



Official Publication of the
West Allis Radio Amateur Club

Hamtrix

[click here to go to web site](#)

Volume 70, Issue 6 June, 2021

JUNE CLUB HAPPENINGS

**Virtual Club Meeting
June 8, 2021 7pm**

*** Using Jitsi ***

see page 11 for more Jitsi info

Programs

Wisconsin QSO Party Results

by Chuck Dellis W9WLX

plus

Overview of the

FlexRadio Power Genius XL Amplifier

by Chuck Dellis W9WLX
Bring Ham Stories to share

**Pre-meeting at Greenfield park by volleyball nets north of pool
From 4pm to 6pm**

<https://meet.jit.si/WARACHamRadioClubVirtualMeeting>



NUT NET

3.985mhz

Monday-Saturday

8:15am CT

NUT NET

Breakfast

8:30am fourth

Tuesday

of the month

Milwaukee-Florida Net

Every Day on 14.290 Mhz

7:00AM - 9:15AM ET

6:00AM - 8:00AM CT

Sunshine Committee

If you know of a member who could use a bit of cheer or support,

Barb Garnier (KD9HPS) is now the Sunshine Committee Chair.

Contact her: 414-529-3536 or barbsewsblue@gmail.com.

Sendik's Grill Fund raiser dates

Saturday July 24, 2021 11:00 am to 4:00 pm

Saturday September 11, 2021 11:00 am to 4:00 pm

WARAC 2-meter net

Every Wednesday at 8pm

SEWFARS W9TJK Repeater 146.820

standard (-) offset 127.3 Hz CTCSS

if repeater down try 146.55 simplex

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The Presidents Shack

June and we are seeing changes in the weather and in Covid restrictions. One thing that means is we are now planing having an eyeball QSO meeting at our normal place come next month, July. We will be talking about it at the meeting so bring any questions and/or thoughts you have. This is a last minute change which doesn't have to happen but we have got the OK from New Berlin to hold our meeting there so that part is taken care of.

Hopefully your local plans for Field Day are coming together. I'm running the dogs Saturday and Sunday but at least hope to make a few contacts if I'm awake when I get home.

Still attending our Monday night CW Slow Speed QSO net. I'm improving at my sending and receiving so it is helping me. Also it is fun, no penalty! If you want to try your hand key or BUG which is always interesting, if you haven't done it for a while.

Mike's WO9B Wednesday park activation has been going well. I haven't operated at one but my Grandkids, who I am usually babysitting on Wednesdays, do know which playground sets they like at what parks. They have sampled quite a few thanks to Mike. HI HI

As we start to open up from Covid restrictions I have to

say Amateur Radio has proven to be a great way to stay in touch with friends, even in Isolation. Hope others have also found that to be true.

Frank KA9FZR • —• —••



My morning nut net breakfast shack HI HI

• —• —••

WARAC Club Meeting Minutes – May 11, 2021

Due to the nature of the COVID-19 crisis and Governor Tony Evers “Emergency Order #12 Safer At Home Order”, Chuck W9WLX hosted the Zoom Meeting.

The club meeting was called to order 7:01 pm by Frank KA9FZR.

Approximately 18 virtual club members were identified by the Secretary Dave WB9OWN. There were no visitors.

Club Program: A Parks on the Air (POTA) adventure by Mike AA9RK & Max Falk KD9NZB, “The top 10 things Max taught me about Parks On The Air.” A very entertaining presentation was made by Mike & Max,
Thank you Max!

2021 Wisconsin QSO Party Final Results: per Chuck Dellis W9WLX.

- An in depth review of the 2021 final results were given, the PDF document was posted on the WARAC website, <http://www.warac.org/wqp/2021/results2021.pdf>

A big Thank You to Chuck Dellis W9WLX and his team for this outstanding effort!

-The West Allis Radio Amateur Club takes top honors in the club competition category this year. Congratulations to the Top scorers Ron Gorski, N9AU, and Al Hovey, WA9BZW!

