The founder of the Hammarlund Manufacturing Co., Oscar Hammarlund was born in 1861 in Stockholm, Sweden. As a student he won the admiration of his classmates as well as high honors for his engineering ability. After completing technical college he went to work as a special tool designer and inspector of electrical instruments for the L.M. Erickson Co. of Stockholm, a leading manufacturer and the originator of the French-type telephone. Shortly after taking this job, he received an offer for a similar position with the Elgin Watch Co. in the United States, and accepted the opportunity to come to this country. He arrived in 1882.

His outstanding engineering achievements at Elgin attracted the attention of Western Electric Co. officials, and in 1886 he joined Western Electric as superintendent of their Chicago plant. Six years later he left Western Electric to go with the Gray National Teleautograph Co., which was then engaged in the development of the Teleautograph. As the design engineer and plant superintendent, he spent many years with Elisha Gray, the co-inventor of the telephone, and was able to follow the early history of wireless development.

The Teleautograph was a device designed to electrically transmit writing by varying a dc current over a wire. However, many problems were encountered by Gray in the designing and building of this unique instrument. After working out most of the details, he found that the frequent failures and dulling of the stylus or pencil at the remote end seriously handicapped the entire system.

Oscar Hammarlund received the assignment to design a means of overcoming the handicap of the troublesome stylus. He solved the problem by developing a propelling pencil, and inadvertently invented the present-day automatic advancing lead pencil. At the time he didn't realize the ultimate possibilities of his invention. It was the first of many important items that he eventually was to create and see become highly successful products.

Oscar Hammarlund's interest in the advance of wireless communications was keen enough that in 1910 he decided to organize a company for the purpose of developing his own ideas. The initial success of the Hammarlund Manufacturing Co., was due solely to his painstaking research and struggle during the early days, but was not until 1919 when radio broadcasting was about to become a reality, that Oscar Hammarlund had the opportunity to put the results of his early experiments to practical use.

From that point forward, the Hammarlund Manufacturing Co. had a sensational series of "firsts". Included among these was the first mid-line tuning capacitors, standard in receivers for many years; the first MC and APC types variable capacitors, built originally for a small group of radio experimenters of the 1920's; the first commercially-produced superheterodyne short-wave receiver; the first band-spread dial with amateur band calibrations; the first beat-frequency oscillator with a front panel adjustment calibrated in kc. Literally dozens of innovations and advances were incorporated in the company's communications receivers, ranging from the early models to the famous SP-600 which was designed to be the finest receiver of it's type available.

For many years, long before most of the present day radio and electronic manufacturers even existed, every wireless enthusiast and experimenter in electricity knew of Hammarlund, and amateur radio operators and experimenters turned to this company for many of their needs. Based on several generations of experience and know-how, the Hammarlund Manufacturing Co. reached high levels of achievement during its lifetime.

A quick look back through the years discloses a history of tremendous growth and advancement. Unfortunately, much of it was never recorded and has been lost to time. The last manufacturing facility at Mars Hill, North Carolina with it's production line manufacturing capabilities and bright modern offices would have seemed unbelievable to Oscar Hammarlund in the early years after founding the company in 1910.

The company was originally located in a loft on Fulton St. in Manhattan. In order to provide work for his small group of skilled people, Hammarlund built a weird assortment of products, ranging from the "Anti-Window Rattler" which was merely slipped in between a window frame and the window to hold it tight after the wood had shrunk, to the "bango" a protection device inserted in windows so that if it were disturbed during the night by an intruder, a blank cartridge would be set off to awaken the household.

Other items manufactured in those days included twin liquor decanters, a finger gauge for use by jewelers, precision metal measuring rules, mechanical window displays and metal watch cases. At one time they turned out air alarms for installation in ceilings as fire protection devices. This apparatus consisted of a metal bulb in which was installed a diaphragm; when the bulb became overheated the diaphragm expanded and set off an alarm at a distant locations.

Another product from the early days of the company was the "Armagraph", this was used to train radio operators in Morse Code. It consisted of a rotating disc in which notches were cut and over which glided a platinum tip contact. As the disc rotated, the needle hit each of the holes in turn and produced the sounds of dots and dashes. During the same time period, they were also producing a centrifuge used by medical and test laboratories.

The first Hammarlund electronic-related product was the variable air capacitor developed in 1916, not as a product for a specific application but as a construction item for the experimenter who furnished the plans.

In 1920 Hammarlund moved to 18th St. in New York City; there were approximately 50 employees on the payroll. At the time he developed a new automatic machine for making spring clips to go into the tops of Christmas decorations. The clip expanded to provide a support for the decoration. As a result, this style of clip exists today to permit easier decoration of our Christmas trees.

