

Prepared by the
AMERICAN RADIO RELAY LEAGUE
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The following is suggested source material for use in preparing a talk on amateur radio for service club luncheons and similar gatherings, radio broadcasts, etc. In its extended form it requires about 30 minutes for delivery; if the indented paragraphs are omitted, the remainder will occupy about 15 minutes.

Wherever possible, it is suggested that personal anecdotes and local color be included for their illustrative and entertainment value.

It is a pleasure to talk to you for a few moments on the subject of amateur radio. To my mind, there is no more interesting topic to discuss.

Perhaps some of you have tuned an all-wave receiver through that portion of the dial marked "amateur," only to hear a mysterious jumble of dots and dashes, or possibly a voice conversation that didn't make sense to you, broken up as it was by such phrases as "Well, Old Man, how's my modulation?" or, "I hooked a VP7 on 20 last night." You have probably listened for a moment or two and then decided the amateur bands were a waste of time for you.

That is only natural. The average conversation of the radio amateur holds no more interest for the outsider than does the passing conversation one might overhear on a street car or in a hotel lobby. In fact, if the amateur tried to broadcast entertainment, he would be violating the provisions of the federal government license necessary for the operation of any amateur station.

Amateur radio is unique in history; nothing quite like it has ever existed before. It is the only hobby provided for by international treaty. Webster might define it as, "the pursuit of radio, not as a business or means of profit, but as a hobby to be indulged in during one's spare time for the love of the work and the pleasure it returns to the individual." Any citizen may obtain the proper licenses to own and operate an amateur radio station. Several grades of licenses exist, each requiring a test in sending and receiving of the International Morse Code and a written examination in radio theory and regulations. The simplest license -- the Novice Class -- requires only a 5 words per minute code test and very basic written exam, while the Extra Class license requires a test difficult enough that some commercial radio operators are known to have failed it. Each licensed operator -- and there are well over 165,000 of them in the United States -- has his own private radio transmitter and receiver which he uses to talk with fellow human beings in the next block, the next town, or around the world. It is a thrill to make friends all over the universe, to talk with other amateurs in Singapore, London, Honolulu, Buenos Aires -- with an airline pilot in Seattle, or a royal prince in Arabia -- to roam the world without leaving your armchair!

Amateur radio began away back in the very earliest days of the art, when radio was known as "wireless." At that time, there was not the present sharp line of distinction between commercials and non-commercials. Experimenters, engineers, hobbyists, scientists --

all were amateurs. That was what the great Marconi meant late one evening in 1933 when he was touring the Chicago World's Fair, and took special pains to visit the amateur station on the grounds. The amateur operator on duty became wide-eyed when he learned the identity of his famous visitor. Under the operator's guidance, Mr. Marconi viewed all of the exhibits with interest, and inspected the equipment closely. He stopped in front of one of the transmitters, and commented that it was a particularly fine piece of workmanship.

"But," said his escort, "it was built by only an amateur."

And the illustrious Marconi replied, "I myself am only an amateur."

It was Marconi who provided much of the early inspiration for amateur radio, back around the turn of the century. In those days, there existed a class of young fellows whose hobby centered around various electrical experiments. They built electric motors and wet cells to run them; they assembled static machines; and they constructed backyard telegraph lines. In 1901, Marconi first transmitted the letter "S" across the Atlantic ocean -- a miracle that threw both continents into wild commotion. The older heads murmured in awe, and consulted their Bibles. Our youthful electrical experimenters, on the other hand, saw immediately that here was something many times more fascinating than "electricity." Communication without wires! With one voice they asked, "How does he do it?" and, with one purpose of mind they proceeded to find out for themselves. Amateur radio blossomed independently in the minds of hundreds of American youths and men. Once begun, it grew and grew. Nothing has stopped it yet.

During the first years, progress was slow, and hindered by many difficulties. There were few books on the subject, and no magazines. Much of an amateur's transmitting and receiving equipment was necessarily home-made. Only a few concerns in the country carried radio equipment of any kind, and this sold for prices far beyond the average purse. But the radio amateur is, by nature, an ingenious fellow. Without a high order of resourcefulness and an ability to improvise, he never could have overcome the problem of inadequate workshop equipment and the equally common handicaps of insufficient apparatus and money.

