

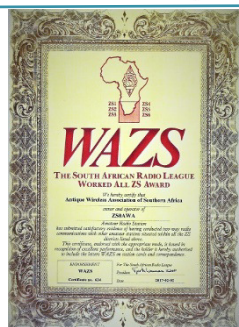


Newsletter

The Antique Wireless Association of Southern Africa

160

November 2019



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AWA Committee:

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- * VicePresident—Renato ZS6REN
- * Technical Advisor—Rad ZS6RAD
- * Secretary/PRO—Andy ZS6ADY
- * KZN—Don ZS5DR
- * Historian—Oliver ZS6OG
- * Member—Jacques ZS6JPS

Reflections:

In our usual Saturday net point of discussion recently, we were discussing some of the many settings that one no longer sees on modern radios.

Settings like AFC, IFC, APF and all those kinds of things. My FT102 has an APF setting on it and I had no idea what its used for until we had this discussion and I had to turn to the instruction manual for some kind of instruction. The old adage “When all else fails use the instruction manual..” became very prevalent.

During the discussion there were many of these that surfaced that had not been heard for many a year, especially when guys like Louie ZS5LP get going.

But this also made me think of why I hate abbreviations so much. Especially today where it seems that every man and his dog has got to be called by an abbre-

viation of some kind.

It becomes extremely confusing when one hears about the ICC and starts thinking Cricket, when all the time they are talking about the International Criminal Court. It reminds me so much of the song from “My Fair Lady”, “Why cant the English Learn to Speak”.

Where am I going with this, I think we have done the same thing in Amateur Radio with many of the abbreviations that are used in many different forms for many different things.

The difference here of course is that, unlike in the movie, we have, most of us, learned to speak a common language.

When one goes through the RAE, many of these forms are taught and then as one learns further about amateur radio, so we learn to know what all the abbrevi-

ations are about.

So when we talk about AGC and QRP and IF, we seem to know what they are and what they stand for.

Of course, with the plug and play radios of today, one does not know about things like Plate, Loading and preselect, as these are things that only appeared on radios that were valve driven. And then, they are still spelt out for you, so you don't even have to guess what they are.

Be that as it may, our hobby is still one that is unique, and until you have learned the basics of radio, you can never understand all the shortcuts and abbreviations that are associated with the hobby. This month there were a whole lot of new hams that were welcomed in to the fraternity. Here's to you all learning about the hobby.

Best 73

DE Andy ZS6ADY

WIKIPEDIA

Radio propagation :

Line-of-sight refers to radio waves which travel directly in a line from the transmitting antenna to the receiving antenna. It does not necessarily require a cleared sight path; at lower frequencies radio waves can pass through buildings, foliage and other obstructions. This is the most common propagation mode at VHF and above, and the only possible mode at microwave frequencies and above. On the surface of the Earth, line of sight propagation is limited by the visual horizon to about 40 miles (64 km). This is the method used by cell phones, cordless phones, walkie-talkies, wireless networks, point-to-point microwave radio relay links, FM and television broadcasting and radar. Satellite communication uses longer line-of-sight paths; for example home satellite dishes receive signals from communication satellites 22,000 miles (35,000 km) above the Earth, and ground stations can communicate with spacecraft billions of miles from Earth.

Ground plane reflection effects are an important factor in VHF line of sight propagation. The interference between the direct beam line-of-sight and the ground reflected beam often leads to an effective inverse-fourth-power (1/distance⁴) law for ground-plane limited radiation.

The Telegraph Office



by Neal McEwen, K5RW
k5rw@telegraph-office.com

J. H. Bunnell & Co. Past, Present, Future

Presented at the 1994 Antique Wireless Association Conference
 by Dr. Joseph Jacobs

Jesse Bunnell, founder of the company to manufacture telegraph apparatus and other electrical supplies, was a kind of folk hero, a man about whom songs and stories should be written. Being born one year before Morse's invention, provided Jesse with a fertile field to become a champion telegrapher, wartime operator and establish the company, bearing his name by the age of 35. Becoming a messenger boy at 11, subjected to cannon fire, long hours, hunger, and privations, he nevertheless found time to stand up for better pay, witnessed a wired observation balloon ascension, play practical jokes and earn the respect of the generals and colleagues with whom he worked. Jesse deserves a trip down memory lane. Let's begin at the beginning.