The company became well known in the 1920's for its Western Union call boxes, which it manufactured by the hundreds of thousands. These small fixtures were a part of nearly every business office. When someone wanted to send a message, they would turn a crank

on the call box, which would send a signal to the nearest Western Union office; a messenger would be sent over immediately to pick up the message. There were also double-throw knife switches as well as cordless table jacks for the telephone systems, all of which marked the beginning of the movement towards manufacturing of electrical products.

In 1925 the company moved to 424 West 34th St. in Manhattan, where the first Hammarlund-Roberts Radio Kits were built. These kits, designed for construction and broadcast listening by experimenters incorporated capacitors, coils and other related items manufactured by Hammarlund. They were generally considered to be the finest and most successful kit-type radio receivers of all time, with the circuit technique ahead of nearly all ready-made receivers.

That same year, the famous mid-line variable condenser, designed by Oscar and his son Lloyd was developed as the most practical solution to the tuning problem at the high end of the dial. This design became standard in almost all home entertainment receivers, and remained in use until the advent of electronic tuning.

The first commercially produced short-wave superheterodyne receiver, the Comet-Pro was a Hammarlund pioneered product. It was introduced in April of 1932, and was designed as an eight-tube receiver covering the range of 14-200 meters with four sets of two coils each. By 1936, the Comet-Pro was in use all over the world by thousands of commercial operators, in broadcast stations and by many amateur radio operators. All the important expeditions included one as part of their standard equipment.

In 1936 the first of the famous “Super-Pro” line was introduced after more than four years of planning and engineering. It featured two stages of tuned RF amplification, electrostatically shielded antenna coils, and improved “Lamb” type crystal filter useable on both phone and cw, and a front-panel calibrated beat-frequency oscillator pitch control. Amplified automatic gain control of the IF amplifier and RF stages provided an exceptionally flat audio output over a wide range of input signal levels. Initially, two versions were manufactured. One tuned from the low end of the broadcast band to 20 MC, and the other started at 1250 KC and went up to 40 MC. Each band position had a frequency tuning range of 2:1. The variable bandwidth IF amplifier, another Hammarlund “first”, and the high-quality audio amplifier provided exceptional performance for the music lover. The separate power supply, as many a ham and former military radio operator can testify, was a challenge to the strength of the user.

Because the company had specialized in high-frequency capacitors for use in commercial and military equipment, nearly 90 percent of all American electronic military gear produced during the early part of World War II incorporated Hammarlund variable capacitors, until the other manufacturers could be taught the Hammarlund techniques and began making them. At the peak of wartime production the famous Hammarlund “APC” variable capacitor was produced at the rate of one million a month by ten different manufacturers.

During the early post World War II years, Hammarlund developed a product line designated “Centralized Operation Control”, or “COC”. This was a basic system designed to control various devices from remote locations. The widest application was in wire line, microwave and land-mobile radio. This product enjoyed considerable popularity until the early 1960’s, when it was overtaken by the more advanced digital systems.

Hammarlund was most famous for it’s amateur/short-wave receiver line. The HQ-120/129 series. The HQ-120 was truly ahead of its time when first introduced in December, 1938. It featured coverage from 540 KC to 30 MC with calibrated amateur band spread. This feature of calibrated band spread, including a 300-degree readout scale, was an industry first. Other innovations pioneered by Hammarlund included a front-panel adjustable antenna trimmer, calibrated front-panel BFO, and the famous multi-bandwidth crystal filter. The noise limiter was particularly useful on the higher frequencies. A special version of the receiver, designated the RBG, was built for the U. S. Navy.

After the war, the HQ-120 was reintroduced as the HQ-129 and sold for $129.00, but the company lost money on the product and it did not stay at this bargain price for long. The receiver was basically the HQ-120 with a modest styling change and greatly improved series-gate noise limiter. Both versions of the receiver were truly innovative at that time and many remain in use today.

The legendary SP-600 introduced in 1952 after many, many years of development was an enhanced Super-Pro covering the frequency range of 540 KC to 54 MC with a 0-100 calibrated mechanical band spread. The receiver had provisions for optional crystal control of six selected frequencies. Several variants were produced including a VLF version, which tuned from 10 KC to 540 KC, others had various tuning ranges which eliminated the broadcast band and the top end of the range was 29.7 MC. The SP-600 series were widely used through out the world for military, laboratory and commercial applications.