It was largely a matter of tinkering in the attic or basement with weird contraptions of wire and bulky batteries, with no guide except faith in one's ability to make it work. When the more talented workers finally succeeded in getting their crude equipment to function, they were delighted to find that they could really talk to other experimenters at a distance -- perhaps as far as a mile away! It mattered little what was said; the main thing was that here was communication without wires, achieved through equipment they built themselves.

After the thrill of the first contact, the amateurs settled down to the business of developing themselves into excellent operators, and improving their equipment to extend their communication ranges. They adopted the "relay" method of distance communication -- an amateur wishing to get in touch with another located outside the range of his equipment would contact a station somewhere between the two points to act as a go-between. So, from a modest beginning as a form of experimentation, amateur radio grew to take on more and more a communications aspect.

One evening in March, 1914, the late Hiram Percy Maxim, of Hartford, Conn., famous scientist and inventor and an ardent radio amateur, was sitting at his station. He wanted to communicate with a fellow amateur in Springfield, Mass., from whom he desired to purchase a piece of equipment. As his transmitter was not capable of reaching Springfield, Mass., direct, he contacted a station midway between the two points, in Windsor Locks, and asked this station to relay the message. It was done, and a reply received promptly. Then Mr. Maxim sat back in his chair, smoking his pipe, reflecting a moment. While this principle of relaying was not new, something about this particular instance set him thinking.

Even the next morning when he arose, he was turning over in his mind the event of the previous evening. While behind the wheel of his car, on the way to his office, an idea dawned. Of course! This relaying of radio messages was a common bond between amateurs and could serve as a foundation for organization of the hundreds of amateurs throughout the country! His idea met with enthusiastic response at a meeting of the local radio club; with several others, he set about forming an organization which they called the "American Radio Relay League," and which was destined to become the national body of the amateur fraternity. Amateurs, eager to group together under a common banner, joined and supported the League, and soon networks were established covering the country.

Amateur radio is a notably fertile field for ideas such as this, and the adaptability of the amateur in putting new ideas to work is a constant source of wonder to the more staid workers of science. One reason for this is the amateur's progressiveness.

He keeps his station abreast of science. When one amateur discovers a method of improving his transmitter, he will spread the news over the air. Thousands of amateurs use their own stations as guinea pigs to test the new scheme, and if it is found to have merit, the radio amateur body adopts it, almost overnight. After the first World War, for example, amateurs took up with renewed vigor their attack on the mysteries of radio. The war had served to introduce many to the vacuum tube, that Aladdin's lamp of radio, and it was found that in place of the old-fashioned and bulky spark sets, these quiet tube transmitters and receivers greatly increased the range of communication. Yet the power needed was but a fraction of that required for the same distance with the spark outfits -- and, these tube sets did not sound like a boiler factory or "rock-crusher," as the spark transmitters had been termed. The change from spark to tube sets began.

Then amateur stations spanned the country and carried on actual communication from coast to coast without an intermediate relay. But, despite all attempts of inter-continental amateur communication, the ocean proved to be a wall of silence. More power was not the answer, since many amateurs were already using the legal limit of one kilowatt. The receivers used were the best of that day. Then, how about another wavelength? Well, the law prohibited the use of a longer wave, and some engineers said a shorter one than 200 meters -- to which amateurs had been assigned in 1912 -- was of no value. But then these same engineers had said that 200 meters was worthless -- and they had been wrong. Early tests on 130 meters proved encouraging, and in 1923 the American Radio Relay

League sponsored a series of organized tests on wavelengths down to 90 meters, and it was noted that as the wavelength was shortened, the results became increasingly better. It looked as though the amateurs had discovered something!

And indeed they had. In November, 1923, after months of careful preparation, two-way transatlantic communication was accomplished on a wavelength of 110 meters! The next few years brought forth many startling developments. Adventurous amateurs dropped down to the so-called ultra-short-wave of 40 meters, and communication with Australia and South Africa became a reality. They didn't believe that 20 meters would be of any value -- but it was tried, and responded with the unexpected property of long-distance daylight communication.

From that time to the present represents a period of unparalleled achievement. World-wide short-wave communication became almost an every-day event. Foreign country after foreign country came on the air with new amateurs, and the need for a world-wide organization was seen, with the consequent formation of the International Amateur Radio Union.