- Steve Dryja NO9B added an update to his problematic experience with the LDG tuner. The root cause failure with the new LDG tuner turned out to be breaks in continuity with insulated wire used in 450 ohm ladder line. Interesting problem? Steve also talked about two modifications done to his rotor, adding RS232 communication & adding a soft motor stop to his CDR rotor. See Steve for further details.

- **2021 WARAC Field Day at New Berlin Recycling Center is OFF.** If some club members want to conduct FD at the New Berlin site, Chuck Dellis W9WLX has the contact information. What do you want to do?

- April minutes were NOT approved, Howard WA9AXQ discovered some current and past errors which will be discussed at the end of these meeting notes.

- Sandwich IL Hamfest netted the club \$904 dollars, Thank You to Steve and Mike for your participation.

- RF Parts made a \$500 dollar donation to the club!

- September club meeting will be held at New Berlin Center September 14th, stay tuned!

- **Sendik's Brat & Burger fund raising** Dates have changed, July 24th & September 11th 11AM – 3PM at the Sendik's store, (exact location to follow.) Any volunteers?

- Mike WO9B: Don't forget the Monday night CW "Come join us" on Monday Night at 8pm, 21.060 MHz, meeting first on 147.135 MHz, 127.3 PL.

- Mike WO9B, 6 meter FT8 propagation is happening at night.

- Club still has electronic material to sell – Call Steve NO9B.

- Elections are coming up, more later.

General meeting was adjourned about 8:23 pm.

Respectfully Submitted,

David Garnier WB9OWN

Secretary WARAC, May 11, 2021

NOTE: Hamtrix meeting notes errors department.

- During the creation of the May issue of Hamtrix the past meeting notes of March 9th were attached instead of the April 13th notes, everyone missed this. Thank you Howard WA9AXQ for catching this and other errors. (The corrected version of the May Hamtrix was uploaded to WARAC website.)

- The WARAC meeting notes of March 9th has Howard as being identified as WA9AQL, Howard's correct call is WA9AXQ.

- The WARAC Quarterly Board Meeting Minuets of January 21, 2021, the Meeting Agenda incorrectly indicates that Wisconsin QSO Party Report was given by Mike WO9B, it should read was given by Chuck W9WLX.

West Allis Radio Amateur Club – Sign In Sheet

General Meeting Zoom Call Listing	05/11/21	Al Hovey	WA9BZW	Yes	
Name	Call	Member	Mike Johnson	WO9B	Yes
Frank Humpal	KA9FZR	Yes	Tom Macon	K9BTQ	Yes
Bill Dargis	KD9BJZ	Yes	Bill Reed	N9KPH	Yes
Chuck Dellis	W9WLX	Yes	Howard Smith	WA9AXQ	Yes
Steve Dryja	NO9B	Yes	Tom Seizer	K9SQU	Yes
Mike Falk	AA9RK	Yes	Paul Sperbeck	W9PCS	Yes
Max Falk	KD9BNZB	Yes	Phil Tollefson	WA9AQL	Yes
David Garnier	WB9OWN	Yes	Ewin Von de Ehe	WI9EV	Yes
Phil Gural	W9NAW	Yes			• —• —••

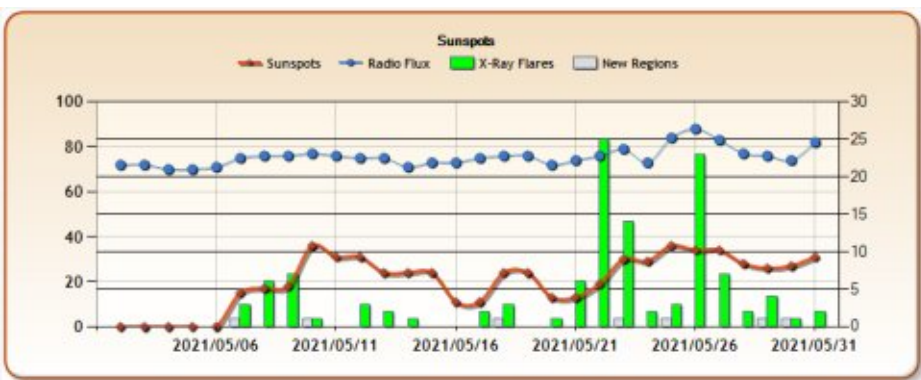
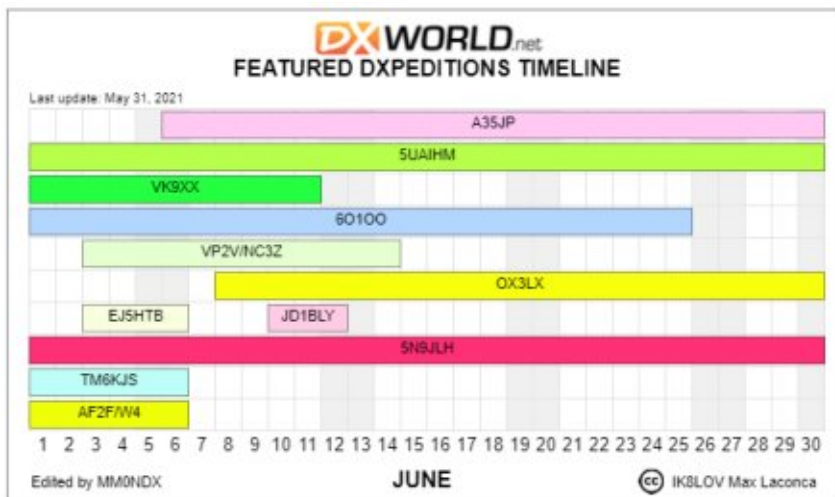
DXing and Contesting - May 2021

DX UPDATE:

DX Operations: Covid travel restrictions are coming off. Things are happening. See the ops scheduled to the right. **DX WORLD** is a great place to keep current.

Hot Modes/Bands: Past weekend CW WPX contest was GREAT. 80 thru 10 were alive. The bands are returning to active status with all modes being workable. 20 meters is staying open late. 10 and 15 are showing daily openings with more than trans equatorial propagation. 6 meters coming alive with the summer solstice activity. Jump on it.

Example: For WPX, a 10 minute window on 15 meters @ 1800 UTC netted (4) KH6's, plus Canary Islands and Paraguay. On 20 meters at 0300 UTC Ukraine, Lithuania, New Zealand and Alaska were all worked in an 8 minute window.



Propagation: Solar activity is trending upwards. The increase in sun spots will also herald increasing instability resulting in CME's and other less desirable activities. Solar minimum is over and the journey up the Cycle 25 mountain is well underway.

CONTEST UPDATE:

June just might be the BEST contest month of the year. Do not miss the ARRL June VHF Contest and of course the ARRL Field Day event (it's not a contest...hahaha). Following those two all star events is the RAC Canada Day contest. Oh my. I say this every year, but these three are the best.

Reminder that WARAC sponsors the Monday night Slow Speed CW QSO Net at 8:00PM meeting on the 147.135 repeater. Jump in to polish your CW skills in a friendly, low pressure get together. It's fun.

- Cookie Crumble QRP Contests: June 6th
- ARRL June VHF Contest: June 12th-14th
- West Virginia QSO Party: June 19th
- ARRL Field Day: June 26th-27th
- RAC Canada Day: July 1st



June 2021

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Hamtrix

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By Michael Johnson, WO9B

Hot Spot Upgrades and Updates..and Firmware too

Lots of us use hotspots to access DMR, DSTAR, Fusion talkgroups and reflectors. The popular brands are RF Shark, Zumspots or Jumbospots. The comments in this article are aimed at the Zumspot and Jumbospot users. RF Shark is a different ecosystem and you should consult their documents to perform upgrades and updates. So on to the MMDVM Pi-Star world we go.

For the Zumspot and Jumbospots, the underlying software is Pi-Star Digital Voice. The reality is your hotspot is a small size Raspberry Pi with a MMDVM Hat attached. It is just a Linux computer and you should keep it updated to stay on top of the latest security issues, features and capabilities. There are new digital modes being added all the time. New cross modes are added to allow you to roam the digital universe without having to buy anything new. It is worth your while. Keeping your hotspot current is really easy and you can use built in tools to do the heavy lifting.

