OLD TIME WEST COAST WIRELESS STATIONS,

SHIPS AND OPERATORS

By

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A Photo History For The Old Timers

Covering The Period

1902 - 1918

Acknowledgement

I want to thank all of you "Old Timers" who tore pictures out of their albums for me to copy. In the thousands of scraps of papers I can't name all of you that helped with this history and by-lines for the photographs.

Mr. "Cliff" H. Watson started me out on this project and a good many letters went back and forth between Mr. Dexter Bartlett and myself.

Many, many fellows came by the house to talk to me and others like George Hubbard and Vincent I. Kraft spent a lot of time writing up portions of the text which had to be incorporated with other bits of information preventing attaching their names to the writing.

I hope you all understand, and I don't take credit for myself. You fellows wrote it, while I sorted out the material, wrote letters, and copied the pictures on a beat up camera.

A number of interesting experiences took place tracing down old operators and connecting others up who had not seen each other in forty years or more.

I know we missed many names of the gang, but circulated notices and letters for over a year's time asking for information, this is what we had.

Ed Marriner, August 1961
La Jolla, Calif.

POUNDING BRASS

Out of pounding brass, there comes a spark.
For many a soul, it was a lark.
This shuffle of life we call a game,
Some make for themselves a name.

Some brave souls stay at the keys,
On tossing ships on high seas.
Coaxing their spark to survive,
Because on it depends many lives.

Under adversities they do their work,
Never for a moment, known to shirk.
So, out of the shuffle of life, we call a game.
Some do make themselves a name.

Now they reap, where they have sown.
They go down in history not unknown.
Known, for many a worth while deed,
For they have sown precious seed.

Laura E. Bartlett
7405 N. Wall Ave.,
Portland 3, Ore.

Introduction

The "Old Time Wireless Stations," like the operators who manned them are gone. The "Golden Age of the Sea Going Wireless Operators," who operated the rough notes of the spark transmitters or nostalgic musical notes of the arc, made the blood flow in any young man with wanderlust. That old quenched spark gap with the pickle jar muffler, had a far away sound and lured many an operator off to sea.

In the very beginning I can imagine the young operator, his first time aboard ship, with the new transmitter resting in front of him, unmarred newness, fragrant with mysterious odors of lacquers and phenolic compounds all enclosed in the tight stuffy wireless shack. Outside, the smoke, stack gas, and carbon grime is seen on the bulkhead. The lifeboat cover is encrusted with a combination of salt spray and soot in view of the wireless shack porthole.

Perhaps the new operator once aboard would familiarize himself with his new treasure before the ship got underway. He might first turn on the switch and press the key like they taught him in the Marconi School in "Frisco," Maybe he might take a pencil and draw an arc off the antenna lead-in, or watch the meters flick a few times to instill confidence in himself.

Once back from a long voyage, "Sparks," might come into port looking for a new ship, spend his money and be out of work. What to do? Go down to Casserly's Bar on Market street where he could get a free hardboiled egg and a ham sandwich for the price of a five cent beer.

Next in order, check in with Malarin the hiring agent for another operators job. Malarin would tell young "Sparks" to wait in the static room. Hours would go by and getting tired, the young man might stick his head out of the door to find Malarin had forgotten him and gone off to the ball game.

Once again onboard another ship with a little more experience he might have thought to take along a bag of silicone which in his spare time he might pick out some good hot crystals for dectors. Some of his time might be spent in building his own receiver from an army surplus audio tube or fixing the spark gap up by putting a 30-30 shell case over the gap for a better sounding note. Then there was that little trick of dropping the helix to broaden out the signal. Once out of port he could contact the Navy station on 2300 meters by doing this modification.

On the return trip being more experienced, young "Sparks" might have gathered a few bottles of "Old Crow," prohibition being in effect, for his friends at home who might want a drink. The stowage problem was always solved by putting a few bottles picked up in Victoria, B.C. in the transformer oil or behind the fuse panel marked "High Voltage."

We hope you will enjoy these memories despite the inaccuracies which might crop up in minds dimmed with time. Here is a little of the rich heritage of our "Old Wireless Days," preserved for all to see and read.

To set the proper perspective, here is a list of events as they occurred:

1895 Marconi connected an antenna on his transmitter and made history.

1896 Marconi leaves for England to demonstrate his wireless equipment.

1897 Marconi starts his own company in England and sends a message 12 miles.

1898 Marconi reports the Kingstown Regatta by Wireless to Newspapers.

1899 Marconi increases the distance of wireless transmission to 66 miles.
The American Marconi Company is started in Wellfleet, Mass.

1900 Wireless is first tried by the U.S. Navy. Marconi installs his equipment on three vessels.

1901 December 12th, Marconi sends the letter "S" signal across the Atlantic. March 1st, telegraphic communication established in the Hawaiian Islands connecting: Oahu, Kaui, Molaki, Maui and Hawaii.
The U.S. Army gets interested in wireless. The U.S. Naval annual report states that several officers were given radio instruction. Equipment for military use is unsatisfactory and they send three Naval Officers to Europe with instructions to investigate various wireless equipments.

1902 U.S. Naval officers return from Europe and decide the U.S. Navy should install German made Slaby-Arco equipment. De Forest equipment is also recommended.

1903 First real message sent across the Atlantic ocean. The U.S. Army established communication in Alaska. The first mesage sent on Aug. 7th, 1903. The U.S. Navy establishes six telegraph wireless stations. Because of foreign control on the Marconi equipment, a complete change was made to Slaby-Arco equipment. The first International Wireless Conference takes place in Berlin. CQD was added for the distress call and the Germans continue to use SOE.
The New York Navy Yard has a wireless school now with 13 students in training. De Forest goes to England to demonstrate speed Morse sending. "Pop" Athern and Harry Brown, two De Forest men set up a station in Shantung, China. The Lake Erie to Buffalo, N.Y. net is in operation the full 180 miles.

1904 The U.S. Navy now has 18 shore stations and 33 ships equiped with wireless. Nine ships of the Asiatic Squadron also have wireless.
The St. Louis Fair has a 20 KW installation working contacting the Chicago station 300 miles away.

1905 The U.S. Navy completes West Coast wireless chain of stations. Second International Wireless Conference takes place. SOS becomes the international distress signal. De Forest sends to the AIEE his first paper on the audion tube. First voice transmission is made.

1907 The Great White Fleet starts its around the world cruise. Twenty ships have De Forest equipment onboard. The De Forest audion is patented this year.

1908 The USS Connecticut en route to Hawaii to New Zealand contacted The Naval wireless station on Pt. Loma a distance of 2900 miles.

1910 The ship act required all ships carrying 50 souls including the crew to have a wireless set onboard although no license was needed.

1911 June 30th., United Wireless Telegraph Co. put out of business. Officers of the company pleaded guilty of Marconi infringements and convicted of selling stock under false pretenses. The company is purchased by the Marconi Co., June 29, 1912.

1912 Radio Act of 1912 required operators license, station license and amateur wireless operators license.

1914 V. Ford Greaves compiles a chart showing that the average age of the sea-going wireless operator was 19 years. Several operators listed on ships were only 15 years of age.

Historical Notes:

Marconi was issued his first patent on June 2, 1896. Prof. Amos A. Dolbear, of Tufts College attests to the successful experiments of shipboard radio by Lt. Bradley A. Fisk prior to August 31, 1888. Lt. Fisk wound a number of turns of insulated cable around the USS Newmark lying at the New York Navy Yard and likewise around the yard tugboat. Using a telephone receiver he could receive signals a short distance away. This being induction wireless.

The first official U.S. Naval message actually took place on Sept. 30, 1899. With Marconi as the operator the following Naval message was sent:

Via Wireless Telegraph:
To: Bureau of Equipment, Washington D.C.
From: USS Connecticut

Underway in Naval parade via NAVESINK station. Mr. Marconi succeeded in opening wireless telegraphic communication with shore at 1234 PM. The experiments were a complete success.

Signed Blish Lt. USN

This message was received at the Highland Station on the Jersey coast. By 1901 all major ships in the U.S. fleet had been equipped with German made equipment and during 1902 had purchased additional to the Slaby-Arco, Brau-Siemens-Halske equipment designed by Rochefot and Ducretet of France, and Lodge Murhead of England. The U.S. Navy also purchased De Forest equipment and quenched gaps of American design including the Lowenstein gap, Simon and others. By 1909 the USS connecticut and USS Virginia had a wireless telephone.