Foreign countries, however, with their government monopolies of communications systems, have not been as sympathetic with the amateur cause as has the United States. A few countries do not allow any type of such private operation, and with the exception of most of the Americas, who have followed our lead, not one other country allows its amateurs the privileges which we in America enjoy. For example, we are permitted to use a maximum of 1000 watts power to our transmitters, while most other countries limit their amateurs to 200 watts or less. In practically every country of the world other than ours, amateurs must pay a fee for their licenses. We are allowed use of more frequency bands than most other countries.

One reason for the wonderful advances America has made in radio is that we allow our young men to play with new ideas and inventions. We encourage them to experiment with radio by making them licensed amateur operators, giving them our blessing, and telling them to go ahead.

It was in the early '30s that, from the headquarters of the American Radio Relay League, came a new development -- termed "single-signal reception" -- such a marvelous refinement in radio technique that today it is used without exception in the communications systems of the government, airlines, commercial radio companies, broadcast stations, and others. More recently, from the same source, came another new development -- automatic noise silencing -- which eliminates man-made static noises such as electric motors, automobile ignition, and so on. The president of a large radio manufacturing concern has said, "Every great advancement that has been made in wireless and radio was discovered by amateurs. All that our great scientific laboratories have done and are doing is merely refining what the young fellows have discovered."

Because of their wide geographical distribution, innate curiosity and desire to reach out for more "DX" -- or distance, amateurs have made great contributions in the study of propagation -- the behavior of radio waves in the ionosphere. For example, during the International Geophysical Year more than 1200 amateurs registered in the ARRL Propagation Research Project, reporting all instances of longer-than-normal distances covered on their very-high-frequency operations to League headquarters, which in turn processed the data on punch cards for analysis by scientists at the U. S. Air Force Cambridge Research Center. Amateurs also furnish supplementary radio observations in tracking earth satellites; because of the uncertainty of the orbit during the first few hours after launching, early amateur intercepts have been found quite valuable to guide later work of the professional tracking stations, and even simple measurement techniques on a satellite's passing are found surprisingly accurate.

Amateurs, or "hams" as they call themselves, are well known for their "hamming" and "ragchewing" over the air. Their bond of brotherhood via the radio waves excels that of most fraternities and lodges. When a "ham" goes traveling, no matter where he may go, he knows he will find friends who will take him in, show him the sights, and give him a royal good time -- whether it be Pittsburgh, Rome, or Hong Kong. One amateur from New Zealand, who visited the United States, wrote ahead to several amateurs who acquaintance he had made in radio contacts, explaining that he did not expect to have much time to spend in America and wanted to make every minute count, and could they please meet him on arrival of his boat to say "hello"? Well, word of his coming spread like wildfire, and he was practically swamped with welcomers. He had intended to spend but a day or so in San Francisco, and then go on to New York -- but the "hams" willed otherwise. He was two full weeks in San Francisco, and another week making various side-trips to west coast points, visiting amateur stations, attending club meetings, "chewing the rag" in person with his ether friends, and seeing the sights. Finally, he got started on his trip east. But the San Francisco gang had made known his presence to all the amateur fraternity; they knew his train schedule and route; with stopover privileges on his railroad ticket, the trip from the coast to Chicago consumed probably the longest time in modern history for the distance! He hadn't intended to stop in Chicago at all, but the League's national convention was only a week away, and he was persuaded to stay over to attend that. Even a week after the convention he was still in Chicago, being shown a royal time by the amateur groups and enjoying it immensely. His trip east was no different. Clubs took him into custody, passed him around from city to city. Before he left our shores, his planned "short visit" had grown into a several-months' trip.

Similarly, an amateur from Switzerland arrived in New York for a three-week tour of the United States. But the warm welcome extended by amateurs in the "big city" kept him there for the full three weeks -- he never got west of Jersey City! For hospitality to his kind, no one approaches the radio amateur.

Along with the spirit of fraternalism, amateurs have developed a language of their own. To enable themselves to send the most intelligence with their keys in the shortest period of time, they have devised abbreviations for commonly-used words and phrases, in addition to the procedure signals prescribed by regulations or adapted from telegraph operation. For example, "73" means "best regards"; "88" stands for "love and kisses." One amateur bids another good-bye by use of the letters "CUL" for "see you later." A young lady is known as a "YL"; after marriage she becomes an "OW" (Old Woman) or "Ex-YL."

