Eastern Iowa DX Association

An ARRL affiliated club - Established 1975

In this issue

January 2021

President's Propagation, Pontifications and Prognostics

GET ON THE AIR IN 2021

The calendar says 2020 is over and only a few are not saying, good riddance. Things look brighter as we seem to have working vaccines for Covid-19. With luck things will get closer to normal sometime time later in 2021. It depends on getting enough vaccine and on the willingness of most people to get vaccinated. It is safe to say that those who want to limit their risk still have more isolation and more time at home ahead.

Tuning the bands these days I wonder what has happened to the hams. There are times when I can't find a single signal on 40 CW during the day. When someone shows up signal levels can be high indicating that it's not band conditions but just low activity. It is true that conditions have not always been kind to us during sunspot minimums, especially for DX. The good news is that we are in the new cycle and things will only get better so this looks like a good

- The usual stuff

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time for us all to get back on the air. We should have time to spare, thanks to the Covid virus. Some have remained active during this low period. Great for them. Why don't those of us who have taken a vacation establish some personal operating goals and get back on?

For contesters, this is much easier. There is a contest of some kind almost every weekend. Contesters can always jump in one of these and have some fun, but so can DXers who normally pass on contests. Anyone can operate for just a few hours or try to win some major category. It is fun to play around and it is easy to makeup your own category. It is not necessary that you submit your longs or make any effort except to operate. My old favorite was to see how many countries (entities) and zones I could work during the CQ contest on just 10 meters. I don't recommend 10 now until conditions get better! But, you can have the same fun now on 40 or 80 while it is helping fill in a few new ones on your Challenge Award. Contests can be fun for everyone even after the sunspots return and the Covid goes away. They are a great way to keep active after you have worked everything except P5.

Another activity for both Contesters and DXers is the CQ Marathon.

It is sort of a hybrid that is a lot like regular DXing starting new each year. Your goal is to work as many countries and zones as possible within the year. In the basic class, that can be on any mode and any band. No QSL's are required. If you are interested year 2021 will start this Friday evening.

Others have suggested for years operating activities you invent to compete against yourself or for a small group. There are many ideas and they can be fun: Get on the air and make a QSO a day. Set a

goal of increasing your CW speed. Polish your techniques for contest operation. Learn SO2R. Complete WAS on 160 or any other band. See how long it takes you to work a new DXCC starting over. Rag chew on CW with new and inexperienced hams. Call CQ a lot more often. Are there some of you who never call CQ? Learn a new mode and make some operating goals for it. Have you tried FT8 on 160? Get WAZ on 30 meters. Turn your radio down to 5 watts and try QRP.

I can go on but you get the idea. If we want to see activity we need to get on the air. The bands need to be used if we want to keep them. Get on and give it a try. You too can relive some of the excitement of your Novice days

Some of you may ask how I have the nerve to preach this sermon. It is true I've not been holding up my end of this but I'm trying to change. Please join me.

Note: At some point, hopefully, we will get past this virus and return to in-person EIDXA meetings. We can bet that we will not get back into our meeting room until Mercy Hospital thinks it is safe. That makes an easy decision for us.

I'm looking forward to seeing you all on the tube at our next Zoom meeting on February 5th.

73, Jim WØSR

Musings from the lunatic fringe

Bob WØGXA

Sunspots

I hope you've all had a chance to get on the air in the past month or so. The sunspots cooperated during CQWW CW in late November, making for an enjoyable contest. I didn't spend much time on 10m but there was more activity on 15m than has been seen in a long time.

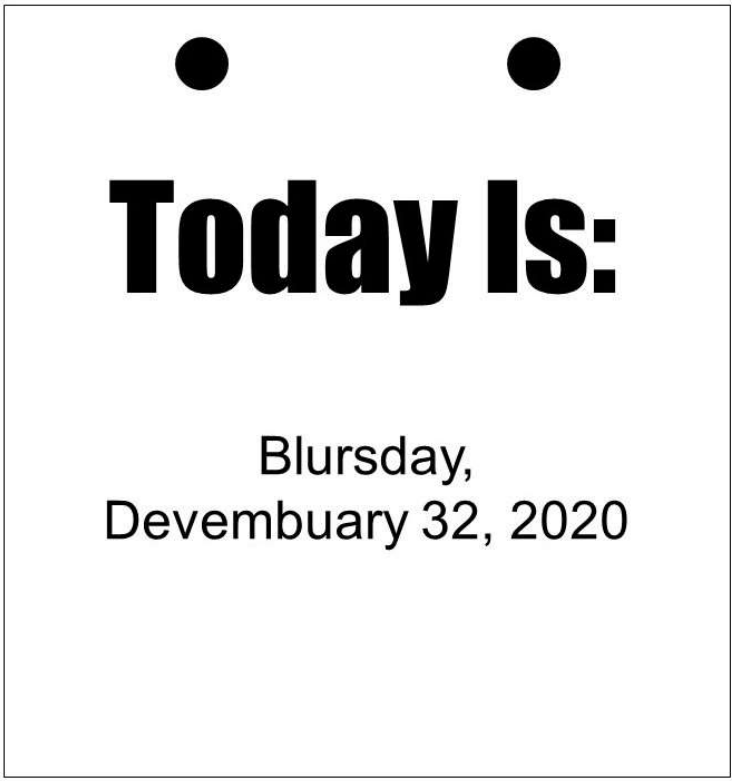
The ARRL 10m contest is one of my favorite contests and it was showing signs of life. Sunday late-morning was great fun. You could draw an 800 mile diameter circle around my house to show were the strong stations were located. Starting to the NW in SK, counter clockwise through MT, ID, UT, CO, MN, across the gulf coast and up the east coast to VA. Signals dropped off quickly for anything NE.

Let's hope cycle 25 is better than the dumpster fire that was 2020!

Thanks for all of the contributions to your newsletter.

Remember:

The newsletter is only as good as you make it!



Are you having trouble keeping track of the day? Me too!

Club News and Administrative Items

NEXT MEETING

February 5, 2021

Social Time: 7:00PM
Meeting & Program 7:30 PM
Watch your email for the Zoom link a few days in advance

Program: "160 - Still better than 2020"

Jeff Woods WØODS

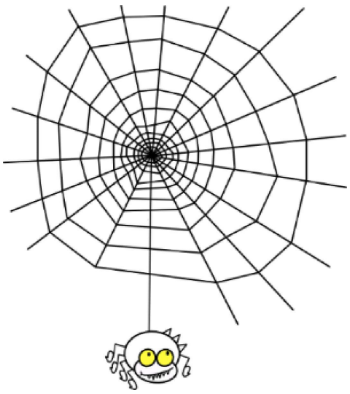
Card Checkers

We have three club members who can check your QSL cards

- Tom, WB8ZRL
- Glenn, WØGJ
- Mike, NA9Q

Contact info can be found here: http://www.arrl.org/dxcc-card-checker-search

Member Spotlight



Nothing to report this month. If you haven't been featured in the newsletter, let me know. We'd love to do a story.

DX News

Feature Articles

Chas Gilmore, former Heath executive

Reprinted from Electronic Design https://bit.ly/39RWlzJ

Heathkit: An Employee's Look Back

Lessons of a successful electronic business—an interview with Chas Gilmore, former Heath executive.

Lou Frenzel
NOV 30, 2020

For those of you who do not know or remember, Heath Company was the largest kit company in the world. Heath designed and put practically every type of electronic product into kit form. Its products, called Heathkits, were exceptionally popular and many are still in use today.

