Vol. 27 No. 3 WWW.NCARC.ORG March / 2010

Gold Country Nuggets

Newsletter of the Nevada County Amateur Radio Club

MARCH MEETING

March 8, 2009
7:00 PM - Salvation Army Bldg
10725 Alta St, Grass Valley, CA

Door Open – 6:30
Coffee & Sodas
"Free" Flea Market Table Raffle

VOLTMETERS - VOMS - DMMS

"What Every Ham Should Know "
by
Charlie Kotan, K0TAN

GUESTS WELCOME

PLEASE SUPPORT NCARC
RENEW YOUR MEMBERSHIP

See Last Page
NUGGETS NEWSLETTER

UPCOMING EVENTS

President's Report

Walt, N6HNS

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Our March meeting will again feature Charlie Kotan, K0TAN, with another presentation on Test Equipment.

For this session, Charlie is going to provide more details on your basic volt-ohm-ammeter, or VOM as it used to be known, but nowadays it's more likely a Digital Multi-Meter (DMM) or a Digital Volt Meter (DVM).

Most of you probably have quite a bit of experience with a DMM, and I'm also sure that the majority of you also accumulated lots of experience with an old analog VOM.

I can remember the Simpson 260 that my dad had – it was his pride and joy. He never did get a Vacuum Tube Volt Meter (VTVM), but many years after he retired he did finally get a DMM.

I'm not sure what a Simpson 260 cost back in the late 60's but it must have been a pretty substantial amount – probably a sizable portion of a week's wages. Even now, I think you have to pay well over $200 for a new one. But as is the case with just about everything electronic, each year the performance gets better and the cost goes down.

(Continued on page 2)

Club Officers

President
Walt Hammontree- N6HNS

Co Vice-Presidents
Charlie Kotan- K0TAN
Bill Bridges - W6FA

Secretary
Jon Gicker – WA6TNC

Treasurer
Chuck Murphey– KI6IND

Elected Board Members

Richard Miller - KI6IOV
"Doc" Dashiell- KG6YHH

LICENSE EXAMS

Morse Code No Longer Required

April 24
June 26
Sept 25
Nov 13

Contact Jon W6EXX for details
jf-morris@usa.net

President's Report (Continued)

This means you can now have a meter which is more accurate than the old Simpson 260 for less than $10. In fact, the club has had raffle prizes of DMMs which we got on sale for $2 ! There are instances where an analog VOM or a VTVM can still shine – I find it easier to peak an output while watching the meter needle move back and forth than to look at digits change or watching a bar graph change.

And now that I'm writing about meters, I remember one summer that with I would've given a full week's pay for a Simpson 260 or something similar. I was in the California Army National Guard and it was our yearly summer camp at Fort Irwin, in the middle of the Mojave Desert. We were replacing battery charging regulators in a bunch of old M-48 tanks. Once we had replaced the regulator, we started up the tank engine (a 1790 cubic inch V-12 as I remember it) and then set the regulator voltage. To measure the voltage, we were issued the LCVT, which stood for "Low Voltage Circuit Tester". This was a typical military type, large instrument. It must've weighed over 20 pounds, primarily because it had a built in resistor load bank for testing batteries. Lugging that thing back and forth in 110 to 120 degree heat made me a believer in getting small portable test gear.

I did eventually get several (many) VOMs and DMMs over the years, but, the next piece of test equipment I want to get will be a new probe set, rather than another meter (although one can never have too many meters). Having done a little work with a newer generation probe set made me realize that there also have been major improvements in this area of test equipment. The standard test probes that came with my ancient equipment has points that are fine for making temporary contact with things you want to measure. However, you have to keep constant attention on them or they tend to slip off – and there goes your measurement. Those times when I got tired of slipping off my measurement point, I've used jumper leads with alligator clips on the end. But, looking at the new probe sets, you see all types of clips, grabbers, fine points, long points, etc, that connect to the end of probe leads. You leave your probes leads connected to the DMM and just plug in the probe end that you need to make the measurement.

Once again, those of you who are do lots of work on equipment and use your test equipment regularly probably already have some nice, versatile, easy to use probe sets.

