HAM SPEAK

ORIGIN OF DX

DX is an early telephone term for distant exchange. "This is correct. In the 1960s I worked in many telephone exchanges around the United Kingdom. On the old-fashioned switchboards with plugs and cords, circuits coming in from distant exchanges had a label marked "DX" above the jack socket. The operator would plug into the circuit and announce the name of her exchange, as confirmation to the distant operator that she was through to the correct destination. 73 de G3NYY"

It is also defined in Funk & Wagnall's as Distance.

The term DX appears in some math formulas as distance of x.

However, Phil, K7PEH Physics and Math reports. This may be true in a few very limited areas where the author has penned their own unique definition to dx. However, by far the majority of instances that dx is used in mathematics is to refer to the "derivative of x". As you might know, the derivative of a function is the rate of change of that function with respect to something else. When dx is used in math, it never stands by itself but must also refer to the "other something else" that is changing in respect to x. For example, the following formula: dx = f'(x,y)dy Defines dx as the rate of change of x in the function of x and y with respect to the change in y. I have included the notation as f'(x,y) which is commonly read as "f prime" to indicate the derivative of the function. Mathematically this is not necessary but it is the traditional definition of the differential dx/dy. Since x often is used to specify a coordinate in space, the term dx is often used to represent an infinitesimally small change in that coordinate of x. In this sense you might say that dx is a measure of distance but this is a very limited definition and not the general definition of dx in mathematics. But, even in this limited sense, the term dx is never read as "distance of x", it is always read as "derivative of x".

WebMaster: Note So much for the urban legend of DX is the distance of X -- but makes a good story.

ORIGIN OF ELMER

Not many reports on this but had a report that early Army rifle instructors were called "Elmers".

From Ken And Mary
I believe that the term "Elmer" is a fairly new one. It has only been widely used for perhaps the last twenty years. I recall reading of it's origin in QST or other ham magazine sometime no earlier than the late '70s. It refers to a specific ham whose first name was Elmer, who was a mentor of novices in a ham club somewhere in the USA.

I started studying for my Amateur Radio license in 1963, and "Elmer" was in use then ... and, if I recall correctly (forgettery works quite fine here) -- seems like that was the term used when I first expressed interest, in the 50s, while in high school physic classes. 73, Mark -- AA6DX Far Northern California. Hammin' for 37 years...

From Norm K1AA " The term "Elmer" was invented in the early 1970s (1971, I think) by Rod Newkirk, W9BRD (now VA3ES). "Rod still holds W9BRD and his Canadian call is VA3ZBB........I am fortunate to still receive his entertaining letters.....we continue our friendship from 1941 when we were both high speed operators at WAR 73 Norm K1AA.

Hi Rod, I can add to what you already have posted: "From Norm K1AA " The term "Elmer" was invented in the early 1970s (1971, I think) by Rod Newkirk, W9BRD" W9BRD was a radio dispatcher with the Illinois State Police. One of his co-workers was Elmer "Bud" Frohardt, W9GFF, now W9DY. I've only met W9BRD once, but I've known W9DY since 1968. Bud was very well known locally for his involvement with the RAMS (Radio Amateur Megacycle Society) radio club, and he was always helping newcomers to the hobby. So when Rod Newkirk started writing about Elmer in the "How's DX" column in QST, he was writing about his friend Bud. I saw Bud quite recently and asked him to re-confirm my recollection that he was the inspiration for Elmer, and he did.

73, John, K9MM

Also see ARRL Page on Elmer Mentor

ORIGIN OF HANDLE

The term *handle* is an old slang term for *name* that goes back to the cowboys of the Old West. Telegraphers picked it up and the ham radio operators got it from them. CB operators copied the hams. For Hams it can be either the operators first name or a nickname such as Sparks or Rusty. CB'ers often use an alias such as "Dirty Dawg" or "The Blue Modulator"

ORIGIN OF MAYDAY
Opinions From The Internet

Why do ships and aircraft in trouble use "mayday" as their call for help? This comes from the French word m'aidez - meaning "help me" - and is pronounced "mayday." (Note: not exactly.... it's pronounced "med-ay", but close enough)

ORIGIN OF SECURITE
Tnx To Ken WI7B

Spoken three times by the USCG on Channel 16 Marine VHF it precedes a message about safety, hazardous navigation, or marine danger to mariners. It's spoken as the French securite and is from the French for "safety".

ORIGIN OF PAN PAN (URGENCY DISTRESS CALL)

From the French word 'panne' --which roughly translates to breakdown. In radio telephony, the word PAN is repeated three times pronouncing it as the French word 'panne'.

F5NOD, Gil Gautier confirms *"It's correct ! French "Panne" means "breakdown" ... or "out of service" or "out of order". When you have a Car "Panne" you have to fixe it !! ;-) ..*

ORIGIN OF DE
Opinions From The Internet

Does anyone know how and why the "de" is included whenever the first name is used. ....as in "73 de Yab". I know "de" is Dutch for "the", but maybe that has nothing to do with it.

Close...'de' is Spanish for 'from.' Ham shorthand. 73 from Yab. An artifact of CW usage. All wrong, "de" comes from the french!!!!!!! language and has the translation to "from" and "of" in the english language. -- odo

ORIGIN OF CQ AND SOS

Opinions From The Internet Let's turn to page 4 of Baarslag's Famous Sea Rescues (formerly titled: SOS To The Rescue): "By 1904 a number of ships in the trans-Atlantic trade were equipped with wireless telegraphy. The British operators were nearly all landline telegraphers who had left railroad or post-office keys to go to sea in the newly opened field.

They brought along with them not only their Morse code but also many of their telegraphic abbreviations and signals. One was the general call - CQ, which had been used to attract attention of all operators along a wire. It preceded the time signal in the morning at 10 o'clock and also all notices of general importance.

CQ went to sea and became a general call to all ships." A couple paragraphs later, "Early in 1904 the Marconi Company, realizing the desirability of some universal distress signal, filled the need by issuing the following general order: ``It has been brought to our notice that the call `CQ' (All Stations) while being satisfactory for general purposes, does not sufficiently express the urgency required in a signal of distress.

Therefore, on and after the 1st of February, 1904, the call to be given by ships in distess, or in any way requiring assistance, shall be `CQD.' '' " To me, this implies that prior to 1 Feb 1904, some ship did use CQ as a distress call, and possibly her calls for help didn't draw the needed attention. (This was before the twice-per-hour Silent Periods were created - 600m was pure bedlam, and a CQ would have gone unheeded.)

For more radio history, visit your local research library. But please don't make up "facts." (Am I the only one who believes that questions concerning radio history should be included in the amateur exams?) 73, Jeff KH2PZ / KH6

From The ARRL:

The telegraph call CQ was born on the English Telegraph nearly a century ago as a signal meaning "All stations. A notification to all postal telegraph offices to receive the message." Its meaning was close to the present meanings of QNC and QST. Like many other telegraph terms which originated on the landlines, CQ was brought over into radio and used as a general call to all ships by the Marconi Company. Other companies used KA until the London Convention of 1912, which adopted CQ as the international general call or "attention" signal. CQ still means, literally, "attention" but in amateur radio its meaning is perhaps more accurately described by Thomas Raddell who compared it to yelling "Hey, Mac!" down a drain pipe.

But why the letters CQ? From the French, sécurité, (safety or, as intended here, pay attention) See:

ORIGIN OF 33

The History and Proper Use of 33 "33", the signature used between YL's is often mis-used and its origin tends to get lost. YLRL was organized in 1939 and it was at this time that, through YLRL women amateur Radio Operators seemed to find their niche. "YL" was adopted as a general term denoting any licensed Amateur feminine operator, regardless of age or marital status.

"33" was originated this same year by Clara, W2RUF - ex W8KYR- and adopted by YLRL for exclusive YL use. It means "Love sealed with friendship between one YL and another YL". With this background and meaning, it is very understandable that "33" is not only exclusive with YL's but is NEVER used in the plural. We sign "33", never 33"s.