Over the years, *Electronic Design* has published many Heathkit-related articles and blogs. Recently, I had a chance to talk with Chas Gilmore, who was a Heath executive. For those of you who fondly remember Heathkit and miss its products, here's a look back at this amazing company and the lessons it offers.

Chas, what was your affiliation with Heath?

A recent physics graduate, I joined Heath in 1966 as an engineer in the Scientific Instruments department. This was a new group designing laboratory instruments supporting the Malmstadt/Enke, Electronics for Scientists program. The kit business was making great strides.

The audio department was about to introduce the AR-15 FM receiver/amplifier. It had rave reviews, putting Heath in the top tier of the Audio/HiFi market. At the same time, the Ham (amateur radio) department was updating the phenomenally successful SB-line of an HF SSB receiver, transmitter, and transceiver, and modernizing the popular $99 single-band SSB transceiver line *(Fig. 1)*.

1. The Heathkit line of low-cost, high-frequency SSB receivers, transmitters, and transceivers used vacuum tubes. (Source: https://www.qsl.net/sp5btb/vintage.html)

My career at Heath had two parts. From 1966-1977, I progressed to Engineering Manager, Product Line Manager (Kit and Assembled) for Instrumentation, and Director of Engineering before joining another division of Schlumberger (then-parent company of Heath), and then starting a software company. I returned in 1984 as VP of Engineering and Marketing, eventually becoming General Manager. By then, Heath

was owned by Zenith. I left Heath in 1993 after we closed the kit business.

Is it Heath or Heathkit?

Good question. The legal name was Heath Company. Heathkit was the primary registered trade name. The two names are often used interchangeably—even by those of us who worked there.

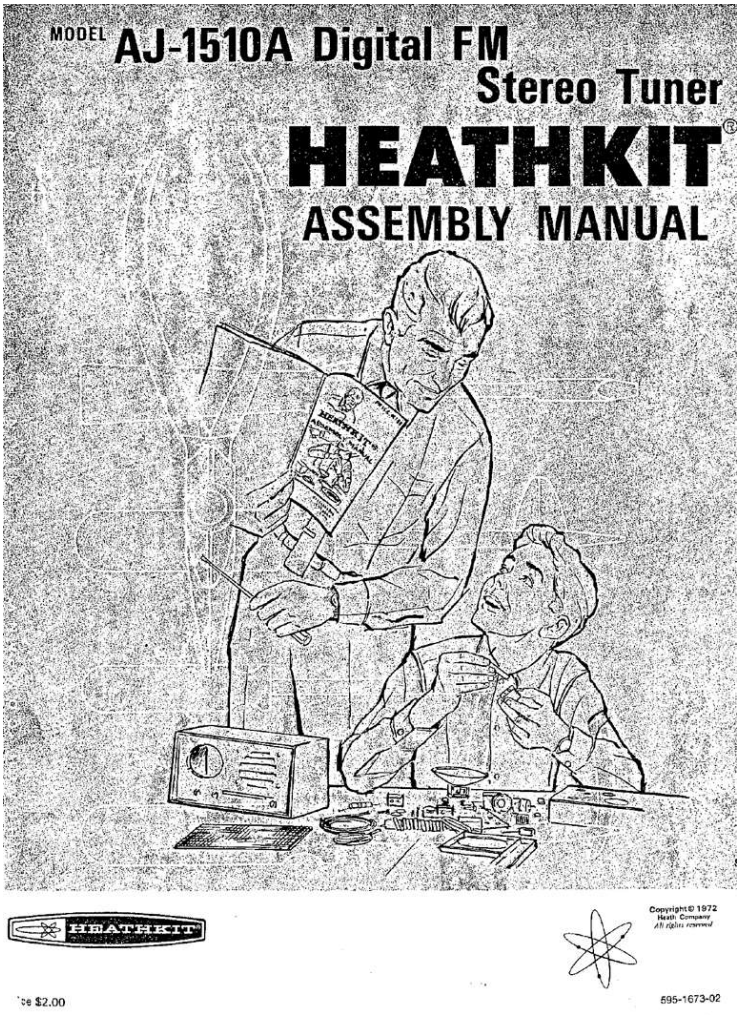
Did Heath also offer some products in non-kit form?

Yes, from time-to-time certain kits were offered "Wired" or "Assembled" (we used both terms). Prior to the demise of the kit business in the early '90s, kit products were always the dominant business.

Why did Heath's kit business fade away?

The original Heath Company kit business phased out in 1992. The reasons for Heathkit's demise are more extensive and complex than reasons speculated by folks from the outside, who typically focus on two reasons: Heath could not incorporate modern parts like surface-mount devices, and reduced assembly costs for electronic goods eliminated savings from building a kit. Although these were factors, they are far from being the only reasons.

- Heath accommodated many changes: from point-to-point wiring to printed circuit boards (PCBs); vacuum tubes to transistors; transistors to ICs; and the ever-increasing complexity of electronic circuits. There were plans afoot to make use of surface-mount technology, which would have addressed the first factor.
- Decreasing manufacturing costs took a substantial chunk of "savings" out of building a kit, especially when equivalent assembled products became high volume. One workaround was to focus on products where eliminating the manufacturing labor for an assembled unit remained significant. For example, linear amplifiers for ham radio. Pretty hard to build those with automated production.
- Heath had significant assembly manual development expense, and the manuals were a great part of Heath's success. This was a product cost that manufacturers of assembled products didn't have *(Fig. 2)*.



2. Heathkits came with extensive documentation and detailed schematics.

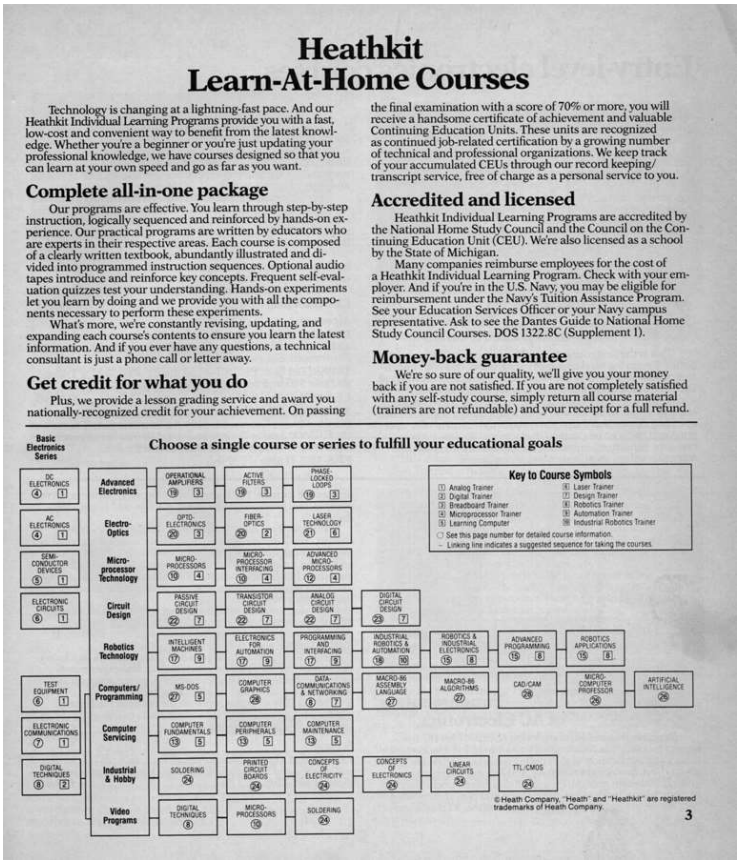
A lot of the reason for building a kit version of a product was beyond saving labor. The educational value in kit building, satisfaction of building something on your own, the ability to service/maintain the product, and, of course, the satisfaction of successfully building the unit and placing it into operation were all positive forces.