Well some much for my rambling. Once again, Charlie, K0TAN, will be talking about "voltmeters" at the meeting. Those of you who have a VOM or DMM, please bring it to the March meeting. It's always good for us to see

MEMBERSHIP INFORMATION

The Nevada County Amateur Radio Club is an organization whose purpose is to further the interests of amateur radio and be of service to the community in times of need. Membership is open to anyone who shares these group goals.

GENERAL MEETINGS:

2nd Monday of each month at 7:00 PM, at the Salvation Army Center located at 10725 Alta Street, Grass Valley, CA 95945. - Visitors are welcome.

ANNUAL DUES:

$20.00* per year. (* $6.00 /yr for associate or additional household members). Membership is renewable January 1st each year. Members who fail to pay dues before January 31st will be removed from the club roster until membership is renewed. For further information and/or application contact N.C.A.R.C, P.O. Box 2923, Grass Valley, CA 95945…or see the club web site at http://www.ncarc.org

SEE LAST PAGE FOR RENEWAL FORM

Please contact the club secretary with any changes in email or contact information.

NETS

All Licensed Amateurs Are Welcome

NCARC	TUES	7:00 P	147.285 PL 151.4
10 M	TUES	AFTER 2M NET	28.453 USB
WX	MON-FRI	7:30 A	147.285 PL 151.4
ARES	THURS	7:30 P	147.285 PL 151.4

NCARC NEWSLETTER: *Published monthly. Please submit articles and information of interest to Gerry, AB7G via email. (ab7g@aarl.net)*

The Gold Country Nuggets monthly newsletter is compiled and edited by Gerry, AB7G of the Nevada County Amateur Radio Club. - All material contained herein is obtained from the sources credited and edited for this newsletter.-

NCARC WEBSITE: *For more club info see us at* ***http://www.ncarc.org.***

WHERE ARE THE HAMS?

Locate other hams in your neighborhood
hams.mapmash.com/mapOneZip.php?hist=zipmatch:95946&zip=95946

equipment, especially something you aren't familiar with, and I expect there is a good variety of equipment owned by club members.

And one more item -- a reminder: please send in your dues, or bring a check to the meeting.

See you at the meeting and also hope to see some interesting pieces of test equipment.

73 Walt N6HNS

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NCARC MEETING MINUTES

NON-SUBMITTED

* *

WHAT SHOULD EVERY HAM KNOW HOW TO DO

1. **Solder**
   Every ham should know how to solder a connection, and by extension, build small kits and cables. Over the course of one's ham career, this skill will save you a ton of time and money.
2. **Build a dipole antenna**
   The dipole is the simplest and most versatile antenna. Knowing how to build one and use one is an essential skill.
3. **Check into a Net**
   Net operation is one of the basic operating skills.
4. **Use a multimeter**
   Measure voltage, current, and resistance and know what those measurements mean.
   This is the most basic skill used in troubleshooting
5. **Install RF connectors**
   Particularly the three most used PL-259, BNC, and N connector."
6. **Measure the SWR of an antenna."**

Feel free to post a comment to my blog or e-mail me at cwgeek@kb6nu.com. - Dan Romanchik, KB6NU

NEWS FROM THE ARRL et al

EMERGENCY COMMUNICATIONS LEADERSHIP

The third annual seminar for Emergency Communications Leadership in the Sacramento Valley Section will take place Saturday, April 24, 9 A.M. to 2 P.M., at the U.C. Davis Sierra Foothills Research and Extension Center, 8279 Scott Forbes Rd., in Browns Valley.

The seminar is hosted once again by Art, K6ALC, Yuba and Sutter County Emergency Coordinator. The seminar is organized and presented by Larry, WD6FXR, Section Emergency Coordinator. All Section EMCOMM Leadership is invited as well as anyone who intends to step up to a leadership position.

All EMCOMM organizations, not just those whose title includes the ARES label, are urged to attend. Attendees need to bring a bag lunch. There is no food service available in the area. Also bring your go kit if you want to share your ideas, and any items you would like to discuss. Coffee, tea, and bottled water will be provided.