Reprinted from YL Harmonics, Issue #2, 1980. Thanks to Lea AB5TY for the reference. (Note also that 73 and 88 should NEVER be used in the plural form. You would not say Best Regards's nor Hugs and Kisses's would you?)

ORIGIN OF 73

Via Louise Ramsey Moreau, W3WRE and Charles A. Wimer KC8EHA

The following is from Louise Ramsey Moreau, W3WRE: "The traditional expression "73" goes right back to the beginning of the landline telegraph days. It is found in some of the earliest editions of the numerical codes, each with a different definition, but each with the same idea in mind - it indicated that the end, or signature, was coming up. But there are no data to prove that any of these were used.

"The first authentic use of 73 is in the publication The National Telegraphic Review and Operators' Guide, first published in April 1857. At that time, 73 meant "My love to you"! Succeeding issues of this publication continued to use this definition of the term. Curiously enough, some of the other numerals used then had the same definition as they have now, but within a short time, the use of 73 began to change. "In the National Telegraph Convention, the numeral was changed from the Valentine-type sentiment to a vague sign of fraternalism. Here, 73 was a greeting, a friendly "word" between operators and it was so used on all wires.

"In 1859, the Western Union Company set up the standard "92 Code." A list of numerals from one to 92 was compiled to indicate a series of prepared phrases for use by the operators on the wires. Here, in the 92 Code, 73 changes from a fraternal sign to a very flowery "accept my compliments,"which was in keeping with the florid language of that era. "Over the years from 1859 to 1900, the many manuals of telegraphy show variations of this meaning. Dodge's The Telegraph Instructor shows it merely as "compliments." The Twentieth Century Manual of Railways and Commercial Telegraphy defines it

two ways, one listing as "my compliments to you"; but in the glossary of abbreviations it is merely "compliments."

Theodore A. Edison's Telegraphy Self-Taught shows a return of "accept my compliments." By 1908, however, a later edition of the Dodge Manual gives us today's definition of "best regards" with a backward look at the older meaning in another part of the work where it also lists it as "compliments."

Editor Note -- Dodge's "The Telegraph Instructor" can be found at URL: http://artifaxbooks.com/afxrare/dodge.htm

"Best regards" has remained ever since as the "put-it-down-in-black-and-white" meaning of 73 but it has acquired overtones of much warmer meaning. Today, amateurs use it more in the manner that James Reid had intended that it be used - a "friendly word between operators." I hope that this helps you in some way....

73, Charles A. Wimer Amateur Radio Call: KC8EHA Assistant Emergency Coordinator, Trumbull County (OH) ARRL Official Emergency Station (OH)

Somebody wrote: Actually "73" was a term the old telegraph operators would use back in the old west days. It meant that they owned a Winchester 1873 rifle (their most prized possession) and that when they died they would give it to the other operator. Hense '73' meant I will will you my 73 rifle. '73s' meant you had more than one rifles that you would give to them (they were a really good friend.).

Hello, It's a nice story, but it has no basis in fact. The actual source of "73" and "88" was the list of numerical abbreviations used by wire telegraphers. These abbreviations were used in a manner similar to Q signals today. Here's a partial list of number abbreviations: 1 – Wait 2 - Important business 3 - What is the time? 6 - I am ready 7 - Are you ready? 12 - Do you understand? 13 - I understand 14 - What is the weather? 17 - Lightning here 19 - Form 19 train order (used by RR) 21 - Stop to eat 23 - All copy 24 - Repeat this back 30 - No more, end 31 - Form 31 train order (used by RR) 44 - Answer promptly by wire 73 - Best regards 88 - Love and kisses 92 - Deliver promptly 134 - Who is at the key?

Note that American Morse was used by landline telegraphers. The signal "30" in American Morse is "..._. _____" (zero is an extra long dash). This was corrupted into a single character, "..._._" which is usually thought of today as SK or VA, with the space between letters removed. 73 (never plural!) de Jim, N2EY

QRPers sometimes sign off with 72 indicating they may be a mite short on power for a full 73!

But Kevin Cozens writes "In one of the magazines I was getting for a while from one of the QRP clubs (can't remember if it was from the Michigan QRP club or the G-QRP club) I learned of the use of 72 for the first time. Their use of 72 was based on the idea that "QRP operators do more with less". If you add that to the page you will have both a QRP as well as the QRO operators view of 72."

Len Anderson retired (from regular hours) electronic engineer person Writes:

After 1844 (the year of the first commercial telegraph service in the USA, Baltimore, MD to Washington, DC), the blazing speed of the early electromechanical sounders made it necessary for commercial telegraphers to to use abbreviations for standard phrases in telegrams. It gave telegraphers a chance to send more telegrams during a workday, increase their profits, etc., etc.

A whole bunch of different two-number sub-codes were invented and used. Few survive to today since morse codes have survived only in amateur radio.

One of the enduring sub-codes is "73" meaning "Best regards." Hams use it on voice, as well. It has become traditional jargon.

Morse code did NOT begin as the character = <dot-dash group> but was originally ALL numbers! Morse got a financial and lab mentor in railroad heir Alfred Vail who is reported to have suggested a change from the all-number code to one where each letter, number, and common punctuation mark has a unique dot-dash group. This latter improvement, along with a way to increase the distance of a landline by using a "relay" of an electromagnet whose magnetically-coupled switch substituted for a telegrapher's key in an unmanned telegraph line relay station. Up to three such "relays" could be used on a wired telegraph circuit. That may or may not be the etymological origin of the word "relay" as the component we know today.

Jim, N2EY writes on a news group

In 1859, Western Union standardized on the "92 code" in which the numbers from 1 to 92 were assigned meanings. It was in this list that 73 got its present meaning. Later more numbers were added. Here's a partial list:

1 Wait a moment
2 Important Business
3 What time is it?
4 Where shall I go ahead?
5 Have you business for me?
6 I am ready

7 Are you ready?
8 Close your key; circuit is busy
9 Close your key for priority business (Wire chief, dispatcher, etc)
10 Keep this circuit closed
12 Do you understand?
13 I understand
14 What is the weather?
15 For you and other to copy
17 Lightning here
18 What is the trouble?
19 Form 19 train order
21 Stop for a meal
22 Wire test
23 All copy
24 Repeat this back
25 Busy on another wire
26 Put on ground wire
27 Priority, very important
28 Do you get my writing?
29 Private, deliver in sealed envelope
30 No more (end)
31 Form 31 train order
32 I understand that I am to …
33 Car report (Also, answer is paid for)
34 Message for all officers
35 You may use my signal to answer this
37 Diversion (Also, inform all interested)
39 Important, with priority on thru wire (Also, sleep-car report)
44 Answer promptly by wire
73 Best regards
88 Love and kisses
91 Superintendent's signal
92 Deliver promptly
93 Vice President and General Manager's signals
95 President's signal
134 Who is at the key?

Editor Note; Had an input for 99 = Get Lost (probably unofficial)

"19" and "31" refer to train orders of two different types (absolute and permissive). They were so well known that the terms "19 order" and "31 order" were still in railroad use in the 1970s, after the telegraph was gone from railroad operations.

The Morse code used in US wire telegraphy was the "American" Morse code, which shares some codes with the "Continental" code we still use today. (The continent referred to in the name is Europe, and it became the standard code for radio work early in the 20th century).

The abbreviation "es" for "and" derives from the American Morse character "&" which was
dit dididit. The prosign "SK" with the letters run together derives from the American Morse "30", which was dididididahdit daaaaaaaah (extra long dah is zero in that code).

There are some urban legends about Winchester rifles and such, but they do not stand up to historical fact.

73 de Jim, N2EY

PHILLIPS CODE

The Phillips code is a shorthand code of word abbreviations for the telegraph first published in 1879 by Walter Phillips (b. 1846 - d. 1920)

ORIGIN OF FIST

The early spark transmitters showered the operator with sparks - so Marconi's key lever was lengthened and the padded end was beaten with the 'fist' of the operator to send dots and dashes.

