

The NEWSLETTER

DECEMBER 2013 VOLUME 13, No. 11



Mercury Amateur Radio Association - MARA

North America - North East

*Remember
the
Reason!*



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OTHER STUFF

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E-mail your comments, ideas, or submissions to marane@mara.net or to ve1vq@eastlink.ca

Grandma Mara's RAMBLINGS



Once again, it's that time of the year. The stores have been decorated for Christmas going on several weeks now; the bearded and red costumed, part-time Santa types holding less than enthusiastic children on their laps to satisfy some desire of their parents, the canned seasonal music is issuing forth from every store's sound system. Despite all of that, it's still a great time of the year! There are Christmas activities and nativity pageants, office parties and family meals, and even the annual local ham club get-together to attend. Some of these are fun, others - well, let's just say Walter and I will take a pass on others. We're at that time in our lives where we can use age as a reason why we can't attend, or at least as an excuse to leave early.

We have friends of other faiths whom we've invited to the Ward Nativity pageant, and we will be attending events with them at their respective places of worship.

The family activities are the most fun, especially the ones with the little grandchildren. To see, again, the wonder of the season through their unspoiled young eyes.

And then there's the music! Seems like almost every other night this month there's a Christmas musical presentation somewhere around town. We both love good music, well performed music. The concerts done by the younger grandchildren are sometimes hard to bear, but we go to show our love and support. Wendy has invited us to her high school's presentation - a combination of instrumental and choral. Something about this time of the year makes the music even more special.

Walter and I both agreed not to buy each other much of anything. We're to the point where we don't need a lot of new things. We set a limit of \$50 each, to buy fun and silly things for gifts. One of his sons is out of work, and their family is having a difficult time, so we thought we would spend more on helping them than on presents for the others who are better off. We got a list and spent a couple of evenings toy shopping for their young children. We quietly passed the word to other families so they could also be a "secret Santa". We're volunteering to assist at several places where pre-Christmas help is

We're at that time in our lives where we can use age as a reason why we can't attend, or at least as an excuse to leave early.



always badly needed.

The plans for Christmas Day are to have everyone at our place for the big meal. Not sure how that's all going to work out, but we'll try it and see. May have to eat in shifts, or put some people in the basement, or out in the RV! Walter said he would volunteer to eat in the radio shack!

The food assignments have been made. Everybody gets to bring something in the meat, veggie or dessert line, meaning Walter and I don't have to spend the week before the big day cooking up a storm. Everyone does a share, and hopefully, we can all enjoy the time.

The womenfolk side of the family have agreed that the menfolk side usually

gets off easy at these family gatherings; mainly showing up, eating, then falling asleep afterward. We've decided that instead of an after meal nap the men would be responsible for the clean-up and the dish washing. Strange how none of the wives objected to the idea.

This will be an interesting and a different Christmas - our first one as a married couple. I think it will be just fine!

The womenfolk side of the family have agreed that the menfolk side usually gets off easy at these family gatherings...

AR



A COMPRESSED-AIR ANTENNA SUPPORT LINE LAUNCHER

This is the part where the high-priced legal suits say I have to warn you that neither I nor the Newsletter (or the lawyers) will be held responsible in any way if you build and/or use this launcher, and damage anything or anybody (including yourself). Shoot responsibly.

The idea of using compressed air to shoot a weight of some kind (fishing sinker, golf ball, tennis ball, or a potato) over a distance has long intrigued me, ever since I first heard about it, years ago.

From the pictures and text in the October 2013 article, I recently created my own version of an antenna launcher. Being as I'm living in a HOME DEPOT and LOWES deprived area, and some of the pictured PVC parts were not available locally, I had to make do with what I could obtain. Some of the parts were purchased from Canadian Tire, some from Home Hardware, and the remainder from EMCO. None of these sources carry the complete line (or even close to it) of water pipe PVC parts, but by careful shopping at each one I managed to find enough to make do.

Every time I visit the plumbing section of either



The modified PVC end cap with the 3/4 inch adapter glued in place. Although hard to see, I shortened the threaded section where it projects through the cap. I added epoxy cement inside at the cap/threads junction as a further seal. On the left view you can see the small pilot hole for the gauge or the Schrader valve, midway down on the side wall of the cap.

Canadian Tire or Home Hardware, there always seems to be at least one other guy in the same aisle looking for some part that isn't there. Several times now, a customer has asked what it is I'm looking for, then tells me the other places don't have it either!

