater located about 17 miles north of my home, one that I couldn't use with my rubber duck antenna. I keyed the transmitter, announced my call sign, and was almost immediately greeted by a friendly voice. It worked! And not only that, it worked pretty well. The other ham said I was full-quieting into the repeater. Not bad for less than 30 minutes of work. Reception performance was also improved.

Summary

A J-pole antenna will never replace a beam or a full-size vertical mounted at 30 feet, but it offers relatively good performance for a minimum of materials, time and effort.

The applications of this antenna go beyond emergency or portable use. A permanent weatherproof enclosure can be built by mounting the J-pole inside a length of PVC tubing capped at the top. The PVC tube may then be placed at the top of a mast or similar structure. You can drill a small hole in the side of the PVC tube for the coax. Just make sure to seal it against the weather. The PVC will protect the antenna and can be painted to match the color of your house or apartment. If you live in an area where you can't put up outside antennas, hang the J-pole in your attic! If the antenna is located more than 10 feet from your radio, use a low-loss coaxial feed line such as RG-213 or equivalent.

Because of the low cost, simple construction, compact size and improved performance, there's no reason not to build several of these antennas. Keep one rolled up in your backpack when hiking, or in the glove compartment of your car!



Known as the Red Planet, it's about to appear in spectacular fashion!

Mark your calendar to watch throughout the month of August, but especially ...August 27, 2006

The Red Planet

This month and next, Earth will catch up with Mars in an encounter that will culminate in the closest approach between the two planets in recorded history. Due to the way Jupiter's gravity tugs on Mars and disturbs its orbit, astronomers can only be certain that Mars has not come this close to Earth in the Last 5,000 years. But it may be as long as 60,000 years before it happens again.

The next time Mars may come this close: 2287.

The encounter will culminate on August 27th when Mars comes to within 34,649,589 miles of Earth. It will be (next to the moon) the brightest object in the night sky. It will attain a magnitude of -2.9 and will appear 25.11 arc seconds wide. At a modest 75-power magnification. To the naked eye Mars will look as large as the full moon!

Mars will be easy to spot. It will look as large as the full moon to the naked eye. And by the beginning of August it will rise in the east at 10 p.m. and reach its azimuth at about 3 a.m. By the end of August when the two planets are closest, Mars will rise at nightfall and reach its highest point in the sky at 12:30a.m.

That's pretty convenient to see something that no human being has seen in recorded history. So, mark your calendar at the beginning of August to see Mars grow progressively brighter and brighter throughout the month.

... FOR NO ONE ALIVE TODAY WILL EVER SEE THIS AGAIN !

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By Zack Lau, W1VT

A No-Tune 2-Meter Bandpass Filter

A homebrew solution to annoying intermod.

Here is a solution to a common problem—strong pager signals interfering with 2-meter signals. Wideband receivers rarely have enough filtering to reject pager signals just above the 2-meter amateur band, resulting in strong intermodulation products, or *intermod*.

My solution is a sharp bandpass filter in the form of tuned circuit made entirely of coaxial cable. This is similar to microwave printed circuits, where the frequency is too high to effectively use ordinary capacitors and inductors. Inductors and capacitors work quite well—if you have the test gear to tune them. I found that semi-rigid cable could be cut accurately enough to eliminate the need for tuning.

The design shown in Figure 1 uses sections of UT-141A semi-rigid coax cable for the circuit elements. This Teflon cable has a solid copper jacket that can be cut accurately to length with a sharp hobby knife and a steel rule. It can also be bent around 3/4-inch PVC pipe to form compact coils, which reduces the size of 28-inch resonators. Coax cable is also self-shielding—you don't need to buy an expensive box to shield the filter from RF. These days, a good box could cost more than the electronics inside it!

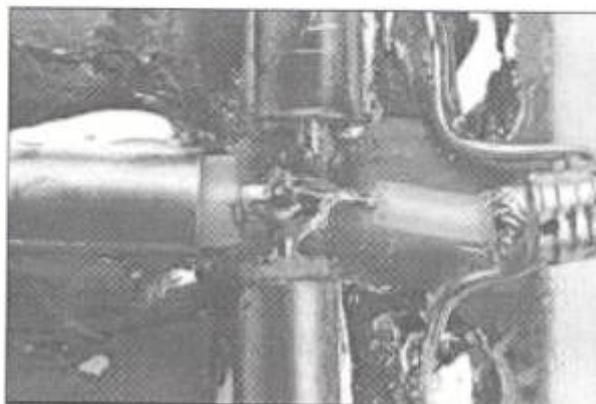
The principle of operation is rather simple—a half wavelength of coax shorted at each end forms a resonant circuit. By tapping into the resonator, energy can be introduced and extracted. Tapping closer to ground reduces the coupling, while tapping closer to the center point increases the coupling.

Thus, the bandwidth of the filter can be adjusted by changing the distance of the tap points from the grounded ends of the resonator. Filters using a pair of resonators have a good compromise between performance and complexity. "The Double-Tuned Circuit: An Experiment's Tutorial," in the December 1991 *QST*, by Wes Hayward, W7ZOI, is an excellent reference for understanding filters with two resonators.