ORIGIN OF Q, R, X, AND Z CODES

Subject: Z codes This article was recently submitted to the Telecomms Heritage Group's journal (which I edit). Rather than just reprint the section on Z-codes and frustrate readers, I attach the full text. Hope this doesn't use up too much bandwidth! Andy G8PTH ----------------

TELEGRAPHIC CODES OF MORSE AND MEN by Kenneth Brown G0PSW

The first line telegraph message is thought to have been sent from Washington to Baltimore in May 1844 by Samuel Finley Breeze Morse, (1791-1872). He is said to have tapped out the message, "What hath God wrought?" using a code of interrupted signals which he and his associate Alfred Louis Vail, (1807-1859), had developed some years earlier.

After this momentous achievement and following the founding of Western Union in 1856, coast to coast telegraph lines were quickly installed and it then became commercially possible to send and receive telegraphic traffic by line. Since then and with an eye on faster speeds of transmissions and higher accuracy, newspapers, railways and post offices made great use of the

telegraph to provide their customers with speedy, economic, personal and commercial communication.

This also paved the way for transmitting traffic by radio from the late 1890s following successful experiments by Marconi. One way of speeding the flow of traffic was to operate an agreed set of short codes to replace well-known sentences or phrases but at that time there was no common national or international standard. The first of many conferences to discuss and try to resolve this issue was held in the US in April 1857, culminating with the release of the National Telegraphic Review and Operators' Guide.

This Guide makes the first authentic reference to the well-known greeting 73; at that time meaning love and kisses. 'Later editions kept this definition but, as time went by, the meaning of 73 changed from a Valentine type of greeting to a vague sign of operators' fraternalism. Western Union, in 1859, set up the Standard 92 Code. Replacing common sentences and phrases with selected numbers between 1 and 92 the message was telegraphed to a distant station. At the distant end the numbers were decoded and a plain language version delivered to the recipient.

The definition of 73 changed yet again to a very flowery accept my compliments. From 1859 to 1900 the many telegraphic manuals show variations of this meaning. Each major telegraph and railway company had its own distinctive telegraphic codes. Since there was no agreed standard all were different and, as a consequence, there was much confusion in communicating with different networks. During this time there were even two alphabetical morse codes the American and Continental (European) versions. Although there were basic similarities there were also some major differences.

This, combined with the multiplicity of telegraphic codes, caused confusion and made communication with and between US establishments particularly difficult. The US 1908 Dodge's Manual gives today's definition of 73 best regards. Other Dodge numbers were 88 love and kisses, 55 lots of success and 99 get lost (probably unofficial). Also, in 1908, the British Post Office, despairing of action to agree an international code of abbreviations, issued its own list of two letter abbreviations intended for use between British coast stations and ships.

The list, published in the PMG's Instructions to Wireless Telegraphists, included abbreviations RA to RZ and SA to SF. The next International Radiotelegraphic Convention, held in London in July 1912, adopted and extended the GPO abbreviations. Q was added as the first letter and so the Q code was born. The new code now ran from QRA to QRZ and QSA to QSX. On 1st July 1913 the Q code finally became an official international information code, updated as changing circumstances demanded to include new codes relating to such matters as aviation and maritime. Some time later came the Z code, running in parallel with the Q code.

This originated as a company code of Cable and Wireless with application limited, in the main, to high speeds machine morse operating at speeds of typically 120wpm. Widely used by many countries, including Germany, the Q code and Z code continued in use throughout the war. After the war high-speed morse became less widely used and was replaced by other forms of traffic communication such as RTTY and facsimile. The Z code, therefore, gradually went out of fashion and slowly disappeared. Examples of the Z code include ZAA you are not observing circuit discipline, ZAN we can receive absolutely nothing, ZST send slips twice, ZAP acknowledge please and there were lots of others.

Operating during the 1930s and early 40s, at the same time as the Z and Q codes, was the X code, then in use by European military services as a wireless telegraphy code. This consisted of the letter X followed by a number. For example X34 meant your morse is bad, X50 your morse is good, X100 affirmative, X112 interrogative, X279 what is the strength of my signal? X496/257 I am winding in my aerial prior to landing/i have nothing further for you. The X code continued in use with the forces until 1942 when, at the insistence of the US military, it was replaced by the Q code.

However, the odd X code can still is heard from veteran telegraphists even now but not very often. So the Q code became the standard international military and civil telegraphic letter code used in CW communication. (Sometimes, incorrectly, even in R/T). Published as an operators' manual, there are separate sections available to deal with various areas of communication. Some less well known examples of the Q code used by base stations of the British Army included QAU followed by QHU,meaning I am waterlogged, I am about to jettison fuel; AS5 generally followed! Even less well known is QGG send the pony by the next train.

Widely used by radio amateurs operating CW, today's Q code has slightly different meanings but is still very similar to the 1912 version. One of the great benefits of using the Q code is the pleasure in being able to communicate with overseas operators who may not be fluent in the English language. In conclusion, it is sad fact there will be no successor to the Q code; no longer is the morse code taught to Royal Navy. Data stream transmissions have displaced morse and taken over everyday communication such is the march of time. Acknowledgements: Grateful thanks to Pat Hawker G3VA and Peter Broom G5DQ, for their help and advice.

ORIGINS OF ROGER WILCO

Incidentally according to the "Morris Dictionary of Word and Phrase Origins" by William and Mary Morris(Harper Collins, New York, 1977, 1988). ROGER -- "in the meaning of 'Yes, O.K., I understand you -- is voice code for the letter R. It is part of the 'Able, Baker, Charlie' code known and used by all radiophone operators in the services in the 40's - 50's.

From the earliest days of wireless communication, the Morse code letter R (dit-dah-dit) has been used to indicate 'O.K. -- understood.' So 'Roger' was the logical voice-phone equivalent." Also from "I Hear America Talking" by Stuart Berg Flexner (Von Nostrand Reinhold Co., New York, 1976)."Roger! A code word used by pilots to mean 'your message received and understood' in response to radio communications; later it came into general use to mean 'all right, OK.' Roger was the radio communications morse code word for the letter R, which in this case represented the word 'received.' 'Roger Wilco' was the reply to 'Roger' from the original transmitter of the radio message, meaning 'I have received your message that you have received my message and am signing off." Wilco implies "I will comply"

Then of course there is the "Roger Beep" (Di-Dah-Dit) which legend has it was innovated by the Space Missions as a quick way to "Roger it" No source for this "but have it on good authority - by a guy who was there" hi hi. From the DX Reflector Ok, I have heard and seen a half dozen explanations, now here is one from one who has "Been there- Done That". "Roger" in both military and government communications definitely came out of the old cw days (and yes I did send/receive cw messages at the beginning of my career). The "R" was sent as a confirmation of receipt of a message,or a portion of a message. "R" was used, not "QSL". In voice communications , it thus became "Roger".

Even in front-line operations such as by forward observers (I did that too). We used Roger and Negative You had to be completely confident in what you were sending or receiving after all, it could , and often was, life or death as to what got thru the communications lines. I cringe almost every time I hear any military movie communications. WILCO means: I will comply with your orders. OVER means I have finished my transmissions and turn the channel over to you to transmit. CLEAR means I am finished with this communication and am standing by on the channel. OUT means I have completed transmission and am completely finished and closing this station or switching to another channel. So you can see why I cringe with "Roger Wilco Over, Clear and Out" WHAT DID HE SAY????

Navy Pilots say the use of Roger Wilco is frowned on, use one or the other as applicable.

In addition to "R" Roger, early CW use for "correct" was Morse "C", this carried over to the phone circuits as "Charlie". This is still used by Morse ops and can still be heard on some military voice circuits as in "That's Charlie" or "That's a Charlie readback". Usually following a readback of a message and meaning 'that is correct'. One will also see the occasional reference to FOXTROT messages as in the "DO NOT ANSWER" also encountered on military circuits. This is also from the CW "F" meaning 'do not answer'.

Reports - 5 by 5 and Loud and Clear

From an old Military Radio Telephone Procedure Manual (Circa 1953). In all probability, these came from the Q-Signals of yore where QRK was -- What is the readability of my signals ? Answer: The readability of your signals is ... (1 to 5). And QSA -- What is the strength of my signals ? Answer was: The strength of your signals is ... (1 to 5).