"CQ" is a general inquiry call used by an amateur wishing to contact another station. "QRRR" is the official emergency call of the amateur corresponding to "SOS" among ship operators. A "lid" or a "punk" is a poor operator; a "YS" (Young Squirt) is a newcomer to amateur radio. Earphones are "cans," an automatic transmitting key is a "bug," and you of the general public are known as "BCLs" or "Broadcast Listeners."

Now, this is all good fun, but there is a basic underlying motive which the general public seldom catch sight of -- that of public service. The history of amateur radio is studded with examples of public service. When the United States entered the first World War, a proclamation was issued by the Navy Department ordering the closing of all amateur stations. But before this proclamation could be circulated to the station owners, the Government asked the League if it could supply five-hundred operators within ten days. The amateur traffic networks flashed out the word. Within ten days, the Government had its five-hundred operators, and before the great war had ended, over four-thousand amateurs had entered the service of our country.

In World War II, 25,000 American amateurs were in uniform, designing military communications equipment, setting up the global network of radio navigational aids in the Army Airways Communications System, manning radar installations, teaching radio to Signal Corps officer candidates -- in short, participating in practically every communications operation of the military. Whether he wore stars on his shoulders and directed communications in the European Theatre, or whether he wore chevrons on his sleeve and operated an airways radio station in the Arctic, the military man who had an amateur background found his ham experience of untold value. That the services of amateurs were invaluable has been attested to by many Army and Navy officials, since to properly train such a large group of men would have taken many months, had they not already been well-prepared by their amateur work.

It was in 1924 that amateur radio opened the eyes of the United States Navy to the possibilities of short-wave communication. The Communications Manager of the League took a leave of absence to join the Pacific Fleet on its maneuvers throughout the Orient. When he reported for duty, his entire equipment was contained in two large grips; the naval operators, knowing the huge size and cost of the standard Navy transmitters, were highly amused. They called his set a "pin-box," and on the cruise the amateur was totally ignored and allowed to amuse himself as best he could. When the fleet reached Hawaii, he was instructed to send a message of greeting to League Headquarters in Hartford. The Commander expected that, in usual amateur fashion, the message would be relayed in a number of jumps before reaching Hartford (if it ever did) and was surprised when an answer was received from Hartford within fifteen minutes.

"How could your amateurs relay so quickly?" he wanted to know.

"That message wasn't relayed," said the amateur. "I was in direct contact with Hartford."

When you realize that the great 8000-watt transmitters of the Navy could only broadcast about 1600 miles under the most favorable conditions, you can appreciate what a surprise it was for the officers to learn that one "pin-box" had been in contact with another 4000 miles away by means of short-wave radio.

But it is in still more direct public service that the amateur's record is most

brilliant. Since 1919, amateur radio has been the principal, and in many cases, the only means of outside communication in several hundred storm and flood emergencies in this country. Most noteworthy was the flood which in 1936 covered fourteen eastern states, the Ohio valley flood of 1937, the California flood of 1938, the hurricane, tidal wave and flood which hit the New England states in October, 1938, and the more recent calamities of floods in the northeast, southwest and Pacific coast areas, blizzard in the Kentucky-Tennessee-West Virginia section, and tornadoes in Indiana, South Dakota, Georgia, Mississippi, Alabama, and Texas. Amateurs have earned world-wide commendation for their resourcefulness in effecting communication where all other means have failed.

The story of emergency communication work is not all in the past tense. Amateurs, always striving to improve themselves and their equipment, and ever looking toward the future, have enrolled by the thousands in the Amateur Radio Emergency Corps, an American Radio Relay League-sponsored organization of men and women who have pledged the support of their skills and their stations in time of communications emergency. Recognizing the value of the amateur to his country, the Federal Civil Defense Administration has instituted additionally the Radio Amateur Civil Emergency Service (RACES) to provide amateurs registered with the service the opportunity to serve from their stations in time of national disaster, whether it be flood, storm, tornado -- or atomic attack. Amateurs are urged to construct equipment which can work from storage batteries or gas-line generators when normal power fails. As a proving ground for these emergency stations, the League sponsors an annual Field Day, in which amateurs pick the most isolated spots they can find, set up their emergency gear, and establish communications with other amateur stations similarly "in the field." Thus, the radio amateur will be ready to combat the disaster of tomorrow, even more efficiently than before.