Jesse was born in Massillion Ohio in 1843. (Remember 1844?) By age 11 he was delivering telegraph messages and at 13 he was a full fledged operator serving at offices in Ohio, Pennsylvania and West Virginia from 1859-61. He set a record at age 17 of 32 words per minute as an average, when for a steady two hours he forwarded President Buchanan's last message to Congress (including the fancy words politicians of that day loved to use). After the attack on Fort Sumter, April 1861, Jesse, not yet 18, joined the Union Military Telegraph Service (UMTS), which had been recently organized by Andrew Carnegie, who was himself an operator at age 15. At the war's start, operators were the Army's Cinderellas. They were (and remained) civilians. Their value was not appreciated and they were given very little support and \$60 per month, less than that of a quartermaster clerk. They were often under fire as their main duty was to relay troop movement observations and orders, in part replacing military couriers. Jesse, in December of 1862, was one of 50 operators who signed a petition to the USMT headquarters for an increase in pay and support. As their importance was recognized, they got merit raises, more regular transport and supplies. Later, however, a group of operators in one area threatened to resign unless pay was raised to \$100 per month. The first telegraph strike aborted when they were threatened with charges if they resigned en masse instead of individually as was their right as a civilian Army employee.

Moving with the Army the operator would cut his wire keeping a few yards with his instrument to reattach to the line at the next stop. During battle lulls, operators were kept busy receiving and relaying casualty information for the Army and concerned relatives. Working long hours, operators would often fall asleep at their instrument, yet always awaken when the sounder clicked their call sign.

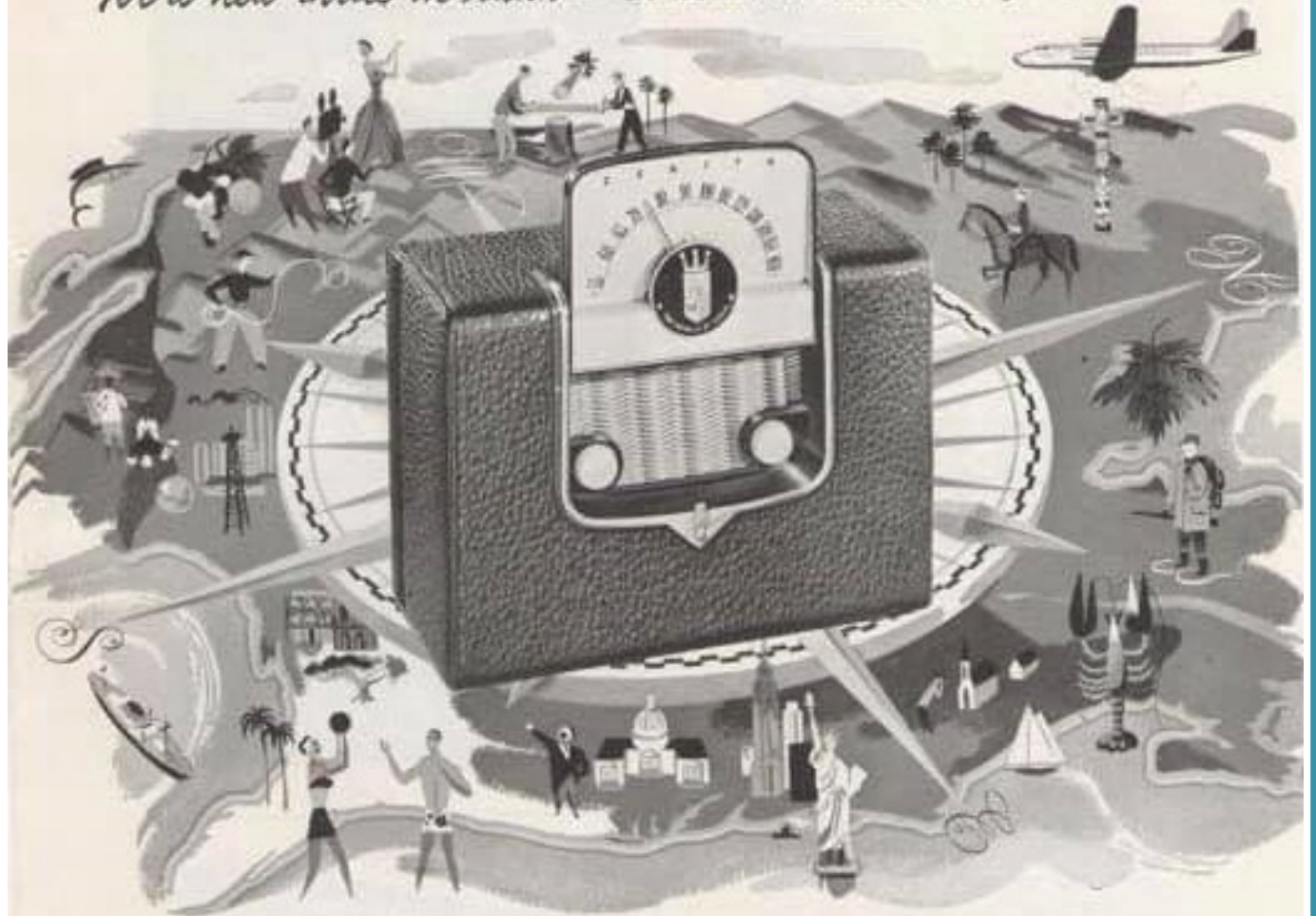
Being young operators, they were not averse to using their skill and wires for practical jokes. Early in the war, Jesse, "a great wit and very young," was fired when he pulled a hoax on Wheeling, West Virginia, newspapers about a great Union naval loss off the "Rip Raps." Of course he had to be fired, but then, because of his great skill, Jesse was rehired elsewhere at higher wages.