Webmaster note: I believe the oft heard "You are Q5 is a voice equivalent to the CW QRK 5" And receiving you 5 by 5 is voice equivalent to QRK 5 and QSA 5

Report of Signal Strength	
5 LOUD	Your signal is very strong.
4 GOOD	Your signal strength is good.
3 WEAK	Your signal strength is weak.
2 VERY WEAK	Your signal strength is very weak.
1 FADING	Your signal strength fades to such an extent that continuous reception cannot be relied upon.
Report of readability	
5 CLEAR	Excellent quality.
4 READABLE	Quality is satisfactory.
3 UNREADABLE	The quality of your transmission is so bad that I cannot read you.
2 DISTORTED	Having trouble reading you because your signal is distorted.
1 WITH INTERFERENCE	Trouble reading due to interference.

RADIO CHECK	What is my signal strength and readability, i.e., how do you hear me?
ROGER	I have received your last transmission satisfactorily. The omission of comment on signal strength and readability is understood to mean that reception is loud and clear. If reception is other than loud and clear it must be described with the prowords from above

WHY LSB BELOW 9 MHz AND USB ABOVE

You have to see the circuitry for early SSB transceivers to appreciate this -- but the easy explanation is -- in the early days of SSB design, one of the common SSB generating schemes used a 9 MHz carrier oscillator/IF. Anything below that freq was inverted (LSB) compared to those freqs above it (USB). So there was no USB/LSB switch, it automatically went to LSB for frequencies below 9MHz and vice versa. The protocol has stayed with us to this very day. But you can operate USB at 7 MHz and below if you want and vice versa. Few do (or should) as it is a gentlepersons agreement (not an FCC rule).

Another opinion from the internet. Once upon a time we had 9 Mcs carrier generators for ssb.   We used surplus ARC-5 aircraft transmitters as a VFO. TWO MOST popular bands were 75 and 20. Subtract 5 Mhz from 9 and there was 75. ADD 5 mhz to 9 and you had 20. The side bands were <u>translated.</u> So there is the rest of the story why 75 was LSB and 20 was USB in general!

Another opinion from the internet. The answer is not dependent on the ARC-5. The original rigs generated the sideband signal at 9 MHz and either added 5 MHz to get 14 MHz or subtracted 5 MHz to get 4 MHz. The addition process preserves the sideband (upper or lower) and the subtraction process inverts it. Since nearly all rigs generated the 9 MHz signal as USB, we came to use USB when adding and LSB when subtracting. Many hams used the ARC-5 as a VFO for the mixer, but *any* 5 MHz VFO would do. ARC-5s were cheap and easy but not required.

Someone else e-mailed me complete with intricate math and vehemently sed that there is NO inversion or translation --- hmmm I sed after being confused with the math.

This from Sweden

Dear Mr. Dinkins,

I have "stumbled" across your very interesting web-site, and noticed that you have some discussion about the reason for the amateur radio use of LSB below 10 MHz and USB above.(As you probably know, the relevant Radio Regulations explicitly prescribes the USB mode for all other regulated SSB users).

In the early days of SSB, the frequency translation scheme of contemporary SSB and ISB exciters used a signal processing IF in the "few" MHz range (a common amateur IF was 5.2 MHz, and commercial IF's were 2 and 3.1 MHz) which was mixed with a variable injection frequency. You ended up with a sideband inversion when the IF was subtracted from the injection frequency. (Example: to obtain 3.8 MHz LSB using 5.2 MHz USB IF and 9 MHz injection).

When the IF is added to the injection frequency no inversion occurs. (Example: to obtain 14.2 MHz USB using 5.2 MHz USB IF and 9 MHz injection).

Commercial ISB exciters were often equipped with 4 independent sidebands (often called the B2 or LLSB, B1 or LSB, A1 or USB and A2 or UUSB, their relationships to the center frequency according to CCIR Recommendation 348-2) each containing a telephone channel or a voice frequency telegraph system.

When international HF circuits using SSB/ISB became commonplace, it turned out that there frequently were incompatiblity between the mixing schemes, so there was a genuine risk that the two ends of a circuit were using different mixing conventions, ending up in mirror-image audio frequencies and VFT channel numbering and keying polarities.

For that reason the CCIR adopted the Recommendation 249 in 1959, in which a provision was prescribed for inverting the ISB channel arrangement if the operating frequency was on either side on 10 MHz.

Progress in the design of commercial receivers and exciters (for example the Wadley loop that made IF's above the signal frequency range practical) soon made this Recommendation obsolete, but it seems that the radio amateur community still hang on to its provisions.

A good account of the reasoning behind the mixing schemes of that era can be found in the first edition of "Single Sideband Principles and Circuits" and in the articles "Die fernbedienbare Nachrichtensendeanlage Elmshorn" and "Fernbedienbarer Steuervorsatz fur Kurzwellen- Nachrichtensender", both in the December 1962 edition of the "Telefunken-Zeitung".

73/ Karl-Arne Markstrom SM0AOM
Senior Radio Engineer
Maritime Networks

And from Don WØPEA

 Hi Rod, Here is the rest of the story........

Tony Vitale W2EWL who lived in Denille NJ wrote an article in CQ in the early1950's entitled "Cheap and Easy Sideband". It was a 9 Mhz USB phasing generator tweaked for optimum suppression on LSB and an ARC-5 used as a 5 Mhz VFO. It summed the 9 Mhz USB signal and 5 Mhz VFO to work on 20 meters. Sum mixing does not invert the USB signal. It used difference mixing to work on 75 Meters, causing the USB signal to be inverted to LSB. At this time commercial SSB rigs were virtually non existent. Shortly after this article was published, Wes Schaum & Joe Batchelor formed Central Electronics and utilized a similar design to make the 10A, 10B, & 20A. The few hams using "Ducktalk" had only the capability of USB on 20 meters and LSB on 75 meters.

Thus the convention was set. When other rigs like the 10A, 10B, & 20A came along, they followed the precedent that had been set by the "Cheap and Easy Sideband" article by Tony Vitale. I met Tony in 1975 when I worked for Cessna. Tony retired in the late '70's and died in the mid 80's.

I also met Russel Farnsworth in the 1968 when I lived in Champaign Ill. but that is another story........ Don WØPEA

The Latest on the controversy -- From N2EY

Hello,

Was just perusing your excellent website when I found the part about why we hams use LSB on 75 and USB on 20.
Unfortunately, the myth about a 9 MHz SSB generator and 5 MHz VFO is there. While that combo allows sum and difference mixing to reach both bands, the sideband *is not* inverted. This isn't a question of opinion - it's just basic math of how SSB and mixers work. There's also a part about the W2EWL "Cheap and Easy SSB" exciter, which has several errors in it. I'm sure they're unintentional errors, but they're still wrong.

Here's what I found: Quoting the website

Tony Vitale W2EWL who lived in Denille NJ wrote an article in CQ in the early1950's entitled "Cheap and Easy Sideband".

Tony Vitale was indeed W2EWL, but the article appeared in QST, not CQ. March, 1956. I have the issue and can scan it if you want proof.

  >It was a 9 Mhz
> USB phasing generator tweaked for optimum suppression on LSB and an
> ARC-5 used as a 5 Mhz VFO. It summed the 9 Mhz USB signal and 5
> Mhz VFO to work on 20 meters. Sum mixing does not invert the USB
> signal. It used difference mixing to work on 75 Meters, causing
> the USB signal to be inverted to LSB.

NO. It doesn't work that way. The sideband does not invert on either band using the mixing scheme W2EWL used. And there's a sideband switch included so that the right sideband can be chosen. The alignment procedure includes making the adjustments so that the unwanted sideband rejection is equally good for both positions of the sideband selector switch.

  >At this time commercial SSB
> rigs were virtually non existent.

No, that's just not true.