In addition to technology and cost, there were also multiple more subtle factors:

- In the late ’70s and the ’80s, demands on discretionary time increased substantially, limiting the time “Dad” (it was almost 100% a male hobby) could spend on a non-family-oriented hobby. Many popular “big” kits (TVs, HiFi receiver/amplifiers, ham transceivers, etc.) required substantial assembly time—many well over 100 hours. The use of assembled and tested subassemblies reduced build time and increased success on complex products, but eventually even that was too much to meet the demand for instant gratification.
- The rapid growth of personal computers siphoned away many of the “early innovators” (who were a large part of the Heath customer base). These customers were attracted to computer software and enjoyed exploring the infinite possibilities presented by computer programs.

- Electronic products became pervasive—everybody had multiple electronic products, where before a household might have a single radio. As consumer electronic products became extremely popular—HiFi, TV, CB Radio, etc.—increased volumes resulted in lowered costs and removed the “wow factor” associated with having such a product and being able to say “I built that myself.”
- As Heath evolved, it became a subsidiary of large corporations and corporate overheads and expectations grew. As a result, Heath became less nimble (it’s tough to make rapid changes as a part of a large corporation) and found it difficult to achieve corporate expectations of profitability in a market where high-volume consumer electronics set expectations. Management and financial constraints imposed as a division of a large public corporation; Zenith Electronics added additional financial pressure.

In 1993, kits were phased out, leaving Reflex lighting and Heathkit Educational Systems *(Fig. 3)*. These businesses were sold to investors in the following years. In 2012, Heathkit Educational Systems filed for bankruptcy and the assets, including the kit-related assets, were purchased, including the name, trademarks, and copyrights.



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2 Digital Trainer
3 Breadboard Trainer
4 Microprocessor Trainer
5 Learning Computer
6 Laser Trainer
7 Design Trainer
8 Robotics Trainer
9 Automation Trainer
10 Industrial Robotics Trainer

○ See this page number for detailed course information.
– Linking line indicates a suggested sequence for taking the courses.

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3

3. Heathkit Educational Systems developed "teach yourself" training materials for a range of electronic technologies and systems.

Under the new ownership. Heath is still a concern. Not the Heath of old, but an entirely new business. The Reflex Heath/Zenith product line had multiple owners, and now as a part of Ferguson, is sold through big-box stores.

Why were Heathkits so successful for so long?

Certainly, popularity of electronic products and fascination with electronics were huge forces. A big driver in the 1950s was the large number of WWII veterans who, during the war, received electronic training. When reentering civilian life, they wanted to continue to work with electronics.

Commercial equipment was very expensive; Heathkits eased the expense burden substantially. Many early kits followed the 80% rule. That is, they provided 80% of the functionality and specifications at 20% of the price.

User experience was also a driver. As the market expanded from the trained GIs, the manuals became more comprehensive, moving to step-by-step assembly instructions with many detailed illustrations. This enabled interested customers with less electronic experience to successfully build kits. Quickly, Heath adopted the "We will not let you fail" slogan and supported it with a robust Customer Service department, who helped many, many customers achieve the ultimate rush of finding a problem and successfully placing their product in operation.

Was Heath strictly a mail-order business?

Yes and no. From the inception of the electronic kit business in 1947 until the early 1960s, Heath's sole outlet was through mail order—catalogs/flyers, trade shows, and magazine advertisements. In 1961, Heath experimented with retail stores. These became popular and by the mid-1970s, there were over 60 Heathkit retail stores.

Do DIY hobbyists still want kits?

Yes, electronic kits are quite popular today. The kits are very different from the Heathkits of the past. Many are simply circuits on a PCB, leaving final packaging to the customer. Typically, kits from any one company focus on a single product area. Many are quite inexpensive and few offer Heathkit-level manuals.

Why do you think the original Heath is so well remembered?

Multiple reasons. For a long time (1950s through the mid-1970s), they were the only game in town. Heathkits resulted in a working packaged product. The assembly manuals were the best by far, leading to a very high success rate and providing a great deal of practical electronic theoretical education and assembly skills. Again, the emotional high from completing the kit was great. Many, many Heathkit customers were repeat customers.

Did Heathkit have any real competition? Who?

In the 1950s and 1960s, there were multiple competitors. Two had similarly broad product lines: Knight-Kit (Allied Radio) and EICO. Both had product lines including test instruments, HiFi, ham, and miscellaneous electronic products. Radio Shack appealed to hobbyists, but Heath didn't see them as a major competitor. They weren't a kit company and sold a wide range of fully assembled imported products. Probably the main competition was from their very popular TRS80 personal computer, which went up against Heath's kit computers.

What were the main product lines at Heath, and which was the largest?

Over the long haul, ham and test Instruments vied for the largest. There were times when audio contended for the largest and TV did as well, especially when there were large bulk sales to the home-schooling institutions such as Bell and Howell. It used Heathkits to provide hands-on instruction, with the building of a kit TV being the course cap-stone project.

In the mid-1970s, Heath introduced its own line of instructional products. These became a significant product line for Heath under the trade name Heathkit Educational Systems and were the last remaining Heath product line in the mid-1990s. They had significant sales into secondary and post-secondary education.

When kit personal computers were introduced in August 1977, they soon became by far the largest product line.

Is it true that Heath's original products were test instruments?

Yes, the "first" Heathkit was the O-1 Oscilloscope. This product was originally introduced in the July 1947 issue of *Radio News* magazine at $39.50—complete.

What was the best-selling test instrument?

No question—the VTVM. The product started as the V-1. It underwent minor modifications over the years; however, the basic circuit remained essentially the same for its entire life. The last VTVM was sold in 1989.

In 1955, Heath tried a great experiment with the V-7—the introduction of the PCB. There were many at Heath who questioned this move, concerned a PCB would "ruin" the kit building experience. Clearly this wasn't the case, as VTVM volumes were neck-and-neck with the Cantenna for Lifetime Volume leader and PCBs were part of nearly every kit thereafter.

What was the best-selling ham radio product?

My guess would be the SB-200 Linear Amplifier for Lifetime Dollars *(Fig. 4)*. It was introduced in 1968 (the model number changed to SB-201, making 10-meter band coverage available only with proof of a ham license) and discontinued in 1983. The Heathkit HN-31 "Cantenna," a 50-Ω dummy load, was introduced in 1961 and remained in the product line until 1991. Likely this accessory outsold any other ham-radio product in sheer numbers, and was my daughter's first solo build.

4. The SB-200 Linear Amplifier was one of Heathkit's top selling kits.

Describe the Heath Product Development organization.

Engineering consisted of two major groups: Design Engineering and the Manual department, each about 80 people out of some 700 in total at Heath. Engineering consisted of Ham, Instruments (kit), General, Scientific Instruments, Audio, and TV departments supported by Component Engineering and Drafting. The Manual Department consisted of Writers, Editors, Illustrators and a support group.

I quickly learned a typical kit design took approximately an equal number of Design Engineering and Manual Department hours—no wonder those manuals were so good. Engineering was a major driver of product innovation. Many product ideas originated from Heath engineers.

A marketing/product-planning group with multiple PLMs (product line managers), often coming from engineering, shepherded each product from concept to end-of-life.

Additionally, the Service and Technical Correspondent Departments were staffed with people with strong technical backgrounds. Everyone involved was a user of Heath products and worked together to bring products to market.