There are three procedures: Updates, Upgrades and Firmware Upgrades. Let's break it down.



UPDATING: Good news..Updates happen automatically in the wee hours of the night. You can manually trigger an update by clicking the “Update” link at the top of most of the Pi-Star pages. This gives you new hostfiles, binaries, features, ect for the Pi-Star software only. If you also want to include the Raspberry Pi operating system, you need to access the hotspot via SSH and issue the command “sudo pistar-update”. You can use PuTTY or you can access Pi-Star’s SSH client located in the Expert page. It is good to do the SSH method once in a while.

UPGRADING: This procedure will install the latest version of Pi-Star onto your device. This is only done by manually initiating the process in one of two ways: The Expert window has a menu item “Upgrade” which is activated simply by clicking on it. The second technique is to SSH into the hotspot and issue the command “sudo pistar-upgrade”. You should reboot the hotspot afterwards.

That's it. Simple. For more detailed info on the above, go to this link: <https://amateurradionotes.com/pi-star-updates.htm>

FIRMWARE UPGRADES: This really is an occasional need only. This can be a bit tricky in that the correct firmware is dependent on the board that you have. It is accomplished only via SSH access and is very simple to do, but again, you need to make sure you have the correct firmware for your board. The details are listed here: <https://amateurradionotes.com/firmware.htm>

So that is it. Super easy to keep your hotspot up to date. Have fun!!

Next Month: Dialing in the BER!! • — • —•

STARVED ROCK RADIO CLUB

AMERICAN RADIO RELAY LEAGUE SANCTIONED HAMFEST 2021

"Formerly PRINCETON HAMFEST"



HAM RADIO, RC MODELS,
COMPUTER & ALL HOBBIES
FLEA MARKET

AMATEUR RADIO HOBBYIST &
COLLECTORS SHOW



SUNDAY, JUNE 6th 2021

8:00am to 3:00pm

MENDOTA TRI-COUNTY FAIRGROUNDS

<-NEW LOCATION

503 1st Ave, Mendota, IL 61342

ARRL VE TESTING 9:30am to 11:00am
GO-KIT JUDGING (Score sheet at w9mks.org) 11:00am
GRAND PRIZE CASH DRAWING at 2:00pm

TICKETS \$7.00 ADVANCED (2 Stubs) or \$8.00 AT GATE (1 Stub)
ALL ADVANCED ORDERS MUST BE RECEIVED BY MAY 27th 2021
GRAND PRIZE WINNERS NEED NOT BE PRESENT TO WIN.

- ✓ LARGE INDOOR EXHIBIT BUILDINGS
- ✓ TABLES \$13.00 ADVANCED OR AT THE GATE WITH FREE ELECTRICITY
- ✓ FREE OUTDOOR FLEA MARKET TAILGATING AREA
- ✓ ON SITE CAMPING-ELECTRICITY AVAILABLE - FEE BY FAIR BOARD
- ✓ HOURLY DOOR PRIZE DRAWINGS

FOR ADVANCED TICKET AND TABLE SALES OR GENERAL INQUIRIES SEND A SASE TO
SRRC C/O Hamfest Chairman, PO Box 198, Leonore, IL 61332-0198

E-mail: starvedrockhamfest@gmail.com or see our internet site for latest info www.w9mks.org

B9 to Exit 72 US Rte 34, West to 1st Ave, South(Left) to Fairgrounds on Left
GPS: N41 545580 deg W089 108484 (N41 deg 32.735min (44.08sec) W089 deg 6.509Min (30.54sec))

TALK-IN by SRRC Repeater W9MKS 147.120 +103.5PL Simplex 146.520

BREAKFAST and LUNCH ON-SITE BY CATERER

**To keep ticket prices down, DO NOT dispose of unwanted equipment on the fair grounds.
If it doesn't sell or you can't give it away- Take it Home!**

MAIL WITH PAYMENT & SASE ENCLOSED TO:

SRRC C/O Hamfest Chairman Make checks payable to SRRC
PO Box 198
Leonore, IL 61332-0198

Name: _____	QTY	ITEM	EACH	EXTENDED
Address: _____	_____	Advance Ticket	\$ 7.00	\$ _____
City: _____ State: _____ ZIP: _____	_____	Indoor Table	\$13.00	\$ _____
Phone: _____		Total	\$ _____	\$ _____

Hamtrix Sales Corner

Microcontroller Projects for Amateur Radio

All the information you need to build fascinating projects using the Arduino, STM32 (“Blue Pill”), ESP32, and Teensy 4.0 micro-controllers.

Unfamiliar with C or C++ programming? No problem. Microcontroller Projects for Amateur Radio provides all the introduction you need to build projects such as a programmable power supply, a signal generator, a DSP mic processor, and more!

Some of the practical hands-on projects featured:

- The Morse Code Tutor - learn and practice sending and receiving methods, with or without Farnworth encoding.
- The CW Messenger allows you to send up to 50 “canned” CW messages, that are completely changeable in the field without a PC.
- The Mini Dummy Load is small enough to fit in a shirt pocket, can handle up to 30W, includes an OLED display that shows RF power, yet can be built for around \$20!
- The Double-Double Magnetic Loop antenna sets a new standard for small (3' diameter), multi-band operation and includes remote tuning.

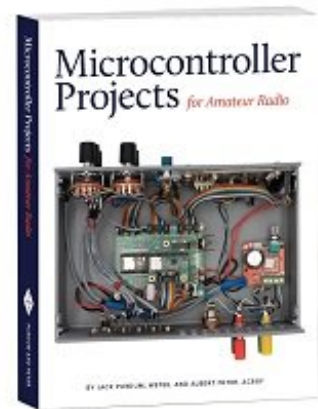
Special Member Price! Only \$34.95 (regular \$39.95)

Product Details

Softcover: 400 pages

One Copy
New
Price \$25.00
Donated to club by
Howard WA9AXQ

Call or email Frank
KA9FZR
KA9FZR@gmail.com
414-425-0794



FREEFEST

Buy/sell Amateur Radio Equipment, Electronics and Computer Gear



**Saturday
June 12, 2021
6am to 11am**

This is a free outdoor event, there is no admission charge

Coffee and donuts will be available for purchase

**Presented by the Lakes Area Amateur Radio Club
Inc. - WI9ELK**

Talk-in on 146.865 pl 127.3 repeater

**Event location
Lyons Town Hall
6339 Hospital Road
Lyons, WI. 53148**

HAMFESTS

UPCOMING HAMFESTS

06/12/2021 - LAARC FreeFest

Location: Lyons, WI
 Type: ARRL Hamfest
 Sponsor: Lakes Area Amateur Radio Club Inc.

06/19/2021 - Sunshine Swapfest

Location: Kaukauna, WI
 Type: ARRL Hamfest
 Sponsor: Fox Cities Amateur Radio Club, Inc.
 Website: <http://www.fcarc.club/sunshineswap.php>

07/10/2021 - WI9SM South Milwaukee ARC Hamfest

Location: Oak Creek, WI
 Type: ARRL Hamfest
 Sponsor: South Milwaukee ARC Website:
<http://www.wi9sm.org>

07/17/2021 - Chippewa Valley Amateur Radio Club HamFest/Tailgater

Location: Chippewa Falls, WI
 Type: ARRL Hamfest
 Sponsor: CVARC Chippewa Valley Amateur Radio Club
 Website: <https://w9cva.org/hamfest>

08/07/2021 - Hamfest 2021

Location: Jefferson, WI Type: ARRL Hamfest
 Sponsor: TCARC / Jefcares
 Website: <http://w9mqb.com>

08/07/2021 - Riverland Amateur Radio Club Swapfest

Location: Onalaska, WI
 Type: ARRL Hamfest
 Sponsor: ARRL
 Website: <http://rarc.qth.com>

08/21/2021 - Northwoods Hamfest

Location: Tomahawk, WI
 Type: ARRL Hamfest
 Sponsor: Tomahawk Repeater Assoc. & Rhinelander Repeater Assoc.

08/28/2021 - Circus City Swapfest

Location: Baraboo, WI
 Type: ARRL Hamfest
 Sponsor: Yellow Thunder Amateur Radio Club
 Website: <http://yellowthunder.org>

08/28/2021 - MRAC & MAARS Interclub Swapfest

Location: Milwaukee, WI
 Type: ARRL Hamfest Sponsor: Milwaukee Radio Amateurs' Club & Milwaukee Area Amateur Radio Society
 Website: <https://www.w9rh.org/club-events/swapfest/>

09/11/2021 - Ozaukee Radio Club Regional Fall Swapfest

Location: Cedarburg, WI
 Type: ARRL Hamfest
 Sponsor: Ozaukee Radio Club (ORC)
 Website: <http://www.ozaukeeradioclub.org>

10/16/2021 - Wisconsin ARES/RACES Conference, ARRL Wisconsin State Convention

Location: Wisconsin Rapids, WI
 Type: ARRL Convention
 Sponsor: WeComm Ltd
 Website: <http://www.wi-aresraces.org>

This note from Chuck W9WLX explains the change to Jitsi. I want to thank Chuck for allowing us to use his professional ZOOM as long as he had it. Holding meetings with out worrying about a time limit made my job much easier and I hope enjoyable for the club

Thanks again Chuck

Frank KA9FZR Club president

I am reaching the end of my need for a paid Zoom account. Up until this point, I have piggy-backed the club's needs on my own at a 100% free cost to the club. The good news is, my need for video meetings has not changed and I have been using an economical tool (free) that has worked out well with my other meeting needs. After the May meeting, WARAC would be the only group continuing to use my paid Zoom account.

The tool I have transitioned to is Jitsi Meet, <https://jitsi.org/jitsi-meet/>.

Jitsi Pros

- Free.
- Everyone is a moderator. No one individual has to start the meeting.
- Works well in supported web browsers: Firefox, Chromium based & Safari. I have personal experience with using it in Microsoft Edge and it works well. Not supported in Internet Explorer.
- Supported in mobile browsers Firefox & Chromium based (Android) & Safari (iOS).
- Video quality settings for lower bandwidth users.
- Android and iOS apps available.

Jitsi Cons

- No phone-in access at free level.
- No breakout rooms.
- Use uniquely strong room name and password to prevent unintended attendees. Minor issue since it is embedded in the link.
- Anyone can mute everyone's microphone (since everyone is a moderator), but each user has to unmute their own. This is similar to how Zoom works except there is only one moderator that can mute all in the Zoom app. • —• —••

Interesting info found by Mike WO9B

Monthly mean total sunspot number

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
2021	10.4*	8.3*	17.3*	24.5*	21.2*	----	----	----	----	----	----	----
2020	6.2	0.2	1.5	5.2	0.2	5.8	6.1	7.5	0.6	14.6	34.5	23.1
2019	7.7	0.8	9.4	9.1	9.9	1.2	0.9	0.5	1.1	0.4	0.5	1.5
2018	6.8	10.7	2.5	8.9	13.1	15.6	1.6	8.7	3.3	4.9	4.9	3.1
2017	26.1	26.4	17.7	32.3	18.9	19.2	17.8	32.6	43.7	13.2	5.7	8.2
2016	57.0	56.4	54.1	37.9	51.5	20.5	32.4	50.2	44.6	33.4	21.4	18.5
2015	93.0	66.7	54.5	75.3	88.8	66.5	65.8	64.4	78.6	63.6	62.2	58.0
2014	117.0	146.1	128.7	112.5	112.5	102.9	100.2	106.9	130.0	90.0	103.6	112.9
2013	96.1	60.9	78.3	107.3	120.2	76.7	86.2	91.8	54.5	114.4	113.9	124.2
2012	94.4	47.8	86.6	85.9	96.5	92.0	100.1	94.8	93.7	76.5	87.6	56.8
2011	27.3	48.3	78.6	76.1	58.2	56.1	64.5	65.8	120.1	125.7	139.1	109.3
2010	19.5	28.5	24.0	10.4	13.9	18.8	25.2	29.6	36.4	33.6	34.4	24.5
2009	1.3	1.2	0.6	1.2	2.9	6.3	5.5	0.0	7.1	7.7	6.9	16.3
2008	4.1	2.9	15.5	3.6	4.6	5.2	0.6	0.3	1.2	4.2	6.6	1.0
2007	29.3	18.4	7.2	5.4	19.5	21.3	15.1	9.8	4.0	1.5	2.8	17.3
2006	20.9	5.7	17.3	50.3	37.2	24.5	22.2	20.8	23.7	14.9	35.7	22.3
2005	48.1	43.5	39.6	38.7	61.9	56.8	62.4	60.5	37.2	13.2	27.5	59.3
2004	60.6	74.6	74.8	59.2	72.8	66.5	83.8	69.7	48.8	74.2	70.1	28.9
2003	133.5	75.7	100.7	97.9	86.8	118.7	128.3	115.4	78.5	97.8	82.9	72.2
2002	184.6	170.2	147.1	186.9	187.5	128.8	161.0	175.6	187.9	151.2	147.2	135.3
2001	142.6	121.5	165.8	161.7	142.1	202.9	123.0	161.5	238.2	194.1	176.6	213.4
2000	133.1	165.7	217.7	191.5	165.9	188.0	244.3	180.5	156.0	141.6	158.1	143.3