I pulled the March 1956 QST off the shelf to be sure. In that issue, which carried "Cheap and Easy SSB" for the first time, the following SSB rigs are advertised:

- Collins KWS-1 and 75A4
- B&W 5100 with 51SB SSB adapter, plus 370 receiving adapter
- Hallicrafters HT-30 exciter, HT-31 linear amplifier, and SX-100 receiver
- RME 4300 receiver with 4301 SSB receiving adapter
- Central Electronics 10B and 20A exciters, 600L *no-tune* linear amplifier, plus Model A and Model B receiving adapters
- Eldico SSB-100A transmitter and SSB-500 linear amplifier
- P&H LA-400 linear amplifier
- Lakeshore Phasemaster II transmitter and P-400-GG linear amplifier.

Just for the heck of it I looked at QST for March 1955 - a year before the "Cheap & Easy SSB" article appeared. Advertised in it are:

- Collins KWS-1 and 75A4
- B&W 5100 with 51SB SSB adapter, plus 370 receiving adapter
- Hallicrafters HT-30 exciter, HT-31 linear amplifier, and SX-96 receiver
- Central Electronics 10B and 20A exciters, plus receiving adapter
- Lakeshore Phasemaster Junior transmitter

Now I grant that these rigs weren't inexpensive, and that there was a far wider selection of AM gear. But there was no shortage of SSB gear for the ham when W2EWL's article appeared.

>Shortly after this article was
> published, Wes Schaum & Joe Batchelor formed Central Electronics
> and utilized a similar design to make the 10A, 10B, & 20A.

They used the same frequency scheme but CE was producing rigs long before the W2EWL article appeared. In fact, the 20A is advertised as a new rig in QST for November 1953, and the 10A was first advertised in QST in September of 1952. CE's first rig predates the W2EWL article by 3-1/2 years!

The few

> hams using "Ducktalk" had only the capability of USB on 20 meters
> and LSB on 75 meters. Thus the convention was set. When other
> rigs like the 10A, 10B, & 20A came along, they followed the
> precedent that had been set by the "Cheap and Easy Sideband"
> article by Tony Vitale.

Nice story but it cannot be true. Both the W2EWL and CE exciters can do either sideband equally well. And the CE rigs predate the W2EWL article by *years*, as shown above. W2EWL did not invent the LSB/USB convention at all. I don't think he ever claimed to, either. His rig would do either sideband on either band equally well. With phasing rigs, all it takes is a DPDT switch to reverse the

phase of one audio channel. This isn't an opinion - it's verifiable facts.

Here's a simple explanation of the mixing scheme: If you generate USB at 9 MHz, the carrier is at 9 MHz and the sideband is on the upper side of 9 MHz. Add 5 MHz and the carrier will be at 14 MHz and the sideband will be on the upper side of 14 MHz, because all you did was add 5 MHz to every frequency in the signal.

If you generate USB at 9 MHz, the carrier is at 9 MHz and the sideband is on the upper side of 9 MHz. Subtract 5 MHz and the carrier will be at 4 MHz and the sideband will be on the upper side of 4 MHz, because all you did was subtract 5 MHz from every frequency in the signal. That's how it works. No sideband inversion from a 9 MHz SSB generator and 5 MHz VFO. The USB/LSB thing came from elsewhere. The myth lives on because too many hams repeat it without checking the math, nor actual sources of info.

Thanks for reading. 73 de Jim, N2EY

More on the controversy

The subject came up on the QRP mailing list, and one of the participantsquoted your web site. Going back to the web site, I see that the actual quote was from W0PEA.   Anyway, it doesn't work. Just as you say others wrote that the math doesn't work when you presented it above that point in the page, it doesn't work here.

Here is why: If you start with a USB SSB generator (of any type) at 9 MHz, and mix it with a signal around 5.2 MHz, you get 14.2 MHz. Now, let's see if it comes out USB or LSB.

  To test the resulting sideband, we take a bit of the upper sideband signal from that generator, and see where it lands relative to the (hopefully suppressed) carrier.

```
          carrier              sideband
          -------             - -------
        9.0 MHz            9.0001 MHz
        5.2 MHz             5.2   MHz
  sum   14.2 MHz          14.2001 MHz
```

so this comes out as upper sideband.

Now, trying it for the difference

```
          carrier              sideband
          -------             - -------
        9.0 MHz            9.0001 MHz
        5.2 MHz             5.2   MHz
  diff.  3.8 MHz            3.8001 MHz
```

Again, the sideband comes out above the carrier, so the result is also upper sideband.

In order for this to work, it appears that the sideband generation must be at the lower frequency, so that the slightly higher sideband frequencies will be subtracted from the reference, and will give lower results.
Alan
wa6azp

ORIGINS OF VOICE NUMBERS LIKE NINER

When voice communications were being used to supplement morse code communications, the number five was being confused with the number nine, especially under adverse receiving conditions, so the military adapted a number system for voice which was:

zero one two tree fower fife six seven eight niner. Sometimes fiver was used to force the intelligibility.

In the days of cord switchboards the operators would pronounce nine as 'niyen' for the same reason.

From other sources: Also from the Cambridge Encyclopedia of Language: zero wun too tree fower fife six seven ait niner From the Atlantic City ITU convention of 1947 the recommended number series for voice communications

Nada zero NAH-DAH-   ZAY-ROH
Una one OO-NAH-   WUN
Bisso two BEES-SOH-   TOO
Terra three TAY-RAH-   TREE

Karte four KAR-TAY-   FOWER
Panta five PAN-TAH-   FIVE
Soxi six SOK-SEE-   SIX
Sette seven SAY-TAY-   SEVEN
Okto eight OK-TOH-   AIT
Nove nine NO-VAY-   NINER

ORIGINS OF BOATANCHOR

THREE VERSIONS -- Opinions From The Internet.

Version I -- During World War II, Military Radio Techs used the term BoatAnchor as they struggled with the huge, heavy, electronic equipments of the day -- full of transformers, tubes etc. Also the US Navy frequently marked electronic gear with an anchor. After the war -- tons of the equipment appeared on the surplus market and was dubbed BoatAnchors due to the reasons above - one or both.

Version II -- After WWII a national magazine editor answered a query "As what to do with an outdated heavy, large, surplus electronic instrument?" and answered "Tie a line to it and use it as a BoatAnchor"

Version III To all those who expressed interest in the CQ magazine reference to boatanchors, I found it after only an hour or two of skimming. And I also found that some of my recollections were a bit hazy after all those years. The original letter to the editor (not to the "Surplus Editor" as I incorrectly recalled) appeared on page 16 of the October 1956 issue of CQ and was as follows: Gentlemen: I recently acquired a "Signal Corps Wireless Set. No. 19 MK II Transceiver." Are there schematics or conversion data for this rig? Any info will be appreciated. David J. Wilke W3LSG Pottstown, Pennsylvania The editor replied: The only conversion we seem to have on the files here at CQ calls for 100 feet of 1" Manila line, one end of which is to be tied securely around the MK II Transceiver.

This then converts the unit into a fine anchor for a small boat. If any readers have better conversions we will be glad to hear about them. Ed. This letter apparently generated a lot of interest and in the February 1957 issue of CQ there was a follow-up from CQ's editor, another letter from W3LSG and several pictures. If I find the time I will scan them and post links to them here.

The expression "boatanchor" may have originated earlier than 1956, as Doug Hensley pointed out. I found no earlier references in amateur radio than these CQ's, but there may be some. However, there was no reason to call amateur gear of that era "boatanchors" since almost all of it fit that description. It wasn't till later when smaller, lighter gear became popular that there was reason to categorize some gear as boatanchors. And it is also interesting to me that a word originally used to denote something of little value, useful only to

anchor a small boat, has taken on a more affectionate meaning. We love our "boatanchors". Roger K6XQ

And then there is this one from a News Group. "The true determination is generally made by your spouse. If you can walk in the front door with it, without your spouse asking "and what are you planning to do with that?", it is not a boat anchor. Boat anchors are brought in during the night or on long weekends. That is CLASSIC! :-)

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ORIGIN OF Gonset "Gooney Bird" From W6VR Bob Gonsett

Had the good fortune to talk with Paul Lieb, KH6HME, after the Gordon West seminar on Hawaii to Western U.S. propagation. Paul said he was the one who named the Gonset Communicator the "Gooney Bird." He said the radio was very reliable, and the other reliable thing that came to his mind at the time was the military C-47 (Gooney Bird) aircraft. A fascinating factoid.

