

The background is a dark blue gradient with a subtle pattern of white dots. Overlaid on this are several faint, light blue circular elements. A large circle on the left features a scale with numbers from 140 to 260 in increments of 10. Other smaller circles and arcs are scattered across the frame, some with arrows indicating a clockwise direction.

FRANK & HESTER CHAMBERS

PHILADELPHIA'S EARLY RADIO POWER COUPLE

THEMES

- Acquisition spurs interest/Mystery
- Little details emerge
- Technical Developments don't occur in a vacuum
 - Uncovering the story: peeling an onion



HOW DID ANY OF US ENGAGE IN THIS HOBBY?

- Grew up with it
- Employed in the field
- History buff with focus on the person in the story
- Other reasons: fascination and enjoyment



THIS PARTICULAR JOURNEY

- Hunt, acquisition, and object documentation
 - Field Auction Find
- Social worker: focus on the person & their environment/times



CHIEF DOCUMENTATION SOURCES

- AWA Review 2 Article by Rexford M. Matlack in 1987
- Ludwell Sibley articles in Radio Age 1997 & copy of a catalog B-24
- Scores of newspaper articles and trade magazine references
- Ancestry.com
- Wikipedia, etc.



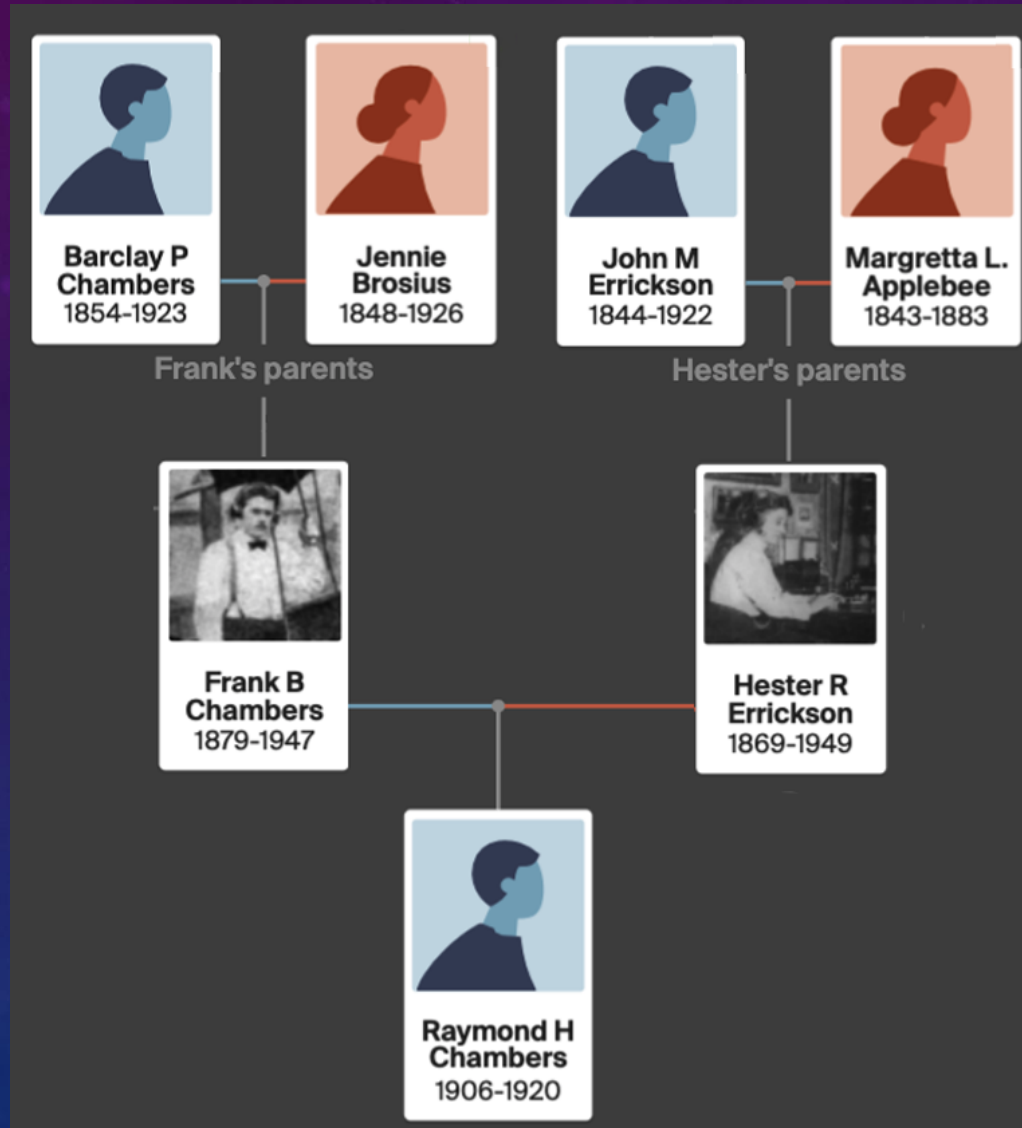
RADIO AGE



F.B. (FRANK BROSIUS) CHAMBERS' FAMILY FACTS

- F.B. - Born - 1879 in Norristown PA; eldest of 6
 - S, S (Lineman-Electrical-Engineer), D, D, D, S (carpenter)
- Father's Hx: Laborer/Carpenter (1906 own shop)
- Marriage: 1905

CHAMBERS FAMILY TREE (ABBREVIATED)



Note: Ages of Frank's & Barclay's Spouses

HESTER RULON ERRICKSON

- Born: 1869 in Chesterfield NJ
- Second of 5: D, D, S, S, D
- Occupation: Dressmaker
- Family Hx - Men: Laborers; Women: Homemakers
 - Family Lore: Marine Inventor - John Ericsson
 - *Monitor* used in Civil War
 - Screw Propeller, etc.

Ericsson Monument in Washington, DC →



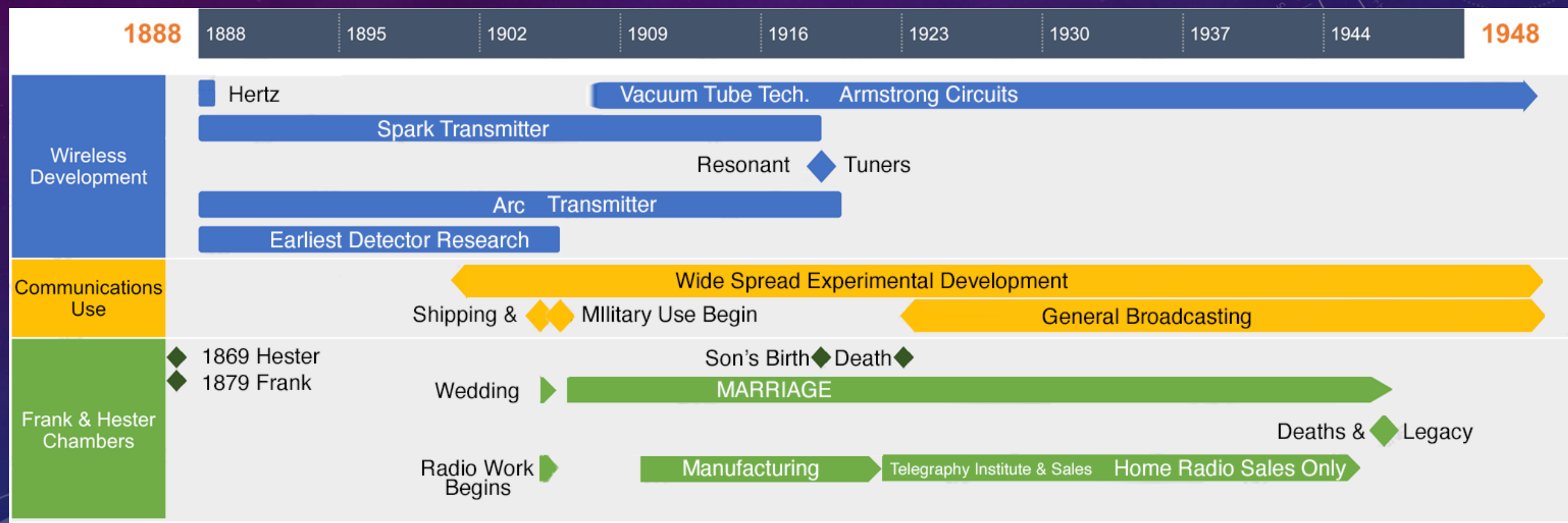
COMPANY STORY THAT EMERGED

- Spanned radio development from 1904-45
 - Telegraph operations
 - Education: Drexel Institute of Art, Science, and Industry
- Moved the amateur radio industry forward*
- Impacted legislation affecting amateur radio wireless stations
 - <1922 Point-to-Point Comms. vs “Broadcasting
- Involved a loving partnership with an apparent family tragedy