The United Wireless Company started in 1906. The 1910 ship act required any ship carrying 50 souls including the crew was required to have a wireless set onboard although no license was required.

HISTORICALLY SPEAKING

Historically speaking, how did it all start on the West Coast? Talking to the old time wireless operators, commercial stations could be just about anyone who had the ability to read a magazine, build a wireless transmitter and assign himself a call sign. Many hotels and tug boat companies hired telegraph operators and did just that!

The first West Coast Wireless Network started in Alaska. During the various Alaskan gold rushes, starting in 1898, towns and camps mushroomed over night, with plenty of tin horn gamblers and other characters (as described by Robert W. Service) wandering from place to place. By 1900, better communications than boats and dog teams became a necessity.

In 1900 Congress gave the Army Signal Corps money to improve communication and invoke them with the responsibility for a cable line to Alaska and to the interior. This cable line was constructed under great difficulty. The poles had to be set in permanently frozen ground.

By 1903 the U.S. Army had strung wires to St. Michaels and they were then faced with the problem to reach Nome. This meant a choice of going around Norton Sound with a pole line under the worst primitive conditions or laying a cable which would be carried away by ice each year.

Because the U.S. Army Signal Corps by now had some experience with wireless telegraphy, the last link between the two stations at Nome and St. Michaels was by wireless. The link was 107 miles via wireless and then 3883 miles via wire to Seattle. During this 1903 experiment, Dr. Lee De Forest exchanged satisfactory communications between Fort Safety and commercial service to Alaska was in effect.

Dexter Bartlett saw some of this old Army equipment functioning at Craig, Alaska as late as 1922. An old 3 KW transmitter was run by a gas engine. The transformer, usual glass plate condensers, straight open spark gap with cup-like electrodes, and plain helix, were still going after all these years. Wireless proved itself easier to maintain than wire telegraph lines.

During this early time, there was no control over wireless stations by the government. The telegraph companies selected their own call letters and we find the same call being used by several locations. The government control of call letters did not go into effect until July 1st, 1912.

By now the stations had to operate on a certain wave length. It was decided ship to shore traffic would be on 600 meters. The alternate wave was to be 300 meters which proved to be inefficient due to the average ship aerial being determined by

the distance between masts. This required the use of a series capacitor in the antenna lead for resonance, thus the output was always lower than the 600 meter frequency wave and seldom used. The old spark signal depended on the distance of the gap, frequency of the AC power supply (Motor Generator sets run from the ship's Direct Current). Later came the rotary gaps. The modern operator, used to hearing CW signals, a sine wave of whatever frequency he sets the heterodyne would be surprised at the spark signals which had all sorts of sounds depending on the length of the gap and AC supply. About 1915 quenched spark gaps with a 500 cycle note began to appear. Thus an operator on a pair of earphones far out to sea in those days heard dozens of signals of all pitches and tones presumably on the same frequency. By clever manipulation of his receiver he could concentrate on one station to the exclusion of the others.

HISTORICAL INFORMATION LEADING UP TO THE ALASKAN WIRELESS NETWORK

Report of the Chief Signal Officer, U.S. Army, 1904

In 1899 the Signal Corps devised a system of wireless telegraphy, the first publicly operated in America. Improved in details, it works successfully over the limited ranges between harbor fortification, for which it was planned. Recognizing, however, the rapid advances sure to be made by the many experts in civil pursuits, the Chief Signal Officer decided to adhere in this matter to his general policy, which looks to experimental work by the Signal Corps only under conditions where recourse can not be had advantageously to the great commercial and industrial establishments of the United States.

Owing to the repeated failures of several wireless telegraph companies to furnish a reliable and satisfactory system of wireless telegraphy in Alaska over a distance of 100 miles, the Chief Signal Officer decided in 1903 to have all existing systems examined with reference to their practical qualities. He decided to obtain by elimination, substitution, or invention some system for army use which would embody qualities, necessary for the reliable and successful transmission of messages.

The previsonary methods of the Chief Signal Officer had already accumulated information and instruments which facilitated the solution of the problem. In addition to the systematic collection of all published data on wireless telegraphy, no efforts had been spared to supplement these by information through conference and correspondence with inventors and investigators. There were also purchased sample instruments and

installations pertaining to every system that seemed worthy of test, and where a title to the instrument could be obtained for a reasonable compensation. In this way there were acquired essential parts of important systems. Experimental work in wireless telegraphy had also been done by Maj. Samuel Reber, George O. Squier, and Edgar Russel, all of the Signal Corps, but none of these officers were available for assignment to the work, which demanded the entire attention of the officer charged therewith.

For experimental work in connection with the perfecting of a permanent plant, Capt. Leonard D. Wildman, Signal Corps, a graduate of Steven Inst. of Technology, who had displayed resourcsfulness and persistency in various phases of field duty, was selected. With full authority to call on Major Reber and Capt. Russel for advice, the accumulated data and instruments were turned over to Capt. Wildman, who began his work by tests as to the capacity and efficiency of the Braun-Halske wireless train, a duplicate of the plant operated successfully during the German maneuvers. While the results from this train were not unsuccessful, its maximum capacity for transmission of messages over 63 miles was not entirely satisfactory.

In addition to the determining the type of field wireless apparatus best suited to the American Army, he was particularly charged with the composition and installation of a wireless plant of the permanent type, which should, by practical operations, demonstrate its capacity for successful work at distances exceeding 100 miles.

The field of operation was between Fort Wright, Fisher Island, and Fort Schuyler, N.Y., the stations being 97 miles apart, of which 20 miles was across land. The use of these forts is a factor in the national defense, as it establishes a wireless system by which, in times of great disturbance, messages can be quickly exchanged between the outlying defenses of New York than by commercial systems.

With these ends in view, experiments were carried on under Capt. Wildman's personal supervision during the past year with instruments purchased from the Lodge-Muirhead Wireless Telegraph Company Ltd of Great Britain: the Brau-Siemens-Halske Wireless Telegraph Company, of Germany; the National Electric Signaling Company, of Washington and from the De Forest Wireless Telegraph Company of New York.

Experimental apparatus were purchased by the Chief Signal Officer from time to time in addition to the instruments furnished by companies and individuals. Comparative tests were also made with all obtainable receivers, responders and coherers on the market, as well as with many different types of special appliances, particularly those of the Stone-Stone system.

Not withstanding the popular idea that wireless telegraphy

over great distances is an accomplished commercial fact, none of the systems investigated proved satisfactory for army use. Wireless telegraph systems seem to have been developed by their inventors rather from the electrical than from the mechanical side, and as a consequent result laboratory and experimental make shift have been placed upon the market as commercial instruments.

After an investigation of existing available systems, Capt. Wildman formulated, with the approval of the Chief Signal Officer, the following changes as being necessary for the practical military uses:

1. Eliminate the necessity for an absolute electrical ground.

2. Construct all parts of the apparatus so that in case of destruction of any part from whatever cause, that part can be replaced without elaborate machinery by intelligent unskilled labor.

3. Replace all adjustments which require a knowledge of mathematics, or experience in manipulation by lettered dials or definite switch positions so that highly skilled operators shall be unecessary.

4. Reduce the necessary height of the aerial wires.

5. Produce a receiver which will not only receive the message intended for it, but which can by adjustment also receive any electromagnetic wave.

6. Eliminate wholly or largely disturbances due to atmospheric or static electricity.

7. Avoid as far as practicable all dangerous high-potential currents at points where there is possibility of danger to employees.

8. Provide appliances and devices which will protect the instruments and machinery from destructive potentials from whatever cause.

9. Avoid as far as possible the use of patented devices and the consequent payment of large royalties.

10. Devise a system which can be easily transported in time of war and which is capable of transmitting messages under all climatic and topographical conditions.

Extended tests were made of the De Forest system, which in its original and earlier forms has been successfully operated

during the Army and Navy maneuvers of 1902 in Long Island Sound, where the Signal Corps applied wireless telegraphy to military purposes, its first installation therefor in America.