Directions: take I-5 to Hwy.
99, then Hwy. 70 Marysville. Take Hwy. 20 east 14 miles to Peoria Road. Turn left, and follow signs 5.6 miles.

EMCOMMWEST 2010 (APRIL 30 – MAY 2)

This year's EMCOMMWEST® will take place Friday April 30 - Sunday May 2, 2010 at the Grand Sierra Resort in Reno, NV.

Started in 1999, this event has grown to a full ARRL convention, with speakers and forums, a one day review of all the Technician Pool questions and a Technician VE exam. A hall of vendors will have all the latest Ham Radio goodies, and there will be a swap meet. http://www.emcommwest.org/

This year's speakers and schedule can be viewed at the site, which will continually update as new forums and sessions are added, so check back often. If you know of someone who would like to present at this event, route them to the website for a speakers package. Registration forms, vendor registration, banquet and breakfast tickets, room reservations etc. can be obtained here as well.

There are some very interesting topics to be discussed this year, including a presentation of special interest to those operating on the 420-450 band, on the USAF's

new RADAR system, formerly known as Pave Paws, in Northern California. Lt. Col. Corey J. Keppler and his staff who work directly with the project at Beale will make this presentation. They will present an overview of the unit mission, explain the project and their use of the 420 - 450 mhz. band, and why the mitigation of interference is important to the mission. Their presentation will be followed by a full session of Q&A to answer questions from the Amateur Radio community.

There will also be FEMA ICS and NOAA Weather Spotter training classes offered at the event, and a "get your ham license in one day" class along with VE license testing for all classes.

ARRL's CEO, Dave Sumner, K1ZZ will be the special Saturday night banquet speaker this year! Keynote speaker will be Mark Spencer, WA8SME of the ARRL. This year's EMCOMMWEST® will offer a new "Sunday Brunch" with special guest speaker, Tom Taomina, K5RC who's huge contest station in Virginia City Highlands, Nevada is legendary.

If you haven't been to one before, come to Reno's The Grand Sierra Hotel Resort, which features an indoor shopping mall, movie theatres, outdoor driving range, lots of restaurants and an on-site RV park. If you want to learn a lot, meet old friends and make new ones, have fun and "love Amateur Radio", then you just have to be at EMCOMMWEST® 2010! - ARRL Pacific Division Director: Robert Vallio, W6RGG , w6rgg@arrl.org

HERBERT "PETE" HOOVER III, W6ZH (SK)

Herbert "Pete" Hoover III, W6ZH (ex-W6APW) -- the grandson of Herbert Hoover, the 31st President of the United States, and the son of former IARU and ARRL President Herbert Hoover Jr, W6ZH (SK) passed away on February 4, 2010. He was 82.

A resident of San Marino, California, Hoover was active in ARRL activities, serving as a Director of the ARRL Foundation in 1976 and as a member of the ARRL Long Range Planning Committee from 1978-1981. In the 1970s, Hoover, along with EIMAC's Bill Eitel, W6UF (SK), established a matching fund to encourage contributions to the amateur satellite program. Hoover served as Vice President and Trustee of the Pasadena (California) Radio Club and was also a member and former President of the Southern California DX Club. In 1978, he was elected to the National Red Cross (later the American Red Cross) Board of Governors. – ARRL Letter

HISTORY OF ITU PORTAL

The International Telecommunication Union (ITU) announced on February 11 that they have launched the History of ITU portal.

This program -- the digitizing of the ITU's archive of historical documents -- aims to improve access to information on the ITU and chart its evolution since its establishment in 1865, while ensuring the long-term preservation of historic documents. The archives will be freely accessible.

ITU's Historical Documents Digitization Program is an ongoing project to catalogue and scan key ITU documents and outcomes of major conferences and make them available on the web. Optical character recognition (OCR) allows the documents to be fully searchable. Documents generated from ITU Plenipotentiary Conferences -- as well as from early radio, telegraph and telephone conferences -- are now available on the portal.

