



HILLTOP HONEY FARM
Charles R. Underhill, Jr.
Butts Bridge Rd. (West End)
Canterbury, Conn. 06331
Phone 546-9650

March 12, 1975

Memo for: SOCIETY OF WIRELESS PIONEERS

Attached are photo copies of of some records and historical data I came across in the attic yesterday. There's a lot of "stuff" to be unloaded. It doesn't belong where it is because there is no one other than myself to really appreciate it.

The photograph of the loose coupler is from one of eleven films which I found in the attic yesterday. These negatives are various views of the 5 units which comprised the original equipment ~~he gave~~ Major Edwin Howard Armstrong gave me in 1914. Three are internal views of the variable condensers and the variometer, -all of which he made while in high school (Yonkers, N.Y.).


Chas, R. Underhill, Jr.

RADIO CORPORATION OF AMERICA

RCA VICTOR DIVISION

CAMDEN, NEW JERSEY

**ENGINEERING PRODUCTS
DEPARTMENT**



September 9, 1946

Dr. E. H. Armstrong
Prof. of Electrical Engineering
Philosophy Hall
Columbia University
New York, New York

Dear Howard:

I recently came across the wireless telegraph receiving set with crystal detector which I understand you made and used when a boy and gave me in 1914 after you graduated from Columbia. It has been stored for about twenty years in the attic at 60 Stanley Street, New Haven, Connecticut, (my wife's home until we married in 1923).

Recently, it occurred to me that this set should be presented to some museum for posterity. This would have to be subject to your identifying it and contributing any further information that would make it of increasing value for future generations.

Having often heard Dad reminisce about you as he knew you since about 1907, I asked him to write me a story about this set. The attached photostats are of his letter. The photographs enclosed were taken by me last month and will serve to show the various units as they exist today.

In appreciation of the help you gave me in getting started in wireless when I was a boy, I would like to follow your wishes as to the disposition of this set.

With kindest regards,

Chas.
Chas. R. Underhill, Jr.

1
encl.

CHARLES R. UNDERHILL

FELLOW, A. I. E. E.

FELLOW, A. A. A. S.

CONSULTING ENGINEER

(Registered Professional Engineer)

SPECIALIZING IN ELECTROMAGNETIC
AND ELECTROMECHANICAL DEVICES

LOWER BANK, N. J.

Author of

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"ELECTRONS AT WORK"

"POWER FACTOR WASTES"-ETC.

Contributing Editor

ELECTRICAL MANUFACTURING

August 27, 1948

Mr. Chas. R. Underhill, Jr.
255 Hoads Avenue
Haddonfield, New Jersey

Dear Son:

In reply to your inquiry about how Major Edwin H. Armstrong happened to give you his home made crystal wireless telegraph receiving set in 1914, I will try to give you what details I can recall.

You remember the summer of 1906 when we boarded at Mrs. Milikins' near Southeast lighthouse on Block Island. During our stay there I experimented with my wireless printing telegraph which I installed in the Block Island wireless station near the lighthouse (call letters, "BI"). * see other side

A year or so later, while commuting from Yonkers to New York City on the NYC & HRRR, I struck up a conversation with a fellow passenger and told him of some of my experiences with wireless. He was especially interested and told me his name was Smith and that he had been District Superintendent of the Hudson Division of the NYCHR. When he learned that I lived in Yonkers, not far from Greystone Station, he said he wanted me to meet his grandson who was interested in wireless.

The boy was Edwin Howard Armstrong, 17, son of John Armstrong, President of the Oxford University Press, whose home was on Warburton Avenue at the corner of Odell Avenue, just above Greystone Station.

For nearly two years, from 1907 to 1909, Howard visited me after school at our home on the old Pine Crest Estate, North Broadway, Yonkers, New York, coming at first on a bicycle and later on a motor cycle. I was working on my book "Solenoids" at the time and making drawings on a large drafting board in my den. Howard would sit nearby, leaning back in his chair with his head against the wall, and ask me a question to which I replied while drawing. Howard would meditate for awhile and then follow up with another question. This often went on for hours at a time. During one of his visits, I gave him the first vacuum tube he ever saw. It had been given to me by De Forest's chief engineer, Mr. Babcock, for experimenting with my wireless printing telegraph. *a Fleming Valve*

I think it was during this period, and while he attended manual training classes

in the Yonkers High School, that Howard built the set you now have.