Jesse observed one of the few ascensions of a wired balloon operated by a balloonist and a telegraph operator to relay troop movements and



(Continued on page 5)

For a new thrill in radio—at home or wherever you roam...



New Zenith "Universal" PORTABLE RADIO

with exclusive "Tip-Top" Dial and Wavemagnet



HERE—from the world's leader in portable radios—is the most powerful standard broadcast portable in Zenith's history!

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Plays on its own long-life battery, and AC or DC. Handsome, sturdy, luggage-style case in buffalo-grained black or brown. See this tremendous new value now, at your Zenith dealer's! Only **\$49.95!**

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New edition of the world-famous standard and short-wave portable with overall performance superior to that of any other portable. More powerful, more sensitive than ever—yet lighter, easier to carry, and lower in price. Brings in Standard Broadcast, plus International Short Wave on 5 separate bands. "Tropic-Treated" against humidity. Plays on thirty long-life battery, and AC or DC.

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AWA Valve QSO Party Results

The second leg of the AWA Valve QSO Party was held over the weekend of the 5th and 6th of October, with AM on the Saturday and SSB on the Sunday.

It was pleasing to hear so many AM stations on the bands on Saturday, but no logs were submitted for the day. The AWA station logged 22 stations on AM.

Unfortunately there were also many, who it sounded like, were using AM for the first time as they found it was a mode on their radios. Quite a few of these were overmodulating to such an extent that one could not make out what they were saying and I made the mistake of telling a few of them to change to AM from SSB. They were also splashing so across the band that it made it difficult for some of the other stations to operate within the allocated frequencies.

It seems the art of transmitting on AM has either been forgotten or in some cases never learned.

The SSB leg was held on Sunday afternoon and there were even more stations taking part in this leg. A total of 58 call signs were gleaned from the 6 logs that were submitted.

First place in the SSB went to John Watson ZS1WJ, who trebled his score by using an all valve radio.

Second place went to Theunis ZS2EC and third place to Roy ZS3RW.

Fourth—Johan ZS4DZ

Fifth—Koos ZS6JFK

Sixth—Ean ZS1PR

Congratulations to those scoring the highest points and thanks to all those who took part in the 2 days.