About 1950, the basic cabinet styling of the Hammarlund receivers aimed at the amateur and short-wave listener market was changed by using an extruded rib around the outside of the front panel. Electrically, the single-conversion concept of the HQ-120/129 series continued in production through about 1960, with a series of receivers designated the HQ-140, HQ-150 and the HQ-160. These used the basic tuning assembly which provided the fully calibrated band spread of the 10-through-80 meter amateur bands. The HQ-150 and HQ-160, in addition employed a “Q” multiplier sub-assembly with front-panel adjustments appearing above the tuning dials. In 1956 the company introduced a lower cost general coverage receiver, the HQ-100 with calibrated amateur band spread. This was supplemented with the HQ-110, basically the same receiver, except that it covered only the amateur bands from 160 through 6 meters.

Another receiver, the HQ-145 was intended to be an updated replacement of the models HQ-120, 129, 140 and 150 series. These were all single-conversion designs and suffered from image responses on the higher frequencies. To counter this problem, the HQ-145

used single conversion up to 7 MHZ and double conversion above that. It retained the five bandwidth crystal filter along with a series-gate noise limiter, calibrated amateur band spread and the front panel antenna trimmer, all of which did much to make its predecessors so popular. This receiver had modest success in the market place, but never captured the hearts of amateurs and SWL's as did the HQ-120 and 129.

The first Hammarlund product to use printed-circuit board construction was the PRO-310, introduced in 1955. It covered from 550 KHZ to 35.5 MHZ and featured double-conversion and a constant-calibration band spread. Unfortunately, the life of the PRO-310 was short with only one production run of 1,000 units, and was last advertised in July, 1956.

In the 1960's, Hammarlund produced the basic FAA airport control tower VHF AM receiver, designed for the 108-132 MHZ portion of the spectrum.

The HQ-170 and 180 receivers were introduced in 1959. These were considerably more sophisticated than prior models and incorporated a product detector and multi-bandwidth upper and lower sideband selection with selectivity settings of 0.5, 1.2, 2.0 and 3.0 KHZ bandwidths. The 180 model was a general coverage receiver while the 170 was a band spread only unit covering the 160-through-6 meter amateur bands. With the advent of the multi-bandwidth IF filter system, the company departed from its use of the multi-band crystal filter with the sole exception of the HQ-145 series.

In 1964 the HQ-110 and HQ-170 receivers were equipped with a built-in two-meter and six-meter nuvistor preamplifier. The band spread dial was changed to include the calibration for the two-meter band.

The Hammarlund receiver line of the HQ-100, 110, 145, 170 and 180 had provisions for the installation of an optional clock to turn on and preheat the receiver. This was popular in the days before the general trend to crystal controlled first oscillator receivers, and helped considerably to reduce warm-up drift. Another step in this direction was used in the "A" versions of the HQ-170 and 180 receivers, which incorporated a stand-by filament transformer to keep the oscillator and first mixer tubes on continuously. The "A" models, in addition to having a 110-120 volt power transformers as standard equipment and dual audio outputs (3.2 and 500 ohms), also had a system socket so that a harness cable could coordinate them with the HX-150 single-sideband transmitter.

Several years after the introduction of the HQ-170 and 180 receivers, the company produced a single-sideband adapter for use with earlier receivers of almost any manufacture, as long as the if was between 450 and 500 KHZ. This consisted of the sideband-selectable multi-band-width IF circuitry of the 170/180, together with a variable threshold limiter and an audio amplifier and built-in power supply. Two versions were offered; a compact desk-top unit for the amateur and SWL market, the HC-10, and, a rack-mounted version for use with the SP-600, the SPC-10, which purchased in modest quantities by the FAA.

Following through on improvements to the HQ-170/180 receiver line, in 1960 Hammarlund introduced a "Lamb" type noise blanker. This device worked on Jim Lamb's original principle of "punching a hole" in the signal to virtually eliminate the effect of ignition-noise interference. A special version of this noise silencer, which was marketed as a "noise immunizer", was developed for the Coast Guard for use with their numerous National HRO type receivers in the vicinity of Loran stations. The device was extremely effective in reducing Loran pulse interference in the 160-meter band.

Some miscellaneous products manufactured during the 1960's included a direction finder, the RDF-10, aimed at the small pleasure boat market, and an electronic keyer designated the HK1B. This solid-state unit offered straight keying, a "bug" mode of operation, and fully automatic dots and dashes.

The HQ-215, the first and only solid-state receiver produced by Hammarlund, was designed in the mid-1960's by Lester Earnshaw, but did not go into production until 1967. This amateur-band receiver was compatible with the Collins "S" line units which employed the same frequency generating scheme, thus making it capable of functioning in the transceive mode with the Collins transmitter. This receiver was produced in limited quantities.