Between the Fall of 1909 and June, 1911, we lived in Pittsburgh, Pennsylvania, and Muskegon, Michigan, and finally moved to New Haven, Connecticut, where we lived for ten years. I had been corresponding with Howard, who had graduated from High School and was then a student of Electrical Engineering at Columbia University where he received his E.E. Degree in 1913. In some of his letters to me, Howard told me how he had made the De Forrest Audion oscillate and that he had made a demonstration. (His famous "feed-back" circuit).

About 1914, Howard made several trips to New Haven for information regarding letters he had written me, for use in a lawsuit with De Forest. I later testified for Howard in court. It was during this time, while you were a Freshman in New Haven High School, that Howard sent me the wireless set to give to you. It consisted of five units and headphones, comprising a loose-coupler having green silk covered magnet wire wound on wooden forms, a variometer and two variable condensers each enclosed in a wooden housing. All the woodwork was of matched mission finish. The crystal detector stand and the headphones appeared to be the only units purchased complete. This may have been the same set we listened to in Howard's room at the Armstrong home in 1909, when he tuned in ship-shore traffic for us on 600 meters. Howard had a large mast to support his antenna which was almost opposite the point where his huge steel FM antenna now stands on the Palisades across the Hudson River near Alpine, New Jersey.

Anyway, you soon became enthusiastic over wireless, and Howard helped you to modify the crystal set for use with De Forest Audions and to cover long wave reception. You made the coils Howard designed at Boardman Manual Training School in New Haven, and I designed the open core interstage transformer and had it made at the Acme Wire Company. I recall that you and Howard corresponded frequently during that time.

A short time later, you became a Junior Member of the Institute of Radio Engineers. Your application was signed by E. H. Armstrong, L. G. Pacent, George E. Cole, and myself.

In looking back over the years I have known Howard, I like to recall that he has told me several times since he became so remarkably famous that a statement I made to him nearly forty years ago, while he was still a boy, made a big impression on him and contributed to his success. I told him that he was an original thinker.

I heartily agree with you, Son, that the set you have should be left to posterity in some museum if Howard is willing to identify it as having been made by him, and providing further that you are willing to make the presentation. I suggest that you write him for his views in the matter.

Sincerely,

Had.

March 12, 1975.

Note: Regarding the Block Island Wireless Station (BI).

I remember well that summer of 1906 at Block Island, and ~~xxx~~ spent many hours watching Dad making experiments with his wireless printing telegraph. Only seven years old at the time the crash of the open spark gap frightened both my sister and me at first. Capt. Dodge was Lighthouse keeper of Southeast Light and his two children were our playmates. We had the freedom of the area and loved to watch Capt. DODGE service the light etc. I stayed up a few nights with Dad who waited for the night boats from Providence, Fall River and New Bedford to pass within range of BI. Ozone filled the air in the little wireless shack. It was a haunting experience returning home with flashlight, especially on a foggy night when the rotating light from the lighthouse and the fog horn pierced the air. ~~DAD/NEVER/DAD~~ Dad never had a license to transmit. The range in the daytime of BI's transmitter was probably only a few miles. I vaguely recall Dad letting me press the key and the thrill of seeing the flash at the spark gap. It "turned me on". Three years later I knew the ~~continental~~ Morse Telegraph Code and in 1910 Dad helped me run a line to the home of playmates across Peck St. in Muskegon, Mich. I forget whether the line was via trees or telegraph poles. So I had the childhood thrill of actually "pounding brass" nearly 70 years ago at old BI.

Incidentally, George E. Cole was "sparks" of BI in 1903 when it was in active use for the safety of passengers on the night boats of the Fall River line etc., -later the New England Steamship Co. George was a wireless operator on one of the boats when Dad became acquainted with him over the air. He co-operated with Dad by sending signals so Dad could perfect his wireless printing telegraph. (I have a few inches of the taped with incoming signals printed on it.)

Dad sent me to NYC to meet George Cole in 1915. He was then in charge of WCG (I think), which preceded WNY on the roof of the Bush Terminal Building. That experience and his assurance that if I got a license I could be assigned to a ship during summer vacations really started a career.

In 1943 RCA transferred me from Pittsburgh to Camden. For about 8 years, or until he retired, George Cole and I had offices on the same floor in the same department. He retired to Florida and a few years before he died he shipped me a copy of Volume I No.2 BLOCK ISLAND WIRELESS, published by the Providence Journal Co.,

printed on the island containing news despatches that came by wireless telegraph. The issue is dated July 10, 1903. Price 5¢. It is mounted in a glass frame. George cautioned me about trying to open the frame for fear the four pages would disintegrate. So it is still hanging on the wall of my den. His signature "G.E.Cole" in ink is in the upper left corner. (I've just noted that George sent it to me on Oct. 29, 1956 from St. Petersburg, Fla.) size 11" x 13". It seems to me this should stay in the East. I wrote the Block Island Historical Society about it several years ago and offered it to them, but never received a reply. Perhaps it wasn't old enough!

Chas. R. Underhill, Jr.
CHAS. R. UNDERHILL, JR.
BUTTS BRIDGE ROAD
2/12/75

September 13, 1946

Mr. Chas. R. Underhill
Lower Bank, New Jersey

Dear Dad:

About 7:10 AM today, the phone rang and Frances answered it. It was a long distance call from New York City for me. It had all the earmarks of trouble, coming in at that hour, but a voice said, "Hello Reg. This is Howard Armstrong". He was enthusiastic over my letter in which I enclosed a photostat copy of yours about the wireless set he made and gave to me, along with eight photographs of the set. He said, "Hearing your voice is like hearing a voice from the grave", for it has been about twenty-five years since I last saw him.

He had completely forgotten about the set and seemed delighted to know I still have it. He asked where it is and said he would like to come down and look it over and discuss disposition of it. He inquired for you and Mother and said he hopes to get down to see you. He explained that his telephone call was made because he is getting ready to leave for a vacation and that he would not have an opportunity to phone this evening. (We leave for New England late this afternoon).

When I told him I have a scrap book with notes, pictures, and some of his letters with circuits written back in 1914, he said he'd like to have photostat copies of some of those old circuits.

So if he comes down, I'll try to arrange for you and Mother to be there.

Sincerely,

Chas. R. Underhill, Jr.

435 EAST 52ND STREET
NEW YORK 22, N. Y.

January 4, 1952

Mr. Reginald Underhill
Haddonfield,
New Jersey

Dear Reg:

Nice to hear from you again. I would indeed like to look at the old silicon detector and see if I recognize it as something made by me; I am sure I would if I made it.

I have not heard from your mother for a few months and trust she is still in good health. *

Looking forward to seeing you both again one of these days,

Most sincerely yours,

Howard

Edwin H. Armstrong

* Dad died
Oct 3, 1950
CHM

EHA:tec

435 EAST 52ND STREET
NEW YORK 22, N. Y.

February 4, 1952

Mr. Reginald Underhill
Rhodes Avenue
Haddonfield, New Jersey

Dear Reg:

Thanks so much for the crystal. Unless my memory fails me, it is Chalcopyrite, a copper sulphur oxide which had as its opposite number, Zincite --- the two together making the old Perikon Detector.

Thanks also for your invitation of a trip to Haddonfield once again. Perhaps we can do that this Spring --- I'm afraid I'm too heavily tied up at the moment to make it.

All best wishes,

Sincerely yours,

Howard

Edwin H. Armstrong

MEMBER



HILLTOP HONEY FARM
Charles R. Underhill, Jr.
Butts Bridge Rd. (West End)
Canterbury, Conn. 06331
Phone 546-9650

License # 17647
To Radio operator, Amateur First
Grade issued to
Charles R. Underhill, Jr
by SW Edwards, examining officer,
U.S. Radio Inspector
Cincinnati, O. June 9, 1921

LOOSE COUPLER

Hand-made by Edwin Howard Armstrong, circa 1908, Yonkers, N.Y. One of five components of a complete wireless telegraph receiving equipment given to me in 1914 and which was in my possession for over 30 years. Further details in letters to William Breniman (2/18/75) and Eben K. Cady (2/11/75)

Charles R. Underhill Jr



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Contributing Editor

ELECTRICAL MANUFACTURING

June 27, 1946

To Whom It May Concern:

While a student at Columbia University, New York, N. Y., where he is now professor of electrical engineering, and about the time he received his degree of E. E. (1913), Howard (E.H.) Armstrong gave my son C. R. Underhill, Jr. (Reg) a crystal wireless receiving set which Howard made especially for him. It consisted of five units and headphones. Four of the five units comprised a loose coupler with green silk magnet wire wound on wooden frames, and bases with mission finish -- a variometer and two variable condensers were in wooden cases with the same mission finish. One of the cases containing a variable condenser also contained a fixed condenser. The crystal detector and the headphones were the only units purchased complete. This set would pick up ship-shore traffic on 600 meters and also NAA time signals and weather reports.

After my son had used the set a few months and had mastered the code, Howard gave him a DeForest Audion with which Reg modified the receiver into a regenerative receiver and incorporated three inductances, each 30 inches long and wound on solid maple forms 5 inches in diameter, with taps about every 3 inches. Reg made these forms in boardman Manual Training School while a student in New Haven High School in 1915. The design and circuits were all made by Howard.

Later, Howard furnished circuits for an audio amplifier using a second DeForest Audion. I designed the open_core interstage transformer which was made by the Acme Wire Co., New Haven, Conn.

About this time, Reg became a junior member of the Institute of Radio Engineers. His application was signed by E. H. Armstrong (Howard), L. G. Pucant, Geo. E. Cole and myself.

In the summer of 1916, Reg passed an examination for Commercial Wireless Telegraph Operator at the Brooklyn Navy Yard and subsequently became wireless operator for the Marconi Wireless Telegraph Co., Ltd., and Electrician Radio, U. S. N., on the U. S. S. Pennsylvania, World War I.

Charles R. Underhill

From 1907 to 1909, we lived near the Greystone station on the main line of the New York Central Railroad, at a place called Pinecrest. I had been experimenting with my wireless printing telegraph at sea and was telling a fellow passenger *on the train* about it. His name was Smith. He had been district superintendent of the Hudson Division. He said he wanted me to meet his grandson who was interested in wireless if I was willing to do so.

The boy proved to be Edwin Howard Armstrong, 17, son of John Armstrong, President of the Oxford University Press. For nearly two years, he visited me after school and asked questions. He had a large mast with antenna by his father's house above the Greystone station on Warburton Avenue, Yonkers -- one of the few houses south of the Hastings-Yonkers line. Our families visited now and then.

In the fall of 1909 we moved to Pittsburgh; in 1910 we went to Muskegon, Mich, and in June, 1911, we moved to New Haven, Conn., where we lived for ten years. I had been corresponding with Howard, as I called young Armstrong, and he told me he had made the *(His famous feed-back circuit).* before the "audion oscillator". He also made a demonstration. Incidentally, I gave him the first vacuum tube he ever saw. It was given me by DeForest's chief engineer, Mr. Babcock, to try with my printing telegraph.

About 1914, Howard came to New Haven for information regarding letters he had written me for use in a lawsuit with DeForest, in which I also testified for Howard. About the same time, he sent me a crystal radio set for my son Reg to use. After setting it up and getting it going, I gave it to Reg who still has it.

Howard has said several times since that my statement that he was an original thinker made a big impression on him and contributed to his remarkable success.

*First boy
then
wireless*