The De Forest system barely covered the Schuyler-Wright course, its manifestations being under the most favorable condition like to the ghost of a sound, while it was impracticable during the active operation of adjacent and disturbing stations. Undismayed by the situation, Capt. Wildman so applied himself with judgement and assiduity to the problem of supplementing and improving it that he succeeded in solving the problem as far as the needs of the Signal Corps are concerned. His improvements were formulated and patented equally in the interest of the United States, to whom the patents are assigned, and of the inventor.

Although the signal corps (or Wildman) system at present is not perfect in some of the qualitites desired, it is better than any system previously tried. It is not absolutely unbreakable; it cannot be operated by men of low order of intelligence; it is not entirely free from interference from stations close at hand; nor can it be operated during a heavy thunderstorm.

On the other hand, a substitute for a good electrical ground has been found; the operation and adjustments are simple; there is only one place within the reach of an operator where there is a destructive potential; the height of the aerial antennae has been much lessened, and the apparatus durable and easily repaired. Messages were sent daily in great numbers ninety-seven miles for five weeks without any apparent deterioration in apparatus or machinery.

There experiments have furnished a large amount of accurate and valuable data on the subject of poles and their setting, antennae and their rigging, houses and their construction, dynamos and their design, transformers and their durability, induction coils and their action, and the various methods of tuning the antennae to each other and to the closed oscillating circuits by which they are fed.

With the exception of the De Forest receiver, an invention in litigation, the signal corps system has no patented or patentable devices other than those invented and designed by the officers and enlisted men of the signal corps which can speak over one hundred miles independent of the De Forest devices.

It is recognized that the public is generally being put into a state of unbelief by the extravagant and unmaterialized claims of wireless telegraph experimenters and inventors. Experience alone will prove whether the devices adopted in the signal corps system are open to unforseen objections when transferred from a temperate climate and favorable conditions to places where their operation and maintenance must be by unskilled labor and in an unfavorable environment.

It appears certain, however, that for army uses this system is better than anything heretofor upon the market. If time should disprove the utility of some of the features which now seem promising and these instruments ultimately disclose faults in design or construction, such passes mark all inventions. At any event, this is an advance over systems in use when these experiments were initiated.

Capt. Wildman acknowledes his indebtedness to Major Reber and Capt. Russel for valuable advice and assistance. He also recognized his intelligent and helpful assistants, enlisted and civilian.

Special commendation is due Capt. Wildman for the persistent and skillful manner in which he has contributed to the

efficiency of the army in perfecting the signal corps system of wireless telegraphy. Marked improvements in methods and valuable advancements in instrumental appliances have been the outcome of his methodical investigation and extended experience. The improvements are largely his own devices, two patents obtained by him for wireless inventions have been assigned to the government in order to protect the United States in their use. Now should it be thought that the results are laboratory and theoretical only are not true. The Long Island wireless plant, transmits commercial business, as stated elsewhere, reliably and rapidly, a distance of 107 miles across Norton Sound. In simplicity, durability, safety, and reliability the signal corps system is thought to be superior for army use to any other.

Wireless Telegraphy

This system of wireless telegraphy devised by the Signal Corps of the Army in 1899 has been improved in details, but its range of operation is limited. It was deemed advisable to stop experimental work along these lines pending the development of this science by experts in civil life.

In 1901, however, it became a matter of practical importance to the Signal Corps to establish wireless telegraphy over extended distances. A contract was made looking to the establishment of the wireless telegraph by the Fessenden system across Norton Sound from Nome (Fort Davis) to St. Michael, about 110 miles. The contractors failed, however to make the installation and the contract was revoked.

In view of the failure of the contract or to install the wireless system across Norton Sound, and in order to meet the desire of the commanding general, Department of the Columbia, for telegraphic communication with Fort Davis, the Signal Corps has taken up this problem and is now engaged in an effort to install a system that shall work from St. Michael to Safety Harbor, near Nome, Alaska, a distance of about 105 miles. Experimental work with separate and composite, systems is being carried on in Long Island Sound by Capt. L.D. Wildman, Signal Corps, with a view to eventually working between Fort Schuyler and Fort H.G. Wright, a distance of 105 miles, and of which about 10 miles are lowland. For this purpose masts 140 feet high have been constructed, and completed in order to make final tests. Captain Wildman now awaits special montor dynamos and transformers.

Meanwhile, installation of mast and antennae are now being made at Safety Harbor and St. Michael, so that what ever system proves satisfactory in Long Island Sound can be utilized in Alaska in 1904 by the transfer thereto of suitable sending and receiving apparatus. At both St. Michael and Safety Harbor the permanent plants are now in process of transportation and erection. There are to be at each station two tripple masts 200 feet high, between which are to be suspended fan shape antennae, consisting of 125 copper wires one foot apart. The motor power is to consist of a 5- horespower gasoline engine and a 3-kilowatt motor dynamo, 60 cycle alternator. At one station will be a transformer "stepping up" from 500 to 20,000 volts, and at the other "stepping up" from 500 to 25,000. The large Muirhead receivers, which now seem to be the best available type, are to be utilized in this work unless meantime other experiments produce something superior.

Another contract was made with the American-Marconi

Wireless Telegraph Company to establish wireless communication between two points in the Tanana Valley where great difficulties were expected in constructing an ordinary telegraph line and in maintaining it satisfactorily, the contract locating to the connecting of two points about 164 miles apart with an intermediate station should the Marconi Company so decide. It was hoped that this installation would be made by October 1902, but the contractors were not able to install the system last year. They were at work during the summer of 1903, but to this date no success has been reported. It has, therefore, been necessary for the Chief Signal Officer of the Army to direct the efficient maintenance of the land lines in the lower valley of the Tanana, such action being imperatively necessary in view of the failure of the wireless installations in a reasonable time.

As was stated in last annual report, the De Forest system of wireless telegraphy was utilized during the Army and Navy maneuvers on Long Island Sound. This year the same system has been used to replace a broken cable in New York Harbor, between Forts Wadsworth and Hancock, and it was worked most satisfactorily over this distance of 12 miles. In this system a motor dynamo of one kilowatt capacity, driven by the power of the post plant at 110 volts, produces an alternating current of 500 volts at 60 cycles. This runs through a two kilowatt transformer, which "steps up" the voltage across the spark gap. Messages are received by the telephone and De Forest responder.

Report of the Chief Signal Officer - War Department

Wash. D.C. Oct. 3, 1903

While communication is now had regularly by telegraph between the civilized world and the Yukon Valley westward to St. Michael, yet restoration of communication with Nome has so far proved impracticable. The cable between Nome and St. Michael was so badly injured by ice, some 40 miles having been carried away, that its repair meet the urgent recommendations of the commanding general, Department of the Columbia. Efforts are being made, with prospects of success in 1904, to establish communication by wireless telegraphy between St. Michael and Nome across Norton Sound, a distance of 108 miles.

October 4, 1904

The Signal Corps Wireless station at Nome could communicate with a similar station on the Kamchatka coast, but the in-

fertile and sparsely inhabited country thence to the Russian station of Nikolaevisk renders any such enterprise unlikely.

As has been stated in previous annual reports, efforts to establish a wireless system across Norton Sound and in the valley of the Tanana, awarded to two different companies under public proposals, entirely failed. The contract was abandoned in its primary stages in one case, while in the other the efforts proved fruitless after two or more years to the construction of a permanent line through that section, it became necessary for the Chief Signal Officer of the Army to undertake through the officers and men of his corps, a wireless installation across Norton Sound. Work was commenced along two lines: First, to install those available and perfecting the system later. Second, as the short navigable season of four months in Norton Sound rendered it impracticable to carry on experimental work in Alaska, it was decided to establish two stations in connection with the coast defenses of the United States, where they would have a permanent value, and after devising a successful typical plant, transfer its sending and receiving apparatus to Alaska.

The arrangements for the temporary plant were made under the general directions of Major (then Capt.) Russel, whose special and important duty in connection with the Alaskan cable installation left him but scant time for arrangements, whose execution must necessarily be carried out 2,000 miles away by assistants not under his personal observation.