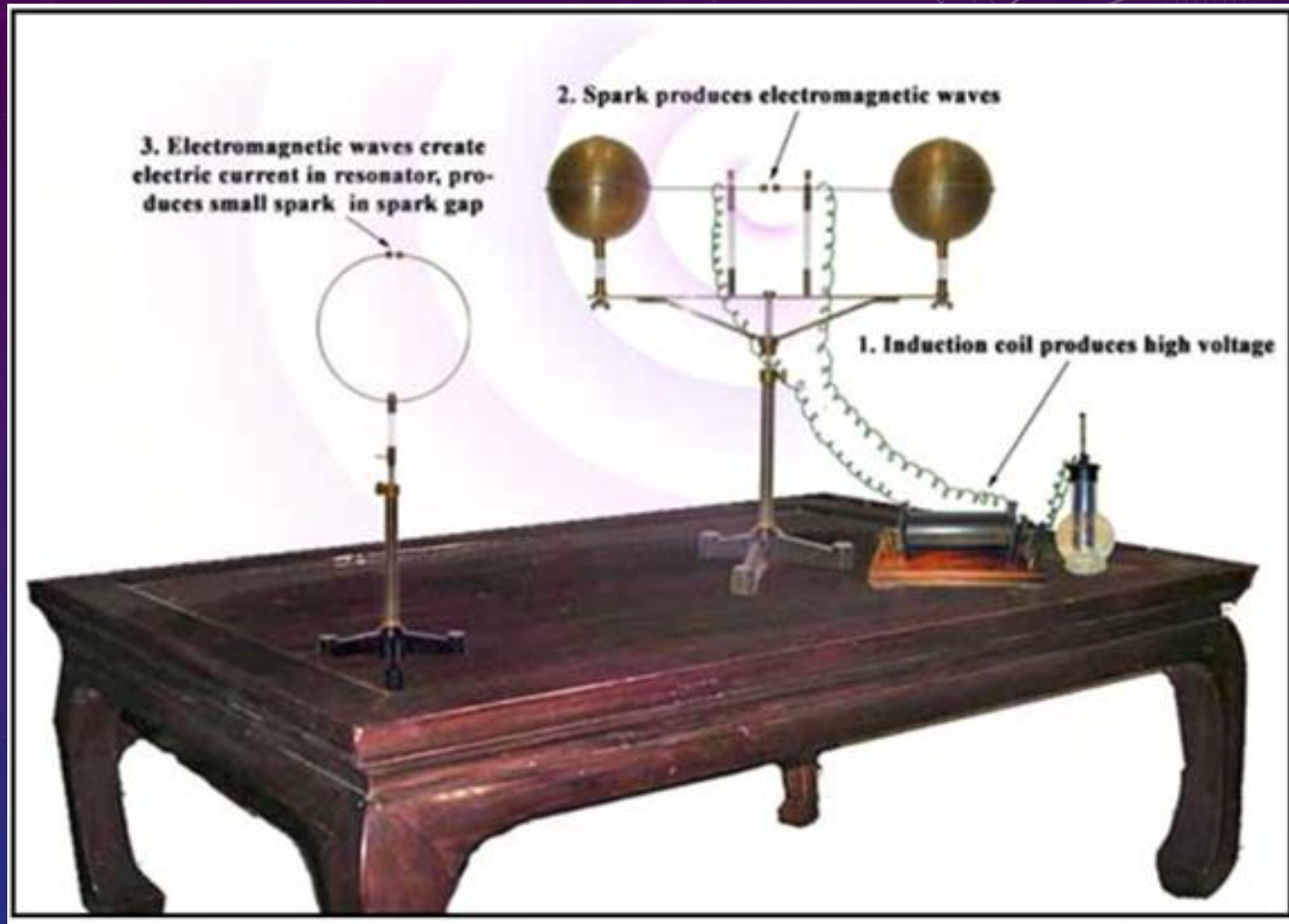


* *Two Hundred Meters and Down*, Clinton B. DeSoto, 1936, ARRL, West Hartford, CT, p. 49

TECHNOLOGY/CHAMBERS INVOLVEMENT TIMELINE



SOME HISTORY

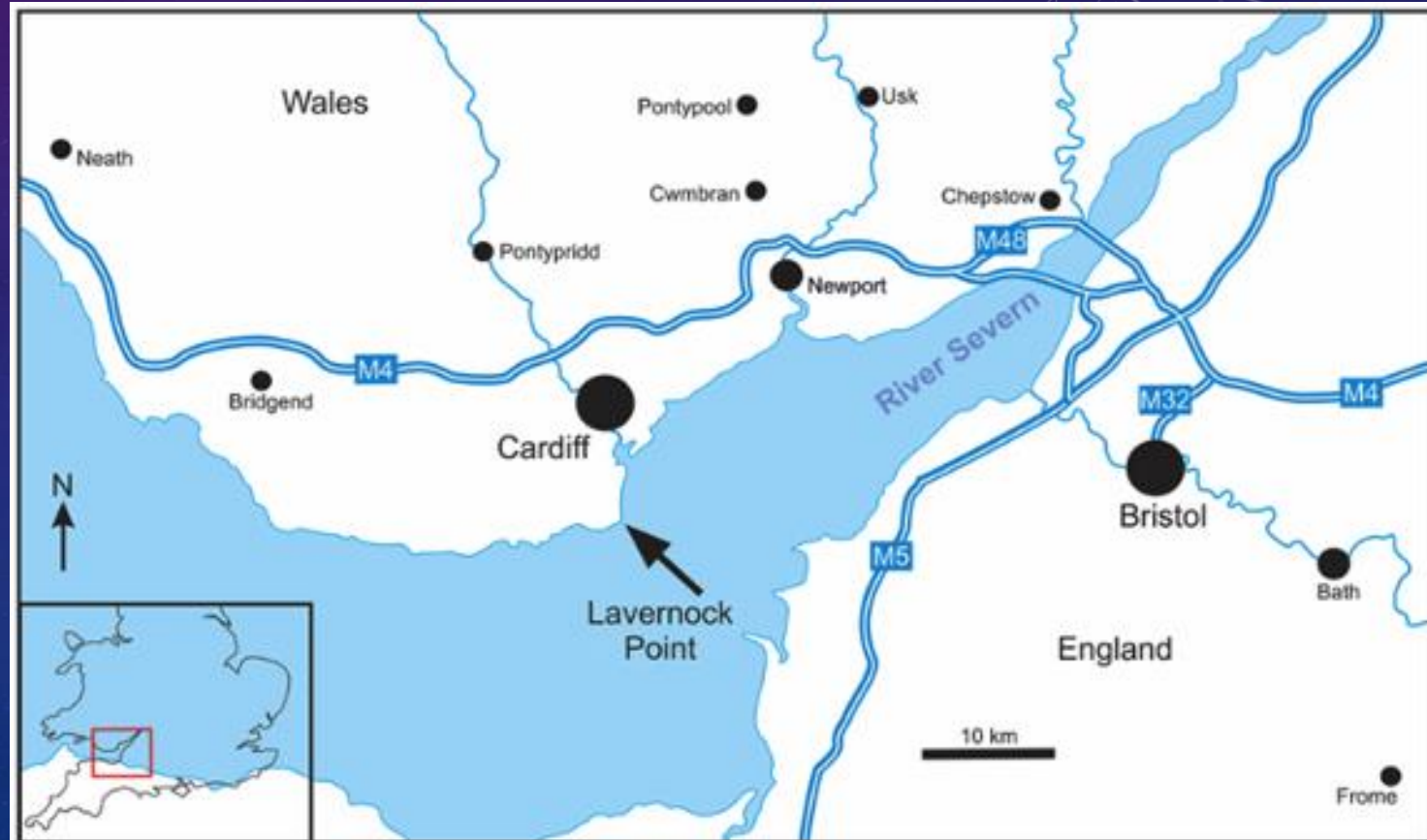


1800's Pioneers led to Hertz's paper in 1888:

*On Electromagnetic Effects Produced by
Electrical Disturbances in Insulators*

MARCONI: FIRST PRACTICAL RADIO SYSTEM

- 1897 Marconi first Wireless Transmission across open water
 - 3.7 Miles (6 km) across Bristol Channel:
Flat Holm Island to Lavernock Point near Cardiff
- 1901 First “Transatlantic”
Wireless transmission



WHY LONG WAVES?