Notice of AWA AGM

Notice is hereby given of the Antique Wireless Association of Southern Africa Annual General Meeting to be held on Saturday 09 November 2019 commencing at 09:00 at the premises of the SAIEE in Observatory Johannesburg.

All members are invited to attend and join in.

Voting for the next Vice President, President in waiting, will be called for as well as posts for members of the committee as per our Constitution of 2014 (revised).

The Jeffrey Wright trophy for the person who has contributed the most to CW for the year is to be awarded. Nominations should be sent to John ZS1WJ

There will be tables available for a swap and sell and there will be a braai/eyeball QSO afterwards.

Anyone needing to order braai packs please let me know and we will organize them. There will of course be extras available, but if you want to make sure you get one, please pre-order from Andy ZS6ADY.

Should you not be able to attend but would like to put forward any nominations or suggestions for the next year, please email your suggestions to any member of the present committee.

If you are not sure where the SAIEE is, please visit our website and check out the Museum news for directions.

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A VERY EFFICIENT INSTRUMENT FOR RECEIVING FROM YOUR LOCAL BROADCASTING STATION
REQUIRES NO BATTERIES OR OTHER SOURCES OF POWER



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dispositions. At first, Jesse, was assigned to the threatened Washington D.C. area in May of 1861 as telegraph service was needed to connect the surrounding encampments and forts with the War Department and the President. At the end of June, he was sent to Annapolis as part of a relay with the capitol, but during that time, operators were "moved from place to place as the occasion required." Jesse Bunnell's tenure on the relay might have allowed him to serve Lincoln, as his company maintains. Lincoln used the War Department's telegraph office as a refuge for relative peace and quiet. At a desk unofficially reserved for him, Lincoln wrote part of his Emancipation Proclamation and his second inaugural address ("--- with malice towards none ---") Lincoln sent his last telegram, two days before his assassination to Richmond opposing reconvening the Virginia Legislature.

From about June of 1862 to August of 1864, Bunnell served with the Army of the Potomac as General McClellan's personal telegrapher, with the sign MC, and with Sherman's Army of the Cumberland through the bloody battles in Tennessee and on to Atlanta. Exposure and starvation in the winter of 1864 weakened Jesse severely, forcing him to resign the 16th of August in 1864 and the UMS lost one of its "ablest and bravest operators." Jesse's return to non-army work from 1864 to 1872 led him to Philadelphia and a partnership with James Patrick, a successor to Chester, Patrick and Co. Later, from 1875 to 1878, he worked for L. G. Tillotson and Co.

In 1878, Jesse created J. H. Bunnell and Co. And in 1879 took Charles McLaughlin as a partner in charge of sales and administration while Jesse concentrated on manufacturing and innovations. Bunnell received a patent the 15th of February 1881 for his steel lever key. Stamped from one piece of steel, with minor machining, this was Bunnell's answer to the loosening of the steel trunion inserted in the brass lever. So successful, the steel lever continues to this day in keys. Early production bore the patent date on the lever. Later, this gave way to a logo containing the letters BUNNELL over a letter S, and with its general acceptance, later levers had no engraving. In 1888, Bunnell introduced his double speed (sideswiper) key to help telegraphers avoid a "glass arm" (today called carpal tunnel syndrome). The original sideswiper, Style G, did not have spring tension adjustment. Most photographs show the style W, with a spring tensioner.



Bunnell was heavily into other electricals noted an article on Bunnell Wave motor published in 1898 In "Electrical Engineer." Bunnell, like other companies, had their castings made for them. In 1899 Jesse caught a severe cold which worsened. He died of heart failure on the 9th of February, 1899 at age 56. He was buried in Brooklyn's garden Greenwood Cemetery. McLaughlin took over the company. In the 1920s J. J. Ghegan became president and introduced many electrical innovations. Ghegan was succeeded by J. G. Dougherty, followed by this wife, who sold the business in the early 1960s to Inso Electronic Products, C. J. Meislich president. In 1989, J. H. Bunnell and Co. Was acquired as a division of MNH Industrials, M. B. Jacobs, president.