To optimize the rejection of signals just above 148 MHz, I used the same tap points for both the input and output of each resonator. This maximizes the attenuation on the high side of the passband—perfect for rejecting unwanted pager signals around 153 MHz. As a bonus, fewer tap points simplify construction. A more symmetrical passband can be obtained by tapping into the half wave resonator at one end and coupling through the other end. You might want to do this with a 70-cm filter used in a transverter, despite the greater complexity. This would result in greater attenuation of the unwanted low-side local oscillator and image.

With tap points set for the desired bandwidth, I adjusted the passband response by varying the length of the coupling cable. This is tedious to do on the bench, but rather easy with a computer simulation. I used *ARRL Radio Designer* to design the filter—tweaking the element lengths until I achieved a design that looked good. *Radio Designer* is also good for looking at other design possibilities. I explored the idea of making a notch filter out of UT-141A, but none of the designs were worth building.

A significant disadvantage of transmission line filters is



A close up of the T-junction connected to 50-Ω Teflon coax.

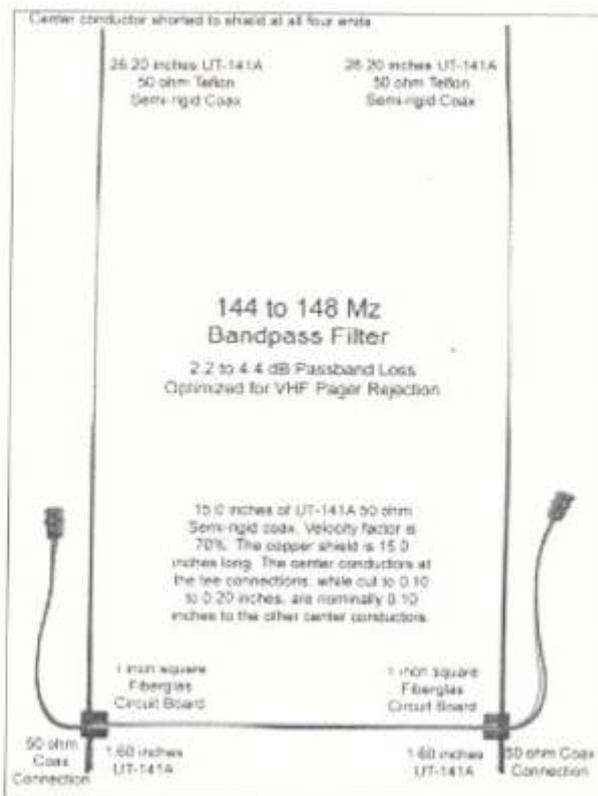


Figure 1—A view of the 2-meter no-tune bandpass filter showing the dimensions and wiring.



Here you can see how the center conductor is grounded to the shield.

harmonic responses. A half-wavelength filter is also resonant on its harmonics. This means that harmonic rejection is quite poor. A more conventional filter is suggested if you need good rejection above 170 MHz. Alternately, a low pass filter could be used in conjunction.

Construction

The semi-rigid cable is available from Down East Microwave and RF Connection.¹ I'd buy at least a couple extra feet for practice and errors. To work well, the cable shields should be cut with an accuracy of $\frac{1}{16}$ inch. However, the 15-inch cable isn't as

critical—the performance is still good with a 1-inch error. With practice, this can be done by placing the cable on a large flat surface and rolling straight lengths of cable under a sharp knife. I used an X-Acto knife with a new blade. You don't have to cut the cable all the way through—copper will break along a score line. A good steel rule will help insure accuracy. I strongly recommend some sort of eye protection when working with very sharp knives.

The dimensions shown in Figure 1 (26.20, 15.00 and 1.60 inches) are the lengths of the copper shields. The cable is most easily cut when there are a few inches on either side, but as little as $\frac{1}{2}$ inch of extra cable will work. A pair of pliers is useful for grasping short lengths of cable. As you cut through the dielectric avoid nicking the center conductor—it will weaken the cable and make it much harder to bend without breaking. If you do nick the conductor, use it on the side that isn't bent.