It sounds like Heath may have had a unique product-development process to ensure successful kits. What was it?

Indeed, the process was quite unique—as is the kit business. Once the product was defined and approved, work started in Design Engineering. Development was assigned to an engineer who was often part of a two-person team consisting of the engineer and a technician. Occasionally, with larger products like a TV or one of the newer ham transceivers, multiple engineers made up the team.

Engineering development proceeded as do most electronic products with the exception that, from the start, a top-of-mind topic was assembly by a customer at home with minimal laboratory equipment, or even none at all for a non-technical product such as a TV or audio receiver. When a final prototype was in hand and passed the functionality and specification requirements, the engineer turned a prototype and five sets of parts along with a draft circuit description and other assembly information over to the assigned manual writer.

As I noted earlier, writing the manual often took as many hours as the electronic/mechanical design. In the process, the manual writer consumed one or two sets of parts building the product to write and check out the assembly process. Additionally, illustrators prepared the detailed and often expanded-view drawings to accompany the assembly step-by-step instructions.

Early on, Heath discovered drawings conveyed much more information than photographs and the drawing could delete clutter that might appear in a photograph. The manual writer also wrote detailed circuit descriptions and troubleshooting guides.

When the manual draft was complete, a phase known as pre-proof began. Three sets of parts were packed as in production. Employees from the manual department, engineering, and product management built the product according to the draft manual. Engineering tested the completed products and the manual writer compiled all manual

markups. Suggested changes and comments were reviewed, and a revised final manual was created.

Was that the main manual test?

No. The next phase was proofbuild. Proofbuilds involved acquiring 25 sets of parts packed according to the final packing instructions. When ready for the proofbuild, 20+ employees were selected from a pool of interested people to build the kits. Like the pre-proof, there was a proofbuild manual review.

Depending on the extent of the proofbuild comments and manual revision (and any engineering revisions revealed by building 20+ proofbuilds), one of two phases occurred. If the proofbuild went relatively well, the product moved to production and was scheduled for a catalog release. If not, a post-proof was scheduled

You mention the engineer always kept buildability in mind. Did this result in unique aspects of the kits?

Yes it did. This became especially true as the kit customers expanded from very technical customers to the more general customer. By the early ’60s, the product volume and breadth of the customer base added multiple unique features to the kits—most derived from customer experience. Two key additions were supplying solder to ensure the use of rosin core solder vs. damaging acid core solder (90% of build problems were associated with soldering) and adding the “Nut Starter” to most kits.

With the introduction of more complex consumer-oriented kits such as color TVs, when a meter was needed to align the product and the customer was unlikely to own a meter, Heath supplied, in kit form, a very simple VOM. With other kits, such as FM receivers, the tuning meter was converted into a meter for alignment purposes.

The advertisement for the very first Heathkit, the O-1 Oscilloscope, used the term “Complete.” That set the tone for the next 45 years. Heathkits didn’t presume the customer would supply any critical items. If they needed it, it was in the kit.

Can you explain how the Heath personal-computer business was conceived?

The personal-computer line is an excellent example of how product concepts came about at Heath. In this case, I had been working with mini-computers as part of our Scientific Instruments products, and had become quite interested in the hobbyist/kit potential for a personal computer. Lou Frenzel was managing the Heathkit Educational Systems business and had been a personal-computer hobbyist/enthusiast for some time. We were good friends and discussed this potential frequently.

Additionally, Heathkit Educational Systems was in the process of introducing a course and accompanying trainer based on the Motorola 6800, and in Engineering we were looking at the Intel 4004 for possible inclusion in a Heathkit. All of these factors came together at the right time.

What was the deciding factor?

The trigger was the *Popular Electronics* January 1975 issue. Lou and I sketched out some concepts for a Heathkit computer kit. Shortly thereafter, Lou presented the concept at the weekly PDC (Product

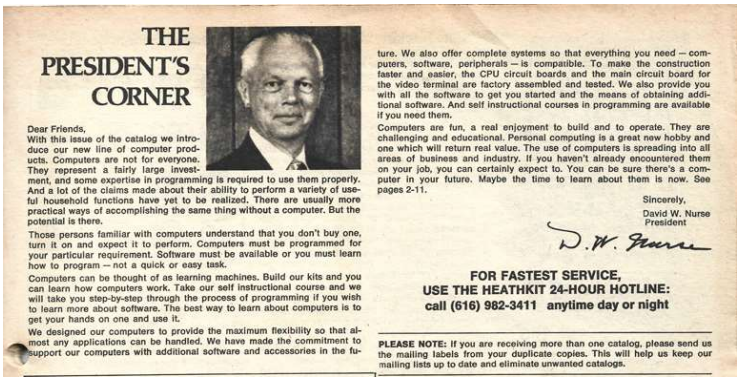
Development Committee) meeting, chaired by the head of the Product Management group and attended by the president, along with the heads and managers of all major Heath organizations. They were the folks to be sold.

It was a very long and drawn-out meeting, with many, many skeptics. “What would someone do with a kit computer—balance their checkbook?” Finally, after a lot of selling, we left the meeting with development authorization for the H-8—Heath’s first personal computer. We also received the admonition “And don’t come back for any other computer products until this one is on the market and selling at or above forecast.”

We introduced the H-8 *(Fig. 5)* along with the H-9 ASCII CRT Terminal, the H-10, Paper Tape Reader-Punch, the H-11 16-bit computer (based on the DEC LSI-11), and a substantial collection of accessories. In the course of development, the personal-computer market was growing rapidly, so getting approval to develop additions to the H-8 was nowhere as hard as the H-8 pitch.

5. The Heathkit H-8 was an 8-bit microcomputer kit based on the Intel 8080A.

First appearing in the August/Fall 1977 Heathkit catalog, computers were given 10 of the 104 pages—a major display for an entirely new product line. For comparison, ham had 11 pages, audio had 15, and test had 21. The “President’s Letter” *(see below)* showed management was still nervous—would personal computers really sell? And yet, personal computers became Heath’s largest selling product line by year’s end.



THE PRESIDENT'S CORNER

Dear Friends,
With this issue of the catalog we introduce our new line of computer products. Computers are not for everyone. They represent a fairly large investment, and some expertise in programming is required to use them properly. And a lot of the claims made about their ability to perform a variety of useful household functions have yet to be realized. There are usually more practical ways of accomplishing the same thing without a computer. But the potential is there.

Those persons familiar with computers understand that you don't buy one, turn it on and expect it to perform. Computers must be programmed for your particular requirement. Software must be available or you must learn how to program — not a quick or easy task.

Computers can be thought of as learning machines. Build our kits and you can learn how computers work. Take our self instructional course and we will take you step-by-step through the process of programming if you wish to learn more about software. The best way to learn about computers is to get your hands on one and use it.

We designed our computers to provide the maximum flexibility so that almost any applications can be handled. We have made the commitment to support our computers with additional software and accessories in the future. We also offer complete systems so that everything you need — computers, software, peripherals — is compatible. To make the construction faster and easier, the CPU circuit boards and the main circuit board for the video terminal are factory assembled and tested. We also provide you with all the software to get you started and the means of obtaining additional software. And self instructional courses in programming are available if you need them.

Computers are fun, a real enjoyment to build and to operate. They are challenging and educational. Personal computing is a great new hobby and one which will return real value. The use of computers is spreading into all areas of business and industry. If you haven't already encountered them on your job, you can certainly expect to. You can be sure there's a computer in your future. Maybe the time to learn about them is now. See pages 2-11.

Sincerely,
David W. Nurse
President

D. W. Nurse

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What happened to the Heath computer business?