- Man-made “Lightning” (Spark) transmission : First source of E-M Waves
- Fessenden notes that receiver development was critical to the communication system (1908)
- 1899 spark gap patent US Nos. 706735 and 706736, Dec. 15, 1899 (by Fessenden) * pg 10
- Tuning needed and “Tank circuits” developed vs “open tuned” receivers * pg 7 & 12, 1898. Loose couplers: non-selective — desirable(?) for general listening-in.

* *Wireless Telephony*, R. A. Fessenden, 1908 A Paper Presented at the Twenty-fifth Convention of the American Institute of Electrical Engineers, Atlantic City, N.J., June 29, 1908

RADIO SPECTRUM USERS & USES

Radio frequencies used by spark transmitters during the wireless telegraphy era^[121]

Uses	Frequency (kilohertz)	Wavelength (meters)	Typical power range (kW)
Amateur	> 1500	< 200	0.25 - 0.5
Ships	500, 660, 1000	600, 450, 300	1 - 10
Navy	187.5 - 500	1600 - 600	5 - 20
Moderate size land stations	187.5 - 333	1600 - 900	5 - 20
Transoceanic stations	15 - 187.5	20,000 - 1600	20 - 500

F. B. CHAMBERS PROFESSIONAL HISTORY*

Electrical Engineer w/Broad Training & Radio Engineer

Employed in Several Industries

- Telegraph
- Telephone
- Electric Lighting
- Overhead Street Railway Companies

Positions Held

- Foreman
- Superintendent
- Wire Chief

* Testimony before 65th Congress on Dec. 18, 1918 re: H.R. 13159 – A Bill to Further Regulate Radio Communication



COURTSHIP & PARTNERSHIP

- Frank: Telegraph Business in Trenton went to a Masonic Ball
- “[I] saw her from the back & asked to be introduced”
- Reporter: She is “Tall & willowy, fine hair and keen eyes, and wins respect of all
- Marriage: Feb. 21, 1905 in Camden NJ
- Per Hester in 1910, “[Frank is] a wireless enthusiast of the most intense kind.... He would not enjoy it unless I [was involved] too.”



Period
Hair Style
Example

PARTNERSHIP (CONT.)

- 1916 article: Mr. & Mrs. “NR” are “still inseparable....”
- Frank : You know I would not have done it [wireless] without her.
- He credited her with:
 - Manufacturing their instruments
 - Experiments on 3XC
 - Testing all new equipment
- She goes to all-men meetings who consider her “the finest there is.”
- Both were “passionately fond of children, although they have none of their own.” (1916) Chats with up to “10 kiddies” in an evening w/”little ‘peepy’ sparks which come out of the darkness like a little child voice.”



FRANK'S SUMMARY OF THEIR RELATIONSHIP

When the Wireless Association of Pennsylvania meets here, [Hester] is always with the men. When we go to other homes we never see the wives. I don't think that is right. A man and his wife should always have an interest in each other's affairs. It keeps them loving each other. We have never had a scrap in fourteen years. We always do everything together.

1910 CENSUS: STATE OF FAMILY & BUSINESS

- Location: 217 N. 9th Street
 - Hester ad: “Furnished room” in 1914
- 21 people resided there
- Frank: General Electrician
- Hester: No Occupation Listed
- Son, Raymond - 4 years old



1920 CENSUS: STATE OF FAMILY & BUSINESS

- Located at 2046 Arch Street
- Frank: Employer
- Hester: Simply Listed there
- Herbert Chambers (brother): Electrician/Engineer
- Gus J. Casper: Draftsman/Proof Reader
- Child, Raymond, **apparently deceased**



WORK SITE ADDRESSES

- 217 North 9th St. – 1905 - 1913
- 2046 Arch St. – 1914 - 1924
- 6046 Market St. – 1924 - 1928
- 6100 Market St. – 1928 - 1940+
(Home listed at 6102 Market St.)



HESTER & FRANK KEEPING IN TOUCH



WIRELESS ENTHUSIASTS IN 1910*

Hester:

- These mutual talks are interesting, but I have the greatest fun when I get him with his portable receiver and can do all the talking myself without his being able to reply with the word. The fun is not lessened by my knowledge of the fact that every wireless operator in the radius is in on the conversation and hears just what I am saying to my husband.
- We sometimes have a dozen boys talking to us and to one another. Will give them all an invitation to come in, and by and by one will call, make himself known and talk wireless until going home time.

* "Wireless Fun," New York Tribune, April 24, 1910, Page 19.

PRODUCT LINES

- Wide Variety of Supplies for Amateur Use
 - See Reproduced Catalog – Some Examples to Follow
- All focused on Spark Transmission and Reception



EARLIEST ADS FOUND

- 1911 – 4-Line Ad
- 1913 – Wireless & “Parts” for Sale
- 1915 – Rotary Gap Spark - QST’s First Issue (December)
- 1916 – Loose Coupler – QST January 1916

GO TO **CHAMBERS** FOR WIRELESS. Guaranteed first-class. Parts sold separately if desired. Send 2-cent stamp for catalog. **F. B. CHAMBERS**, 217 No. 9th Street, Philadelphia, Pa. (9)

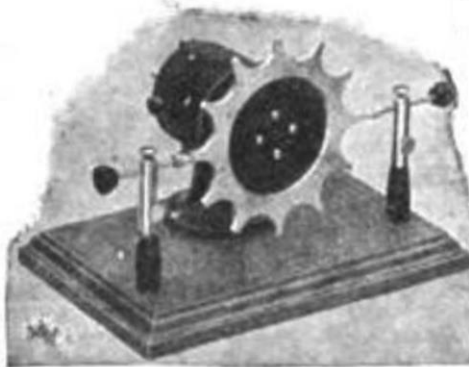
Why Not Get the Best?

Everything we manufacture is for Wireless, and if you give us one order, we feel sure of more to follow, as every article is just as represented; and mail orders receive prompt attention. Every Instrument is thoroughly tested before leaving the factory. We not only sell the finished article, but any or all parts to those who wish to make up their own Instruments.

Why not begin by trying one of our 3½" Coils at \$10.00 net? or, a Loose Coupler at \$8.50. All parts for this Coupler complete, unassembled; tubes wound, woodwork stained, etc., \$5.00 net. Receiving Set, consisting of Tuning Coil, Fixed Condenser, and Detector Stand mounted on Mahogany Base, \$5.50. 7-Strand No. 22 Copper Antenna Wire, 60c. per 100 ft. No. 14 Aluminum 50c. per lb. Positively 2c. stamp for Catalogue M-2.

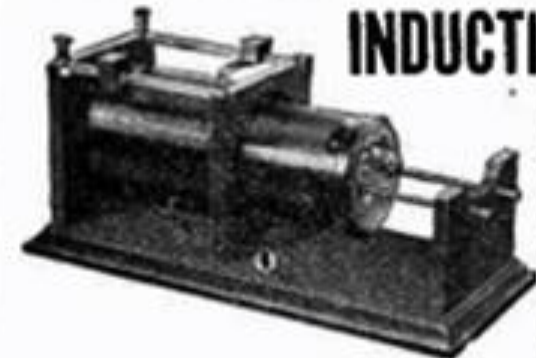
F. B. CHAMBERS & Co.,
217 North Ninth St., Phila., Pa.

ROTARY SPARK GAP



This Gap is entirely new, and no Wireless Station is complete without it. No wobbling, runs very steady, and on 60 cycles gives a tone similar to a flute; about 6,000 rpm on 110 D.C. or A.C. Suitable for ¼ to 1 KW. Motor has ¼ inch shaft. Price \$11.00. New Catalogue on press, ready about July 15th, 5c. in stamps for same. None otherwise.