Source: WDC-SILSO, Royal Observatory of Belgium, Brussels

From Ron Crown ka9jcp

credit TO GRAVEYARDNET.ORG

RADIO AMATEURS ARE CALLED HAMS

The word HAM as applied to 1908 was the station call of the first amateur wireless stations operated by some amateurs of the Harvard Radio Club. They were Albert S. Hyman, Bob Almy and Poogie Murray. At first they called their station Hyman-Almy-Murray. Tapping out such a long name in code soon became tiresome and called for a revision. They changed it to Hy-Al-Mu, using the first two letters of each of their names.

Early in 1909 some confusion resulted between signals from amateur wireless station HYALMU and a Mexican ship named HYALMO. They then decided to use only the first letter of each name and the station call became HAM.

In those early pioneer days of unregulated radio, amateur operators picked their own frequency and call letters. Then, as now, some amateurs had better signals than commercial stations. The resulting interference came to the attention of congressional committees in Washington and Congress gave much time to proposed legislation designed to critically limit amateur radio activity.

In 1911, Albert Hyman chose the controversial Wireless Regulation Bill as the topic for his thesis at Harvard. His instructor insisted that a copy be sent to Senator David I. Walsh, a member of one of the committees hearing the bill. The senator was so impressed with the thesis that he asked Hyman to appear before the committee. Albert Hyman took the stand and described how the little station was built and almost cried when he told the crowded committee room that if the bill went through they would have to close down the station because they could not afford the license fees and all the other requirements which the bill imposed on amateur stations.

Congressional debate began on the Wireless Regulation Bill and little station HAM became the symbol for all the little amateur stations in the country crying to be saved from the menace and greed of the big commercial stations who didn't want them around. The bill finally got to the floor of congress and every speaker talked about poor little station HAM.

That's how it all started. You will find the whole story in the Congressional Record.

Nation-wide publicity associated station HAM with amateur radio operators. From that day to this and probably till the end of time in radio, an amateur is a HAM. • —• —••



CW Practice

One of the best and maybe the only way to get better at CW is practice. Having someone else who also wants to practice also helps. Just makes it more fun.

The West Allis Radio Club is going to try to help. We are running a CW practice net on Monday at 8pm
The repeater is 147.135+ 141.35 the CW portion is on HF

Mike WO9B has been joining me and setting up some practice but we are open for suggestions on where to go with this. Come join us.

Heathkit: An Employee’s Look Back

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

<https://www.electronicdesign.com/communiq/article/21148923/electronic-design-heathkit-an-employees-look-back>

Interesting vidios

https://www.youtube.com/watch?v=74_N163HyhA

https://www.youtube.com/watch?v=uh88Y2_33GI

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Frank Humpal KA9FZR
- Vice President
Steve Dryja, NO9B
- Secretary
Dave Garnier WB9OWN
- Treasurer
Bill Reed N9KPH
- Directors
Tom Macon K9BTQ
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