In the late summer of 1903 the Norton Sound bases were established. At Safety Harbor and St. Michael there were built portable houses, in which were installed engines, batteries, and wireless instruments, supplemented by two masts at each station 210 feet high, between which are suspended fan-shaped antennae, consisting of 125 copper wires one foot apart. The motor power consists of a 5 horsepower gasoline engine and a 3-kilowatt motor dynamo, 60 cycle alternator. At each station is a transformer "stepping up" from 500 to 20,000 volts, and at the other "stepping up" from 500 to 25,000 volts.

These poles, the highest ever erected on the Pacific Coast, and antennae were installed through the resourcefulness and professional skill of Mr. R.D. Ross, a civil engineer employed for this purpose.

Unfortunately, part of the wireless material failed to reach St. Michael owing to its shipment by the steamer Meteor, which was disabled en-route. First Lt. Alfred T. Clifton, Signal Corps, with a selected force of signalmen familiar with wireless work, extemporized instruments through which wireless signals of a meager and unsatisfactory character were exchanged during the winter.

Meanwhile experimental work was carried on in Long Island

Sound by Capt. Leonard D. Wildman, Signal Corps, with separate and composite systems. Captain Wildman eventually devised a composite plant, originally based on the De Forest system, but largely modified by inventions of his own, as elsewhere stated. This plant worked with great success between Forts H.G. Wright and Schuyler, New York, a distance of 97 miles, of which about 20 miles was over the northwestern part of Long Island. The transfer of the typical instruments from Long Island Sound to Norton Sound was promptly and satisfactorily accomplished by Capt. Wildman during the present summer. The perfection of training, simplicity and method of installation were such that the installation was made with great facility.

Capt. Wildman, at St. Michael, and Sergeant Treffinger, at Safety Harbor, installed their respective systems in less than two days. Capt. Wildman reports that the wireless material was landed and delivered at St. Michael by noon of August 4, and says:

At 9 o'clock a.m. on the 6th, complete messages were exchanged, and the telegram from me at Safety Harbor was released and set forward. No serious trouble of any kind was experienced and every part of the machinery worked in perfectly satisfactorily manner. Since that time we have been pushing the machinery overloaded about 20 per cent in order to see if it could be broken down. The signals are fine and louder than I have ever heard them at either the stations at Schuyler or Wright. The operators have no difficulty in reading the messages while the relay is working in the same room and with engine running in the next room and men walking about and talking in an ordinary voice anywhere in the house.

On August 17 the Nome section was thrown open for commercial business with the rest of the world, and the wireless section of the Alaskan telegraph system is now an everyday adjunct of the electrical appliances of the twentieth century. It has daily and uninterruptedy transmitted the entire telegraphic business of Seward Peninsula. In one afternoon 5000 words were exchanged between Safety Harbor and St. Michael.

In short, through the professional skill of Capt. Wildman and his subordinates, the Signal Corps of the Army is now regularly operating the longest wireless section of any commercial telegraph system in the world. It is a new illustration of the intelligence and aptitude of the American Army that this electrical installation and its operation are the work of its officers and soldiers.

News Items: Portland, Oregonian, Nov. 24, 1906

The U.S. Weather Bureau is establishing government sta-

tions from Alaska to Mexico. Tatoosh has been in operation for sometime. Northhead is now under construction and work has started on Cape Blanco. Mt. Tamalpais, just north of the Golden Gate is now in operation. Stations to be established next are: Table Bluff, Trinidad Head and Point St. George.

Main office of the United Wireless Company in Seattle

By-line Modern Electrics Magazine

photo 39

This was conceded by experts to be the most complete and thorougly equipped wireless telegraph instrument factory in the country, and has just been completed in Seattle by the United Wireless Telegraph Company. The structure is situated at 1426-1428 Jackson street, on a hill overlooking the manufacturing district of the city, where ample light, fresh air and transportation facilities are unexcelled. In fact, the site is ideal for a factory of this kind and was selected with a view to having a permanent home for the producing department of the company.

The building consist of three stories and basement. It has a frontage of fifty feet and extends 100 feet back to an alley. Concrete was used through-out in its construction, making it practically fireproof.

The plant is fitted with almost every known device to facilitate the manufacturing and handling of wireless telegraph apparatus. An electric freight elevator has been installed for more conveniently carrying on the work of the plant. Fire escapes, open plumbing and other modern fittings have been used for the safety and convenience of the employees.

United Wireless Telegraph Company's Machine Shop

At Seattle, Washington. Right Eden Haw. Photo by:

Gordon Haw

40 photo

The top floor of the building is occupied by the machine shop. Here the material in the rough is taken and the work of turning it into the various devices for sending aerograms is started.

The second floor is used as an office, drafting room and testing room. On this floor also are located the nickle plating and polishing departments. A general store room and shipping department occupy the remainder of the floor. The wireless instruments are set up and tested thoroughly before going to the shipping room. The testing department is one of the most interesting places in the establishment. It is equipped with two mammoth switchboards, from which both direct and alterna-

1/2 photo

ting current can be obtained, of almost any voltage desired. Every piece of apparatus is sent to the testing room and given what is known as "the break down test". If any defect is discovered the instrument is returned to the manufacturing department.

In connection with the testing room an antenna has been erected on the roof of the building and lead wires run directly to the testing room. This feature of the factory is considered one of the most important in the plant. Not only can tests be conducted satisfactorily by this arrangement, but aerograms can be exchanged with other stations of the company in the Northwest as well as with boats at sea. Orders for apparatus can be transmitted direct by the operator aboard an incoming boat so that by the time the vessel arrives at its dock the instruments can be on the pier ready for installation. This avoids unnecessary delay and confusion on the arrival of the craft.

A fully equipped laboratory is maintained by Superintendent N.O. Nelson so that the latest inventions and ideas in wireless machinery may be tried and experiments made to improve the present equipments, if possible.

A force of expert wireless engineers, designers and electricians is at work every day in the week at this busy place but the factory is scarcely able to keep pace with the demand.

Info: From "The Pacific Aerogram. Vol 2 July 1910 no. 4

Loaned by Mr. N.O. Nelson,
3710 Brooklyn Ave.
Seattle, Wash.

General Information of the United Wireless Telegraph Company

In the early 1900's there was quite a bit of stock selling promotion. Wireless was new and where it was going was anybody's guess. The United Wireless Telegraph Co. had a few stations by 1909 and by 1911 it was a large business organization. They would not sell equipment, only lease it. A steamship company would pay a monthly rental for the equipment of $200 per month per ship. United furnished the operator whom they paid $40 a month. Of course the operator got his meals and lodging from the steamship company. In port he received $1 a day extra and not served meals. In those days this was not as bad as it might sound. The operator had no expenses except for clothes, and also got a chance to travel to all sorts of places in the style equivalent to fine hotels, and being away from where he could spend his money, and actually he might save some. Marconi operators on the East Coast started at $30 per month but $40 was the lowest on the West Coast.

United Wireless Station "PA" at Seattle, Washington

"PA" was established about 1910, where the Alaska Yukon Pacific Worlds Fair had been located in 1909 on the University of Washington Campus.

The antenna was a 210 ft wooden mast, with a four wire flat top using 12 foot spreaders. The antenna ran over several hundred feet to a wooden water tank and was fairly effective because of the land topography.

During 1913 the station was moved to the Maritime building, in which the engineering shops were located. The new location was no where near as good as the earlier station location. Thus about 1916, PA was again moved to the 42 story L.C. Smith building in down town Seattle. Here a 5 KW 500 cycle quenched spark gap transmitter was installed by Vincent Kraft. The antenna ran from the 35th floor of the building over to the top of the ten story Alaska building. There were sixteen wires in the flat top.

About this time the call was changed to KPA and then at the out break of WWI the U.S. Navy took it over and changed the call to NVL. At the end of the war the original call letters were returned to the station.

The primary concern of KPA was making contact with ship arrivals to Seattle and not very much night traffic was handled.

United Wireless Station "PE", Portland Oregon

News Item, April 18, 1906 from the Portland Oregonian

G.L. Mellegan, a wireless expert who has spent the past week in Portland tuning the local station, that is, adjusting the wave length sent out to that of the other stations so they may talk together, has watched the development of wireless from the time a message could be flung through the ether a scant four miles. He believes the development of the ether wave will give to science the power to make daylight. He says it is only a question of short enough vibrations of the wave, together with high enough frequency of the current. He also thinks power will be sent through the air in future without wires. Mr. Mellegan installed the wireless station in St. Michaels, Alaska, the first commercial station ever established on the West Coast.