F. B. CHAMBERS & CO., 2046 Arch St., Phila., Pa.



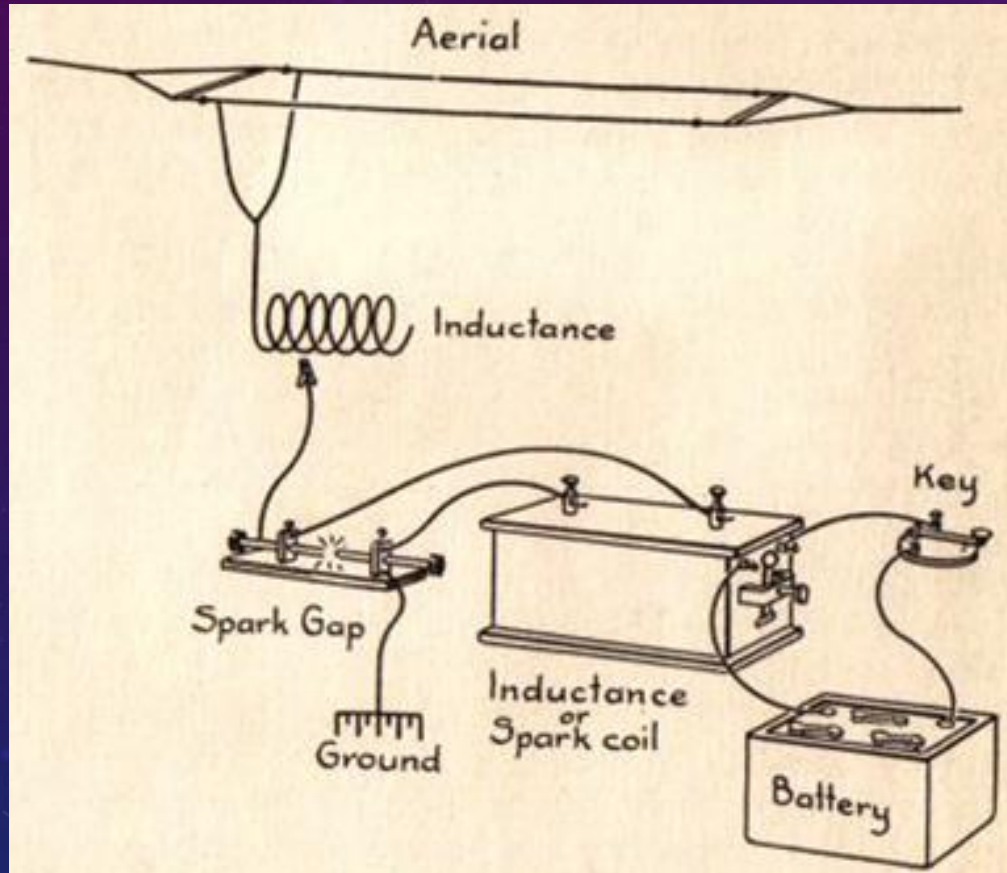
INDUCTIVE TUNER

The public are often misled by Cuts which show what looks to be a full sized Tuner, and upon sending for the article find it only a toy. But this is not the case with our tuner, as it is a first-class commercial instrument of the following dimensions:

Entire length, 15 in.; height, 7 in.; width, 7 in.; Prim. tube, 6 in.; L., 4½ in. diam.; Sec. tube, 5¼ in.; L., 3½ in. diam. 2 point variation switch, double slide, and wound with No. 22 and 28 enameled wire, mounted on mahogany-finished woodwork, and is guaranteed to be just as represented. Will respond to 2000 meters, and with variable condenser 3000. Price, ... **\$8.50**
Parts unassembled; woodwork stained. Tubes wound, Taps made, etc. Price, **\$5.00**
Positively 2c. stamp for Catalog M-2.

F. B. CHAMBERS & CO., 217 N. Ninth St., Phila., Pa.

SMALL SPARK STATION



Drawing Source: Lescarbours, Austin C. - Radio for Everybody (1922)
Scientific American Publishing Company, Munn & Co., New York, pg. 16

ONE OF CHAMBERS' SETUP RECOMMENDATIONS

TRANSMITTING SET NO. 2440

- Induction Coil No. 102
- Morse Key No. 548
- Dandy Spark Gap No. 242
- D.P.D.T. switch No. 344
- Storage Battery No 1818

WIRELESS RECEIVING STATION

One of Chambers' Setup

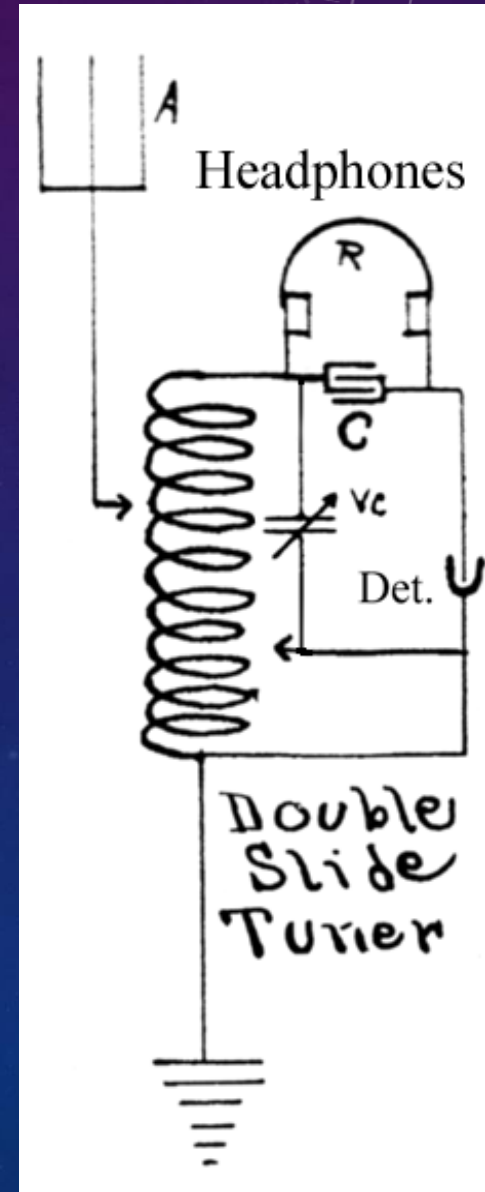
Recommendations

Receiving Set. No. 2430*

- Tuning Coil No. 705
- Receiving Condenser No. 720, or No. 726
- Detector Stand Nos. 1200, 1202, 1204, or 1208
- Rotary Variable Condenser No. 780
- Receivers (Headphones), complete, No. 1620 or No. 1628

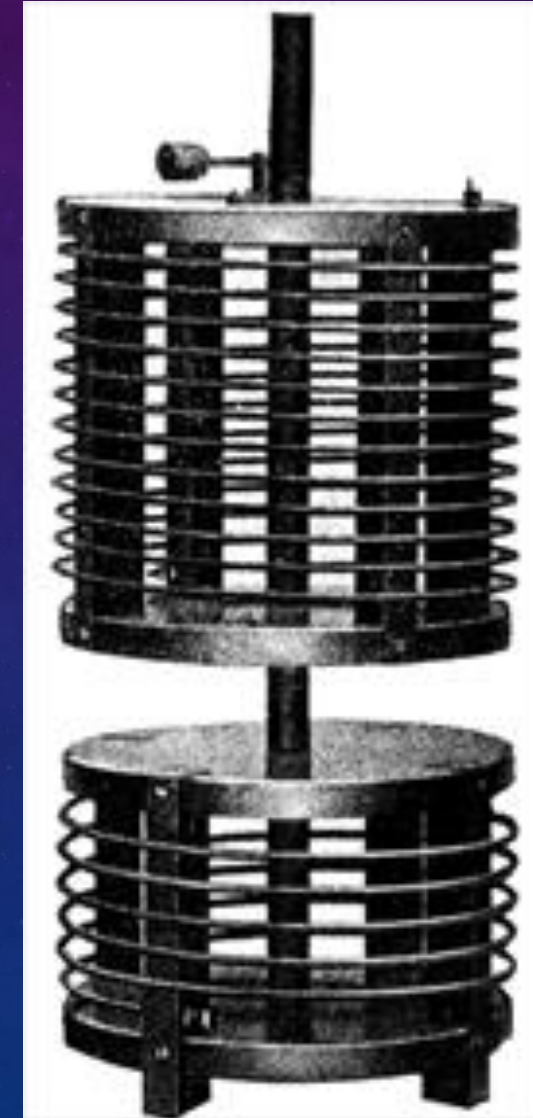
"[O]ne can easily read signal 2000 miles distant."