The portal provides background information, key data and links to the documents and other materials for each conference. The digitization program will continue to make available documents of historic significance, including those related to Radiocommunication Conferences since 1903. – ARRL Letter

W1AW ANNOUNCES NEW SCHEDULE FOR DIGITAL BULLETIN TRANSMISSIONS

Beginning Monday, March 15, W1AW, the Hiram Percy Maxim Memorial Station, will alternate the digital modes used for its digital bulletin transmissions. While Baudot, PSK31 and MFSK16 still make up the digital mode complement, W1AW Station Manager Joe Carcia, NJ1Q, says that the schedule will be altered to give more exposure to PSK31 and MFSK16. "Because of time constraints and the varying lengths of digital bulletins, there were many instances where only Baudot was used," he said. "With the new schedule, amateurs preferring either PSK31 or MFSK16 will no longer find these modes secondary – ARRL Letter

DISASTER PREPARATION TIPS

As we start a new decade, let's review some of the basics of Amateur Radio disaster preparedness. (The following are tips from John Covington, W4CC, of Dallas, North Carolina.)

You must make sure you're personally prepared for a disaster before you can even consider helping with Amateur Radio. If you are preoccupied with personal matters, you won't be able to help ARES®.

To be ready for disaster communications, do the following:

- Train regularly with your local ARES® group
Think about how you might best be able to help during a disaster. Some of us are good at installing antennas and equipment, others of us are better at operating on the air. Not everyone is suited to doing every job. Sometimes just having helping hands, spare equipment or supplies can be helpful even if you cannot operate the radios yourself. Generators need fuel, operators need coffee, and stations need to be set up.

- Figure out where you best fit in.
Decide how you can help out if you stay home: Can you deploy at a shelter or EOC for a few hours? Operate from home? If you must evacuate, can you deploy from where you have evacuated to, such as a shelter?

- Have all resource materials you need in printed form.
Don't depend on computers, PDAs and so forth as they may not work in a disaster, require electricity and are relatively fragile.

If you use a computer regularly in your on-the-air operations, make sure you practice doing things such as calling nets and handling traffic the pencil-and-paper way once in a while. Remember, you may not be able to spare the amp-hours or the table space to run a computer.

- Have an Amateur Radio ready-kit to supplement your personal ready kit.

Some items to include:
* Portable radio, antenna and power supply or batteries (2 sets)
* Headset or earphones (you may be operating in a noisy area)
* Any cables you could possibly need
* Pencils and Paper
* Clipboard (firm writing surface, you may not have one otherwise)
* Radiogram forms (helpful but not absolutely required)
* Operating aids (pink card, Field Resources Manual, list of ARRL numbered radiograms, and anything appropriate for your local area)
* Small tools (multi-tip screwdriver, multitools, etc.)
* ARES® Identification Card, if appropriate
* Important phone numbers and frequencies
* Map of the area
* Flashlight
* Poncho - very small to store, only around $2 and can be useful when you least expect

If carried in lieu of a personal ready kit, a few other items may be helpful:
* For a short deployment, a bottle of water plus some crackers or something to eat requiring no preparation could make things much more bearable for you
* Medicine
* Toilet paper - small packets from MRE kits are very handy and don't take up much room
* Moist towelettes

* Know CPR.
* Know the location of the Automated External Defibrillator (AED), and how to use it.
* Know the signs/symptoms of a heart attack and stroke.

Also, be prepared physically, mentally and emotionally for the sometimes overwhelming demands of a disaster or emergency environment. Hope for the best, but expect the worst. You are at risk for witnessing horrific scenes. Protect your self and especially young hams; participate in psychological and grief counseling, if necessary. Your mental health is just as important as your physical health. – ARES E-LETTER

FCC ALLOWS ROBOTIC DEVICE IN 440 M BAND

In January 2008, a company called ReconRobotics filed a request with the FCC for a waiver of Part 90 of the Commission's Rules with respect to the Recon Scout -- a remote-controlled, maneuverable surveillance robot designed for use in areas that may be too hazardous for human entry.