In one word: success. In a few short years, personal computers evolved from the domain of the “techie” or early innovator, to the early adopter, and then to general use. As with many products, once a particular product was no longer confined to the early innovator market, product volumes became large enough to drive costs of assembled product down.

Also, interest in assembling the product from a kit became the domain of a very few. Relative to many other products, the personal computer went through this evolution very quickly. The immediate and intense interest in personal computers quickly drew interest away from kit building as the users were fascinated with what could be done with the computer itself. Early in the life of Heath computers, fully assembled as well as kit computers were offered under the name Heath Data Systems. Shortly, Heath was acquired by Zenith, who changed the name to Zenith Data Systems.

You mentioned one time that Heath was responsible for a number of “Firsts.” What were they?

There are too many to list here, but the back page of the Heath 1966 general catalog lists some 42 Heath “firsts” as of that time *(see below)*. Many of these were the product of Heath employees thinking about how to make construction of a Heathkit successful.

FAMOUS HEATHKIT FIRSTS

★ First to offer kits with all required parts included.
★ First Citizen's Band Transceiver Kit
★ First High Performance, Self-Aligning Amateur Radio Receiver Kit
★ First Marine Depth Sounder Kit
★ First All-Transistor Shortwave Receiver Kit
★ First All-Transistor AM/FM/FM Stereo Receiver Kit
★ First Linear Tuning, 1 kc Calibration Line of Amateur Radio Gear Kits (Deluxe SB Series)
★ First Successful Color TV Kit
★ First Ignition Analyzer Kit
★ First Tunnel Diode Kit for Amateur Radio Gear
★ First Crystal Filter Kit for Amateur Radio Gear
★ First And Only HV Regulated and Solid-State Regulated LV Power Supply Kits
★ First And Only Impedance Bridge and Q-Meter Test Instrument Kits
★ First Analog Computer Kit
★ First Vacuum Tube Voltmeter, Oscilloscope, & Lab Instrument Kits
★ First Automatically Sequenced Fog Horn Kit
★ First Color Bar & Dot Generator Kit
★ First Transistor Portable Radio Kit
★ First Williamson Hi-Fi Amplifier Kit
★ First Transistor Stereo Amplifier and Tuner Kits
★ First Alignment Generator with Electronic Sweep Circuit
★ First Photographic Aid Kits (PM-14 & PT-15 Photo-Timer)
★ First Tape Recorder Kit
★ First manufacturer in the high fidelity industry with Amplifier Rating Standards.
★ First to extensively use circuit boards in amateur radio kits.
★ First to produce electronic kits overseas.
★ First Electronic Kit Manufacturer to build a pre-tuned FCC type accepted Radiophone for outboard installation.
★ First Electronic Kit Manufacturer to furnish a complete marine communications system . . . radiophone, antenna & ground system.
★ First Electronic Kit Manufacturer to utilize voltage sensing for fuel vapor detectors.
★ First Electronic Kit Manufacturer to use "Check-By-Step" instructions in assembly manual.
★ First Electronic Kit Manufacturer to provide calibration and adjustment procedures.
★ First Electronic Kit Manufacturer to develop highly specialized products for college educational programs.
★ First Electronic Kit Manufacturer to use fold-out pictorials in assembly manuals.
★ First Electronic Kit Manufacturer to incorporate soldering instructions that use the "(S-1)" double-check system in assembly manual.
★ First Electronic Kit Manufacturer to provide single adjustment of a multi-band signal generator.
★ First Electronic Kit Manufacturer to screen values and part locations on kit circuit boards.
★ First Electronic Kit Manufacturer to include adequate calibration in voltmeters.
★ First Electronic Kit Manufacturer to provide oscilloscope input attenuator adjustment capability without need of extra equipment.
★ First Electronic Kit Manufacturer to supply precision components where useful.
★ First Electronic Kit Manufacturer to offer a tube checker that provides constant current power supply for tube filaments.
★ First Electronic Kit Manufacturer to offer a graduate level electronic teaching system (EU-100A) for chemists, M.D.'s, etc.
★ First Electronic Kit Manufacturer to own patents on new circuits (e.g., scope sweep circuit).

A KIT FOR EVERY INTEREST!

STEREO/HI-FI
AMATEUR RADIO
EDUCATIONAL
HOME & HOBBY ITEMS
CITIZEN'S BAND RADIO
GARRARD STEREO CHANGERS
MARINE ELECTRONICS
LAB & TEST INSTRUMENTS

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Other “firsts” included:

- A TV with on screen digital Channel and Time display: *Elementary Electronics*, May-June, 1974 –"The fact is, today's Heathkit GR-2000 is the color TV the rest of the industry will be making tomorrow…there is no other TV available at any price which incorporates what Heath has built into their latest color TV."
- A kit microwave oven.
- A kit single-board, 100-W SSB transceiver, priced at $100
- The first frequency counter using 74LS TTL.
- Over 60 retail stores devoted to displaying and selling kit electronic products.
- Mid-'70s catalogs featuring over 400 products in kit form.

Why is it you can still buy some original Heath products online, at hamfests, etc.?

There are two reasons: Volume—over the course of 40+ years Heath produced literally tens of millions of products; and downsizing—many of the people who built those kits are now in or reaching the stage of life where they're paring back.

Can you summarize how all of this information offers lessons on how to make a successful electronic business?

Probably the single greatest lesson is focus on customer service. Heath lived by "We will not let you fail." Even before this slogan was formally introduced, it was the company mantra.

Certainly, a secondary driver of success was the employee interest in the products. We all used them at home, vied for the opportunity to build a kit whenever possible, and, as noted earlier, many, many Heathkit product concepts came from the employee base vs. a formal product planning process. Unique products added to that success.

Where can I find more information on Heathkit?

The web is an excellent place to start. Just searching on Heathkit will keep you going for a long time!

Chuck Penson (Ham Call WA7ZZE) has written three excellent books describing virtually all of the products in three major product lines: amateur radio, test equipment, and audio.

Terry Perdue (K8TP), an 18-year veteran of the Heath Ham Engineering Department, produced a very interesting collection of Heath pictures, articles, and documents, including an audio file of an interview with Heath's first Director of Engineering—employee #19.

Erich E. Brueschke, KC9ACE and Michael Mack wrote an informative article for the Antique Wireless Association titled "The History of the Heath Companies and Heathkits: 1909 to 2019." It first appeared in the *AWA Review*.

Lou Frenzel chimes in.

Thanks, Chas. Great overview. My recollection is virtually the same as yours. Heath was a fun place to work for hobbyists like hams and audiophiles, and as you're fond of saying, "It was like working in a candy factory."

Lou Frenzel,
Electronic Design

Technical Contributor

We both became hams in our high school days, you K1KJY (now W8IAI) and me W5TOM (now W5LEF) and both had early Heath product build experiences. Working at Heath was also a major educational experience because the company had good execs and great business procedures. We learned that a continuous steam of exciting and unique new products, superior documentation, and world-class customer service can make most companies successful. Thanks again for sharing your experience with *Electronic Design* readers.

Chas responds.

Lou, I have really enjoyed this discussion. It has been an opportunity to review one of the most enjoyable parts of my career. It occurs to me many former Heath technical people are regular ED readers. I am sure some of them can elaborate on Heath's history and some may have corrections to comments from my 30-plus-year-old memories. I'd love to hear them and other memories.

Jurassic Journal

- A look back in time -

Tom Vavra WB8ZRL

Twenty years ago, the winter of 2001

A52 - The Johnson family, A52GJ, A52MJ, A52VJ, and A52YL were in Bhutan. Winter is a good time to vacation from Brrrrrrmidgi. Glenn and Mark were in my log.