United Wireless Telegraph Station, "PE", Portland, Oregon

The Portland wireless station was located on Council Crest, the highest hill in South Portland. It was constructed in 1906 and used the call sign, "PE". The station had a 200 foot wooden mast, guyed, with a four wire loop running over to an observation tower that was in the northwest center of the amusement park.

The station equipment consisted of a De Forest-Shoemaker 25,000 volt transformer, glass plate condenser and conventional tight coupled Helix and Spark Gap.

At the time of installation the first operator was Tommy Thompson. Later Jess Sweitzer took over for several years. After that John Julian ran the station later transferred out to the Federal station at Lents. This was a Poulson Arc station.

Before "PE" closed down, United Wireless Company had installed a station in the Perkins Hotel using the call "DZ". The operating position was down in the lobby operated by the Chief Operator, C.B. Cooper, known as "CBC" with Cliff Watson. The spark was up on the roof of the hotel in a dog house with the antenna running one full block to the top of the Sweatland Building.

About this time, United Wireless Telegraph Company expanded and put stations in hotels up and down the West Coast. One of the stations near Portland was located at Kalama, at a point which the trains transferred across the Columbia River on the way to Seattle. The station at Kalama had the call "PV". It was a relay point to Chehalis, "DV" where the operators were Billy Anderson and Desart, later Jess Weed.

This group of stations around Portland could contact stations far north to Friday Harbor, Seattle and ships across the sound. Other stations in the net were, Bellingham, North Head, The Dalles and Salem.

Probably the first wireless came to Portland on Admiral Fullam's flagship the USS Charleston during the Lewis and Clark Centennial June 1st 1905. The transmitter onboard was a 2 KW spark with a De Forest audio control box receiver. If you doubt it, Cliff Watson states, "They sure as hell had one on the Charleston, I was there."

News Item: Portland Oregonian April 7 , 1907

The Council Crest station of the United Wireless was just put into operation and is now working with San Francisco, Tatoosh and Table Bluff. The operator can hear all stations from Victoria B.C. to Mexico, but not Sitka, Alaska. The operator said he was able to contact the steamer Enterprise 400 miles out from San Francisco bound for Honolulu.

The best line of wireless stations in the world will soon be installed on this coast. Wireless Telegraph works better here than in the East because there is less humidity in the air. Mr. G.L. Milligan the installer will now go from Portland to Alaska, where United Wireless will establish 14 stations. The United Wireless has about 100 land stations and 150 ships.

News Item: Portland, Oregonian April 19, 1908

United Wireless station at Council Crest, D.A. Cameron now the only operator. He works nights because of better distance covered. He talks to Sitka, Tatoosh and San Diego.

Historical Notes on PE United Wireless Station in Portland

From the Oregonian April 19, 1908 by C.H. Williams

If you were on a ship midway between Portland and Honolulu and the craft were to sink beneath the waves, you could while the waves were laping hungrily at the sinking craft, send a message to your friends in Portland and direct disposition of your property. Or if your voyage were more happy, and was to end at Portland, you could, while off the Columbia River, far out of the sight of land, order a cab sent to your pier to meet you at the hour you step off the gang-plank.

You can order rooms reserved at your hotel, notify your wife you will be home for dinner, or do any one of the thousand things that you can do through the old telegraph and telephone system. If the shaft of your steamer breaks and the vessel drifts helplessly at the mercy of wind and wave at any point off the coast from Sitka, Alaska, to Magdalena Bay, your captain can flash a message to Portland for a tug, giving the location of the disabled vessel, with reassuring messages to friends of passengers on board. This is a splendid accomplishment, when it is remembered that thousands of steamships, similarly disabled, have drifted helplessly for weeks and many have finally gone down, overwhelmed by storms.

All these things and innumerable others have been made possible by the installation of the new wireless station on Council Crest by the United Wireless Telegraph Company, which has just been put in operation. With the crash of the wireless spark as his only companion, D.A. Cameron, the operator, keeps vigil over the city sleeping far below him, for the station works only at night, when conditions are most favorable for the wireless apparatus. The violent rays of the sun at war with the ether that carry wireless messages, and fight them like red corpuscles in the blood do disease germs. Humidity in the air also breaks up ether waves. Only short distances are covered by wireless in the daytime. Messages to be sent over 200 or 300 miles are transmitted at night when conditions are perfect.

Every night Operator Cameron, hears the wireless messages passing between Admiral Evan's fleet of fighting ships and Southern California stations. He hears what ships far out at sea have to say as they pass each other hundreds of miles apart. He is chummy with the operator at Sitka, Alaska, and chats with the man at the key in the lonely hut on Tatoosh Island, as readily as one neighbor to another over the telephone. He gossips with the man on watch at San Diego, and the stations between as readily as one man to another across the room.

The wireless telegraph operator is another Aladdin. He caresses his key, which is another magic lamp, and the genii of the clouds do his bidding. The willing slave carries his mesage a thousand leagues over land and sea, and delivers it more quickly than a flash of lightening. Before the wink of an eye is accomplished, this modern wizardry is done.

This is nothing short of magic - greater magic than the wonder-workers ever wrought. That one may send a message across mountains, over deserts, fling it across oceans, without wires or cables, losing not a letter of its import, is nothing less than a miracle.

Would the steamship Columbia have gone down last Summer off the California coast in collision with the San Pedro, had both vessels been equipped with wireless as Portland-San Francisco steamers are now? Probably not.

By wireless telegraph and its sister invention, the wireless telephone, ships can warn each other of approaching danger, even in the densest fogs and smoke, which often make visual signaling impossible. Lighthouses equipped with wireless can warn ships off the shore more effectively than the present system of lights.

In the New Station

At the Council Crest station, a mast 200 feet high has been placed, from the peak of which stay wires reach in each direction. These wires are not used in receiving or transmitting messages, eight antennae serving these purposes. There are 26 other stations on the Pacific Coast already, all of them in touch with the Portland station, as well as a number of ships that ply across the ocean. From Portland to Sitka is 870 miles, while to Magdalena Bay is 1590 miles more. Stations will be placed within a short time at Coos Bay and Grays Harbor, making a chain of wireless masts that will be ready for communication with each other at all times reaching the whole length of Western North American Coast.

Wireless messages have been sent very long distances successfully. Last Spring the naval wireless station at Point Loma, Calif. took part of a message sent by the wireless operator aboard the Connecticut, which was off the east coast of Cuba. A message from the battleship Rhode Island was received by the same station, the vessel being at that time off Cape Henry. The Armored cruiser Pennsylvania, in San Francisco Bay last August, took a wireless message from Savannah, Ga. a distance or more than 2400 miles. The message was recorded without a break.

A striking demonstration of one of the many uses of the wireless was made last August by an enterprising New York newspaper. The annual cruise of the New York Yacht Club was about to be sailed through Long Island Sound and the newspaper equipped a tug with wireless apparatus and arranged to send financial bulletins and stock quotations to it every little while. The tug was to follow the fleet of pleasure craft and hoist signals telling the latest news of Wall Street. Each yacht had been supplied with code books in advance by which the owners could interpret the tugs signals. Wireless messages were flashed to the tug from the top of a Broadway skyscraper, where a mast and laterals had been set up.

While the fleet was gathering at Glen Cove a number of the yachtmen declared they intended to separate themselves entirely from business worries during the cruise. They accepted the code books politely, but intimated they would not be used. On the following day the finacial storm broke.

Many who had steeled themselves to be heedless at the outset were the most interested readers of the financial bulletins. From having promised themselves to be interested only in squalls at sea, they began to strain their eyes for squalls on the New York stock exchange. Scores who started out to remain with the fleet until the finish of the cruise at Newport hastened back to the storm-center. Those who remained were kept as fully advised of the market as if they had been in their own offices.

One minute and thirty seconds was required to flash the news of the London opening to the fleet, the message being relayed by the Newport naval station, and in three minutes the OK had been sent back to the New York operator that the wireless tug had received the message.