A waiver is required to permit licensing of the Recon Scout because the device operates in the 430-448 MHz band, which is allocated to the Federal Government Radiolocation service on a primary basis, as well as the Amateur Radio Service and certain non-federal radiolocation systems on a secondary basis.

More than two years later, the FCC granted the waiver request in the form of an *Order* (WP Docket No 08-63), subject to certain conditions.

In its comments filed in May 2008, the ARRL called on the FCC to deny ReconRobotics waiver request, "either permanently or even temporarily." The FCC noted in the waiver that they had received more than 70 comments "generally consist[ing] of public safety and law enforcement entities supporting the waiver request, and amateur radio operators opposing it." In their initial waiver request, ReconRobotics asserted that even though the device operates in a in an area allocated to other services, including Amateur Radio, the Recon

Scout operates with only 1 W peak power and it is "unlikely to cause interference to these services."

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REQUEST FOR AMATEURS TO KEEP EMERGENCY FREQUENCIES CLEAR

A massive 8.8 magnitude earthquake hit Chile at 0634 UTC on February 27, 2010, triggering a potential tsunami.

IARU Region 2 and the Red Chilena Nor Austral de Servicio (RECNA) have suggested Amateur Radio operators monitor the following emergency communications frequencies for traffic pertaining to the earthquake and tsunami: 3.738, 3.750, 7.050, 7.100, 14.200, 14.350, 21.200, 21.350, 28.300 and 28.500 MHz.

IARU Region 2 Area Emergency Coordinator Jorge Sierra, LU1AS, reports that there is now traffic at frequencies of 40 meters from people seeking information from people in Chile: "We would appreciate if amateurs would leave free the frequencies used by RECNA, as well as the usual IARU Region 2 frequencies on in 20, 40, and 80 meters."

In addition to the above frequencies, you may also want to listen to the worldwide emergency communication Center of Activity frequencies: 14.300, 18.160 and 21.360 MHz. Other suggested monitoring frequencies are 3.720, 7.045 and 7.060 MHz. Hawaiian Amateur Radio operators on the lookout for a possible tsunami are monitoring 7.088 and 3.888 MHz. – ARRL QST

INJURED COLORADO SKIER USES AMATEUR RADIO TO SUMMON HELP

When Steve Priem, N0YIV, of Boulder, Colorado, decided to go backcountry skiing near Yankee Doodle Lake in the Guinn Mountain area of Colorado's Roosevelt National Forest on Friday, February 19, the 60 year old ham made sure he was well prepared: Not only did he take along a rescue whistle, he made sure his handheld transceiver was fully charged and in his pack.

It's a good thing he did: When Priem was injured while skiing, he used his radio to summon help. According to ARRL Colorado Section Manager Jeff Ryan, K0RM, a ham more than 100 miles away in Colorado Springs answered Priem's call for help and called 911. Priem was able to provide GPS coordinates for his position. – ARRL Letter

2010 ARRL FIELD DAY PACKETS NOW AVAILABLE

It's that time of year again -- time to start gearing up for ARRL Field Day, June 26-27, 2010! ARRL's flagship operating event -- always held the fourth full weekend in June -- brings together new and experienced hams for 24 hours of operating fun.

Field Day packets are now available for download and include the complete rules (including changes for 2010), as well as other reference items such as forms, ARRL Section abbreviation list, entry submission instructions, a Frequently Asked Questions section, guidelines for getting bonus points, instructions for GOTA stations, a kit to publicize your event with the local press and more. – ARRL Letter

LITHIUM- ION BATTERIES MAY BE BANNED FROM CHECKED AIRLINE BAGGAGE

Traveling by air with spare Lithium Ion batteries for your H-T could soon become impossible. This as Computer World reports that the United States Department of Transportation may prohibit the transport of all spare batteries in checked luggage, regardless of their physical size or capacity.

Lithium-ion cells rated at 100 watt-hours and smaller were previously exempt, but new proposed rules would eliminate the exception. The tighter rules would affect smaller professional video cameras along with a host of consumer electronics devices, from the P-D-A's to audio players and even some hearing aides. Basically any device that uses Lithium Ion cells as a power source.