* Catalog B-24, p. 61



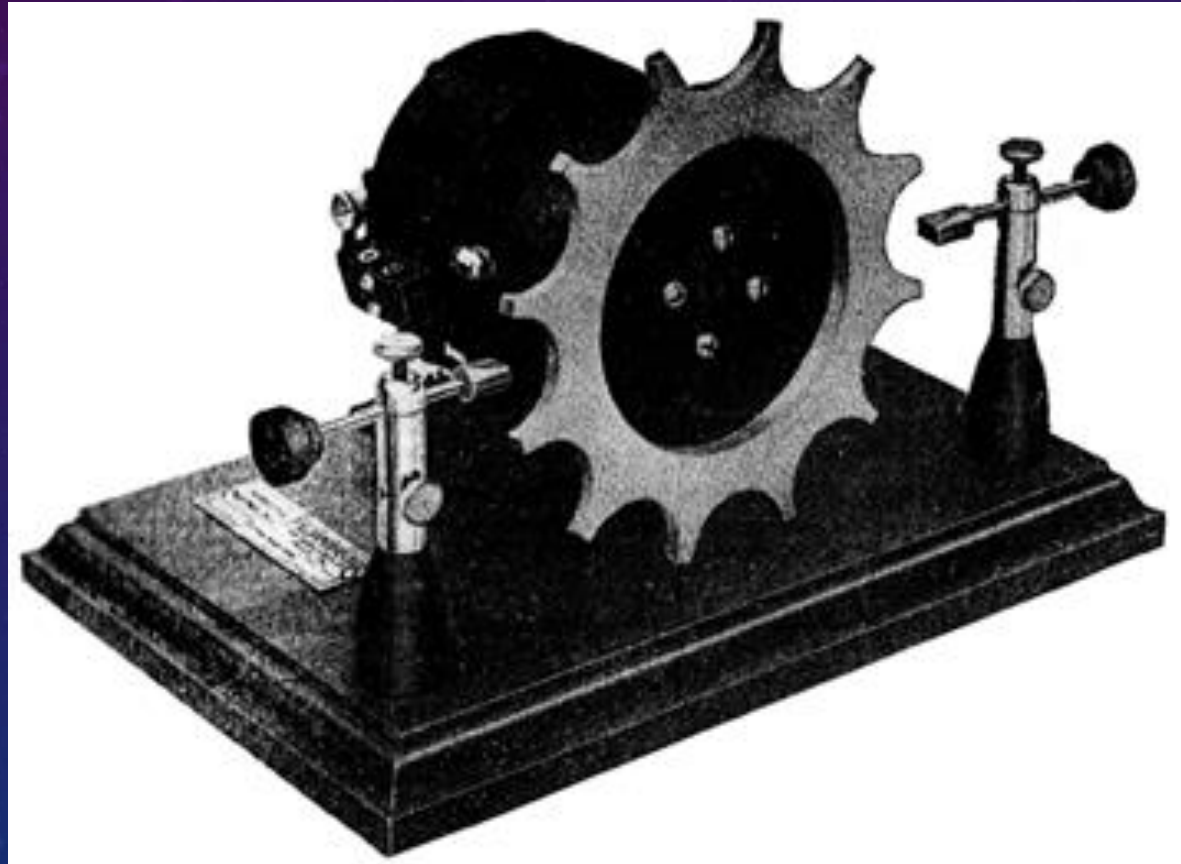
SOME SPARK EQUIPMENT

- Spark Equipment
 - Helix Coil
 - Oscillation XFMR



MORE SPARK EQUIPMENT

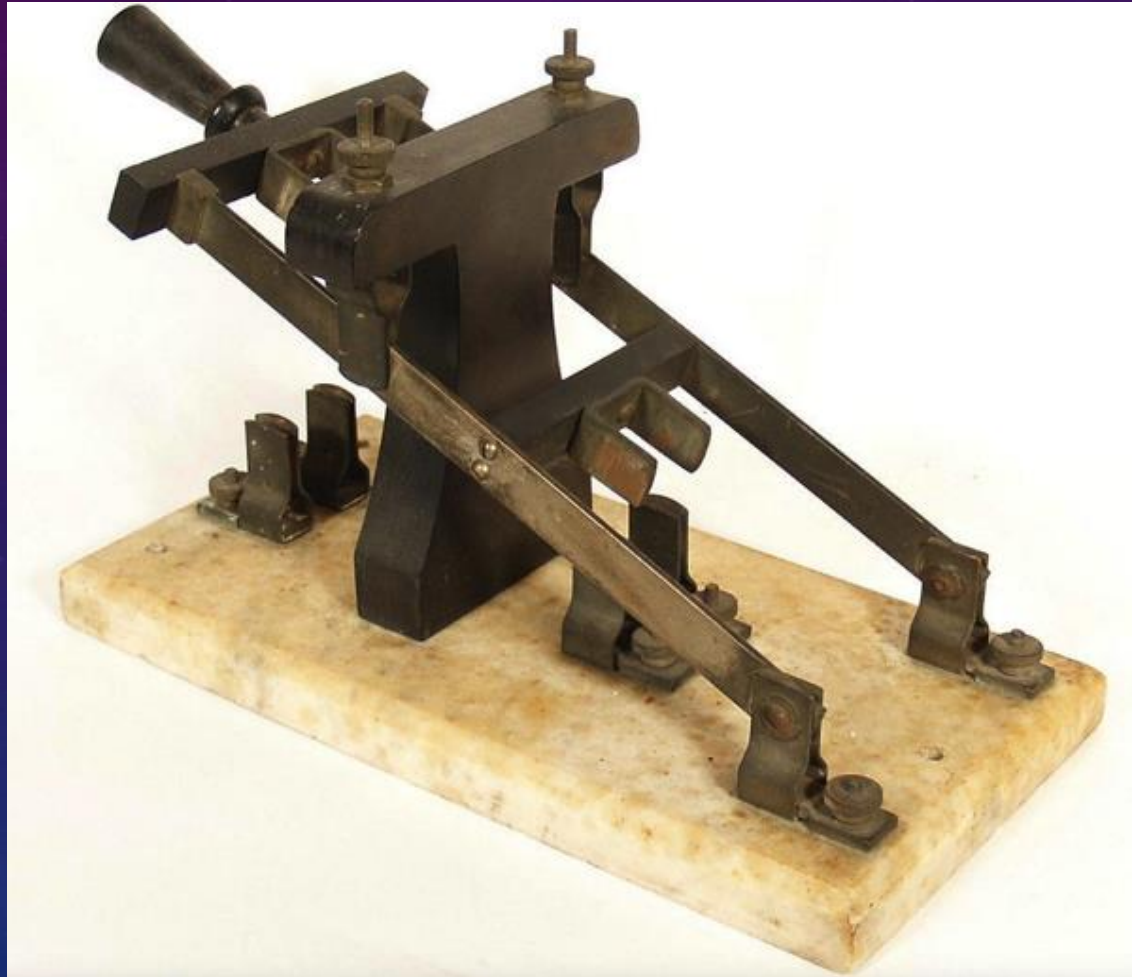
- Rotary Gap



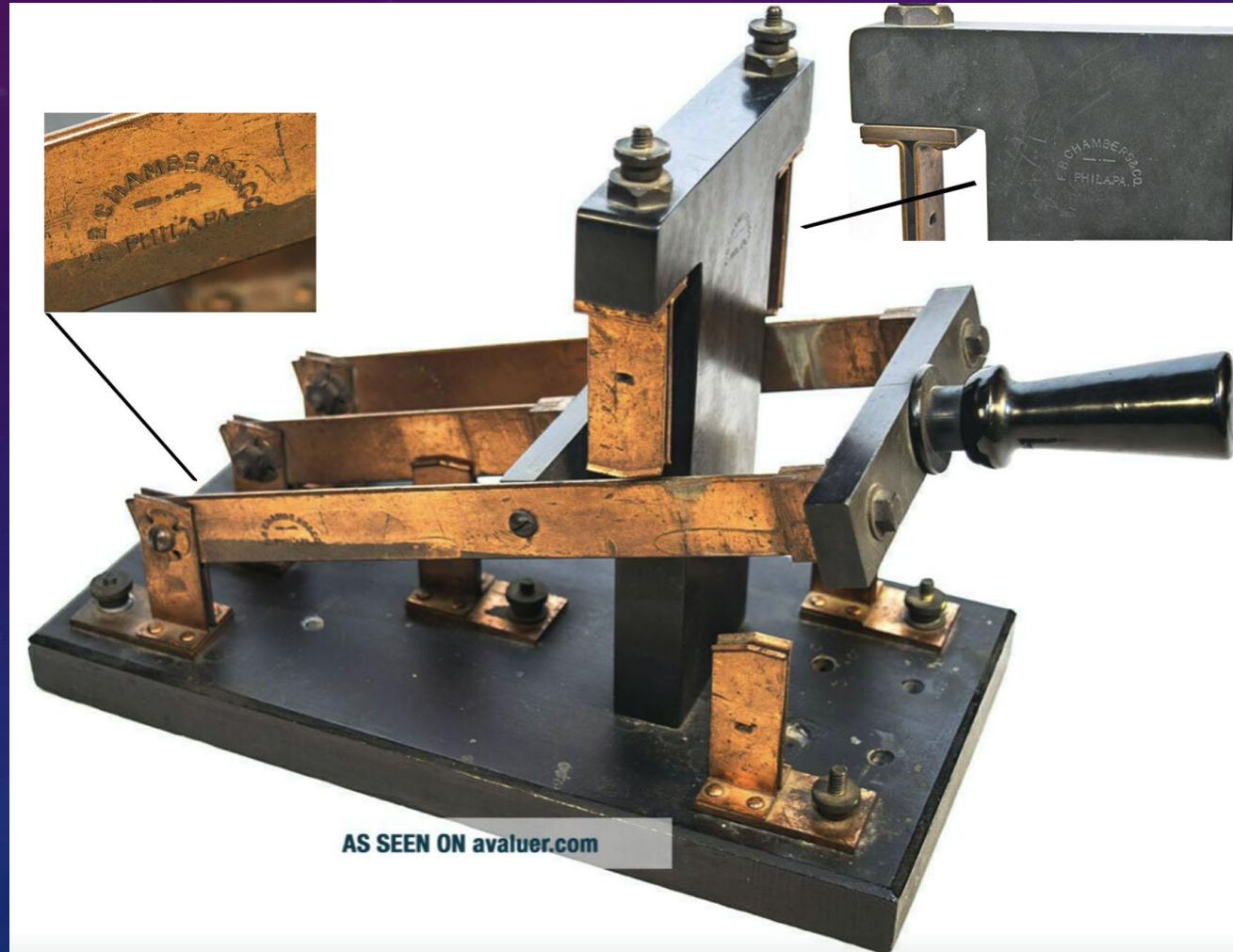
CHAMBERS KEY



ANTENNA SWITCH



REFINED(?) ANTENNA SWITCH



TRANSMITTING CONDENSERS – GLASS

- For use with 0.25 KW to 2 KW Systems
- Priced from \$8.00 to \$64
- (Add \$2 for each 0.25 KW for Mahogany)