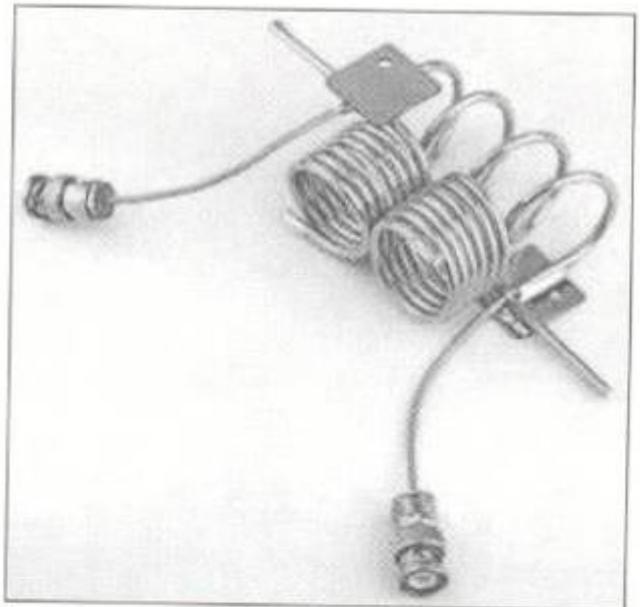
I also looked into ways of cutting the cable that required less skill. I made two cutting guides. They were both sections of brass rod with #27 (0.144) inch holes drilled down the center. The first was made out of $\frac{3}{16}$ -inch rod—thick enough to tap with set screws to firmly hold the cable. The second was made out of $\frac{1}{4}$ inch rod—I just taped it to the coax. I wouldn't go through all this trouble just to make one filter, but making some tools might be a good idea if you plan a lot of microwave construction. UT-141A is a popular cable for connecting microwave subassemblies.

It doesn't hurt to measure twice, even after you have cut the cable shield. If you discover that you've made a mistake, and if you haven't cut the dielectric yet, you might be able to solder the cable back together. Tin the shield, wrap some copper foil over it, and solder the copper foil to the cable. Not as pretty, but still useable. Just $\frac{1}{2}$ inch of center conductor is plenty for the shorted ends.

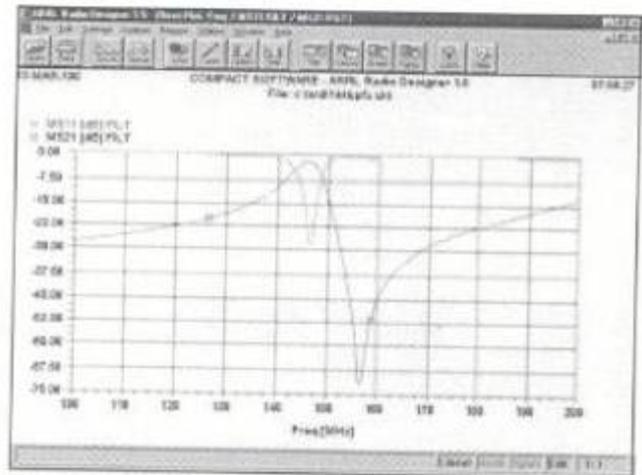
I used an unetched copper and Fiberglass circuit board to solder the three coax connectors together in a T-junction. It is a poor heat conductor compared to solid metal—you can solder additional pieces of coax to it without the first melting off. The Teflon may swell up. If this happens you can cut it back with a sharp knife. If you wish, you could use copper foil to cover the T-junctions and coax cable ends. However, the exposed "antennas" are so small that I doubt there will be much to be gained by shielding the connections.

I used RG-316/U Teflon coax to connect to the filter T-junctions. More common RG-174/U or RG-58/U can also be used, but Teflon coax is less likely to melt and short out.

¹<http://www.therfc.com/coax.htm>; <http://www.downeastmicrowave.com>.



A view of the filter with the resonators coiled up to save space.



Insertion and return loss plots of the bandpass filter generated by ARRL Radio Designer. MS21 is the insertion loss and MS11 is the return loss.