The company, which started in Manhattan, moved to several locations in that borough. In the 30s it moved it's operations to a number of locations in Brooklyn, then to Long Island where it is now at Kings Park.

Starting with telegraph item production, Bunnell shortly branched into a huge variety of electrical items both as manufacturer, wholesaler and retailer. Theirs and other companies produced fire equipment for NYCFD and other fire departments, burglary, security, medical and the 1930's through 1950's commercial radio and fax transmitters. Bunnell produced for Postal Telegraph and Western Union, both to Bunnell's or the company specs. Bunnell produced telegraph items through 1988 for Mexico and other Latin American countries. Pre W.W.II, Bunnell was one of the largest telegraph key suppliers. Recently, an Amelia Earhart documentary maintained that her tragedy may have been avoided if she had better code skills and hadn't left without a key for CW backup. As one of the country's main telegraphic manufacturers, Bunnell equipment can be found displayed in the Smithsonian's Museum of American History as well as railroad

and other communications museums.

With the introduction of the semi-automatic key (bug), Bunnell produced and won the right to use the generic bug. Bunnell also sold Vibroplex keys and later in association with Martin, (inventor and founder of Vibroplex) produced these bugs.

Bunnell produced for the military from the Spanish American War through the present. Bunnell made keys for Great Britain's military. Together with other companies, Bunnell produced the flameproof key, but for three decades to 1988, Bunnell was the only company to supply the flameproof to meet the Table of Equipment need of ships and planes. During W.W.II, Bunnell employed 600 people in a number of plants to produce a variety of electrical items and later supplied the military during the Cold, Korean and Viet Nam wars.

In the 1890's, Bunnell introduced its fully functional miniature versions of their key, sound and KOB, selling them as is or as a tie pin or with a bale for use as a watch fob. The sounder was also included in an earpiece for privacy or for use in especially noisy areas. They were sold to ardent telegraphers and presented as special awards, such as to Jesse's Civil War boss, Andrew Carnegie. They were presented at a 1908 Telegraphic dinner, RCA's Sarnoff (of Titanic fame), other radio luminaries, and in 1954 to President Eisenhower. As a collectible today, they are extremely rare and desirable. In addition to it current sales to industry and the military, Bunnell will issue a special limited edition of their mini key, sounder and KOB as a forerunner to production of other sought after telegraph items. Orders have been coming in and serial numbers are being issued on a first come basis for this limited production. Order forms are available on request to the company, J. H. Bunnell, 80 Locus Drive, Kings Park, NY 11754 or FAX 516-361-217.



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Extremely sensitive and selective in its operation. It features 12 tubes, RF stage in all 4 bands, two iron core IF stages, Silver Liner, Crystal Filter, SFD, Electrical Band Spread exclusive HOWARD Imitate Radio, and all other desirable refinements. Best Carrier Level Meter on entirely new design for measuring input signal strength in microvolts can be selected on any HOWARD Progressive \$54.95 model in 151.00 (With Crystal—\$43.00)

660 FREQUENCY MONITOR
Enables you to read directly in frequency, any waveform signal in the entire band. Crystal detector circuit on an extremely sensitive frequency scale. Frequency can be read within one kilocycle in the entire band. Highly exhibited, but built in power supply and 100% complete price.

MODEL "436"
Providing more features than Model 435, but lower in cost than Model 437, the HOWARD 436 is the answer to outstanding performance in the medium price range. A seven tube receiver containing all features of Model 435, plus an efficient noise limiter, a new angle lock band spread micrometer dial and exclusive HOWARD Imitate tracking controls which provide fly wheel tuning on both main and band spread dials. A remarkable value.

MODEL "435"
HOWARD Model 435 is the basic unit of the HOWARD Progressive Series, features six tubes, separate electrical band spread condenser, resonant coil former, built in 60 Hz notch filter, and an electrodynamic speaker. BEC, iron core IF coils, copper plated chassis and silver plated shielding. The slide rule dial is silver plated and well illuminated. A band in-use indicator is on the left of the main dial with electrical band spread at the right.