“CAN” OR ROTARY CONDENSER FOR RECEIVING

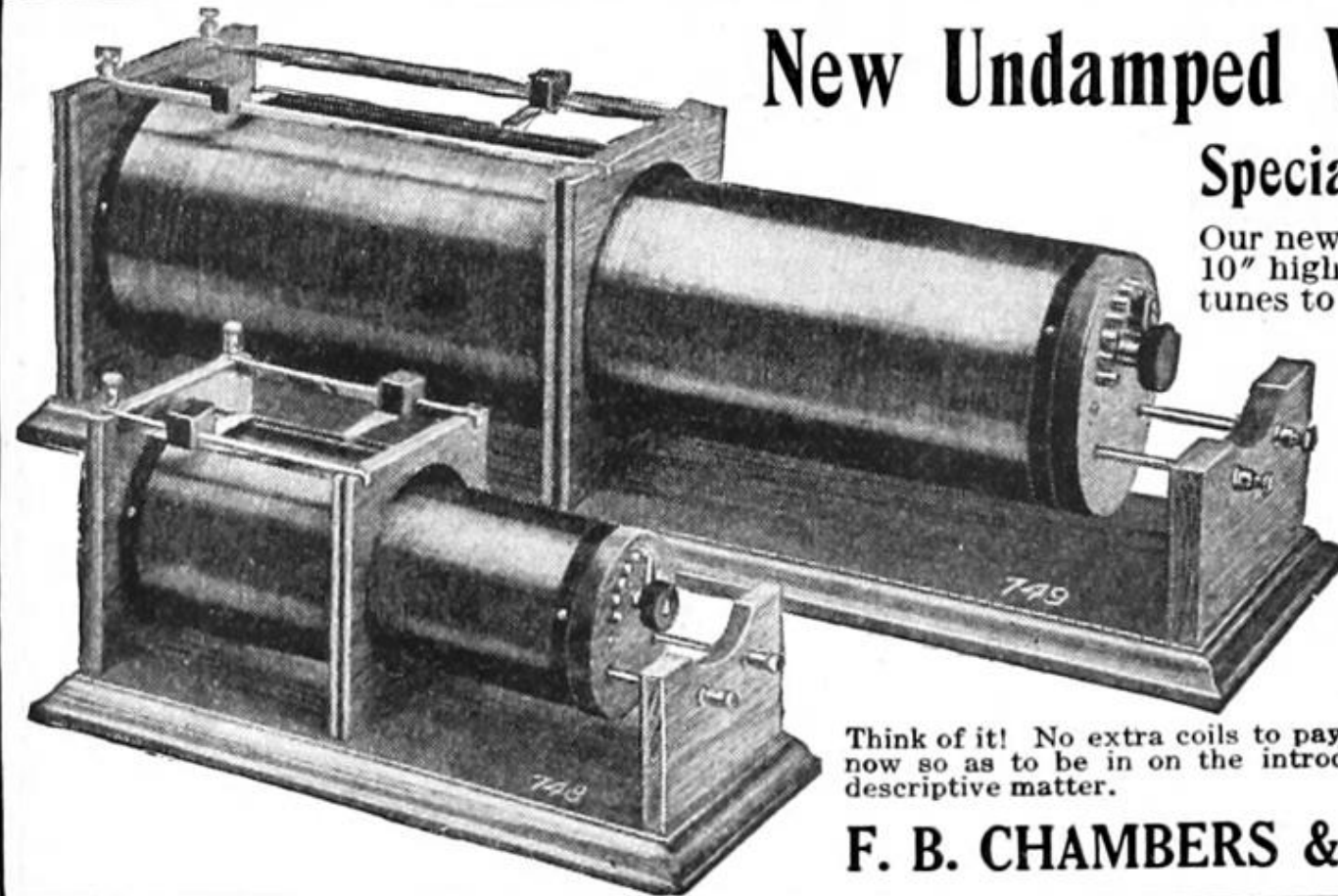


CHAMBERS' MAJOR RECEIVER

- Chambers "F.B. 084 Wireless Standard Time (Jewelers') Set



CHAMBERS' MOST ADVERTISED LOOSE COUPLERS



New Undamped Wave Coupler No. 749

Special Introductory Price, \$18.00

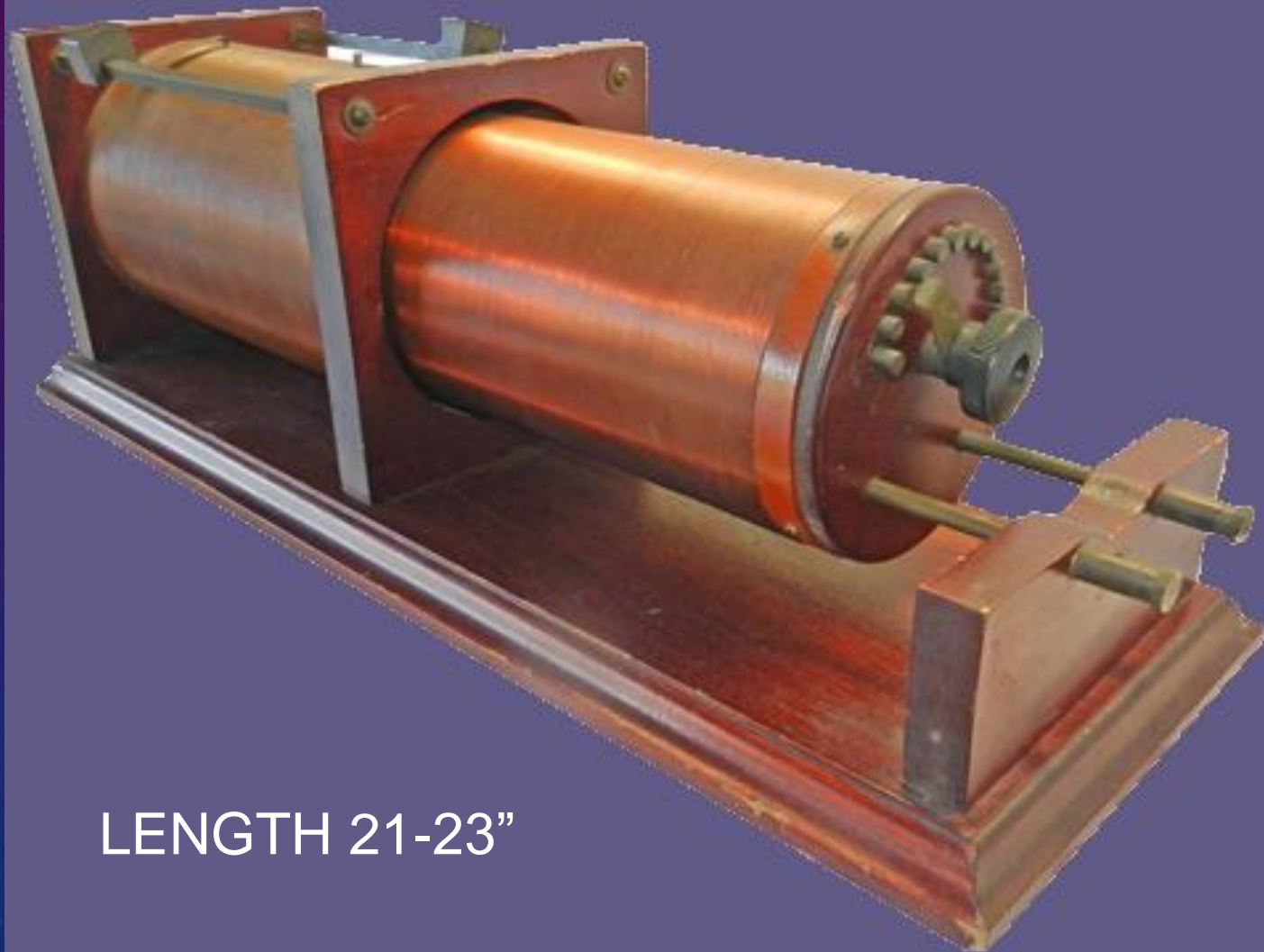
Our new coupler No. 749 is 32" long, 9" wide, and 10" high, over all, and on an average-sized Antenna tunes to 15,000 meters. This coupler, used with the new CHAMBERS' SYSTEM or CIRCUIT, will bring in signals from domestic and foreign Arc Stations surprisingly loud and clear. Note the difference in size of our No. 748 and No. 749.

We claim to be the original inventors of a SYSTEM or CIRCUIT for the reception of the undamped waves without the use of Loading Coils or Oscillating Coils, as they are sometimes called; as with our SYSTEM or CIRCUIT only two Inductively Coupled Coils are necessary. Circuit supplied with each coupler.

This CHAMBERS' CIRCUIT saves you money. Think of it! No extra coils to pay for, and price of coupler only \$18.00. Place order now so as to be in on the introductory price. Orders filled in rotation. Send for descriptive matter.

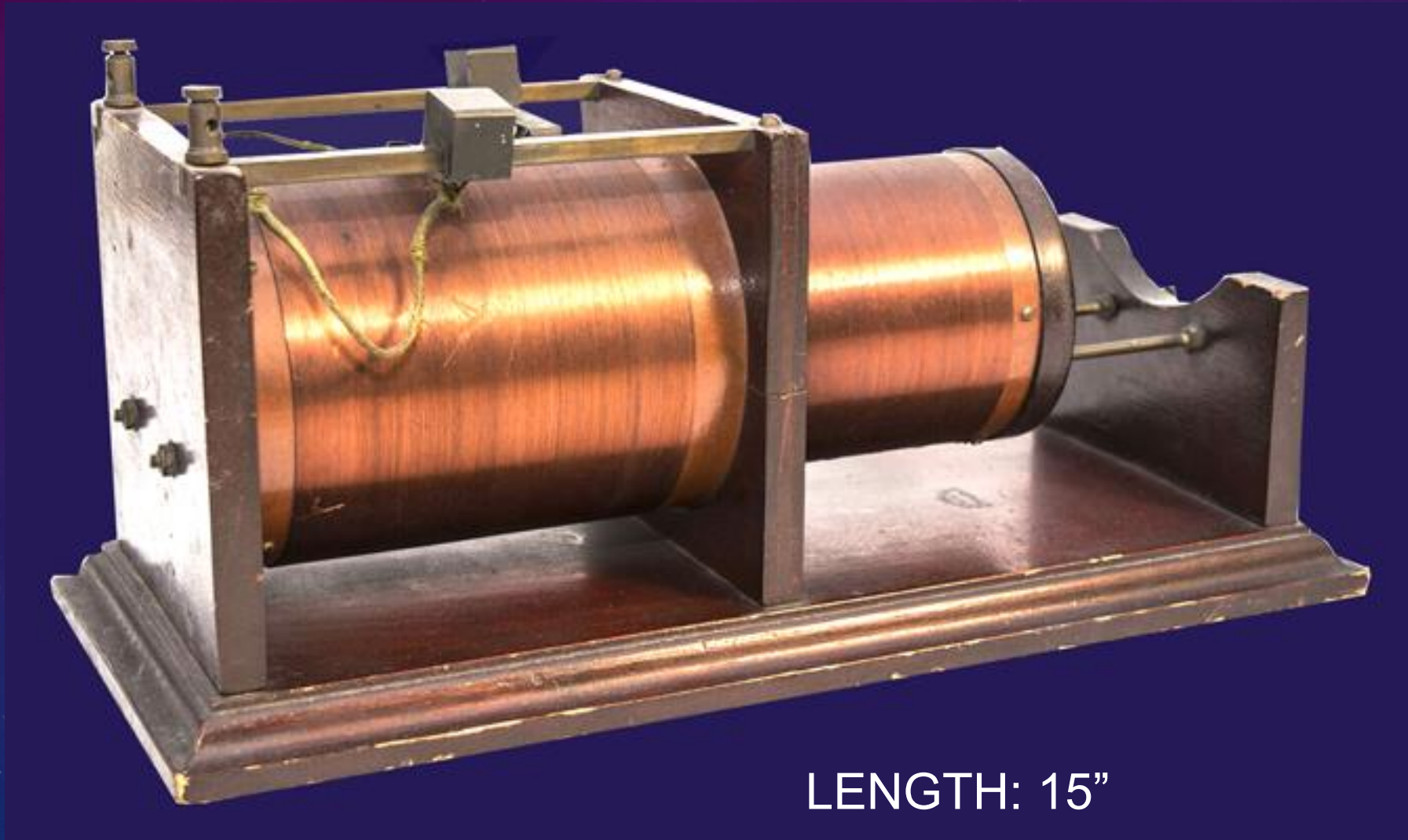
F. B. CHAMBERS & CO., 2046 Arch St., Phila., Pa.

MODEL 746 LOOSE COUPLER



LENGTH 21-23"

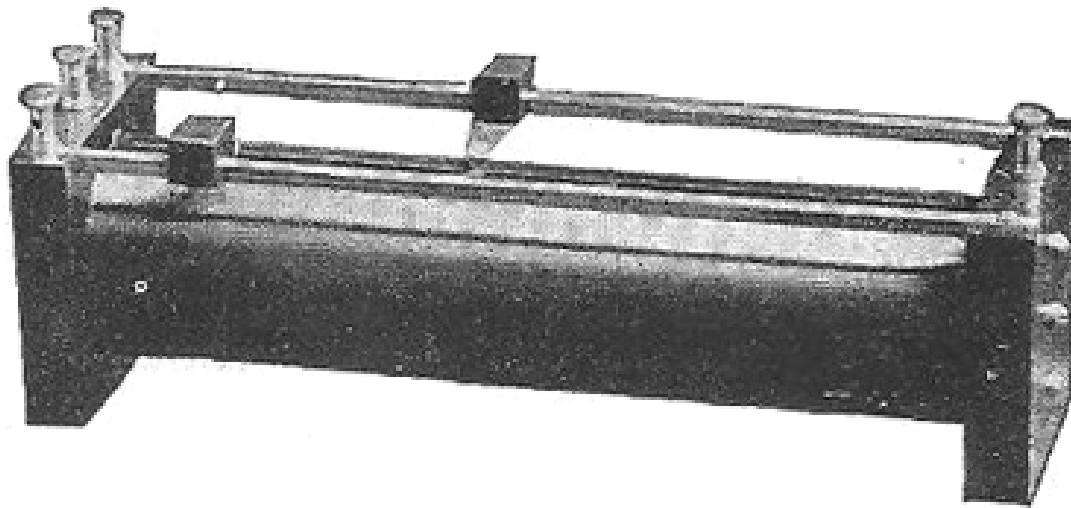
MODEL 748 LOOSE COUPLER



LENGTH: 15"

