

= Shortwave listening =

Shortwave listening , or SWLing , is the hobby of listening to shortwave radio broadcasts located on frequencies between 1700 kHz and 30 MHz . Listeners range from casual users seeking international news and entertainment programming , to hobbyists immersed in the technical aspects of radio reception and collecting official confirmations (QSL cards) that document their reception of distant broadcasts (DXing) . In some developing countries , shortwave listening enables remote communities to obtain regional programming traditionally provided by local medium wave AM broadcasters . One 2002 estimate placed the number of shortwave listeners worldwide in the hundreds of millions .

The practice of long @-@ distance radio listening began in the 1920s when shortwave broadcasters were first established in the US and Europe . Audiences discovered that international programming was available on the shortwave bands of many consumer radio receivers , and a number of magazines and listener clubs catering to the practice arose as a result . Shortwave listening was especially popular during times of international conflict such as World War II , the Korean War and the Persian Gulf War .

Listeners use inexpensive portable " world band " radio receivers to access the shortwave bands , and some advanced hobbyists employ specialized communications receivers featuring digital technology designed for optimum reception of shortwave signals , along with outdoor antennas to enhance performance .

With the advent of the internet , many international broadcasters have scaled back or terminated their shortwave transmissions in favor of web @-@ based program distribution , while others are moving from traditional analog to digital broadcasting modes in order to allow more efficient delivery of shortwave programming . The number of organized shortwave listening clubs has diminished along with printed magazines devoted to the hobby ; however , many enthusiasts continue to exchange information and news on the web .

= = History = =

The practice of listening to distant stations in the medium wave AM broadcast band was carried over to the shortwave bands . Frank Conrad , an early pioneer of medium wave broadcasting with KDKA in Pittsburgh , instituted some of the first shortwave broadcasts around 1921 . Stations affiliated with General Electric and Crosley followed shortly after .

United States shortwave broadcasters began transmitting popular radio programs in an attempt to attract foreign audiences . During the 1930s , new shortwave receivers appeared on the market as well as popular shortwave magazines and clubs . Shortwave stations often offered unique QSL cards for DXers .

In Europe , shortwave broadcasts from Britain and the Netherlands such as Philips Radio 's PCJJ began around 1927 . Germany , Italy , the Soviet Union , Britain , and many other countries soon followed , and some classic shortwave broadcasters got their start . The BBC began on shortwave as the " BBC Empire Service " in 1932 . Its broadcasts were aimed principally at English speakers . Radio Moscow was broadcasting on shortwave in English , French , German , Italian and Arabic by 1939 . The Voice of America (or VOA) began broadcasting in 1942 after its entry into World War II using the Yankee Doodle musical theme .

While technically minded shortwave listening hobbyists dwindled during the war years due in part to the demands of military service , casual listeners seeking war news from foreign broadcasters increased . Shortwave receiver manufacturers contributed to war production . Zenith launched the multi @-@ band Trans @-@ Oceanic series of radios in 1942 . In some other countries , during the war , listening to foreign stations was a criminal offense . Established in 1939 , 35 @-@ kilowatt Chinese shortwave station XGOY broadcast programming aimed at listening @-@ restricted Japan . The station was often bombed by the Japanese .

CBS began a shortwave listening program in September 1939 , on an experimental basis , at the National Lawn Tennis Championships at West Side Tennis Club in Forest Hills , New York .

Engineers installed equipment at the CBS booth when the location was found to have good reception , and monitors relayed European shortwave news to CBS headquarters in New York between tennis matches . Throughout World War II , CBS captured Allied and enemy shortwave communications from more than 60 international stations via secretly located receivers . Translations of intercepted broadcasts were teletyped to all New York newspapers , Associated Press , United Press International and International News Service , and in turn disseminated to newspapers and radio stations throughout the United States . Major headline news frequently resulted , since big stories often broke first on radio .

Shortwave listeners notified families of prisoners of war when studio announcers at stations in Axis powers countries , such as Germany and Japan , read prisoner @-@ written messages . Allied monitors notified families , but many shortwave listeners were often first to report the broadcasts . Listeners in other countries also monitored POW messages . Americans were actively discouraged from listening to these reports , however , since broadcasting the names of a few American prisoners was regarded as a propaganda trick to build up the listening audience for Axis radio programs . In May 1943 Jack Gerber , director of the CBS listening post , told journalist William L. Shirer that the International Red Cross was the only reliable source of information on prisoners , and expressed concern at receiving six or seven letters a week requesting transcripts of German broadcasts in which service members may have been mentioned :

The only reason the Nazis put on prisoner broadcasts is to get people justifiably anxious about relatives reported missing at the front to listen to their propaganda . Although many of the messages undoubtedly are true , they represent but a small fraction of our prisoners and we have no assurance that many of them are not faked from papers picked up on the battlefield . What concerns some of us is the consequences of listening to Nazi broadcasts unless you are a well @-@ trained listener (and often , even if you are) . Nazi arguments often sound plausible . A person may listen to them with all the skepticism in the world , knowing that every word is a lie . But if the content is sufficiently sensational (and it often is) the source may be forgotten in time , and out pops the Nazi lie , all unsuspecting .