Using the Filter

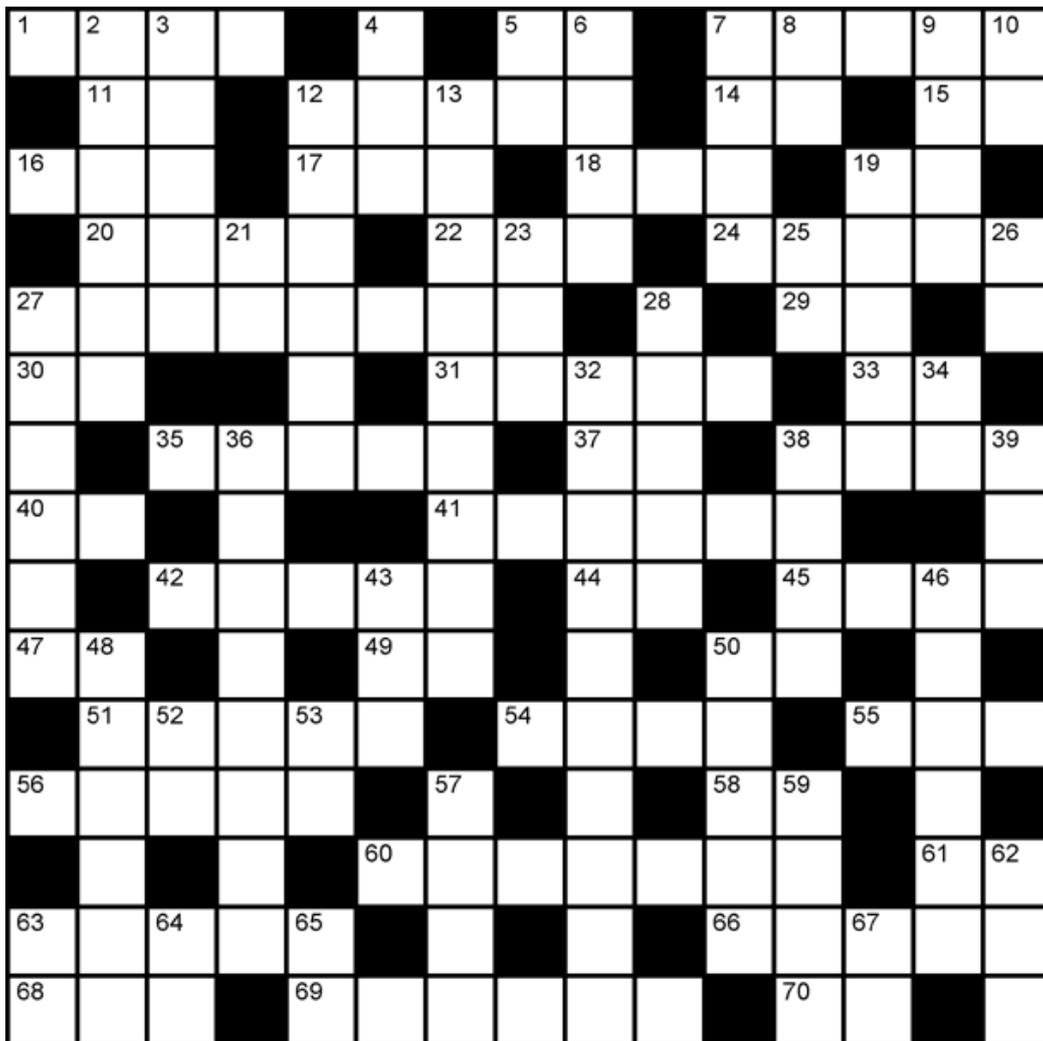
The loss of this filter is a bit high to leave in during transmit—3 dB loss is half your transmit power. Also the SWR, while acceptable from 146 to 147 MHz, isn't too good at the band edges. A common solution is to use a relay to bypass the filter. The 2-meter brick amplifier in the 2000 ARRL Handbook can be easily adapted to use this filter. Just cut "coax A" in Figure 13.57 on page 13.47 and insert the filter. The amplifier circuit can be adapted to merely bypass the filter, without adding an amplifier.

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05F-

From May 2000 QST © ARRL

The Amateur Radio Crossword Puzzler



Across

1. Directive antenna
5. Determining a signal's origin
7. Where compasses point in the Southern Hemisphere
11. 25.4 of these in an inch
12. World's tallest waterfall
14. Country from which the language of most South Americans came (prefix)
15. Continent west of South America (abbr)
16. Print resolution (abbr)
17. Agency that worries about tower height
18. Prefix meaning outside
19. Center frequency (abbr)
20. Frankenstein's assistant
22. The laziest California section
24. Shadows point this way at noon in Buenos Aires
27. The climate along the Amazon
29. Long country on South America's western coast (prefix)
30. Abbreviation for regarding
31. Acquaintances
33. Going (CW abbr)
35. The river that separates Argentina and Uruguay
37. The department that ensures quality products are made
38. Spanish for hello
40. Largest South American country (prefix)
41. Argentinian cowboy

42. To give a strong signal report, you would say "Cinco"
44. Suffix denoting an amateur that has upgraded to Amateur Extra
45. A very wet forest
47. South American country with two capitals (prefix)
49. Another abbreviation for QRQ CW
50. Part of solder (chemical symbol)
51. Goodbye in Spanish
54. Temporary gift
55. The WRTC teams each formed one
56. Yellow material that when rubbed, takes on a static charge
58. Suffix denoting an amateur that has upgraded to Amateur Advanced
60. Ocean to the west of South American
61. The first digital mode
63. Components or pieces
66. The look of an energized tube (two words)
68. Morse code signal report
69. Solo
70. Distant stations

Down

2. Many South American countries were a part of one of these colonial collections
3. Spanish for friend
4. Sensitive amplifier that adds little noise
5. From (CW abbr)
6. To bend
7. On-air meetings
8. Country containing the headwaters of the Amazon (prefix)
9. Do it to your own horn
10. Country where the quad was invented (prefix)
12. Continent to which South America was once attached
13. Equatorial islands owned by Ecuador
19. Land of fire is Tierra del
21. Operator (abbr)
23. Type of digital signal that establishes contact automatically
25. Not centered (abbr)
26. Prefix of hams in Bogota
27. There are two - Cancer and Capricorn
28. Strengthen or support
32. Geographical features near the equator
34. Good luck (CW abbr)
36. The worst
38. The cape at the bottom of South America
39. Again (CW abbr)
43. Video tape standard
46. South America's largest waterfall
48. Grasslands of Argentina
50. Opposite of email
52. Logarithmic ratio (abbr)
53. Complement to AND
57. Increase signal strength
59. Wrong type of solder flux for electronics
62. Morse code speed
63. Publicity (abbr)
64. Right (abbr)
65. Non-corroding metal (abbr)
67. Transmit (abbr)

International Lighthouse and Lightship Weekend 2006 Saturday 19 & Sunday 20 August 2006

Over the past 8 years, International Lighthouse/Lightship Weekend (ILLW) has grown to over 370 lighthouses in some 51 countries around the world participating in the event. The event is always held on the 3rd full weekend in August and it now coincides on the Sunday with International Lighthouse Day.