A9 - A92ZE, Gus, K4SXT, was worked for the 38th zone on 80M, leaving only zones 18 and 26 for 5BWAZ. He initially copied my WB as W6.

3C1 - 3C1AG was SMØAGDs call from Equatorial Guinea. Eric has activated many rare locations.

3D2 ROTUMA - Antoine, 3D2AG, signed /P from Rotuma. Between 1991 and 2020 he made 16 trips there for the deserving.

YK - Syria, YK9A, was activated by Carl, K9LA; Vicky, AE9YL; Dick, N7RO; Lee, VE7CC; Al, K7AR; Bob, W4DR; Rosalie, N4CFL; and Jim, W4PRO. Of the 26063 QSOs, 17586 were CW, 7637 SSB and 860 RTTY.

D6 - The three week long D68C operation from the Comoros set a new record for total QSOs -- 168,722! Sixteen of those were in my log, including a unique 29590 KHz FM QSO.

T32 - Jarda/OK1RD, Jirka/OK1RI and Frank/OK1EK operated as T32RD from Christmas Island (the Pacific Ocean Christmas Island). They made 41K QSOs, split evenly between CW and SSB.

PWØS - A DXpedition to St. Peter and St. Paul Archipelago signing PW0S was mounted by Jim/PY7XC, Fred/PY7ZZ and Ciro/PY7ZY. They were only able to operate 4 days and logged 7800 QSOs. Wind and thunderstorms hampered their landing, operation and leaving.

9MØ SPRATLY - 9MØM was activated for one week by Dennis AF7Y, Luis XE1L, Dan NA7DB, Sally KM5EP, Jerry WB9Z, Darryl AF7O, and Mike N7MB.

HZ - HZ1AB was searching 80M for an Iowa station to finish his 80M WAS. Jim, KFØH, worked him long path a few minutes before I worked him short path.

CE0 Easter - 3GØY was the call used by 9 operators from DE and DL. Their two week operation netted 50K QSOs.

BQ9P - A ten day operation from Pratas was mounted by 8 operators.

H4Ø - ZL1AMO, Ron, was signing H4ØRW from Temotu for 3 weeks.

Other 2001 activity:

3YØC - Chuck, N4BQW, was still operating from Bouvet.

VKØ - VK6CQ finally returned home from a year long assignment to Macquarie Island. VKØMM QSL cards were finally being sent to the deserving.

VKØ - Lord Howe Island was activated by ZL4IR, signing VKØEHH.

3D2CI - Conway Reef was the destination for YT1AD, Hrane, and his crew. The weather deteriorated quickly as tropical cyclone Paula approached, and they abandoned the island. They appear to have returned later in the year to properly conduct their dxpedition.

VP6 - Kan, JA1BK and Jacky, F2CW/ZL3CW were active as VP6BK and VP6CW from Pitcairn for only one weekend. They were there to start laying the groundwork for making Ducie a DXCC entity. Their efforts were successful, when Ducie was added to the DXCC list in November.

From 10 years ago: The winter months of 2011

WWV numbers were pretty good, compared to today's normal. Solar Flux ranged from 79 to 155, and the A-index from 1 to 26.

5Z4EE - Sig, NV7E, was quite active from Kenya. He has now retired from DXing.

VP8/so - VP8ORK was a 13 day dxpedition to the South Orkneys. The deserving had 63K QSOs. The thirteen operators were the Dayton Hamvention dxpedition of the year.

T3Ø - Bob, W7YAQ, has traveled somewhere every year for a dozen years. In 2011 he went to Western Kiribati using the call T3ØYA. 12,485 QSOs were made in 12 days.

TJ9 - TJ9PF is the callsign issued to the 10-20 February expedition to Cameroon. The target of 80000 QSO wasn't reached but despite all of the problems they suffered with electricity, static and propagation they finally stopped on about 67000 QSO.

J5 - Laci, HAØNAR, activated J5NAR concentrating on 160 - 30M. Side trips to 6W/HAØNAR/P (IOTA AF078) and J5NAR/P (IOTA AF093)
were made.

XF4 - 4A4A was the call used for a major dxpedition to Revillagigedo.

Z2 - Z2/KØYY was worked. Much later I learned that his old call was W6SOT. Roger and I were both TDY at Sheppard AFB, TX, and worked emergency communications together after the April 1979 tornados devastated Wichita Falls.

Other activity in Jan - Mar 2011

VK9X - A group of JA operators went to Christmas Island for one week. Each op had a unique VK9X call.

1AØ - 1AØKM, the Sovereign Military Order of Malta, was active for only a few days, but three operators put QSOs in many logs.

MOST WANTED SURVEY - The DX Magazine's annual Most Wanted Survey conducted in September-October 2010 was published. The top 10 DXCC Entities were North Korea (P5), Navassa (KP1), Bouvet (3Y), Yemen (7O), Heard Island (VKØ), Amsterdam & St. Paul (FT5Z), Marion Island (ZS8), South Sandwich Islands (VP8), Crozet (FT5W) and Scarborough Reef (BS7).

FT5X - Gildas, TU5KG was unexpectedly active for a couple of hours on 20 meters SSB from Kerguelen on 2 February. He usually operated from a fishing boat while sailing in Southern Indian Ocean from the waters around Crozet (FT5WQ/mm) and Kerguelen (FT5XT/mm).

TT - Baldur, DJ6SI was active as TT8DX from Chad on for almost

two weeks. Like all of his operations, it was mostly CW.

VU4 - Seventeen VU operators activated VU4PB the last two weeks of March from Port Blair, Andaman Islands. They made 33K QSOs. A pirate "borrowed" the call for a few hours and conned quite a few dxers.

S2 - Zorro, JH1AJT and five operators activated S21YZ from Bangladesh. Their two weeks netted 26K QSOs.

VK9C - Tim, NL8F was active as VK9CF from Cocos (Keeling) Island for the CQ WPX SSB Contest in March.

Balloon launched by Pella Students makes 3rd trip around globe

The Jefferson Intermediate 5th grade science classes launched a helium filled balloon on November 5, with a GPS tracker attached to it, and it just traveled around the world for the 3rd time. For the third trip, Jim Emmert with the Pella Amateur Radio Club says it took 19 days, as it took a path North into Russia, Siberia, and the Arctic Ocean. He says there were problems tracking this balloon on this circumvention, as the project is powered by solar panels and the winds took the balloon above 51 degrees latitude, where there is not enough sunlight for power.

On this third lap around the world, the balloon flew over the following countries:
USA (Pella Latitude). Wednesday, December 2, 2020. 10:16:02
Canada
Greenland
Atlantic Ocean
Spain
Portugal
Algeria
Tunisia
Mediterranean Sea
Sicily
Albania

North Macedonia
Kosovo
Serbia
Romania
Hungary
Ukraine
Slovakia
Poland
Lithuania
Latvia
Baltic Sea
Sweden
Gulf of Bothnia
Finland
Russia
Kazakhstan
China
Mongolia
North Korea
Japan
Near Islands (United States)
Bering Sea
Russia
East Siberian Sea
Anzhu Islands
Arctic Ocean
Beaufort Sea
Canada (Pella Latitude) Monday, December 21, 2020 Around 5:45 am

This science project is supported by the Pella Amateur Radio Club and financed by the Pella Community Foundation and the Marion County Community Foundation. Anyone can track this balloon here:
Google Maps APRS

Posted By: Andrew Schneider, December 28, 2020

https://www.kniakrls.com/

Member News

The ARRL 160m CW Contest

It just so happened that my XYL was away in Iowa over same weekend as the League's 160m CW contest December 4th- 6thth. With that I made a last minute decision to play around a bit and see if perhaps I could pick up a "new one" on 160m. Quite frankly, the only reason I get on 160 is to try to get another ATNO for the DXCC Challenge. I'm at that point where I have to pick up 160, 80, and 6 meters countries for new ones.

The 160m test is really not a DX contest, at least for Midwesterners. In

this contest DX will get you 5 points a QSO whereas stateside and Canada QSO's go for 2 points. The guys on the NE seaboard have chip shots over the pond compared to the Midwest. So unless I could hear a new one, I decided not to jump into a pile up for EU/AF with the east coast wall. There are plenty of US and Canadian stations on to work. I decided I would just have some fun and run SOHP, Unassisted. In checking out the solar indices I found that both the A and K indices were both at ZERO and we had a solar flux up around 100. My expectations were high for good conditions. Welcome Cycle 25!

Antenna: Earlier in the year I took down my 160m Inverted Vee in favor of a reverse fed tower with four L/4 radials on the center feed. I fed it about 13' off the ground to achieve the match. I do not have a separate receive antenna. I looked forward to seeing how the reverse feed antenna would do this fall/ winter.

Receiver: My receiver is the FTDX-101D. I have had this rig for nearly a year now and really like the receiver. I figured 160m ought to really put it through some paces. For this band I set the roofing filter down to 300Hz. I kept the width feature ON but at 300Hz unless I need to squeeze it down further I kept a sharp notch filter off to edge of the passband for some noise or station QRM reduction. When copy gets tough, the rig has a nice sharp Automatic Peaking Function (APF) that can pop the station out. I found I did need to use that feature on some of the weak ones. Interestingly, I usually operate 160 with at least 6dB of attenuation cut in but with the band so quiet, I didn't use it much at all. Of course, no preamplifiers on this band. In fact, much of the time the front end is set up for IPO use and cut back on RF Gain. For those new to the hobby or 160m it is all about Signal-to-Noise, not just signal.

At 4pm Friday night with those low solar indices I found the band to be very quiet - like S0 quiet! I started out down at the bottom of the band (1800kHz) with the methodology to just move up the band and Search and Pounce. It's not a fast way to work in a contest, but I hadn't been "running" them at any time this year (2020!) and had not even set up the PC given the last minute decision to participate!

The first journey up the bands from 1800 to 1880kHz I logged 162 stations in 55 sections. One of those was the US Virgin Islands. I found that I was pretty much one- calling each station. The antenna was doing the job! The second pass back through the band netted 96 stations and 12 more sections. One of these was a DX station, C6AGU in the Bahamas. This is the way I operated sporadically until Sunday morning. In the end, the only EU I worked was CT9ABV in the Azores. It was both a surprise as well as a big disappointment that EU didn't turn up any new ones. I did finish with 82 multipliers with only 4 DX. I put 480 Q's in the log and I was happy with the number of sections. I did miss AK, PAC, BC, NT and believe it or not, SJV. From the MWA chatter afterwards it sounds like many missed SJV. Some folks thought the fires had shut down a few stations in the valley.
For those of you working towards WAS on 160m, this contest could bring you WAS in one weekend. I worked the "lower" 48 in just a few hours on Friday evening, Saturday morning sunrise, and Saturday evening. The Pacific would normally be heard at our sunrise, but alas,

I did not find any running them.

At the end of the day, I had a lot of fun playing in this contest. Friday night the band was so quiet you would not have been able to tell it from 20meters. Saturday evening the conditions were not quite as good. Perhaps next year I could actually plan to be in the contest and do some “running” and not just Search and Pounce. I think that had I run a few times I might have picked up the VE7 and perhaps KL7/KH6. Like they say “there’s always next year!”

Tom, NYØV

DXCC-80m on a small city lot

I recently completed my DXCC on 80 meters.

For those not familiar with my house in Iowa City, its a small lot with no room for an 80 meter dipole nor any room for a tower of any kind. I do have a large oak tree at the edge of my lot. I put a line over a high branch and measured from the branch to ground at 46 feet. I used #14 THNN wire and made an inverted L antenna with the vertical portion 45 feet and sloping horizontal part of 22 feet. I put down 4 radials (certainly not enough) and a single 4 foot ground rod.

The antenna resonated at 3.6 Mhz , the resistance was 42 ohms. I think a large part of the resistance is ground loss, but what the heck, lets see how it works. At the bottom of the antenna I put a 1:1 balun in a plastic box. SWR is about 1.3:1

When I started in March I had only 20 countries confirmed. Although I did not hear much of the DX reported on the clusters, I managed to confirm 101 countries by September, using CW and FT8. I did not make any SSB contacts. The furthest Eastern QSO was 3B8XF, the furthest Western QSO was DS5TOS. For those who can't put up a “normal” 80 meter antenna, even a compromise antenna can give sufficient results to make you happy.

73
Rich W3ACO

Congratulations Rich! - Ed.

Feedpoint - W3ACO

Planning those rotor repairs before it gets cold

Pre-winter repairs! Rotor loops and more. Just finished before snow fell last weekend.

I swapped out the mast for a mast 5 foot longer and added a M2 6 meter loop above the TH7 and D3W WARC dipole. The feed point for a 160/80/40m double sloper off the tower needed rebuilding too.

Pictures follow...

Merry Christmas.
Gary-KWØJ

Everyone knows you get an extra 3dB out of antennas erected when the temps are below freezing - Ed.

Moving On...

Late this summer the “stars aligned” for an opportunity to down-size from our hilltop QTH in Burlington to a small house near family in the village of Chagrin Falls, Ohio.

Finding no-takers for a free tower and SteppIR yagi high above the Mississippi River we called on EIDXA’s NRØX for an assist. Jason and XYL arrived with their rugged pickup truck, newly equipped with a purpose-built crane, which they used to lay the tower on his long-bed trailer. As a trained former Iowa Rock Climber Jason used his safety gear to to make a safe and rapid removal of the yagi. Then the crane lowered the cable-rigged tower gently onto the trailer with the press of a switch. Including lunch and good conversation it was about 4 hours from arrival to departure.

Now I have seen first-hand why Jason is a valued member of the PJ2T tower crew at the Caribbean Contest Club on Curacao.

I will miss all of you, and the fellowship and many other benefits of membership in EIDXA. Thank you and “73” for your continued success.

Jim Livengood, WØNB/8

Thanks Jim - Godspeed - Ed.

Logbook

CQ Test

ARRL 10M Contest

With the Cycle 25 pendulum starting to swing up I thought that I'd give 10 meters some attention during the ARRL 10M Contest this year. The solar flux was pushing around 100 and there were actually some sunspots recorded. This is one contest where I usually run SOHP CW Un-Assisted. And this year was no exception!

The contest starts at 0000z on Dec 12th which is our Friday night at 6pm CST. It runs through Sunday at 6pm CST. When we have been on the peak of the sunspot cycles it is not uncommon to be able to run long into the night with both Stateside and DX paths open. Given we are just barely into this new cycle, I had no expectations of this happening this year.

As I worked my way up the band in a Search and Pounce mode, I found that I was working a lot of east coast stations. The signals were plentiful and strong from Maine all the way down the coast and over to Texas. I also heard a few Caribbean stations, but the early pile ups

where rather large and I didn't feel like pounding in a close pileup for a KP4. I closed down about 10pm Friday night, but post contest chatter had guys saying there were good signals until midnight. That is not too bad considering the totally dead band we have experienced over the last few years!