Ed Note on C-47. Air force ID was C-47. DC-3 was commercial airliner and Douglas ID. Also known as the SkyTrain. They served during WWII, Korean War, and Vietnam. Blaster version was "Puff The Magic Dragon" Gunship AC-47.

In the Navy they were IDed as R4D. R for transport, 4 for the fourth navy transport, and D for Douglas.

ORIGIN OF THE PROSIGNS

From the 1969 ARRL "The Radio Amateur's Operating Manual" Many of the expressions and procedure signals still in use in radiotelegraph had their origins in the early days of the landline telegraph - long before Marconi sent his letter "S" across the Atlantic. In sending formal messages by CW, the first thing a beginner hears is "don't send punctuation. Separate the parts of the address from each other with the prosign AA." This is ironic, because in the American Morse Code the sound didahdidah is a comma and was doubtless the origin of our prosign.

Originally, a correctly addressed letter was punctuated with commas following the name and the street address, each of which was (and still is) on a separate line although the commas have been dropped, even in mail addresses on letters. The comma was transmitted by Morse operators and thus, AA came to mean that the receiving operator should "drop down one line" when sent after each part of the address and it is so defined in the operating manuals of the time.

Our familiar prosign SK also had its origin in landline Morse. In the Western Union company's "92 code" used even before the American Civil War, the number 30 meant "the end. No more". It also meant "good night". It so happens that in Landline Morse, 30 is sent dididdahdit daaah,the zero being a long dash. Run the 30 together and it has the same sound as SK.   -Louise Ramsey Moreau W3WRE/WB6BBO

Where Did They Come From? The end-of-message signal, AR comes from the American Morse letters FN, meaning 'finish'. SK, from the American Morse 30, meaning half-past the hour, the end of an operator's shift. ES, for 'and' from the American Morse symbol for '&', used extensively in written English in earlier times. And when old-timers send a long dash for 'zero', they are actually sending the correct American Morse symbol. History casts a long shadow.

Procedural Signals (Prosigns) for Morse Code C Q - Calling any station (does any ham *not* know this one?) AR - over, end of message K - go, invite any station to transmit KN - 'X' go only, invite a specific station to transmit BK - invite receiving station to transmit R - all received OK AS - please stand by SK - end of contact (sent before call) CL - going off the air (clear)

WHAT HAPPENED TO THE B-BATTERY ????

A and B "batteries" were multi-cell sources for the early battery radios - where the A battery supplied the filament; and the B battery supplied the B+ - or plate voltage. The A batteries ran anywhere from 2 to 6 volts; (5V being the most common filament voltage; you used a rheostat to adjust as the battery ran down); 67 and 90 volts were most common B batteries. These used a bunch of cells - series to stack up to the B+ voltage; the A batteries were usually series (to give enough voltage) & parallel to give enough current.

There were also C batteries - (not to be confused with C cells) - they usually supplied some bias (negative) voltage for output stages, etc. Back to the "Cells" There are - or were, A and B cells, (like AA, C & D cells today) but they aren't commonly used anymore - but they did (some do) exist.

Here are Cell Types and their approximate specs (Being "cells" they are all 1.5V carbon): Type Size (Diam x Height) Wt. (lb.) Ed Note dimensions are approximate -- see Vendor data sheets for each manufacturer's specs. i.e Eveready ALSO SEE Standard Cylindrical Battery Sizes -- MANY MORE SIZES HERE

A - 5/8 x 1 7/8   .046
AA - 17/32 x 1 7/8   .033
AAA - 0.41 x 1.75"   9.7 grams
AAAA - 0.327 x 1.673"   6 grams
B - 3/4 x 2 1/8   .077
C - 15/16 x 1 13/16   .1

D - 1 1/4 x 2 1/4   .22
E - 1 1/4 x 2 7/8   .29
F - 1 1/4 x 3 7/16   .35 (commonly used in packs to make A batteries)
G - 1 1/4 x 4   .4   6 - 2 1/2 x 6 2   .2 is also still around, used both in industry and by hobbyist (glow plugs in model airplanes and cars gas engines). These are those tall cells with two binding posts on top - one in the center - and one at the edge.

There were also BR, CD, FL, FL-1 -> FL-9, J, K, M, N (still are), NS, & P cells. best regards.. Randy Guttery

Also See Powering Your Antique Battery Radio

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WHAT HAPPENED TO TV CHANNEL 1 ????

FULL STORY AT URL: http://www.tech-notes.tv/History&Trivia/Channel%20One/Channel_1.htm

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ORIGIN OF HAM

Subject: Re: Why the term ---HAM---
From: Gary Coffman) wrote:

Where did the term HAM come from? When did it come to popular use? The *real* explanation appears to be lost in the mists of time. There are a number of theories. Some more plausible than others. The one you'll likely hear the most is about "little station HAM". It goes like this. In the early days of radio, the government didn't assign call letters to amateurs. They just made up their own. Supposedly, three students at Harvard named Hyman, Almay, and Murray set up a station. They decided to use their initials as the call. Thus we have the little station HAM.

When the Navy tried to grab control of all radio frequencies, these guys are supposed to have testified before Congress, and the story of little station HAM supposedly didn't leave a dry eye in the house. The press is supposed to have picked up this story of little station HAM, and amateurs have been known as hams ever since. Unfortunately for this story, none of it checks out. A past president of the ARRL did extensive research in an attempt to confirm this story.

There is nothing in the Congressional record about little station HAM. There is nothing in contemporary press records. And there is no record of a Hyman, Almay, or Murray at Harvard at the time this supposedly happened. This story first surfaced in an amateur publication in 1948, and doesn't seem likely to die. But it appears to have no factual basis.

Another story you may hear is that ham is the result of a Cockney pronunciation of (h)amateur. But that is unlikely for two reasons. First, the term was in use in America before there was substantial amateur activity in Britain. And second, voice transmission wasn't used by amateurs of the era, so how did a pronunciation get propagated by Morse?

Another story you may hear is that it comes from a landline telegrapher's insult. Many operators of the day came from a landline background, and on the landlines a common insult was that someone was "ham fisted" in his sending. It is possible that commercial operators used this slang to refer to amateurs and it caught on.

Certainly, the term LID came from landline telegrapher slang. (LID was a reference to use of a tobacco can lid on the sounder to aid a poor operator in copying Morse.) This one may be true. It wouldn't be the first time that a group adopted a term originally meant as an insult to serve as a slang term for themselves.

But the one I like best goes like this. This era was filled with pulp magazines catering to the experimenter. (Everyone at the end of the Victorian age apparently viewed himself as a closet inventor or tinkerer.) One of these magazines was called Home Amateur Mechanic, and it featured many simple radio sets a person could build. It is likely that when asked what kind of radio an operator was using, he might send back RIG HR ES HAM, meaning that it was one of the circuits shown in Home Amateur Mechanic magazine.

Since telegraphers tend to abbreviate everything, due to the low throughput of Morse, this is plausible, and Home Amateur Mechanic magazine certainly did exist in the correct era. So it was those HAM radios which started the use of ham in amateur radio. Gary Coffman KE4ZV

Another Version Of Ham is from the telegraph days where a poor operator was said to be "Ham-Fisted". Then there is this one. It is a corruption of "AM", which was a truncation of the word "amateur".

And Still another version -- possible connection with the acting profession. The term "Hamming it up" is often used to describe amateur acting performances.