The lighthouses are "activated" by amateur radio operators, and the basic objective of the event is to promote public awareness of lighthouses and lightships and their need for preservation and restoration, to promote amateur radio. Hams set up their gear in or next to a lighthouse / lightship, and make contact with other lighthouses. The public is invited to participate, to learn about radio and the importance of lighthouses and their preservation.

In previous years members have taken part in this weekend at the Kiama Lighthouse. David VK2EZD, Hank VK2HL and many others have organised and conducted this weekend, which takes quite a deal of organisation and time on their behalf for the furtherment of their hobby.

If any members are interested in participating in this weekend could they please notify the Secretary as soon as possible so it can be organised with the various bodies necessary.

What is flea speak at hamfests?

Flea speak is the jargon of second-hand vendors at a ham radio festival. Often it may have two meanings. Here is our guide.

Fleaspeak with English translation follows:

This rig puts out a BIG signal - It's 50 kHz wide.

This is a really good CW rig - It doesn't work on SSB.

This is a really good SSB rig - It doesn't work on CW.

This is a really good rig - It doesn't work on CW or SSB.

The transmitter is outstanding - It doesn't receive.

The receiver is really hot - It doesn't transmit.

This rig is really hot - It's stolen.

It seems to be a vintage regenerative type - It oscillates.

I just re-tubed it - Got 'em from questionable used tube stock.

I just aligned it - The slugs on the transformers are jammed.

I don't know if it works - It doesn't work, probably never has.

It doesn't chirp - It doesn't chirp because it doesn't transmit.

The audio sounds great - The 100 / 120Hz buzz is faithfully reproduced.

I just had it serviced - I sprayed WD-40 over all the wiring.

It comes with the original box - Just brush out the kitty litter.

Better buy it now, cause it won't last - No translation needed here.

Sure, it works at full power - It sucks all it can from the wall outlet.

This rig has wide frequency coverage - It drifts up and down and out of band.

Frequency stability is great - The VFO doesn't work - you'll have to use crystals.

Real popular rig in its day - There were whole HF nets on the repair and maintenance problems.

QST gave this one a really great review - The language broke new ground for profanity.

It might need a bit of tweaking - Marconi himself couldn't fix it, much less align it.

It was used in government service - It was stored outdoors on a wooden pallet.

The dial drive may need lubricating - The gears are stripped and the setscrew's frozen.

I plugged it in to check that it lights up - The light came from the two foot high flames.

I'm selling it because I have two of them - I'm getting rid of my parts radio.

You won't find one at a 'better' price - 'Better' defined as solely from the point of view of the seller.

This is a collector's item - The manufacturer just went belly up and won't honor the warranty.

It came from an estate sale - If you have any problem take it up with the original owner.

I had it on the air just last night - And you thought the woodpecker was gone?.

SO SMILE NOW! - Hamfests aren't 'really' like this at all. Enjoy the rest of your day. - VK2TIP

It worked last time I used it - If it still worked, I'd still be using it.

The only lightning damage was a fuse - The only lightning damage I recognized was a fuse.

I have the [?] somewhere, I'll send it to you, trust me - You'll never see the [?].

I'll help you carry it to the car - I'll do anything to unload this boat anchor.

It works O.K. on 80 meters - It had some parasitics but I got in and really screwed it up and now I want to unload it.

The tubes used by this rig are worth the asking price - The rig uses a rare 7360 beam deflection tube for a balanced modulator, but it's blown and you'll spend at least \$80+ to get a new one.

This is the rig of my dreams I really wanted one of these as a kid, but now I've got to let it go - As I've gotten older, I've learned what a hunka junk it is.

The signal quality of this rig was easily recognizable in its day - The high distortion and bad audio quickly identified this rig.

This rig will bring back the feelings and atmosphere of vintage ham gear - The bypass capacitors to the AC line put enough voltage on the chassis to give you a shock in the lips through the microphone, and it smokes so bad when you turn it on that you'll probably start coughing and wheezing.

I'd keep this baby, but my wife is making me clean everything out of the shack - I finally got around to giving this thing the proverbial heave-ho.

There are a couple of other people interested in it - Someone sat on it to tie his shoelaces while walking past the table.

You'd better buy it now, because I'm leaving soon - The previous buyer and his brother, Guido, are heading back toward the table and they aren't smiling.

Today's scientific question is: What in the world is electricity and where does it go after it leaves the toaster?