The same newspaper office was in possession of the fact that the schooner yacht Elmina won the Astor cup two minutes and thirty seconds after the boat crossed the line, all due to the re-traveling on the ether wave, and then sent across the country and picked up as wireless messages.

But the most wonderful development in the field opened up by the wireless inventor is probably as yet unguessed. Operators believe that the constant improvement of sending and receiving apparatus that is bound to come, the wireless message will be sent longer and longer distances, and no one can guess what will be the ultimate distance spanned by the wireless spark.

Like the other big advances in science the wireless telegraph has made the world smaller. For centuries the earth has been shrinking. When Marco Polo first circumnavigated it, the globe grew noticeably smaller. When the first steamer boat ploughed the Atlantic, distances grew less.. With the invention of telegraph and telephone and the building of steam railroads,

what seemed informidable distances shrunk to short comfortable journeys. With the invention of the wireless telegraph, the earth positively shriveled. It has done more to annihilate distance than almost anything else. Terror of sea travels has been vastly minimized.

And why not greater wonders? Why should not the control of ether the most insubstantial substance bind the planets closer together as it has the hemispheres? It is not altogether improbable that the ether waves offers means of communication with Mars and other planets believed to be inhabited. Given the means of generating a wave strong enough and there is no reason why it should not break on the shore of that little known, mysterious planet. Why not sometime detach an ether wave from the Council Crest antenna which would pulsate the receiving lateral of Martian station?

Ether not only permeates the air and water but substances as well and its chief constituent of that void between the worlds where nothing is across which light and heat travels on ether but through which no sound can. How fast the ether wave will speed its own element, where no air is, cannot now be known. Who knows but in the supposedly perfect medium, an ether wave would flash across hitherto unbridged distances and all in the twinkling of an eye?

In fact some wireless inventors believe Mars has been trying to signal us by this means already. Last Summer when this new science was being developed by leaps and bounds, a number of scientists were experimenting along the Atlantic Coast at widespread stations. Operators at the keys throughout the night reported that at certain fixed intervals each night a mysterious message of the dots would be tapped on the receiver. Not once, but many times this happened and many operators at different stations reported it.

Where the dots came from no one knows, but the suggestion was made that it might have been Mars trying to speak to the earth through this new and universal means of communication.

United Wireless Station At Astoria, "PC"

In 1907 the United Wireless Co. decided Smiths Point at the west end of Astoria would be a perfect spot to construct Oregons first Wireless Telegraph station. "Old PC" was finally located on top of a hill at the end of "G" street in Astoria, Oregon. Fine homes now occupy the site, but in those days things were very primitive, including the old shed used for a wireless shack. Dexter Bartlett visited the station in 1916 and the shed was still in use, including the old United equipment.

During Nov. 1907 the station was coming along very fine using Dr. Lee De Forest's equipment. It was activated with Mr. Alfred Ferland as the first operator. The masts were 204 feet high but during the winter of 1907-1908 they toppled due to

a strong gale, barely missing the building. This of course put the station out of commission until next spring when two masts 113 feet high were erected, with a flat top antenna, having a down lead at each end ending in a stub mast and then a single wire into the station.

The De Forest equipment consisted of a 2 KW transformer, straight spark gap, the usual Leyden jar condensers and a one coil helix for the transmitter. The receiver consisted of a two coil tuner with carborundum electrolytic and silicon detectors, plus a whisker point coherer consisting of a german silver wire with a platinum core 1-1000 inch in diameter. The station was connected to Astoria by Western Union.

In 1908 or 1909 the Atlantic fleet made a world tour, with the USS Connecticut as flagship. It passed by within sight of Smith Point, and "PC" furnished the news. The fleet, even at that time was equiped with De Forest radiophone sets.

Some of the early wireless operators at "PC" were: Lynch, R. De Champlain, Joe Hallock, Bill Vetter and Dexter Bartlett.

Vincent Kraft helped dismantle "PC" in 1918, now known as KPC. The old guyed square tapered wood masts came down. The masts had been constructed with over-lapping joints with brown wood apparently creosoted treated wood all the way to the top.

KPD Friday Harbor

This station was established to relay between the ships at sea, and Seattle which was too far inland to hear most of them. Most of the ships were equipped with either a one KW or a 2 KW spark set, not enough power to contact Seattle when at sea. The receivers on shipboard were the same as the land stations, a crystal detector. This combination of transmitter and receiver on 600 meters only maintained communication several hundred miles at sea and less over land depending on whether it was day or night.

At sea, ships could easily maintain contact with Port Townsend, but California or Orient bound steamers turning west into the Straits of Juan de Fuca started to loose contact very rapidly. Alaska bound ships likewise had trouble after pasing the San Juan Islands. Thus KPD was built so that its signals carried strongly to Cape Flattery the entrance to the Pacific Ocean, and north to the Seymour Narrows and extended the range of the Seattle station about 100 miles. Now steamers could call KPD as they rounded Cape Flattery, and send docking messages on through KPD to Seattle eight to ten hours before reaching port.

Vincent Kraft says that he has heard of several stations being called KPD. First in 1910, Pachina Point was KPD and then

Friday Harbor in about 1912. After 1912 Friday Harbor became KPD no. 2 and Pachina VAD. After several years KPD at Friday Harbor was closed down when the use of shorter wave lengths became more effective and it was not needed as a relay point. KPD was then issued to Hawk Inlet, an Alaska fish cannery.

THE END COMES FOR THE UNITED WIRELESS TELEGRAPH COMPANY

The United Wireless Telegraph Company trying to capitalize on the new device, "Wireless," incorporated and sold stock in tremendous quantities. Thousands of people saw a chance to get rich by getting in on the ground floor of this new invention, and the principal company they could buy into was, United Wireless. It was a national company in scope with offices on both coasts and the Great Lakes. To keep in the public eye, they built a string of wireless stations on both coasts and the Great Lakes. Some of these stations later developed into very valuable outlets but at that time had little value in commerce but showed on the maps of those selling stock.

There were two distinct phases of the company's operations handling traffic between ship and shore, and selling stock for promotional purposes. In charge of the financial operations on the West Coast was George H. Parker, Fiscal Agent for United Wireless, with headquarters at 601-632 People's Bank building, Seattle. These offices were separate from the operating end of the company which was located in the Arcade building, Seattle.

Stock was sold in great amounts, totaling millions of dollars. George Parker lived in a newly built mansion in Seattle, Suddenly in July 1910 the bubble burst. Parker was indicted, tried and sent to the penitentiary for mis-appropriation of funds, as were several other officers. One clipping in the newspaper reported Parker had been found to have made 66 big real estate transactions here presumably with United Wireless funds but for his own advantage.

The fancy offices were closed, while the manager and his stenographer operated out of the newly built factory. Within two years, United merged with Marconi Wireless Telegraph Co. or American Marconi Co. Later it became RCA. Such was the meteor like rise of a new industry which inspired many wireless operators, and then fizzled down to sputter.

Poulson Wireless Telephone and Telegraph Company

Cyril Elwell of Palo Alto obtained the patent rights for the Poulson arc developed by the Danish engineer, Valdeman Poulson. Elwell formed the Poulson Wireless Telephone and Telegraph Co. in 1912 with himself as president opening com-

mercial communications between San Francisco and Honolulu a distance of 2400 miles. The following year 1913, Elwell left the firm which had been purchased by the Federal Telegraph Company.

Federal Telegraph

After the collapse of the United Wireless Company, the most active commercial wireless company on the west coast was the Federal Telegraph Company. It operated under the Poulson patents and the equipment was imported from Denmark in 1910.

The active chain of stations comprised: Seattle, San Diego, Portland, Medford, Central Point, Sacramento, Phoenix, El Paso, Fort Worth, Chicago, San Francisco and others.

To span the Pacific Ocean a station using 40 KW was erected in Honolulu. The other stations used a D-C generator of 500 to 1000 volts, choke coils, arc and loading inductance to feed into a "T" type antenna. The arc was water cooled and current went between a copper positive electrode and a carbon negative electrode. This was put in an intense magnetic field, and in an atmosphere of gas, generally denatured alcohol.

Keying was accomplished by shifting the wave length rather than keying part of the circuit voltage. The easiest way to do this was to short out several turns of the inductance with relays thus changing the wave length about five percent. All of the time energy was going into the antenna, and it took a sharp receiver to tune in the signal because of the blocking effect.