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Broadcasting in the '20s and '30s Better and Better

The first radio broadcasters were amateurs, i.e., “hams,” and in the early days of commercial broadcasting, radio and recording were seen as competing with each other. Volume control was a big problem.

By Jim Cook, W00XX



On this label on a 10-inch 78 RPM phonograph record from the 1920s that belonged to the author's father, the term "electric", at the top, was meant to convey "state of the art," meaning that it was recorded with a microphone, audio amplifier, and electric stylus, allowing for better regulation of volume. On the left side are the words, "Radio Broadcast Not Licensed For"; early radio stations hired their own musicians to avoid such license restrictions. The recording is of "I Don't Love Nobody," by the Fiddling Doc Roberts Trio, on the Perfect label.

Although communications between radiotelegraph stations had existed for more than 20 years before broadcasting began, no one had any experience providing a radio broadcasting service that would appeal to the general public. The earliest broadcast stations, such as KDKA in Pittsburgh, Pennsylvania, began as amateur radio stations. They brought news reports and sometimes set up a phonograph next to a microphone to play music for their listeners. Later, they had studios for live performances. But there were questions about how to pay for this service and what program material could be used.

In the United Kingdom, broadcasting would be owned and controlled by the government. Listeners had to pay a tax on each radio they owned to cover the costs of this broadcasting service. Although this possibility was debated in the United States, there was a strong desire to keep American broadcasting under the control of private companies and to make radio listening free to the public. For this to be financially feasible, advertising was allowed to cover the costs of broadcasting.

The development of the phonograph also had an impact on the radio broadcasting. Prior to the 1920s, all phonograph recordings were made acoustically by having the musicians perform in front of a giant horn that collected the sound and carried it to a mechanical stylus that made the recording. The only way to control the loudness of the recording or the sound levels of each musician was to rearrange them on the stage in front of the horn. In retrospect, it is amazing that some of the early acoustic recordings sound as good as they do.

Fortunately, the development of vacuum tube amplifiers provided an opportunity to make better recordings. I have included an illustration of the label on a 10-inch 78 RPM phonograph record from the 1920s that belonged to my father. This recording is on the Perfect label, and the selection is "I Don't Love Nobody" by the Fiddling Doc Roberts Trio. At the top of the label is the word "Electric" which meant that this record was "state of the art," recorded with a microphone, audio amplifier, and electric stylus. On the side of the record label is the statement, "Radio Broadcast Not Licensed For." The sentence structure is odd, but the meaning is clear. Most early radio stations hired their own musicians to avoid these limitations. Later, there was an understanding that having records played on the radio would actually increase the sale of phonograph records, benefitting everyone, and eventually arrangements were made to reimburse musicians whose records were used on the air.

By the 1930s, electric recording and reproduction of phonograph records provided the possibility of recording radio programs in advance on transcription disks. These were large records, typically 16" in diameter, that operated at 33 RPM, long before long-playing records at this speed were offered to the public. By using these transcription disks, a 15-minute program could be recorded without interruption. Transcription disks were largely replaced by magnetic tape recordings in the 1940s.

As radio broadcasting became popular, many companies were eager to put a station on the air. A list of radio stations included in the Fall 1925 edition of the Radio Listener's Guide and Callbook shows an interesting mix of stations, most owned by schools, religious organizations, radio shops, or retail stores. The transmitter power of some of these early broadcasting stations was as low as five watts, and there were only a few stations operating with power levels above 500 watts. There were only three stations listed with power levels of 5,000 watts. The listener had many stations to choose among, but only a few had enough power to break through the static and provide enjoyable listening.

By the mid-1920s, the Federal Radio Commission reassigned broadcast frequencies to avoid interference, and eventually most stations used at least 500 watts of transmitter power. The development of better vacuum tubes allowed transmitter power to be increased. By the 1930s, 1,000 watt and 5,000 watt stations became common. By the mid-1930s, there were even a few 50,000 watt stations, including station WLW in Cincinnati, Ohio, which was owned by Powel Crosley, Jr. who also manufac-

tured Crosley radios. For a few years, WLW had an experimental license to operate a 500,000 watt transmitter, but the Federal Communications Commission later terminated this license and limited all AM broadcasting stations in the United States to a maximum of 50,000 watts, a power limit that is still in effect today.