Here is a simple experiment that will teach you an important electrical lesson: On a cool dry day, scuff your feet along a carpet, then reach your hand into a friend's mouth and touch one of his dental fillings. Did you notice how your friend twitched violently and cried out in pain? This teaches one that electricity can be a very powerful force, but we must never use it to hurt others unless we need to learn an important lesson about electricity.

It also illustrates how an electrical circuit works. When you scuffed your feet, you picked up batches of "electrons", which are very small objects that carpet manufacturers weave into carpet so that they will attract dirt. The electrons travel through your bloodstream and collect in your finger, where they form a spark that leaps to your friend's filling, then travel down to his feet and back into the carpet, thus completing the circuit.

AMAZING ELECTRONIC FACT: If you scuffed your feet long enough without touching anything, you would build up so many electrons that your finger would explode! But this is nothing to worry about unless you have carpeting.

Although we modern persons tend to take our electric lights, radios, mixers, etc. for granted, hundreds of years ago people did not have any of these things, which is just as well because there was no place to plug them in. Then along came the first

Electrical Pioneer, Benjamin Franklin, who flew a kite in a lightning storm and received a serious electrical shock. This proved that lightning was powered by the same force as carpets, but it also damaged Franklin's brain so severely that he started speaking only in incomprehensible maxims, such as, "A penny saved is a penny earned." Eventually he had to be given a job running the post office.

After Franklin came a herd of Electrical Pioneers whose names have become part of our electrical terminology: Myron Volt, Mary Louise Amp, James Watt, Bob Transformer, etc. These pioneers conducted many important electrical experiments. Among them, Galvani discovered (this is the truth) that when he attached two different kinds of metal to the leg of a frog, an electrical current developed and the frog's leg kicked, even though it was no longer attached to the frog, which was dead anyway. Galvani's discovery led to enormous advances in the field of amphibian medicine. Today, skilled veterinary surgeons can take a frog that has been seriously injured or killed, implant pieces of metal in its muscles, and watch it hop back into the pond -- almost.

But the greatest Electrical Pioneer of them all was Thomas Edison, who was a brilliant inventor despite the fact that he had little formal education and lived in New Jersey. Edison's first major invention in 1877 was the phonograph, which could soon be found in thousands of American homes, where it basically sat until 1923, when the record was invented. But Edison's greatest achievement came in 1879 when he invented the electric company. Edison's design was a brilliant adaptation of the simple electrical circuit: the electric company sends electricity through a wire to a customer, then immediately gets the electricity back through another wire, then (this is the brilliant part) sends it right back to the customer again.

This means that an electric company can sell a customer the same batch of electricity thousands of times a day and never get caught, since very few customers take the time to examine their electricity closely. In fact, the last year any new electricity was generated was 1937.

Today, thanks to men like Edison and Franklin, and frogs like Galvani's, we receive almost unlimited benefits from electricity. For example, in the past decade scientists have developed the laser, an electronic appliance so powerful that it can vaporize a bulldozer 2000 yards away, yet so precise that doctors can use it to perform delicate operations to the human eyeball, provided they remember to change the power setting from "Bulldozer" to "Eyeball."



From the Secretary's Desk

Don't forget this month is the Annual General Meeting to be held at our Clubrooms on Tuesday, 9th August at 7.30pm.

This is your chance to have your say on how your Club is operating. It's time to get involved in your hobby. There is a nomination sheet in this issue and on the Club webpage, please think about nominating yourself to one of the positions which will be voted on at the AGM.

A reminder, that membership of the IARS is from 1st July to the 30th June each year. If your renewal has not been received by the Treasurer by the 31st August, you will be deemed to be unfinancial.

This year, 2006-2007, each member will be issued with a Membership card, stating that you are a current financial member of the IARS. The Club is currently negotiating discounts at various outlets for our Club members, upon production of your membership card. You must also show your card to borrow books from our Club library.

Many thanks to our Repeater Committee for, hopefully, rectifying the interference problem on 146.850. The ACMA has investigated the problem, and the cause has been found. Many thanks to Rob McKnight and John Bennett for the time he spends making sure our repeaters work 100%. Without their assistance, our area would be very quiet.

The Committee would also like to take this opportunity to thank you the members for your support and assistance over the past 12 months, many things have changed for our Club during this time, new venue, broadcasts, the Foundation Licence etc. Hopefully, the past 12 months has made our Club a more enjoyable hobby for all.

Regards
Maeva Bennett VK2HUG
Secretary



ILLAWARRA AMATEUR RADIO SOCIETY (INC)

PO BOX 1838 WOLLONGONG NSW 2500

WWW.IARS.ORG.AU

EMAIL SECRETARY@IARS.ORG.AU

APPLICATION FOR MEMBERSHIP/RENEWAL OF MEMBERSHIP

Please fill in the relevant information as required by the IARS for its records and information. It is the member's responsibility to notify the Membership Secretary of any changes of circumstance that may occur.

*** If you wish you may download a copy of this form from the IARS website, where a copy of the Club Articles of Association may also be found for your information.**

NAME

CALL SIGN*YEARS LICENCE HELD.....

ADDRESS

.....Post Code.....

CONTACT PHONE NUMBER

EMAIL Address for receiving Propagator and other Club Notices.....

Are you a member of another Amateur Radio Club? If so, please indicate from the list below:

Wireless Institute of Australia

Amateur Radio New South Wales

*Name of other Radio Club

I hereby apply to become a (Concession/Ordinary) member /renew my membership of the Illawarra Amateur Radio Society Inc. I agree to be bound by the rules of the Society being in force at the time.

SIGNATURE OF APPLICANT

DATE

Your membership payment, if by cheque to be made out to the "Illawarra Amateur Radio Society Inc", and must accompany this form.

No renewals or membership applications will be accepted without this completed form attached.

Membership Fees 1 July – 30 June 2007 \$25.00 for Ordinary Membership
If not paid by 31 August the member is deemed to be unfinancial. \$20.00 for Concession Membership

Fields marked with an asterisk () are optional and are for use of the IARS only.*

FOR OFFICE USE ONLY

Date Received.....Renewal

Payment of \$.....Cheque/Cash.....Receipt No.....Treasurer.....

Propagator to be sent by Mail or Email.....

Date Entered into Club Membership Register

Membership Secretary.....



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NOMINATION FORM 2007 COMMITTEE

PLEASE NOMINATE ONE PERSON PER FORM

I.....

Address

.....

Call Sign.....

Being a financial member of the above IARS, hereby wish to nominate for the position described below.

Signature.....Date.....

Nominated Person and Position.

Name.....

Position

I am a financial member of the IARS and in the event of my election, as a member of the executive, I agree to be bound by the rules of the Association in force at the time of election.

Signature of Nominee.Call Sign.....

Date.....

I,.....being a financial member of the IARS, second the above nomination.

Signature of Seconder.....

Call Sign.....Date.....

NOMINATION FORMS MUST REACH THE SECRETARY NO LATER THAN THE 4TH AUGUST 2006.

The August Funnies

25 SIGNS YOU HAVE GROWN UP!

1. Your houseplants are alive, and you can't smoke any of them.
2. Having sex in a bunk bed is out of the question.
3. You keep more food than beer in the fridge.
4. 6:00 am is when you get up, not when you go to bed.
5. You hear your favourite song in a shopping centre.
6. You watch the News.
7. Your friends marry and divorce instead of "hook up" and "break up."
8. You go from 130 days of vacation time to 20. This is the worst one!
9. Jeans and a sweater no longer qualify as "dressed up."
10. You're the one calling the police because those %&@# kids next door won't turn down the music.
11. Older relatives feel comfortable telling sex jokes around you.
13. Your car insurance goes down and your car payments go up.
14. You feed your pet Science Diet instead of McDonald's leftovers.
15. Sleeping on the couch makes your back hurt.
16. You take weekend naps from noon
17. Dinner and a movie is the whole date instead of the beginning of one.
18. Eating a kebab at 3 AM would severely upset, rather than settle, your stomach.
19. You go to the chemist for Panado and antacid, not condoms and pregnancy tests.
20. A R12 bottle of wine is no longer "pretty good stuff."
21. You actually eat breakfast food at breakfast time.
22. "I just can't drink the way I used to" replaces "I'm never going to drink that much again!"
23. 90% of the time you spend in front of a computer is for real work.
24. You drink at home to save money before going to a bar.
25. You read this entire list looking desperately for one sign that doesn't apply to you and can't find one to save your sorry old butt.

Being Australian is about driving in a German car to an Irish Pub for a Belgian beer, then travelling home, grabbing an Indian curry or a Turkish kebab on the way, arrive home to sit on Swedish furniture and watch American shows on a Japanese TV.

Oh and..... Only in Australia ... can a pizza get to your house faster than an ambulance. Only in Australia ... do pharmacies make sick people walk all the way to the back of the shop to get their prescriptions while healthy people can buy cigarettes at the front.

Only in Australia ... do people order double cheeseburgers, large Fries and a DIET coke.

Only in Australia ... do banks leave both doors open and chain the Pens to the counters.

Only in Australian ... do we leave cars worth thousands of dollars on the driveway and lock our junk items we don't use anymore and cheap lawn mower in the garage.

Only in Australia ... are there disabled parking places in Front of a skating rink.

NOT TO MENTION...

3 Aussies die each year testing if a 9v battery works on their tongue.

142 Aussies were injured in 1999 by not removing all Pins from new shirts.

58 Aussies are injured each year by using sharp knives instead of screwdrivers.

31 Aussies have died since 1996 by watering their Christmas tree while the fairy lights were plugged in.

8 Aussies had serious burns in 2000 trying on a new jumper with a lit cigarette in their mouth.

A massive 543 Aussies were admitted to Emergency in the last two years after opening bottles of Beer with their teeth.

and finally.....

In 2000 eight Aussies cracked their skull whilst throwing up into the toilet.



ILLAWARRA AMATEUR RADIO SOCIETY (INC)

Minutes for July

Appologies	Bob Walker VK2WRJ
	Rob Heyer VK2XIC
	Ted Hawkins VK2TTH
	Phil Greaves VK2ZZY
	Max Riley VK2
	Barry Fidler VK2DLI
	Boris Rewak VK2JJJ
	Steve Benko VK2

Visitors

Meeting Opened by President Tony, at 7.40 pm

Correspondence IN: Bluescope Steel – receipt for venue
Membership renewals
Smoke Signals
IMB Bank statement
Kiama Council – Saddleback Site renewal
ARNSW – affiliation requirements for 2006

Minutes Read from June Meeting

Treasurers Report Tabled and Accepted as a true and accurate records of Club finances by Tony Stone and Maeva Bennett

Repeater Report

1. Interference on Knights Hill reported, probably pagers, was rectified for a short time but now active again. Rob McKnight to follow up with ACMA
2. All repeaters seem to be working well.
3. Effect of illegal telephones on airwaves

The minutes for the June Meeting were read – there was no business arising.

General Business

1. A thank you from Brian Farrar to those who helped him erect his new aerial, Adolf, Frank and Ted. He stated that it works really well.
2. Thank you to Ted Thrift VK2ARA for becoming our Education Officer and contact for new licence applications and training.
3. Thanks to Tony and Ted for updating our Club information in Amateur Radio Magazine
4. The Lighthouse Weekend – Kiama Lighthouse will not be operational during this weekend as David Downie, VK2EZD is unable to organise.
5. Members asked if they were interested in holding it at either Kiama or Wollongong Lighthouses, there was no interest shown from the floor.
6. A notice of equipment for sale was tabled for Ron VK2WB

Show and Tell

1. Simon VK2XQX, purchased a radio at Dapto Markets for \$5
2. Ted VK2ARA, Braid Braker
3. Paul VK2FE, a 2m band pass and aerial/antenna wire

About the Airwaves.

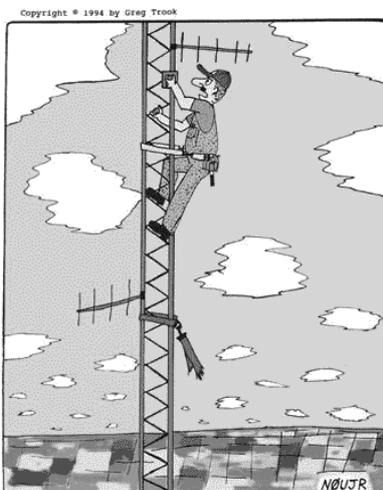
- 1 If you have any items you would like broadcast on Tuesday nights, please contact Geoff Howell VK2NSW either by phone on 42725134 or by email at vk2nsw@optusnet.com.au, or Jack Decesco VK2XGD 4227 1620 or at jack@newtec.com.au. If it interests you it will interest others, it's for the enjoyment of our members and other listeners.

I know many listen to the broadcast, please participate in the call-backs – Geoff and Jack put a lot of hard work into doing this each week, let them know their effort is appreciated.

- 2 Over the past few months, many members have changed their email addresses, as emails sent by the secretary have come back undeliverable. If you have changed your email address, could you please let the secretary know, so that our Member Registry is up to date.
- 3 Many thanks to Jack De Cesco at Newtek, for his monthly specials for our members.
- 4 If you have any knowledge of competitions that involve amateur radio could you let the editor know for inclusion in the Club Calendar.
- 5 The monthly raffle and snowballs at the Meetings will start again this Month. Remember to win the Snowball, you must be present at the Meeting.
- 6 Mt Boyne repeater, 146.675 will be de-linked from the South Coast Repeater System for approximately 2 hours from 7.30pm until 9.30 pm each Wednesday for the Mid South Coast Weekly net until their new aerial is constructed.
- 7 The Committee starting a Club Library of current Amateur Radio books. If you have any suggestions regarding books to purchase, please let the new librarian, Neil Justusson VK2VNJ, know. Books would be on loan for a period of 1 month (Meeting to Meeting) to financial members and managed and maintained by Neil. Neil can be contacted by email through the link on the iars.org.au webpage.
- 8 The idea of a bimonthly workshop has been suggested to the Committee. At these workshops, it is envisaged that members could use this as a forum for ideas on home brewing, repairing of equipment, sharing of spare parts and finding sources, problem solving and designing and constructing new equipment under the supervision of other members. If you would be interested in participating, please contact the Secretary.

Calendar Dates for August 2006

- 9th Monthly Meeting at Industry World, Coniston
Annual General Meeting
17th July Committee Meeting at Industry World Coniston
19-20th Lighthouse Weekend
27th The best night to see Mars



"So Bob...why did your ex-wife give you a new climbing belt for Christmas?"



"So Charlie, I guess I had better think about signing off, as I just heard a peal of thunder..."



"Mr. Nelson...I'm afraid you will have to leave the air for a while during this procedure."