Computer World dug further into incidents of Lithium Ion battery-related accidents reported on aircraft. It found that based on the number of batteries shipped, injuries during a flight due to battery-related accidents were about one in 28 million in 2008. While not very many in number, still enough percentage wise to concern the Department of Transportation and likely prompt the proposed ban. - Computer World, TV Business, others)

BILL GORDON -DESIGNER OF ARECIBO RADIO TELESCOPE - SK

The designer of the giant radio-telescope at Arecibo, Puerto Rico, has passed away. This with word that astronomer and engineer who Bill Gordon, who designed the array that spotted the first planets beyond our solar system and lakes on one of Saturn's moons died February 16th in Ithica, New York, at age 92.

Gordon designed the Arecibo Observatory's radio telescope in the 1950's as a 1,000-foot-wide dish set in a sinkhole surrounded by forested hills. Within a year of opening, it was used to determine the planet Mercury's period of rotation.

After radio pulsars were discovered in 1967 the observatory played a prominent role in studying their properties Astronomers Joseph Taylor, K1JT, and Russell Hulse used the Arecibo telescope to discover the first binary pulsar in 1974 and leading to their 1993 Nobel Prize in physics. In 1990, Polish astronomer Aleksander Wolszczan used the telescope in the discovery of a pulsar in the constellation Virgo that was shown to be orbited by the first known planets beyond Earth's solar system.

Bill Gordon was born in Paterson, New Jersey. He earned a bachelor's degree from Montclair State Teacher's College, a master's degree from New York University and his doctorate at Cornell. He was a professor and administrator at Rice University in Texas from 1966 until his retirement in 1985. (Southgate, others)

HIGH EFFICIENCY ORGANIC SOLAR CELLS DEVELOPED

Scientists at the Department of Microsystems Engineering and the Freiburg Materials Research Center have succeeded in developing a method for treating the surface of nanoparticles which greatly improves the efficiency of organic solar cells. The researchers were able to attain an efficiency of 2 percent higher than previously expected by using so-called quantum dots composed of cadmium selenide.

Organic solar cells belong to the so-called third generation of solar cells and are still in the developmental stage. The world record for purely organic solar cells in which both components of the photoactive layer consist of organic materials is currently at 7 percent through wet chemical methods.

Organic solar cells have many advantages over the conventional silicon cells typically used for large-scale energy production. Not only are they are considerably thinner and more flexible but are also less expensive and quicker to produce. As such, they are well suited for powering everyday devices which are not in constant use such as sensors or electrical appliances.

The procedure to produce these new cells has been patented and the results were published in a recent issue of the journal Applied Physics Letters.
- Amateur Radio Newsline (ScienceDaily)

SNEAK PEAK AT THE FCC NATIONAL BROADBAND PLAN

With the FCC scheduled to deliver its long awaited National Broadband Plan to Congress next month, the FCC released a sneak preview of the plan. It reveals what can best be described as a group of sweeping and ambitious proposals it hopes Congress will support.

The recommendations released in a 56 page report cover a variety of proposals ranging from efforts to spur job creation and improve energy independence to improving healthcare and controlling its costs. The plan also calls for constructing an interoperable nationwide wireless public safety network.

Other proposals seek to improve the delivery of education services and enhance government performance. The preview document provides details of what may be included in the massive report the FCC plans to deliver to Congress on March 17th.
- Amateur Radio Newsline (Information Week)

VU2RBI TO MEET WITH UK ROYAL FAMILY

One of the worlds most decorated hams has been invited to meet with the British Royal Family. VU2RBI, Bharathi Devulapalli Prasad, announced on her Facebook page (Feb. 22) that she has been invited to speak at the Commonwealth Day Observance in London in March 8th in the presence of HM The Queen, HRH Duke of Edinburgh, the Prince of Wales, the Duchess of Cornwall and all Commonwealth High Commissioners. She says she will be talking to the distinguished group about science technology and society, which she says will include her personal experiences on ham radio.