MAKING THE PARTS AND ASSEMBLING THEM

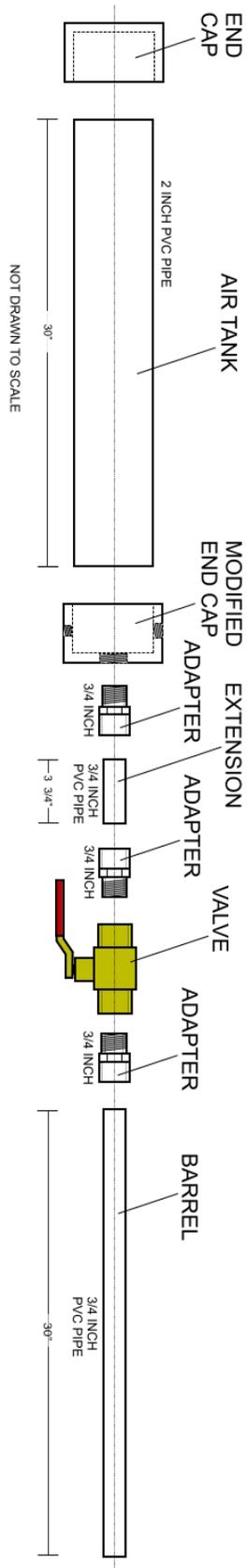
The pipe and the end caps for the air tank came from the local Home Hardware store. Nowhere could I find the fittings pictured in October's article for the tank end



The adapter used as a 3/4 inch NPT tap. I ground four grooves in the threads with a bench grinder to make it easier to cut the threads in the top end cap.

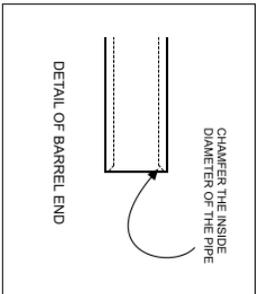
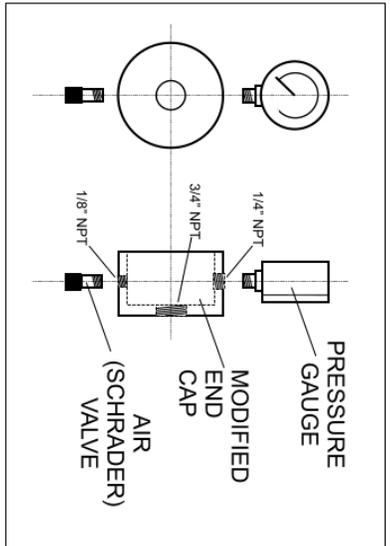
closest to the valve. I ended up taking a plain end cap and drilling a hole for the 3/4 inch PVC adapter (which actually measures xyz inches, average outside diameter of the tapered threads). My step drill only went to 3/4 inch so I had to use a rat tail file for the remainder. I then used a modified iron, male NPT adapter to use as a tap for the 3/4 inch NPT thread. In order to keep the "tap" at a 90 degree angle with the hole in the end cap, I lightly clamped the two in a bench vise between two pieces of plywood. As I turned the "tap" clockwise, I kept tightening the vise jaws to maintain a light pressure while cutting the threads. This made an "acceptable" tapped hole. Nothing that a liberal application of PVC solvent cement wouldn't fix!

I applied the cement to the adapter's threads and screwed it into the end cap. After the cement dried I used epoxy cement on the inside to make sure there wouldn't be any leaks. Once the epoxy cured, I drilled two pilot holes on opposing sides of the end cap for the pressure gauge and the air (Schrader) valve. I glued the end cap on the air tank pipe and using the pilot holes, drilled through the pipe wall. Then I enlarged the holes to 11/32 and 7/16 respectively for the 1/8 inch NPT and 1/4 inch NPT taps. Make sure the pipe and cap assembly is



PARTS LIST

- | | | |
|--------------|---|-------|
| 1. CAP, END | PVC, 2 INCH | QTY 2 |
| 2. TANK, AIR | PVC PIPE, 2 INCH | QTY 1 |
| 3. ADAPTER | PVC, 3/4 INCH, NPT | QTY 3 |
| 4. EXTENSION | PVC PIPE, 3/4 INCH | QTY 1 |
| 5. VALVE | BRASS, 3/4 INCH NPT, FEMALE | QTY 1 |
| 6. BARREL | PVC PIPE, 3/4 INCH | QTY 1 |
| 7. SLEEVE | PVC, 3/4 INCH | QTY 1 |
| 8. GAUGE | PRESSURE, 0-50 IF AVAILABLE
0-100 AS SECOND CHOICE | QTY 1 |
| 9. VALVE | SCHRADER, 1/8 INCH NPT | QTY 1 |