A number of transmitters were produced. These saw only limited use until Hammarlund entered the market with single-sideband equipment. In 1960 the HX-500 was introduced; this was a table-top, 100 watt output, single-sideband transmitter which also had FM and FSK transmission capability. This unit was probably too sophisticated and too expensive for the market at the time, and the HX-50 was introduced in 1962. It featured band pass coupling of the driver stages, simplifying the tuning and band changing. The HX-50 had provisions for accepting the 160-meter kit, which also could be ordered installed at the factory. This modestly priced unit used a crystal filter to eliminate the unwanted sideband.

In 1964 the company produced a table-top linear amplifier, the HXL-1, a 1500 watt unit with a built-in power supply for the 10-80 meter amateur bands. It basically matched the HX-50 in appearance and size, and its control circuitry was compatible with most of the exciters and transceivers then on the market.

Hammarlund entered the land-mobile two-way radio market in 1960, producing many units under the name "Outercom". The first model to go into production was the FM-50, a 35 watt unit covering the 150-170 MHZ band. This was followed by the FM-60 with a frequency range of 25-54 MHZ and a rated power output of 50 watts. The company also produced a high-band (150-174MHZ) 100 watt desk-top amplifier designed to increase the power output of the FM-50.

The "Outercom" land-mobile units featured a cascode receiver front end with high-frequency crystal lattice filtering. They had unusually high sensitivity coupled with improved adjacent-channel signal rejection, and were relatively immune to desensitization. The receiver section of the Outercom was also used as a high

performance monitor receiver with crystal-controlled channel selection for the Public Safety, Industrial and Land Transportation Radio Services in both the 25-50 MHZ and 150-174 MHZ bands.

The FM-50 was built for the Coast Guard in a special version, designated the AN/URC-45, with six channels and with a second receiver for continuous monitoring of the marine VHF emergency channel.

Hammarlund built a substantial quantity of the VHF FM "Village Radios" for the U. S. Agency for International Development (AID) for use in Vietnam. Several versions of these radios were produced under contract and were later made available as land-mobile units for the commercial domestic market. The SP-600 variant the R-1511/GR was also produced during the Vietnam era and used to detect signals in the HF Spectrum. These "hybrid" receivers had eight printed circuit boards and only 9 tubes. They had a 200 KHZ bandpass filter front end and were mounted in banks of five giving them 1 MHZ of audio coverage. This was recorded on video tape and the tapes were sent to the NSA at Fort Meade, Maryland for interpretation.

The Citizens Band radio market was entered into in the early 1960's, and Hammarlund was one of the first companies to offer a synthesized 23-channel transceiver, also produced under private label for Lafayette, Allied Radio and Radio Shack. In addition, the HQ-100 general coverage receiver was redesigned to include a one-tube transmitter modulated by the receiver audio section. This unit, designated the HQ-105TR, was intended for single-channel transceiving in the 10 and 11 meter bands. A six-channel crystal-controlled unit was also produced for Business Radio and Industrial Radio use in the CB band.

For forty years all of Hammarlund's activities were centered in New York City, but in the early 1950's a phased move to western North Carolina was begun. The first manufacturing at the new Mars Hill, North Carolina plant built in 1951 involved the variable air capacitor line. With additional space provided by an expansion in 1959, the manufacture of receivers and other accessories was transferred, leaving engineering, accounting and general management in New York until 1965 when the remaining company functions were moved south.

This major addition to the Hammarlund Manufacturing facility brought the production space up to approximately 100,000 square feet. The plant was fairly self-sufficient, producing a number of screw machine parts and mechanical components. A complete plating facility, paint shop and a silk-screen capability for panels minimized the dependency on outside vendors.

Oscar Hammarlund's management style was "family-like"; he frequently visited the productions lines and knew every person who worked for him by name. He passed away in 1945. The company, however, continued to flourish under the direction of Lloyd Hammarlund, his son.

In the late 1950's, Hammarlund was sold to Telechrome, which several years later sold out to Giannini Scientific. In the late 60's the company was once again sold to the Electronic Assistance Corporation (EAC). But, this sale was final. The product line was sold off in parts or phased out. The Cardwell Capacitor Corporation purchased all remaining stocks, including a few SP-600 VLF units. Sometime in 1972 or 1973, the Hammarlund factory closed. One of the most respected names in the history of radio manufacturing had come to an end.

This information was compiled with help from Stuart Meyer W2GHK (now a silent key) who was employed by Hammarlund from 1960 until 1966. He started out as Chief Engineer and rose through the ranks to President of the company. Stuart was gracious with time spent on the telephone and in correspondence from approximately 1987 until 1993.

While at Hammarlund, Stuart was primarily responsible for expanding the product line to include land-mobile two-way radio and high frequency equipment..

Stuart passed away on May 21, 1994 at the age of 76.

Les Locklear
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