The distance covered between Los Angeles and San Francisco was 350 miles, using 12 KW as typical or the power needed. At night, San Diego using 5 KW could contact San Francisco. During the winter months the 12KW station in San Francisco could reach out to El Paso during the day time, a distance of 900 miles but not good enough for a commercial traffic service net.

The towers at San Francisco were 440 feet high and 600 feet apart. The antenna drew 40 amperes of current when loaded to 35 KW. During 1912 the distance covered was 2300 miles and 2500 words of press could be handled each day at the rate of 25 cents per word. Between S.F. and Los Angeles 300 messages were sent each day on 3260 meters.

During the period 1911 to 1912, the interesting phenomenon of skip distance became well known. For instance at Phoenix the signal from San Francisco would become lost and yet the compensating wave which was higher in frequency would still come through. This was noted especially at night fall, yet the longer wave could be heard in El Paso, Texas. Thus the operators reasoned that propagation was being disturbed by refrac-

tive power of the clouds bending the waves. This was before it was known about the various reflective layers in the atmosphere.

On Dec. 8th, 1912 communications were established between San Francisco, Washington D.C. and Honolulu using 35 KW.

Continental Wireless Company

The biggest competitor to United Wireless during 1910-1911 was the Continental Wireless Company. They had a 5 KW station located in Seattle on Queen Anne Hill with the call letters S2. Another station was located in Tacoma with the call O2. The stations could not get contracts with any ship stations and soon had to close shop. Joe Hallock was an operator for them in 1910.

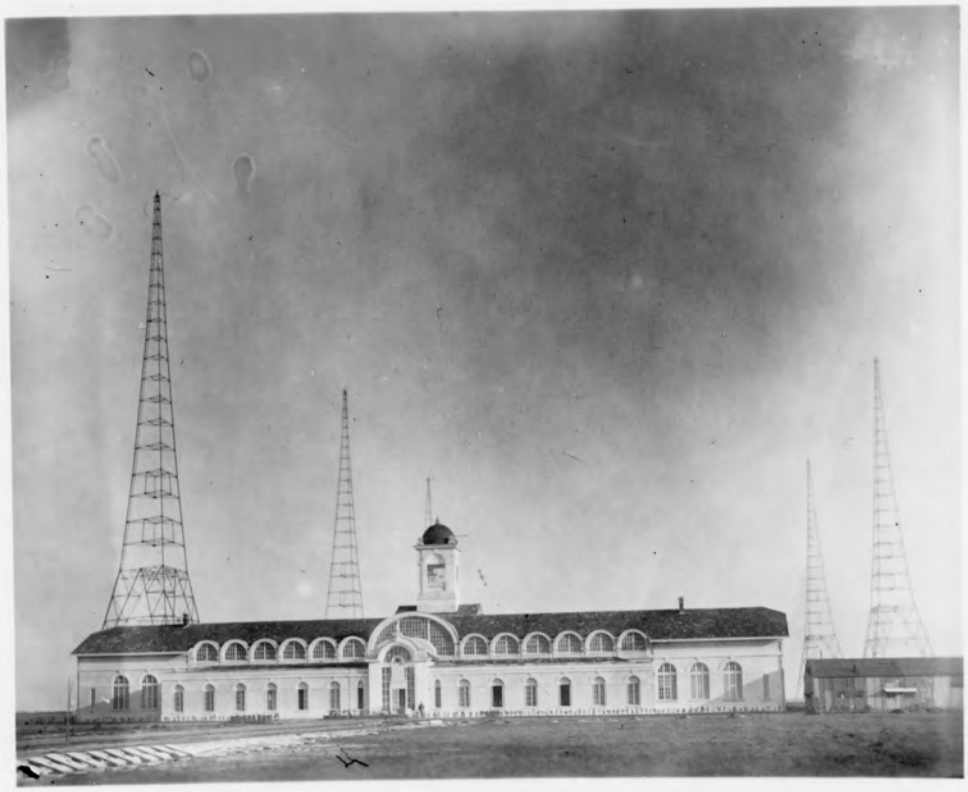
The Continental Wireless Telegraph Co. when they were on the air operating had to divide their transmitting time with United. Prior to 1912 when the 600 meter assignment went into effect, ships and land stations had any wave length they chose, some longer and some shorter. With crystal detectors and Type D tuners, this didn't make too much difference. If a transmitter started up in your area, you usually heard him, then proceeded to tune him in better. All this spark traffic generally caused interference problems with the Navy Yard Station NPC at Bremerton who also had to maintain contact with various naval ships. Thus a gentleman's agreement, that permitted the Navy to transact its business on the first half of the hour, during which all other stations would remain silent. Then at the half past the hour the Navy would remain silent for the commercial station to carry on. After 1912, 600 meters was assigned to the ship-to-shore traffic.

The one ship contract that Continental had was the Rose City with the call H2 during 1906 to 1910. Morse code was used in place of Continental Morse code. The Rose City later became the Rose Isl after many years carrying sugar to Hawaii and the bottom rusted out. It ended its days as a gambling ship anchored off San Pedro, filled with concrete to take the place of the engines which were taken out. Originally the ship was an old U.S. Army transport the Ft. Lawton.

The Pacific Wireless Company 1902-1906

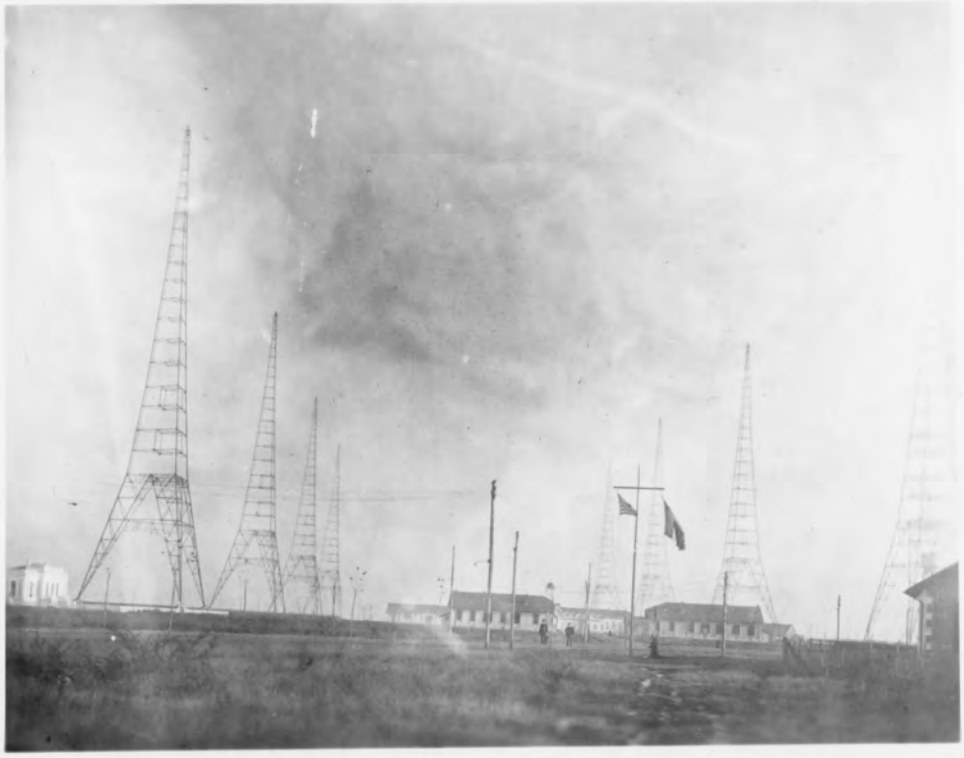
The Pacific Wireless Company had a circuit between Los Angeles and Catalina Island during the years 1902-1906. This station handled a good many news items for the local population of the Island. The newspapers published the results of the Jeffries-Fitzsimmons fight on the Island many hours before the local steamer arrived with the news.