Audio quality was also a problem in the early days. Carbon microphones were used, similar to the transmitter section of a telephone handset. They were not very sensitive and had poor frequency response. Fortunately, better microphone designs were developed and sound quality improved. Harold Black, an engineer with Bell Telephone Laboratories, invented negative feedback in 1927 to improve the performance of audio amplifiers. This invention was originally used for "repeaters" to amplify long-distance telephone calls but was later applied to audio amplifiers for other applications including radio broadcasting. The technology of modulating the transmitter signal with the audio program material also improved. Throughout the 1920s, a method called Heising modulation was used. It worked, but was inefficient, especially for high-powered transmitters, and could not fully modulate the radio frequency signal. A better method called Class B Plate Modulation was developed by Loy Barton, an engineering instructor at the University of Arkansas, in 1930. This was the first modulation method that provided full 100% modulation. This improvement made AM radio signals sound better to the listener. The University of Arkansas radio station, KUOA, was the first to use Barton's invention, but it was later adopted by all broadcasting stations. The use of leased telephone lines and phonograph recordings made remote broadcasting possible. Radio broadcasts could be made live directly from the sources of interesting events, or could be recorded for broadcasting later. An example of this capability was the memorable report of the crash of the Hindenburg air ship at Lakehurst, New Jersey, on May 6, 1937. Radio announcer Herbert Morrison described this shocking event as it was happening. That emotional broadcast is still available today on the internet.

By the 1930s, radio was being used by law enforcement organizations. Initially, police departments made arrangements with existing broadcasting stations to interrupt their programs with dispatches to their patrol cars. The Chicago Police Department used radio station WGN for this purpose. Later, police departments established their own radio stations on separate frequencies. Some were at the top of the AM broadcast band, between 1,650 and 1,720 KHz. Others had assigned frequencies between 2,400 and 2,450 KHz on the short wave band. These frequencies were often marked "Police" on radio dials, and listening to police dispatchers appealed to the public.

I read a report in an old radio magazine about a listener in Alaska who enjoyed tuning into the Los Angeles, California, police frequency, 1,712 KHz, when radio propagation conditions were favourable. He learned the names of the police dispatchers and could recognize them by their voices.

By the early 1950s, nearly all law enforcement organizations used two-way radios operating on VHF frequencies. The police bands marked on the dials of old radios are no longer used. My next article will discuss developments that allowed radio to move from the living room to the automobile, allowing broadcast listeners to enjoy their favourite programs on the road.

(JIM COOK, the son of a radio technician, became a licensed amateur radio operator at 15 and obtained commercial radio-telephone licenses before he was 20. He worked as a transmitter operator for two radio stations while studying electrical engineering at the University of Kansas. After graduation he became an electronic circuit designer)



This photograph of the author's 1937 Silver-tone shows the markings for police, foreign, and amateur frequencies that were common on many radios during the 1930s

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Antique Wireless Association
of Southern Africa

Mission Statement

Our aim is to facilitate, generate and maintain an interest in the location, acquisition, repair and use of yesterday's radio's and associated equipment. To encourage all like minded amateurs to do the same thus ensuring the maintenance and preservation of our amateur heritage.

Membership of this group is free and by association. Join by logging in to our website.

Notices:**Net Times and Frequencies (SAST):**

Saturday 06:00 (04:00 UTC) —AM Net—3615
Saturday 07:00 (05:00 UTC) —Western Cape SSB Net— 3630
Saturday 08:30 (06:30 UTC)— National SSB Net— 7140; Sandton repeater 145.700
Echolink—ZS0AWA-L; ZS6STN-R
Relay on 3615 for those having difficulty with local skip conditions.
Saturday 14:00 (12:00 UTC)— CW Net—7020; (3550 after 15 min if band conditions not good on 40)
Wednesday 19:00 (17:00 UTC) — AM Net—3615, band conditions permitting.

For Disposal: