

Hardware Hunting

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The most difficult part of being an amateur scientist is obtaining scientific materials needed to proceed with certain investigations. This article will introduce some of our group to an opportunity to purchase hi-tech materials and instruments which might have seemed far beyond the economic reach of many of us. Many amateur scientists among us already know of this source and have made valued use of it for years. This source is the HAMFEST!

What is a Hamfest?!

The original concept of the hamfest was born many years ago by radio amateurs (HAMS). Many of the electronic parts for radio construction were expensive and hard to get. The local radio operators created a once a year get together where fellow hams could buy, sell, and swap equipment and parts among themselves in an effort to avoid high costs and promote the hobby.

Today's modern hamfest has undergone quite a transformation. The hamfest or hamvention has evolved into a kind of "Techfest" where people come to buy and sell various technology related items. This can be any form of electronic, optical, or mechanical hardware. Most of the change in hamfests has been brought about by the computer revolution and the fantastic availability of advanced technology government surplus offerings.

You will meet everyone from a ham selling 2 meter rigs and transmitting tubes to a surplus dealer with 20 new, but surplus, argon ion gas lasers! It is all there from (a)rc lamps to (z)irconium wire.

Radio is still a big part of any hamfest and remains the very reason for its existence. Most all "fests" are sponsored by local chapters of the Amateur Radio Relay League (ARRL).

Where and when are these hamfests?

The hamfests are held throughout the United States and Canada and are sponsored by local amateur radio clubs. They are held at each location only once per year. As a rule, big cities have big hamfests and small towns without a radio club have none. I have been to hamfests held in parking lots of small town grocery stores with only 10 vendors, and attended massive hamfests spanning 2 days, held at state fairgrounds covering hundreds of acres with thousands of vendors. In between are National Guard armories with 50-100 vendors and large rural fairgrounds near big cities with hundreds of vendors.

To find out when your local hamfests are held, ask a ham! Find out where the local hams meet and attend a meeting to secure information. The ARRL web page on the internet has the yearly listing of supported hamfests posted for the entire country with dates and times.

Hamfests are generally held on Sundays only though the trend after 2005 has been drifting towards Saturdays. They normally have the gates open at 8:00 AM and close around 3:00 PM. The normal admission fee is in the six to ten dollar range. (Often, this is amortized with the first amazing, killer deal!!) Most all hamfests have bathroom facilities, food and soda vendors, etc., so make a day of it! Make sure to stop at the ARRL booth (hamfest H.Q. and anchor point) while at the fest and pick up flyers for other upcoming, nearby fests!

If you are really hooked after a couple of hamfests, you might draw a 150 mile radius circle around your town and this two or three hour travel circle might bring as many as 10 different hamfests per year in range of your scientific foraging efforts. Get a couple of friends to attend with you and split the gas and driving.

Location is everything!

The East and West Coasts are the prime hamfest locations, but the world's biggest hamfest is held each year during April in Dayton, Ohio. In general, any town or city near a "technology corridor" is a prime source for scientific gear. This includes major universities and other educational institutions, military bases and complexes, major

technology manufacturers, etc. More hamfests are always found in parts of the country where at least three big cities are rather close together.

In order to help you “fit in like a glove”, and avoid hassles and missed opportunities, I will give a few tips on successfully navigating the world of surplus at these bashes.

The Rules!

1. **Arrive early!** Open the gates if possible. The best deals are all gone by 11AM! Nothing is more exasperating than seeing some guy quickly stealing off to his car to secret the very item you are looking for! You just know his need is not as great as yours!
2. **Bring lots of cash money!** Checks are laughed at and credit cards are just not accepted at all.
3. **Bring a backpack or large over the shoulder bag.** Better still, pull around a small wagon or hand truck. Parking at these affairs is almost never a problem, but at best, is remote. It is terrible to buy a 60 pound transformer for \$1.00 or a six foot long enclosed gas laser for \$22.00 and realize that your car is about 3000 feet away! You’ll go nuts at first, buying everything in sight so a pouch or satchel is a bare minimum. **You will get plenty of exercise!**
4. **Prepare for the weather!** Bring sunblock, sunglasses, hats, water, etc. Most large hamfests are held out of doors and in a spring to fall time frame. Dress for long times in the sun in warm or hot weather. Winter fests are mostly indoors, but some are still held outside. I once spent 6 hours in 17 degree gusting wind at a large February hamfest!
5. If you come with friends or family, **make sure every person has a watch!** If you get separated or split up, a prearranged meet time at the car or a prominent place is important. I carry three spare keys to my car’s trunk and give anyone riding with me a spare so they can bring stuff back to the car as they need rather than wait for me or have to haul me away from the hunt!
6. **Never pay what the guy is asking!** Bartering and dealing is always held in high regard and expected at hamfests, especially if you are planning on buying in quantity. Offer less and see what happens.
7. **Buyer Beware!** Nothing, and I mean nothing, has any guarantee. You buy it, you own it! If it is broken you better be able to fix it! I have made some of my best buys on broken gear which I later fixed.