And Still another version. Electric Radio" magazine has been reprinting the columns that W. J. Halligan, the founder of Hallicrafters, wrote for the Boston Telegram in 1923 - 1924. In an item dated 4/16/23, Mr. Halligan wrote: We have been asked for a definition of the "ham". A ham is a code enthusiast. The word is probably a corrupted contraction of the word amateur and is used by all non-professional radio telegraphers in describing themselves. -- Electric Radio #181, June 2004, p 38

ARRL VERSION OF ORIGIN OF HAM

BOTTOM LINE
ORIGIN OF THE TERM HAM HAS BEEN LOST IN THE MISTS OF TIME

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ORIGIN OF LID

ORIGIN OF LID My granddad was a railroad telegrapher. He said that the term lid came from operators who would put the lid of a Prince Albert tobacco tin on the sounder so they could copy the code easier. It was a practice that was frowned on by operators who did not have to do this and it became the slang used for bad operators. They would also say that such an operator had a "tin ear". 73 Mark WA0DC

The best explaination I have heard was that if "lid" was not sent properly in landline (American Morse) code, it sounded like "dd": daaah, dit dit, dah dit dit. (daaah = long dash) It was a basic test of a proficient operator. 73 JD, ac6pv
  ----

I have also heard that LID came from the early days of land morse.. an operator who could not send well put a LID eg: slowed down the traffic J. Gold WB2AFS

From The Internet ---- Actually no, it isn't the lid, but it is the can itself. The tobacco can was shaped similar to a pocket flask but had a flip top metal lid on it. If you removed the lid and stuck the can in between the sounder and the reflecting box then it amplified the sound and gave it a little rounder tone (removed some of the click). Some of the local old timers tell me they would fill the tobacco can with sand. Varying the depth of the sand changed the tone.

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WHY DO HAMS ABBREVIATE EVERYTHING

Telegraphers and Morse Operators abbreviate extensively due to the low throughput of Morse code, this has carried over to the voice circuits as well. 73 OM's es YL's de AC6V

★★★★★★★★★★★★★★

WHEN WAS AVC (Automatic Volume Control) INVENTED

Ted Coombes reports via the Internet -- I have established that Wheeler of the Hazeltine Laboratories invented AVC, and that the first radio to feature an AVC circuit was the Philco Model 95, introduced in October 1929. Alan Douglas, in the Philco section of Vol. 2 of "Radio Manufacturers of the 1920s" cites three authoritative articles on this subject -- a Popular Radio magazine article in late 1929 or 1930 (sorry, don't have the cite at hand), and article in the "Proceedings of the I.R.E.", and an article on the Philco 95 in the December 1929 issue of Radio Broadcasting magazine. Didn't have the Popular Radio or IRE source, but I did have the issue of Radio Broadcasting. Wouldn't you know it -- the pages with the Philco 95 article had been removed from my copy sometime in the past 74 years.

Author Note: Philco is short for the [Philadelphia Storage Battery Company](#)

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▶ When Did Single SideBand Appear in Radio ?

Here's a timeline:

1910 - G.A. Cambell (of AT&T) develops LC filters suitable for SSB in the LF range.

1914 - G.R Eglund (of Western Electric) sketches geometric relationship of carrier and sidebands.

1915 - J.R Carson (of Western Electric) describes mathematical foundation of modulation and shows the theoretical advantages of SSB suppressed carrier transmission.

1915 - Carson files for patent on SSB.

1917 - Experimental 3 channel SSB telephone carrier system installed between Maumee Ohio and South Bend, Indiana.

1918 - "Type A" SSB telephone carrier system installed between Pittsburgh PA and Baltimore MD. Four channels using LSB between 5 and 25 kHz. Type A was thefirst nonexperimental commercial use of SSB, and eventually seven Type A systems were installed, remaining in service until the 1940s

1923 - Experimental one-way LSB 60 kHz radio system demonstrated between Rocky Point, L.I.,(New York), and London. Many of the components, including tubes, for this system were developed by Western Electric.

1927 - Regular transatlantic telephone service using 60 kHz LSB put in service. Transmitting stations at Rocky Point and Rugby, England. Receiving stations at Houlton, Maine and Cupar, Scotland. A three-minute call cost $75.

1932 - Carsons's SSB patent granted (17 years after filing).

1933 - Robert Moore, W6DEI, puts an amateur station on 75 meter LSB. This station was later described in detail in R/9 magazine. It used LC filtering at 10 kHz to generate the SSB signal, followed by conversion to 200 kHz and 3950 kHz.

1934 - Several amateur SSB stations are in the air using rigs similar toW6DEI's

1939 - 68 kHz channel added to Rocky Point system

1946 - R.B. Dome describes "Wide Band Phase Shift Networks" in Electronics magazine.

1947 - O. G. "Mike" Villard, W6QYT, puts Stanford University amateur station W6YX on 75 meter LSB with a phasing type transmitter using an audiophase shift network developed from the Dome article.
The term "SSSC" (Single Sideband Suppressed Carrier) was frequently used in the early days.
 This brings us to the point where SSB began to become common in amateur communications. Numerous homebrew transmitters and receive adapters were described in the amateur literature, followed by manufactured equipment.
Early SSB efforts all used separate receivers and transmitters - thefirst SSB transceivers and matched-pair receiver/transmitter sets for the amateur market did not appear until the late 1950s (Cosmophone 35, Collins KWM-1 & KWM-2, Collins S-Line, etc.).

SSB operation concentrated on 75 and 20 meters in the post-WW2 years because:
- they were the most crowded 'phone allocations
- 40 had no 'phone band, and 15 wasn't a ham band, until the early 1950s.
The main reasons SSB was not more widely adopted by hams in the '30s were cost and complexity.

In those years (late '40s-early '50s), QST had a regular column called "On The Air With Single Sideband". There were "SSB Handbooks" for hams put out by several publishers. And there were gripes that QST was becoming "too technical" and that ARRL was "forcing SSB down hams' throats".

The more things change...   73 de Jim, N2EY

ORIGIN OF ES = AND IN CW

es as a CW abbreviation for and apparently was derived from American Morse which has a symbol for the ampersand (&) which sounds almost exactly like dit dididit.

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Origin Of HI HI

"hi hi" is the Morse equivalent of a laugh as in Morse it sounds like someone chuckling ("hehhehhehheh hehheh"). That is ditditditdit   dit dit --- or dot dot dot dot   dot dot. You really have to listen to it sent in Morse to appreciate its laugh like sound. It is most commonly used in CW (Morse Code), but has carried over to voice as well. Many CW expressions have carried over to voice -- such as 73 (Best Regards) and 88 (love and Kisses), etc. The origin probably dates back before radio to the telegraph days. And since Hams used Morse long before voice became practical-- the sound of the Morse characters HI HI was used to resemble a laugh sound. In some sense it is equivalent of a smiley. It's onomatopoeic -- that is the naming of a thing or action by a vocal imitation of the sound associated with it (as buzz, hiss) The definitive answer might be found in the "Dodge's The Telegraph Instructor Manual" circa 1850 to 1900. However, I have never been able to find a copy of this document. Wish I could as it would help to see the transitions from telegraph to radio usage.So that is my best guess -- based on what old time telegraphers have told me.

Ed Note: Another use of HI HI is sending a greeting to a fellow Ham when vehicles pass -- four short horn beeps followed by two short horn beeps. Since many Hams have Ham License plates -- a fellow Ham is easily spotted as well as the seeing the mobile antennas.

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ORIGIN OF JURY-RIG

jury-rig is based on one word "jury" which is a nautical sense meaning 'makeshift; temporary' and one word "rig" referring to a ship's sails and masts. The first known example of this "jury" is the compound jury-mast, 'a temporary mast put up to replace one that has been broken or lost', attested since the early seventeenth century. A jury-rig, then, is 'a temporary or makeshift rigging', and the verb is used figuratively in the sense 'to assemble or arrange hastily in a makeshift manner'. The origin of this word "jury" is not certain, but some scholars identify it with iuwere, a late Middle English word meaning 'help; aid', borrowed from the Old French ajurie

ORIGIN OF THE WORD RADIO

From "<u>UNITED STATES EARLY RADIO HISTORY</u>" BY THOMAS H. WHITE

Radio, currently a synonym for "electromagnetic radiation", actually first came into use before Heinrich Hertz's proof of the existence of radio waves. Originally "radio" was a general prefix meaning "radiant" or "radiation" -- hence the term "radio-activity" for the *alpha*, *beta*, and *gamma* rays emitted by decaying atoms. In Europe, some of the persons investigating Hertz's discovery began using the "radio-" prefix -- for example, in 1890 Edouard Branly in France called his receiver a "radio-conductor", the October 24, 1902 issue of *The Electrician (London)* included an article titled "The Radio-telegraphic Expedition of the H.I.M.S. 'Carlo Alberto'", and a report in the November 19, 1904 *Electrical Review* about Belgium marine applications noted that "radio-telegraphy has entered into the domain of current practice".