Bharati, one of ham radio's most prominent YL's, she was part of the Andaman DX'pedition team that with the Dec 2004 earthquake and tsunami that devastated South Asia coastal areas swiftly shifted nd. into an emergency communication link with India's mainland.
- Amateur Radio Newsline

With all of the old QST magazines online for ARRL members, why not take a tour through radio history and see if you can find the answers to these questions in the articles and advertising sections! – ARRL

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1) A flying animal graced the cover of this popular shack reference -- name the animal *and* the reference!

2) Which Amateur Radio vendor was owned by "Uncle Leo?"

3) Match the electronic "jobber" with the city.
a. Burstein-Applebee
b. Lafayette Electronics
c. Butler Radio
d. Cortland Radio
e. Syosset
f. Kansas City
g. Chicago
h. Los Angeles

4) Match the slang with the manufacturer:
a. Squawk Boxes
b. Hot Water
c. Twins
d. Flash!
e. Drake
f. Heath
g. Gotham
h. Gonset

5) Who manufactured the Super-Pro receiver? Hammarlund or Hallicrafters?

6) What was one of antenna manufacturer Mosley Electronics' first products?
a. receiver
b. transmitter
c. keyer
d. amplifier

7) Radio Row and the World Trade Center had what in common?

8) Name the manufacturer of the "Trans-Oceanic" and its most famous advertising slogan.

9) What type of equipment would have been manufactured by Brown Brothers?
a. headphones
b. keying paddle
c. microphone
d. SWR meter

10) What was the name of the E. F. Johnson amplifier based on the 4-400 tube?
a. Ultra
b. Thunderbolt
c. Bandsweeper
d. Annihilator

11) What were vacuum tubes called in RCA's classic design manual?
a. Radiotrons
b. Valves
c. Thyristors
d. Quasars

12) What type of components are these?
a. Brown Devil
b. Orange Drop
c. Nuvistor
d. Breadslicer
e. Dog bone
f. Nixie

13) The most widely modified surplus transmitter after World War was the ARC-_____.
a. 3
b. 5
c. 9
d. 11

14. Match the product names and types:
a. MICRO-TO
b. Navigator
c. Cherokee
d. 75A4
e. Warrior
f. Receiver
g. Transmitter
h. Amplifier
i. Transmitter
j. Keyer

15. What word added before "Ranger" would change it from a transmitter to a receiver?

Bonus : Where were Heathkits made?

Answers: Bottom of next page

NCARC ANNUAL MEMBERSHIP

Name: **Call Sign** **Class**	__ $20 Club Member
Address: **City** **State** **Zip**	___$6 2nd Family Member
Birth date **Phone** **E-Mail**	___$6 Non-Licensed Associate
Spouse's Name **Call Sign** **Class**	____ Additional Donation _____ TOTAL ENCLOSED $ _____

Please make checks payable to NCARC, P.O. BOX 2923 GRASS VALLEY,CA 95945

Answers

1. c and g -- The "Flying Horse" is still the symbol for *Callbook* publications.
2. World Radio Labs and Leo Myerson, W0GFQ, were famous for the Globe series of transmitters.
3. a-f, b-g, c-h, d-e -- These companies were the source of parts for the amateur homebrewer.
4. a-h, b-f, c-e, d-g
5. Hammarlund
6. a -- the CM-1 was manufactured in the early 1960s.
7. Cortlandt Street in New York City
8. Zenith -- "Where the quality goes in before the name goes on."
9. b -- Their attractive paddles and keys featured chrome hardware, distinctive red paddles and knobs, as well as a crinkle-finish black base.
10. b -- Even a version contained in a desk was made.
11. a -- *The Radiotron Design Manual* was the bible of the electronics designer.
12. a -- resistor, b -- capacitor, c -- vacuum tube, d -- variable capacitor, e -- insulator, f -- numeric display
13. b -- The ARC-5s were cheap, abundant and easily modified to work on 40-meters -- they were everywhere!
14. a-j, b-g, c-i, d-f, e-h
15. Adding "Sky" would create the "Sky Ranger" -- a popular receiver made by Hallicrafters.

Bonus -- At home! The company was -- and is! -- located in Benton Harbor, Michigan.