Amateurs endeavor at all times to operate their equipment at maximum efficiency, and continually try to keep their transmitted signals as clean and free from spurious radiations as possible. The League continually points out to its members the desirability of such a policy for a number of reasons, not the least of which is prevention of interference to broadcast and television receivers. But, with the trend in recent years toward cheap midget broadcast-band receivers and poorly-designed television receivers, in which inefficient and unshielded circuits are used and quality of parts comes second to production cost, even a properly-operated radio transmitter may cause interference to broadcast and television programs. Amateurs want it known that they are as anxious as the receiver owners to help clear up this interference, even though the transmitter is not at fault. If you happen to be one of those few who have experienced trouble with what you believe to be amateur transmissions, let it be understood that the amateur will be glad to help you cure the condition. But, a word of caution: do not jump to the conclusion that every little noise or marred picture in your receiver is due to amateurs. Many people have made vigorous complaints about amateur transmissions causing interference on their sets, only to find, to their embarrassment, that it is the thermostat on an oil burner, or someone using an electric shaver in the next apartment, or a neighbor's FM set, or perhaps a defective electrical apparatus of some kind in their own home.

An amateur never knows who might be at the key of the next station he contacts. For example, it seems that back in early 1928, an amateur station in San Francisco contacted one in Pomona, California. Now, this in itself was nothing out of the ordinary, except that the amateur in San Francisco, evidently an ambitious "party man," insisted upon talking a great deal about the virtues of one Alfred Smith vs. Herbert Hoover for the coming presidential election in November of that year. The station in Pomona seemed to enjoy the speech but was not particularly impressed -- as a matter of fact, he had very little to say, and soon "signed off." The San Francisco operator wondered a moment --

and then picked up his directory of amateur stations to check the name and address of the "ham" he had just contacted. He found the owner and operator of the Pomona station to be none other than Herbert Hoover, Jr.! A well-known geophysicist and former Under Secretary of State, he still gets on the air occasionally.

Among other celebrities who are radio amateurs, there are princes, entertainers and leaders of industry. C.B.S. star Arthur Godfrey; radio comedian Freeman F. Gosden, the "Amos" of "Amos 'n Andy"; Martin Block, well-known announcer; and, bandleaders Tex Beneke and Peewee Hunt are all amateurs. Among military men, Gen. Curtis LeMay, Deputy Chief-of-Staff, U.S.A.F., Lt. Gen. F. H. Griswold, Vice-Commander, S.A.C., Vice Admiral William V. Davis, Jr., Deputy Chief of Naval Operations for Air, Rear Admiral Henry Braton, Director of Naval Communications, Major General Julian S. Hatcher, retired Chief of Ordnance, and Brig. General Joe Stilwell, Jr., son of "Vinegar Joe" Stilwell, all enjoy the hobby. Hams in the business world include Arthur Collins, president of Collins Radio Co.; Dr. Allen B. Dumont, noted TV pioneer; William Halligan, head of Hallcrafters; Ernest Henderson, president of the Sheraton Hotel chain; Admiral Corporation president Rose Saragusa and Harry F. Vickers, head of the Sperry-Rand Company. As for royalty, six Arabian princes and an Indian maharajah operate ham stations.

Archduke Anton of Austria was so ardent an amateur that, while world history was being made by the German invasion of Austria, he sat in his castle busily competing in an international amateur competition, apparently unaware of the world-shaking events going on outside, until the last minute of the contest had ended.

Among the thousands of everyday contacts made by radio amateurs, there are many of more than ordinary interest. For example, a college in Hawaii has held track meets with a large California university -- each team performs at its home location, 2000 miles apart; amateur stations are set up at each track to exchange results of various races and field events, and the winner is thus determined. Imagine running the 100-yard dash in competition with a young Hawaiian athlete whom you never see!

Such an event merely illustrates another of the unusual phases of amateur radio. While in this brief discussion it has not been possible to tell about more than a few of the highlights, I hope that I have been able to give you a better picture of the radio amateur and his activities than you had before. To me, no other hobby compares with amateur radio. To those of you who may be further interested, I invite you to visit my own amateur station. I will be glad to show you more about the workings of amateur radio and answer any questions you may have.

Thank you.