COMPRESSED AIR ANTENNA SUPPORT LINE LAUNCHER

VE1VQ - DECEMBER 2013



A closeup of the modified end cap, pressure gauge, Schrader valve, the ball valve, and the threaded end of the barrel at the valve.

The completed launcher in all of its 5'8" glory. The tank is made from 2 inch PVC pipe, which measures 2 3/8 inches on the outside. The barrel is 3/4 inch PVC pipe which measures 1 1/16 inch outside and 13/16 inch inside.



clamped securely. If you don't, the work piece may violently climb the drill bit and be damaged. Cut the threads no more than halfway in on the tap. Try the gauge or valve for proper fit. Cutting the threads too far on the tap will mean a loose fit. Go slowly until the fit is correct with two or three threads of the gauge or valve showing outside of the PVC tank.

Don't even bother using white Teflon tape (see **TESTING** below) to seal any place where there is thread to thread contact. The yellow tape may work but I didn't try it. Go buy yourself some **pipe dope compound**. Get the kind that says "safe with plastic". Using Teflon tape is a hit-or-miss kind of thing. It may work to seal the threads or it may not. I've had too many instances where it didn't, no matter how much got wound around the threads or how much you tightened everything.

My attempt with tape resulted in cross threading the first time I inserted the gauge. I used the tap to clean up the threads, adding more tape, but still it leaked. In the end, because the fit was now so sloppy, I had to smear some epoxy glue on the threads and once cured I re-tapped them again.

After running a cleaning cloth inside the tank to make sure the interior was clean, I cemented the bottom end cap in place. Don't panic if you can't get all the tiny plastic bits cleaned out. A few "firings" will do it for you.

I increased the distance between the tank and the ball valve by a few inches to give my knuckles a bit more room by lengthening the short 3/4 inch pipe.

While I did find the PVC ball valve pictured in the article, I wanted one that would lend itself more to further experimentation. I replaced it with a brass ball valve with 3/4 inch female thread on both ends. With this I can change the valve, should I so desire.

The barrel is a longer piece of 3/4 inch PVC pipe. It is glued to another PVC pipe adapter and screwed to the valve without using Teflon tape or thread compound. Why bother to seal at this junction? Any pressure loss due to a slight leak around the adapter

threads is miniscule compared to the open ended barrel. In addition, it lets you store everything in a shorter bag or case, if you can unscrew the barrel.

TESTING

Before I headed out for the nearest tree, I thought I'd better do some static testing. I wanted to pressurize the tank to 25 psi for a few hours, increasing it to 50 psi overnight, and see if any problems occurred.

I switched on the air compressor and pumped it up to 25 psi. The pressure gauge dropped to zero in under a minute - *that wasn't good!*

The next order of business was a water filled plastic container about two feet deep, for a dunk test. Three leaks were found - one around the pressure gauge, one around the Schrader valve, and a minor one around the 3/4 inch adapter that screws into the ball valve. Everywhere sealing tape was used! %*^&#\$\$@ Teflon tape!

Testing after using pipe dope compound - all three leaky spots were fixed and no new ones appeared. The initial pressure was 25 psi. That dropped to 24 psi over the next ten minutes. Twelve hours later it was still at 24. The pressure was then increased to 50 psi and left for another twelve hours. It had dropped to 45 psi at the end of the test. Submersion in the water tank did not show any signs of leakage.

Pipe dope is so much easier than tape; simply smear it more or less evenly on the male threads, insert, and tighten (finger tight and then another half turn with a wrench). No wondering if you have too much or too little tape.

In order to lighten the valve action, I added a few drops of olive oil to the inner seal surface of the ball valve.

Don't panic if you can't get all the tiny plastic bits cleaned out. A few "firings" will do it for you.

I fired up the air compressor and pumped 25 psi into the tank. The pressure gauge dropped to zero in under a minute - that wasn't good!