On Saturday I was able to operate off and on through the day. The band was NOT in as good a shape as Friday night. The east coast was just not coming in the northern latitudes. I wasn't hearing any VE1, VE2, and most W1-2. There were a few PA W3's but that was it for me. So, I left too early on Friday night as that is when to get those states. I ended up missing DC because of this.

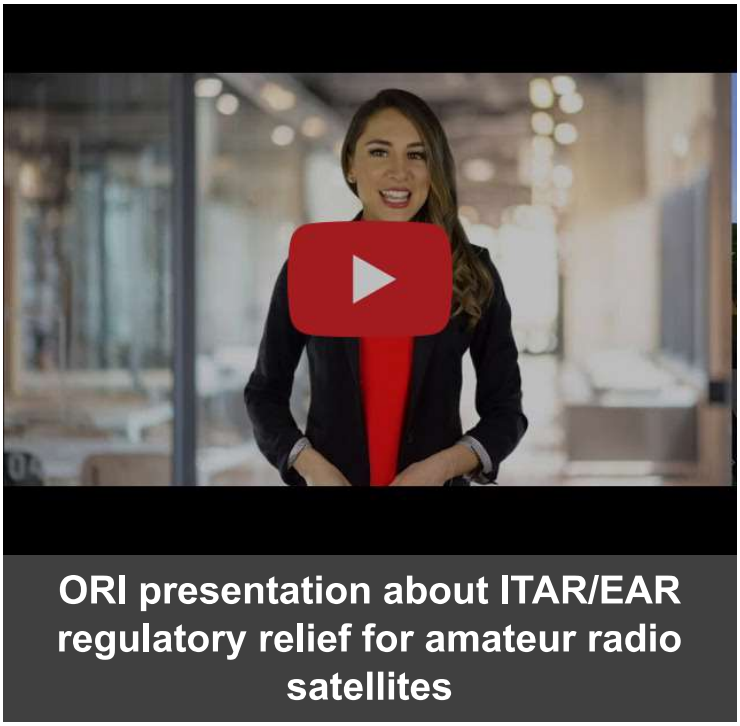
As the day went on Saturday, it became apparent that the only direction to have your antenna pointed was SE. Even in pointing in that direction, I was able to work all the W5, W6, W7 states. The VA and NC stations were in abundance as were TX stations. I was pleased to have EIDXA member Dave, WØVX call me from his QTH in Dallas while I was in a "run" mode. Some day I should get a 'friends' file set up with EIDXA members. This would enable an automatic sending of "hi Dave" after entering the call. I worked a few IA stations and a couple of EIDXA members, WØGJ and WØWP.

At my QTH in SE Minnesota, I found that I could work all of the closest states, but the second states were very difficult. For example, NE, MO, IN, MI. I ended up with 367 QSO's and 57 states/country multipliers by Sunday afternoon. By 3pm Sunday, the band was dropping out and the only stations I heard were dupes.

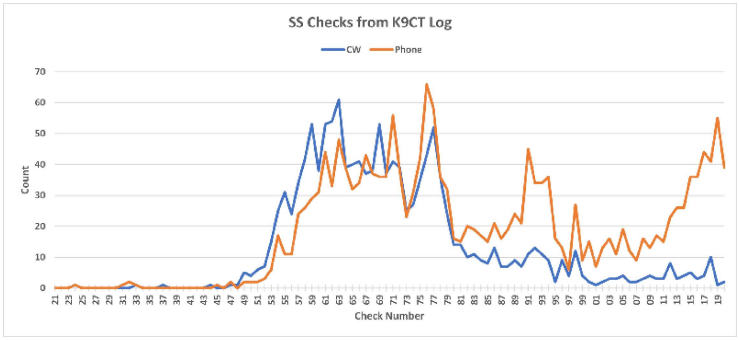
For this contest I think I achieved a "Worked all ____." You can fill in the blank with VA, NC, Argentina, Brazil, and MWA members. The MWA is the Minnesota Wireless Association of which I am a member. This year the MWA has turned in 104 logs!
This contest was a pleasure for me. It helped me on keep tuned up on my CW and I was able to work stations on a band that has been pretty much in the pits for the last few years. I will look forward to the next ARRL 10m in December 2021 when the conditions should be where we can work into EU in the mornings and AS/PAC in the late afternoons.

Tom, NYØV

QRM

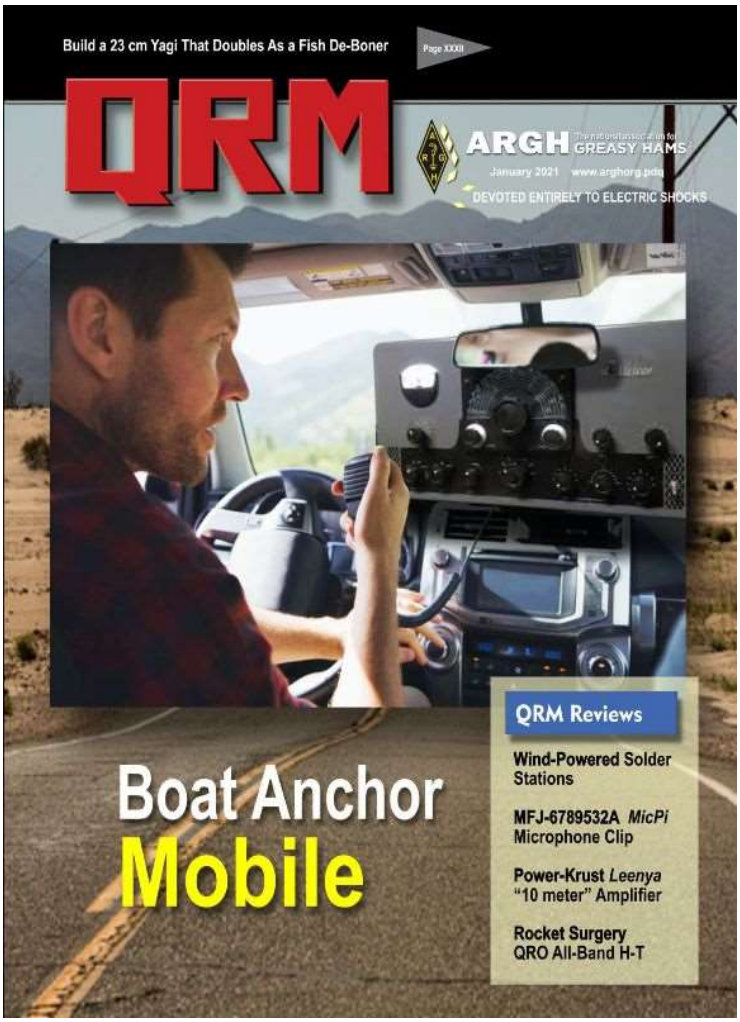


Age vs. Mode



Depicted here is a breakdown of K9CT's contest logs for Sweepstakes, both CW and SSB. Plotted here are the check numbers (year first licensed). Interesting divergence for CW vs SSB for newer hams.


"On FT8, no one knows you're a dog."


Build a 23 cm Yagi That Doubles As a Fish De-Boner
Page XXXII
QRM
ARGH
GREASY HAMS
January 2021
DEVOTED ENTIRELY TO ELECTRIC SHOCKS
Boat Anchor Mobile
QRM Reviews
Wind-Powered Solder Stations
MFJ-6789532A MicPi Microphone Clip
Power-Krust Leenya "10 meter" Amplifier
Rocket Surgery QRO All-Band H-T

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