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WHAT HAPPENED TO THE WC, WR, WK, WT PREFIXES

AUGUST 5, 2004. The FCC has ceased issuing 2x3-format Amateur Radio vanity call signs that begin with the prefixes WC, WR, WK and WT (eg, WR1AAA, WC4ZZZ). The Commission has acknowledged that it erroneously granted more than 150 WR and WC-prefix 2x3 vanity call signs from 1997 through September 2003, when it began rejecting such call sign requests.

In the late 1970s, the FCC announced a new Amateur Service call sign assignment system. It provided four standard call sign groups, designated Group A, B, C and D, delineated by license class and issued sequentially with no backfilling. The FCC's Bill Cross, W3TN, recently told the nation's volunteer examiner coordinators (VECs) that the FCC also had a "Group X." These included WC (RACES), WR (repeater), WK and WT-prefix 2x3-format call signs reportedly reserved for special-use licenses.

The FCC stopped issuing repeater call signs in 1983 and ceased renewing RACES licenses in 2000. After the current vanity program began in 1996, several ham clubs sought new and formerly held repeater and RACES-type call signs. When the Universal Licensing System came along in August 1999, however, the FCC encountered some licensing system programming shortcomings, including the anomalous assignments of WC and WR-prefix 2x3 call signs as acceptable formats.

When the FCC implemented programming corrections that halted the issuance of Group X call signs in September 2003, it did not advise the amateur community. As a result, several amateurs who filed for 2x3 WC or WR-prefix call signs had their applications dismissed without any explanation beyond

saying that the applicant's call sign choice was unavailable. That remains the case. The FCC has not indicated whether it plans to address the WC and WR-prefix 2x3 call signs it's already issued.

In a related matter, the FCC's new Amateur Radio vanity call sign regulatory fee of $20.80 for the 10-year license term goes into effect Friday, August 6. All applications received at the FCC on or after that date must be accompanied by the new, higher fee. NNNN /EX

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Origin Of RG AS IN RG-58 COAX CABLE

RG means "radio guide" and was the original military specification for coax cable, starting in the 1930s. So what do all the numbers mean ? RG-6, RG-8, RG-58, RG-59, RG-62, RG-122, RG-213, RG-405 and on and on?

The number is just a page in a book. RG-1 was the first page (and obviously wasn?t a very successful cable design). RG-6, the sixth page, was wildly successful. Most CATV/broadband cable these days is RG-6.

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The Gonset Company
Radio World ("RW") is a trade publication for broadcast engineers and managers. When RW published an article on CONELRAD with a picture entitled, "This Gonset two-meter ham transceiver shows the CONELRAD logo," Bob Gonsett set the record straight, and added a bit of interesting family history:

The "CD" letters on the bright yellow Gonset Communicator II pictured in Radio World's Reader's Forum (May 13, 2005, page 46) stand for Civil Defense, not CONELRAD.   The yellow cabinets were produced exclusively for the U.S. Civil Defense program by the Gonset Company in Burbank, CA. Thanks for posting the picture nevertheless. Thousands of Communicators were produced and were used in a variety of settings including amateur, military and aviation.   Just a few years ago, the FAA Western Region Office advised me that they had retired their last Communicator as a control tower radio, not bad for tube-type transceivers produced circa 1955.

My father founded the Gonset Company. He and his father had favored a diamond shaped logo for the company, and "Gonset" fit better inside the diamond than our family name "Gonsett." And so it was, Gonset in business and Gonsett in our personal lives, and that complimented many years of happy memories from producing state-of-the-art equipment for its day. Gonset manufactured many products, by the way. Sears TV receiving antennas of the

50s were Gonsets, and so was open-wire transmission line used to connect some of those antennas (like the "Radar Ray" and "Rocket") to TV sets located in deeply shadowed canyons - all fascinating and magic technology before the advent of Cable TV and satellite.

 Bob Gonsett, W6VR Communications General Corporation

Why Hams End A QSO With Dit Dit

In ye olden days, every time a train left the station, it would sound two short blasts from its whistle, warning everyone it was moving out. The old telegraph operators having been exposed to this practice, picked it up and would send two dits at the end of each telegraph message. This meant "GOODBYE". So ham radio CW operators adopted the practice. It is still used worldwide today.

ERIC, K1NUN writes "When I was first licensed in the early 1960s, we ended our CW conversations with
di dididi di (Shave and a haircut) to which the other station would reply di di (two bits). Then station 2 sent
di dididi di and the first would reply di di. Sometimes, and particularly among us young teenagers, this reparte might continue for several minutes. Over time, this back and forth terminal handshake shortened just to di di. Also, about that time, sometimes instead of calling CQ, one would just go di dididi di over and over on a frequency (remember, we were crystal controlled in the novice bands) while tuning the receiver, listening for anyone who sent a synchronized di di. After enough back and forth to ensure proper syncronicity, one of the stations would send QRZ? (with the question mark so as to really ask who is calling me). Thus, dit dit also began a QSO in some cases. Fortunately , this custom died within a very few years as the rules changed and more of us could use transceivers that put us right on frequency and we did not have to tune around and search for responders And that's my story and I lived it.

WHY DID THE ALLIES FAVOR TRF DESIGNED SETS DURING WWII

The military used some TRF designed radios because they didn't radiate RF (like Superhets do) and thus couldn't be found by the Axis. The RAK-6 equipment like the CRV-46155 etc. were TRFs durring WWII

Why 50 ohm coax ?

Standard coaxial line impedance for r.f. power transmission in the U.S. is almost exclusively 50 ohms. Why this value was chosen is given in a paper presented by _Bird Electronic Corp._ Standard coaxial line impedance for r.f. power transmission in the U.S. is almost exclusively 50 ohms. Why this value was chosen is given in a paper presented by Bird Electronic Corp.

Different impedance values are optimum for different parameters. Maximum power-carrying capability occurs at a diameter ratio of 1.65 corresponding to 30-ohms impedance. Optimum diameter ratio for voltage breakdown is 2.7 corresponding to 60-ohms impedance (incidentally, the standard impedance in many European countries).

Power carrying capacity on breakdown ignores current density which is high at low impedances such as 30 ohms. Attenuation due to conductor losses alone is almost 50% higher at that impedance than at the minimum attenuation impedance of 77 ohms (diameter ratio 3.6). This ratio, however, is limited to only one half maximum power of a 30-ohm line.

In the early days, microwave power was hard to come by and lines could not be taxed to capacity. Therefore low attenuation was the overriding factor leading to the selection of 77 (or 75) ohms as a standard. This resulted in hardware of certain fixed dimensions. When low-loss dielectric materials made the flexible line practical, the line dimensions remained unchanged to permit mating with existing equipment.

The dielectric constant of polyethylene is 2.3. Impedance of a 77-ohm air line is reduced to 51 ohms when filled with polyethylene. Fifty-one ohms is still in use today though the standard for precision is 50 ohms.

The attenuation is minimum at 77 ohms; the breakdown voltage is maximum at 60 ohms and the power-carrying capacity is maximum at 30 ohms.

Another thing which might have lead to 50 ohm coax is that if you take a reasonable sized center conductor and put a insulator around that and then put a shield around that and choose all the dimensions so that they are convenient and mechanically look good, then the impedance will come out at about 50 ohms. In order to raise the impedance, the center conductor's diameter needs to be tiny with respect to the overall cable's size. And in order to lower the impedance, the thickness of the insulation between the inner conductor and the shield must be made very thin. Since almost any coax that *looks* good for mechanical reasons just happens to come out at close to 50 ohms anyway, there was a natural tendency for standardization at exactly 50 ohms.