FIXES AND THOUGHTS

The action of a ball valve is quite stiff, and that's fine if all you are doing is turning the flow of water off and on. Efficiency in propelling a weight over a tree top is related to just how fast you can open that valve. A slow opening does not allow the entire tank to empty quickly behind the projectile. Sort of like a five year old's half-hearted kick at a soccer ball. Open it quickly and the entire stored energy gets behind the projectile. Or still with our soccer ball example, a kick by a pro player that goes the length of the field! In order to lighten the valve action, I added a few drops of olive oil to the inner seal surface of the ball valve. Using a petroleum based lubricant may cause damage to the seal over time.

Because of the possible inconsistencies when using a

manually operated valve, some builders have replaced it with a **modified water sprinkler valve**^{2,3}. Whether or not you stick with the former or go high tech with the latter, depends on what you are intending to do. If good 'nuff gets you over any tree with extra to spare then go with the cheaper manual valve. If you want to impress the neighborhood kids then the sprinkler option is for you.

I had considered using gray **PVC electrical conduit** for the barrel as it comes in the same outside diameter and fits the same adapters. Unlike the white PVC pipe, it is not rated for pressure. In the end, I passed on it.

I looked for a pressure gauge with a top end of 50-60 psi (pounds per square inch) but was unable to find one unless I ordered from somewhere on-line. Locally available ones all come rated at 100 psi and are intended for water pump use, so that was what I ended up with. Someday, I'll stumble across a lower pressure one, and perhaps I'll replace it.

If you are going to use a hand pump with a pressure gauge to fill the spud gun reservoir, there is no need to install one on the gun. Save yourself some money to spend on projectiles instead.

There are no single set of perfect sizes for the air tank and the barrel. Everything is a compromise. The first has to be long or large enough to contain enough air to power the launcher effectively. The latter must be long enough to utilize the air from the tank properly. Too small a tank or too short a barrel and the missile fails to reach its potential. Too large a tank or too long a barrel and the launcher becomes awkward and unwieldy. Ideally, there should still be a bit of air in the tank when the projectile leaves the end of the barrel. Making the tank a minimum of twice the volume of the barrel, and close to the same length for both is a good **rule of thumb**. Certainly the barrel should be long enough that you can't hold the "gun" in the "firing" position and, at the same time, look down the open end of the barrel.

SAFETY

Treat this device the same as you would a firearm.

The PVC material used in this and other similar devices has not been rated for hurling objects using compressed air. Treat it with care.

If you are going to use a hand pump with a pressure gauge to fill the spud gun reservoir, there is no need to install one on the gun.

Do not drop it or strike it against another object (especially when pressurized).

This material may become brittle in cold temperatures, and may shatter if struck or dropped. Caution is advised.

Wear safety glasses whenever you intend to pressurize the air tank or use the device. The use of work gloves is also strongly recommended.

For what it's worth, my advice to you if you build or buy one of these launchers, is to take it out to a large, deserted area and take some practice shots to get the feel of pressure levels. You may have to sacrifice a few "bullets", but better there than through a house window or the neighbor's cat.

This article is more of a how-to-build, rather than a how-to-use one. See the **October 2013 issue** of the NEWSLETTER for more information.

"As it turned out, to launch the weight over a 125 foot pine tree, all it took was 20 psi when standing back about 40 feet from the tree and with the launcher raised to about a 70 degree angle."

Note the **20 psi** pressure used! Just like loading long gun or handgun ammo, keep the pressure to the minimum required to do the job. Just because 20 psi works fine doesn't mean pumping it up to 70 psi makes it work *better*! After all, if it clears the tallest tree you can find using 20 psi, why risk using more? Read the October article before you take your rendition of the "spud gun" out to your antenna farm.

¹ [MARA NE NEWSLETTER - October 2013](#)

² QST - March 2009 - The W4SSY Spudgun. The author spent a lot of time and effort to "get it right". He used a hand pump with a pressure gauge attached. This allowed him to omit the gauge on the spudgun.

³ YOUTUBE video on how to modify an electrically operated sprinkler valve for use with a spudgun - <http://www.youtube.com/watch?v=A3EOdNP6lag>



SILENT KEY

W4UGK

William James Lockhart, Jr., 83, of Frederick County, Virginia, died Tuesday, November 19, 2013, in the Winchester Medical Center.