If you don’t heed every one of these tips don’t complain when things go wrong, or you miss the real bargains, or you can’t locate the wife and kids, or you are found frozen to death with no coat on clutching a vacuum diffusion pump, etc. I learned every lesson above the hard way! Save yourself hassles. Do a formal check list! You are, indeed, going on a scientific expedition! Happy hunting.

Boat Anchors!

This is a term coined by hams for some older piece of gear or any very large or very heavy piece of equipment. Many of my best buys have been boat anchors. Tube gear is very inexpensive and many tube instruments are just as accurate as any modern solid state item and are much better made and vastly more maintainable. I purchased a large tube type Keithley 610BR electrometer (surplus from naval research lab) at a recent fest for \$10.00. It worked! I note that this vacuum tube based instrument is still available from Keithley in their catalog for \$4,995.00!! Many good and serviceable items are left lying due to people’s insane rush to acquire the “new” or the “best” before having ever first secured the “good”. Often, the extra money spent on modern gear is never returned in functionality versus dollars spent over some of these fine older relics.

Seeing at sight.....

This is an art and a science. Most folks do not “see at sight”. This is especially true when the senses are overwhelmed by a vast sea of goodies. In many cases, some folks don’t even know what an item they are looking for really looks like in a surplus environment. Such items may be in a cabinet, filthy, or attached to so much other hardware, it is effectively lost to sight. Know your prey, inside and out. Focus!

I have purchased working Pockels cells, He-Ne and Argon ion gas lasers all under \$50.00. I have picked up nuclear detectors from Geiger counters to ion chambers to scintillation counters. I have found instruments from oscilloscopes to frequency counters. I have acquired hydrogen thyratrons, krytrons, microscopes, vacuum gauges, diffusion pumps, lenses, optics of all sorts and many hard to find "hi-tech" items offered for pennies on the dollar. I just recently picked up a Precision DA 150, .1 micron, vacuum pump with 1/2 hp motor for \$40.00!

Sound good to you? Don't go cryin' in your beer about the stuff you can't get until you have checked out a couple of hamfests! You snooze - you lose. Now get out there and scrounge the hamfests for what you might need now or in future!

Update: Ebay, LABX, and other Internet sources.

As this paper was originally written in the late 1990's other significant sources of scientific materials have come online via the internet which grew rapidly in the 1990's. Many good and bad things appear online. Some items offered for sale work, some don't. Some are damaged or missing certain internals or ancillary items required be functional. The vast majority of sellers can't tell what they have, know how it works or even test what they are selling!! All of this assumes you know what you are buying in detail and what should be contained in the item to make it functional! Many buyers, I have noted, are as clueless about what they want or how to "make it work" as some sellers!

At hamfests, you can at least touch, view and observe before purchase, poking around the item of your desiring. This is never the case on the internet. Shipping, packing and insurance can be outrageous via the internet, due to a post sale "rip-off" by the seller, as for many sellers, the shipping is where they make their money. At the hamfest, shipping is always free as the seller brings it to you and you will cart the item off after purchase.

The internet is great in that, someone, somewhere, is probably ready to sell just what you want at the very moment you need it. This is good if there is a time crunch, but you are again at the mercy of the seller and the unknown functionality of the merchandise many hundreds or thousands of miles away.

The upshot of this entire paper is to exhort you to get out there and hamfest your guts out! Do this constantly and you will amass a lot of good materials for current and future scientific endeavors.