One morning two fellows left Avalon on the 5 o'clock boat before it was discovered that they had taken the cash and expensive wine from the Metropole Hotel bar. Avalon citizens

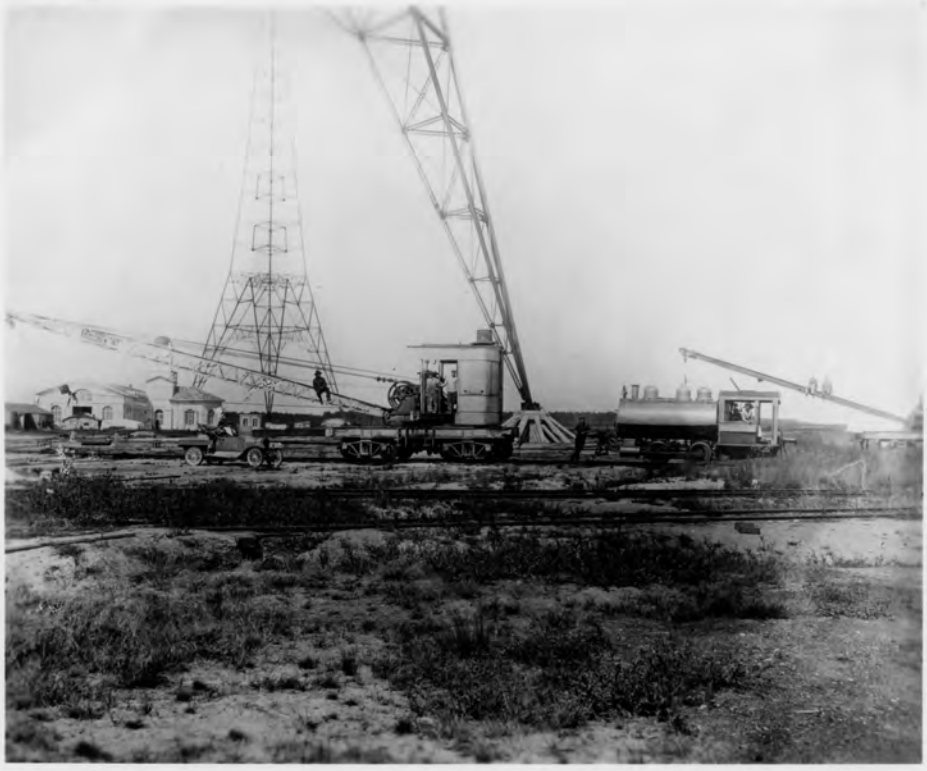


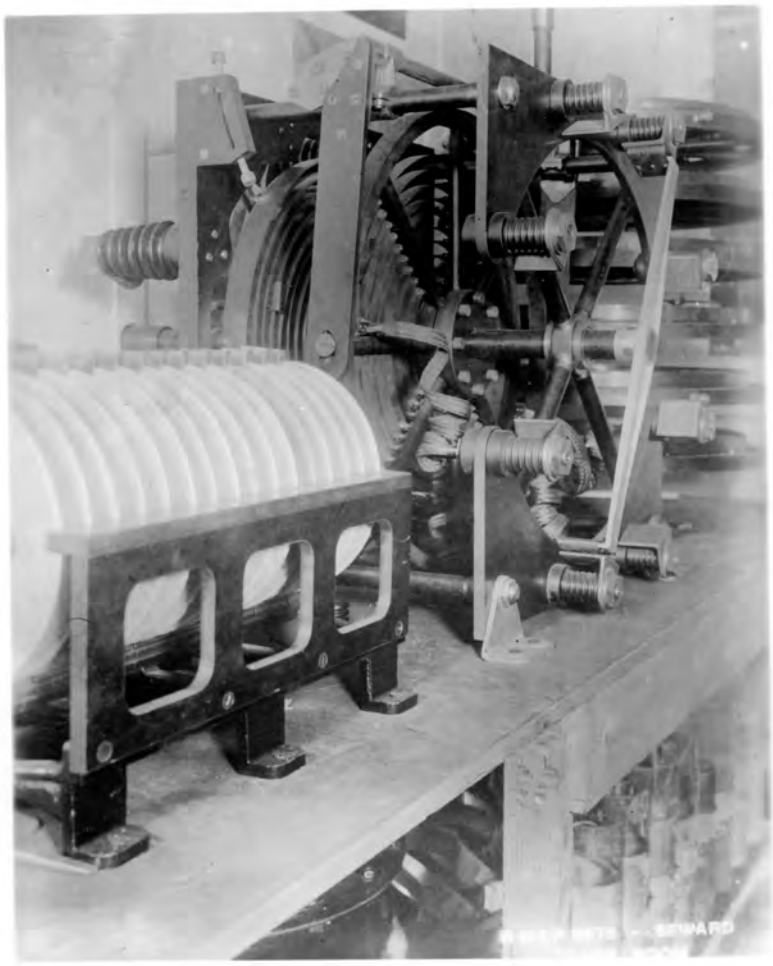
U.S. Navy Shore Station FLZ at
Croix d'Hins, France 1919

This station ran a full one million watts. Had eight towers 800 feet high and used frequency shift keying on 15 kcs. The station was installed by Joe Hallock or the Poulsen Arc part.



U.S. Naval Radio Station FLZ
Croix d'Hins, France.





Loading coils at NPW, Seward, Alaska 1918. Operating position shows antenna switch insulators. These insulators were made by Telefunken and sealed with lethard and glycern. During their construction some water must have gotten inside the seal. When wireless engineer Cliff Watson cranked up the power, the steam generator blew the insulator apart and it went across the room through the wooden shack wall.

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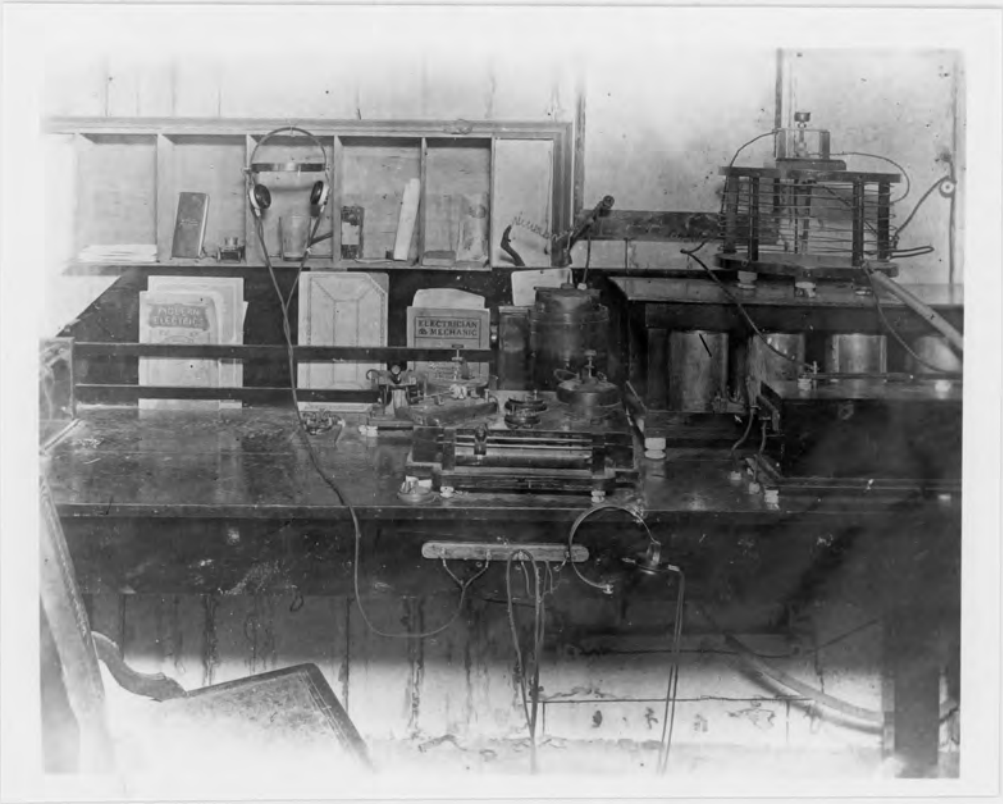
Phillip's Code was used by operators on wireless circuits beside land line in order to speed up traffic.



San Diego Station ES
Operated by Eugene Skinner in 1909. Main contact, Pacific Coast SS Co. and local contacts. Sometimes Navy ships in Magdalena Bay 500 miles south were contacted by 1910.