Mr. Lockhart was born in 1930, in Winchester, Virginia, the son of the late William and Dellitt Lockhart, Sr. He was a graduate of Stephens City High School. Mr. Lockhart was the Manager of the Arcadia Mobile Home Park in Winchester for over 40 years. He was a member of the Church of Jesus Christ of Latter Day Saints in Winchester. Mr. Lockhart was a HAM Radio Operator and enjoyed a good round of golf.

His wife, Yvonne Hovermale Lockhart, preceded him in death on December 16, 2011.

Surviving are two sisters, Joan Elizabeth Brock of Fayetteville, North Carolina, Linda Wilson of Spring-

ville, Utah; two brothers, Walter Merrell Lockhart of Lewisburg, West Virginia, Robert Stephen Lockhart of Winchester; and his caregiver, Barbara Moore of Frederick County, Virginia. One brother, Donald Eugene Lockhart, preceded him in death.

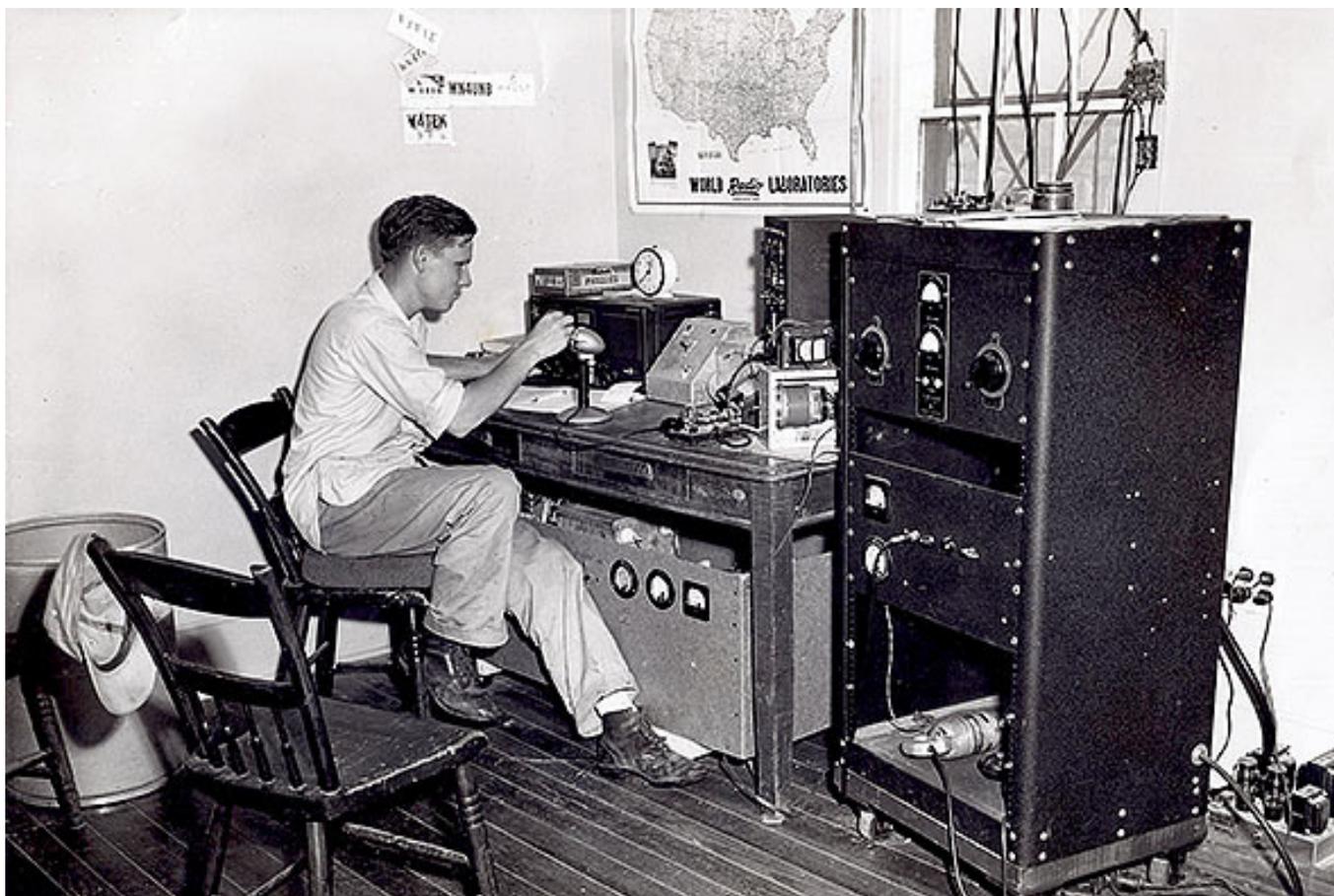
The family will receive friends on Thursday evening, from 6:00-8:00 PM, at Omps Funeral Home, Amherst Chapel.