New Zealand shortwave listeners reported POW voices broadcast over Radio Peking during the Korean War .

In the 1950s and 60s , shortwave DX columns in US magazines such as Popular Electronics ? " Tuning the Short Wave Bands " and Electronics Illustrated ? s " The Listener " became news sources for serious radio listeners . Popular Electronics ? " WPE Monitor Registration " program , begun in 1959 , even offered callsign @-@ like identifiers to hobbyists . A number of specialty radio clubs such as the Newark News Radio Club also arose during these decades and provided hobbyists with an exchange of DX news and information . When Popular Electronics and similar magazines expanded coverage of new electronics topics in the 1970s , this led to the cancellation of several long @-@ time shortwave listening columns .

Beginning with Sweden Calling DXers on Radio Sweden in 1948 (there was a slightly earlier short @-@ lived program from Radio Australia) , many shortwave radio stations began programs providing news . Some of the other prominent DX programs were Radio Netherlands ' DX Jukebox (which became Media Network) , the SWL Digest on Radio Canada International , and the Swiss Shortwave Merry @-@ go @-@ round on Swiss Radio International .

An example of notable shortwave programming was the Happy Station Show , popularly called the ? world ? s longest @-@ running shortwave radio program ? . The show originated on Philips Radio 's PCJJ shortwave station in 1928 , continuing until 1940 . After World War II Radio Netherlands broadcast the show from 1946 until it terminated in 1995 . Producer and presenter Keith Perron ? resurrected ? Happy Station on March 12 , 2009 . Although no longer associated with Radio Netherlands , the new effort proclaims itself as ? transmitted globally via shortwave , podcasting and Internet streaming radio ? .

During the Persian Gulf War in the 1990s , many Americans tuned into foreign news broadcasts on shortwave . Some electronics retailers even reported a " run " on portable shortwave receivers due to the increased interest at the time .

== Practices ==

Listening to shortwave broadcast stations for news and information programming is common , but for many shortwave listeners (abbreviated as " SWLs ") , the goal is to receive as many stations from as many countries as possible , also known as DXing . " DXers " routinely test the limits of their antenna systems , radios and radio propagation knowledge . Specialized interests of shortwave listeners may include listening for shortwave utility , or " ute " , transmissions such as shipping , sailing , naval , aviation , or military signals , listening for intelligence signals (numbers stations) , or tuning in amateur radio stations .

Listeners often obtain QSL cards (which confirm contact) from ham operators , broadcasters or utility stations as trophies of the hobby . Traditionally , listeners would send letters to the station with reception reports and requests for schedules . Many stations now accept E @-@ mails or provide reception report forms on their Web sites . Reception reports give valuable information about propagation and interference to a station 's engineers .

There have been several publications dedicated to providing information to shortwave listeners , including the magazines Popular Communications (now a " digital supplement " to CQ Amateur Radio magazine) , Monitoring Times (now defunct) , and The Spectrum Monitor , a digital @-@ only publication , in the United States , and the annual publications Passport to World Band Radio (now defunct) and the World Radio TV Handbook (WRTH) . In addition , stations can provide broadcast schedules through the mail or E @-@ mail . There are also shortwave radio programs dedicated to shortwave listening and DXing , such as the U.S.-based World of Radio and DXing With Cumbre , but recently these programs have been curtailed or dropped by many international broadcasters . As of 2007 , Radio Habana Cuba still hosts a program called DXers Unlimited .

There are estimated to be millions of shortwave listeners . In 2002 , according to the National Association Of Shortwave Broadcasters , for estimated numbers of households with at least one shortwave set in working order , Asia led with a large majority , followed by Europe , Sub Saharan Africa , and the former Soviet Union , respectively . The total estimated number of households worldwide with at least one shortwave set in working order was said to be 600 @,@ 000 @,@ 000 . SWLs are varied , with no common age or occupation . David Letterman is an admitted fan of the British Broadcasting Corporation (BBC) .