A funeral service will be conducted at 10:00 AM on Friday at Omps Funeral Home, Amherst Chapel, with Bishop Jonathan Oringdulph officiating. Interment will be in Woodlawn Cemetery, Whitacre, Virginia.

Memorial contributions may be made to the Salvation Army, 300 Fort Collier Road, Winchester, Virginia, 22603 or the American Red Cross, 561 Fortress Drive, Winchester, Virginia, 22603.

AR

Below is a picture of William, W4UGK in his teenage years, shown operating a ham station.



QUOTE OF THE MONTH

“Then the Grinch thought of something he hadn’t before! What if Christmas, he thought, doesn’t come from a store. What if Christmas...perhaps...means a little bit more!”

Dr. Seuss



DI-DAH-DI-DAH-T

Many of us with amateur radio licenses have at least a basic understanding of how our radios work. I would guess not nearly as much as years past when we built our own equipment. Now that the modes available to us have progressed beyond simple CW, AM, FM, and SSB, into the digital arena, most of us are losing that understanding. With any luck, we plug cables into sockets on our computers and boxes that we purchase, and things work. We don’t know why but they work. It’s when they don’t produce the desired results that we are totally stumped. Now what do we do? Is the problem in the computer, the cables, the unknown box or boxes?

I belong to several Google and Yahoo tech groups. I often see posts from individuals who don’t even know what question to post to solve their situation. Typically, the question is some variation of, “I hooked up the cables like the manual said (or, my ham/CB buddy told me), but it doesn’t work. What do I do?”. When queries from others on the group try to pin point exactly what “doesn’t work”, it often takes several specific and pointed questions before the problem can be determined, solved and the equipment be made to work. It’s like some of us can’t even express a basic deduction clearly.

I often see posts from individuals who don’t even know what question to post to solve their situation.

I find the same thing when dealing with customers and trying to determine the problem over the phone, before I drive to their site. I ask what the equipment (fire alarm) is doing - is it totally dead, are there any lights showing; if there are any showing which ones are they? And many of them can’t tell me even this simple bit of information. Non-technical customers I can sort of understand, but hams who are supposed

to have some basic understanding of the equipment they use? So what’s the problem? Has electronics equipment gotten so complicated that we have to be on the team which designed it to understand how to use it. If you read the equipment reviews in

[QST Magazine](#) I’m sure you are aware of how complicated the “simple” two meter transceivers have become in the last few years, and the HF rigs are even worse. Feature settings are now buried several layers deep. I have a dual band VHF/UHF handheld that I keep at my Alberta residence. I use this rig infrequently. When I do, even something as simple as changing the frequency to one not already programmed in requires opening the manual! And, I consider that I am reasonably electronically competent.

It seems users continue to want more and more features. Whether it’s iPhones or HF transceivers, wide screen televisions or refrigerators, cars and trucks or personal computers, we continue to want and expect more than ever before. Not only users, but the people who design these things seem to have the idea that, just because they can do it, we want it!

Just like back a few decades ago when transistor radio makers kept adding transistors to their radios, using them as diodes, or nothing at all, just so they could boost the advertised transistor numbers, so present day companies do the same. It’s still the same shell game so they can hype it that their whatzits have “more and better” stuff than their competitors.

So what is the answer? Some manufacturers are trying to make things easier by sticking the most important features on the first menu level. Others are trying to provide built-in on-screen help. That doesn’t reduce the

Has electronics equipment gotten so complicated that we have to be on the team which designed it to understand how to use it.

What if the manufacturers were to ask their product users what THEY actually wanted!

complexity however.

I have an idea! What if the manufacturers were to ask their product users what THEY actually wanted! They might find out that the vast majority of us don't really care if our refrigerators or our stoves are connected to the Internet.

Naw! - that would be too simple.

Until next month,

VENQ



*Merry Christmas from all
of us here at the Newsletter.*

*Walter asked Grandma
to remind everyone to eat
responsibly!*