Some developing countries use shortwave as a means of receiving local and regional programming . China and Russia retransmits some domestic channels on shortwave that target listeners in far off provinces . Shortwave listening is also used as an educational tool in classrooms . Poor sound reproduction , unreliable signal quality , and inflexibility of access are seen as disadvantages .

Some humanitarian organizations like Ears to Our World distribute portable , self @-@ powered shortwave radios to less developed parts of the globe , enabling people in remote , impoverished parts of the world to get educational programming , local and international news , emergency information and music . Recently , the group was involved in sending radios to Haiti so victims of the 2010 Haiti earthquake could stay abreast of local disaster recovery efforts .

== Equipment ==

=== Shortwave radio receivers ===

Radios for shortwave reception generally have higher performance than those intended for the local AM or FM broadcast band , since dependable reception of shortwave signals requires a radio with increased sensitivity , selectivity , and stability . Modern shortwave radio receivers are relatively inexpensive and easily accessible , and many hobbyists use portable " world band " receivers and built @-@ in telescopic antennas .

Serious hobbyists may use expensive communications receivers and outdoor antenna located away from electrical noise sources , such as a dipole made from wire and insulators .

Features typical of modern solid state communications receivers :

- 500 kHz to 30 MHz frequency coverage
- Superheterodyne type - double , triple or quad conversion
- Multiple RF and IF stages
- A crystal controlled IF stage
- BFO product detector for SSB and CW reception
- Signal strength meter
- RF gain control ; AVC / AGC adjustments
- Antenna tuner
- Bandwidth filters
- BFO tuning ; audio limiters or attenuators .
- Frequency display dials - analog or digital .

Older vacuum tube @-@ based communications receivers are affectionately known as boatanchors for their large size and weight . Such receivers include the Collins R @-@ 390 and R @-@ 390A , the RCA AR @-@ 88 , the Racal RA @-@ 17L and the Marconi Elettra . However , even modern solid @-@ state receivers can be very large and heavy , such as the Plessey PR2250 , the Redifon R551 or the Rohde & Schwarz EK070 .

A feature coming into wide use in modern shortwave receivers is DSP technology , short for digital signal processing . DSP is the use of digital means to process signals , and a primary benefit in shortwave receivers is the ability to tailor the bandwidth of the receiver to current reception conditions and to the type of signal being listened to . A typical analog @-@ only receiver may have a limited number of fixed bandwidths , or only one , but a DSP receiver may have 40 or more individually selectable filters .

Another important trend in modern shortwave listening is the use of " PC radios " , or radios that are designed to be controlled by a standard personal computer . These radios as the name suggests are controlled by specialized PC software using a serial port connected to the radio . A PC radio may not have a front @-@ panel at all , and may be designed exclusively for computer control , which reduces cost . In pure software defined radios , all filtering , modulation and signal manipulation is done in software , usually by a PC soundcard or by a dedicated piece of DSP hardware .

= = Future of shortwave listening = =

The rise of the internet influenced many broadcasters to cease their shortwave transmissions in favor of broadcasting over the world wide web . When BBC World Service discontinued service to Europe , North America , Australasia , and the Caribbean , it generated many protests and activist groups such as the Coalition to Save the BBC World Service . In the US , the shifting of resources from shortwave to Internet and television by the Broadcasting Board of Governors , which oversees U.S. international broadcasting , has also resulted in reduced broadcasting hours in the English language . Although most of the prominent broadcasters continue to scale back their analog shortwave transmissions or completely terminate them , shortwave is still very common and active in developing regions such as parts of Africa .

Some international broadcasters have turned to a digital mode of broadcasting called Digital Radio Mondiale for their shortwave outlets . One reason is that digital shortwave broadcasts using DRM can cover the same geographic region with much less transmitter power ? roughly one @-@ fifth the power ? than traditional AM mode broadcasts , significantly reducing the electricity cost of operating a station . A traditional AM (analog) international shortwave station can have a power rating of 50 kilowatts to as much as one million watts per transmitter , with typical power levels in the 50 ? 500 kilowatt range . Endorsed by the ITU , it has been approved as an international standard for digital broadcasts on the HF (shortwave) bands . A DRM broadcast rivals FM mono quality and can also send graphic images and web pages via a separate information channel .

Shortwave listening also remains popular with some expatriates who tune in shortwave transmissions from their homeland . Additionally , a number of remotely controlled shortwave receivers located around the world are available to users on the web . While radio hobbyists report

that the number of shortwave listening clubs has diminished and printed magazines devoted to the hobby are few , enthusiasts such as Glenn Hauser and others continue to populate web sites , and originate podcasts dedicated to the pursuit .