TUNING COIL

Prof. Tuning Coil

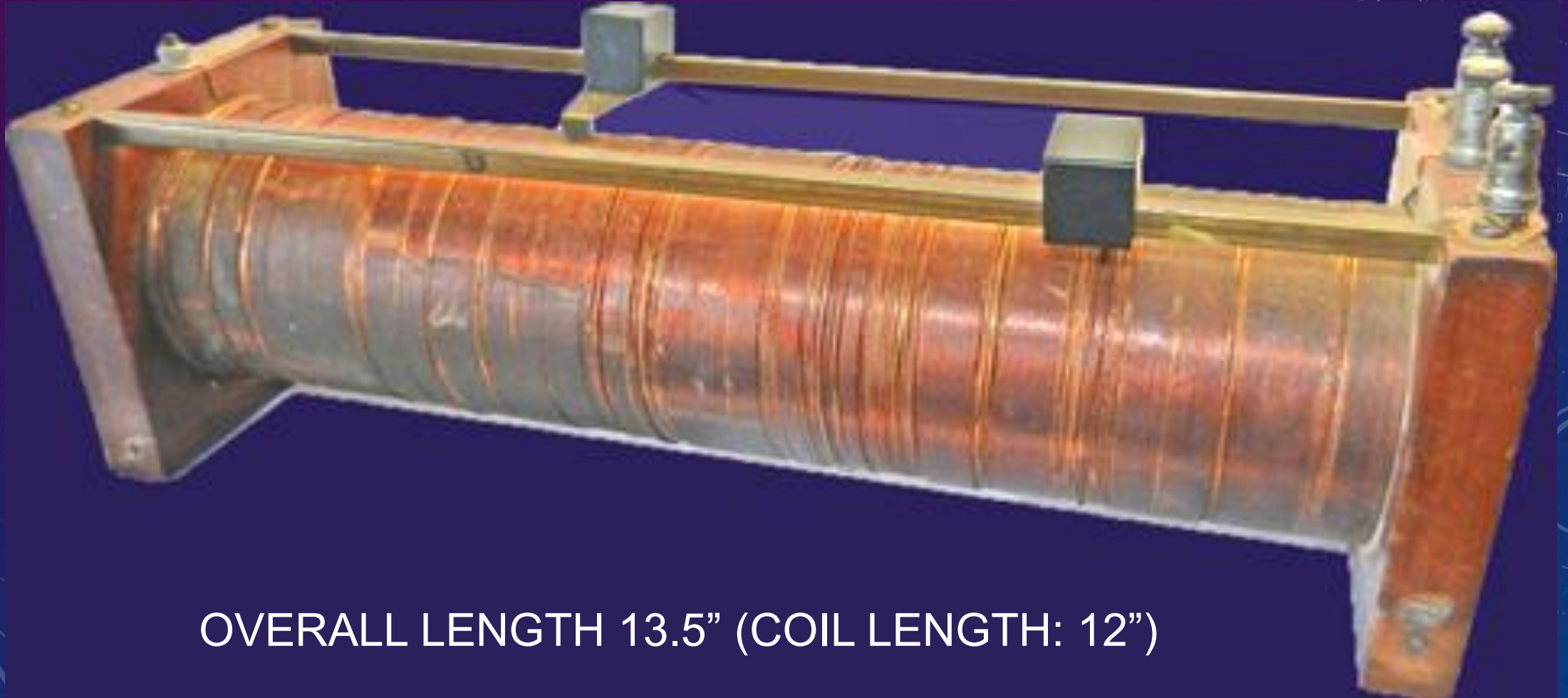


705

is the case with many Tuning Coils on the market. Price..... \$3.00

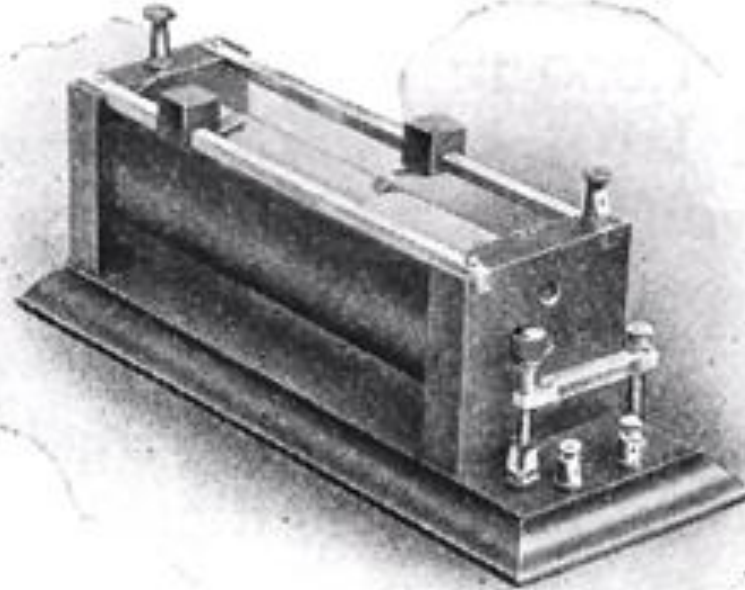
This Tuning Coil is standard Prof. size. Winding space 3 x 12". Is equipped with two sliding contacts, four binding posts, and wound with enameled wire. Has polished hardwood ends of $\frac{3}{4}$ " stock. The cylinders are positively unshrinkable and the wire will not become loose by usage, as

705 TUNING COIL



OVERALL LENGTH 13.5" (COIL LENGTH: 12")

"PORTABLE" RECEIVER



PORTABLE RECEIVING SET

This small receiving set consists of double slide Tuning Coil, our Special Pick Detector Stand, and Fixed Condenser in the Base.

The Tuning Coil has $8\frac{1}{2}$ " winding space, is $2\frac{1}{2}$ " diam. and has genuine mahogany ends.

The whole mounted on a mahogany base $4\frac{1}{2}$ "x12", fitted with nickelplated binding posts and all wired ready to connect the receivers to. On an average sized Aerial will respond to 2,000 meter wave length. Price, \$5.00. 5c. in stamps for 1913 Catalogue. None sent otherwise.

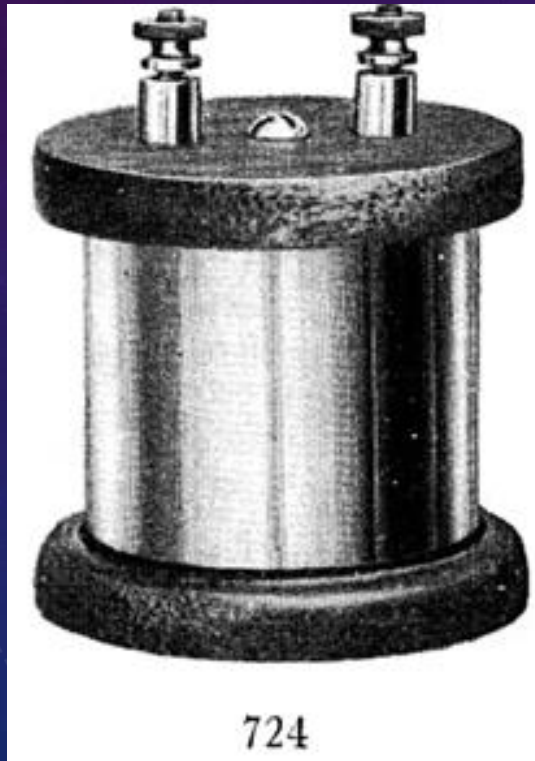
F. B. CHAMBERS & CO.,
217 N. Ninth St., Philadelphia, Pa.

EARPHONES AKA "RECEIVERS"



ERRICKSON EQUIPMENT LISTED IN CATALOG

Receiving Condenser



Hester's family
name comes to
mind again.

Closed Detector Stand



CHAMBERS INFLUENCE IN MULTIPLE SPHERES

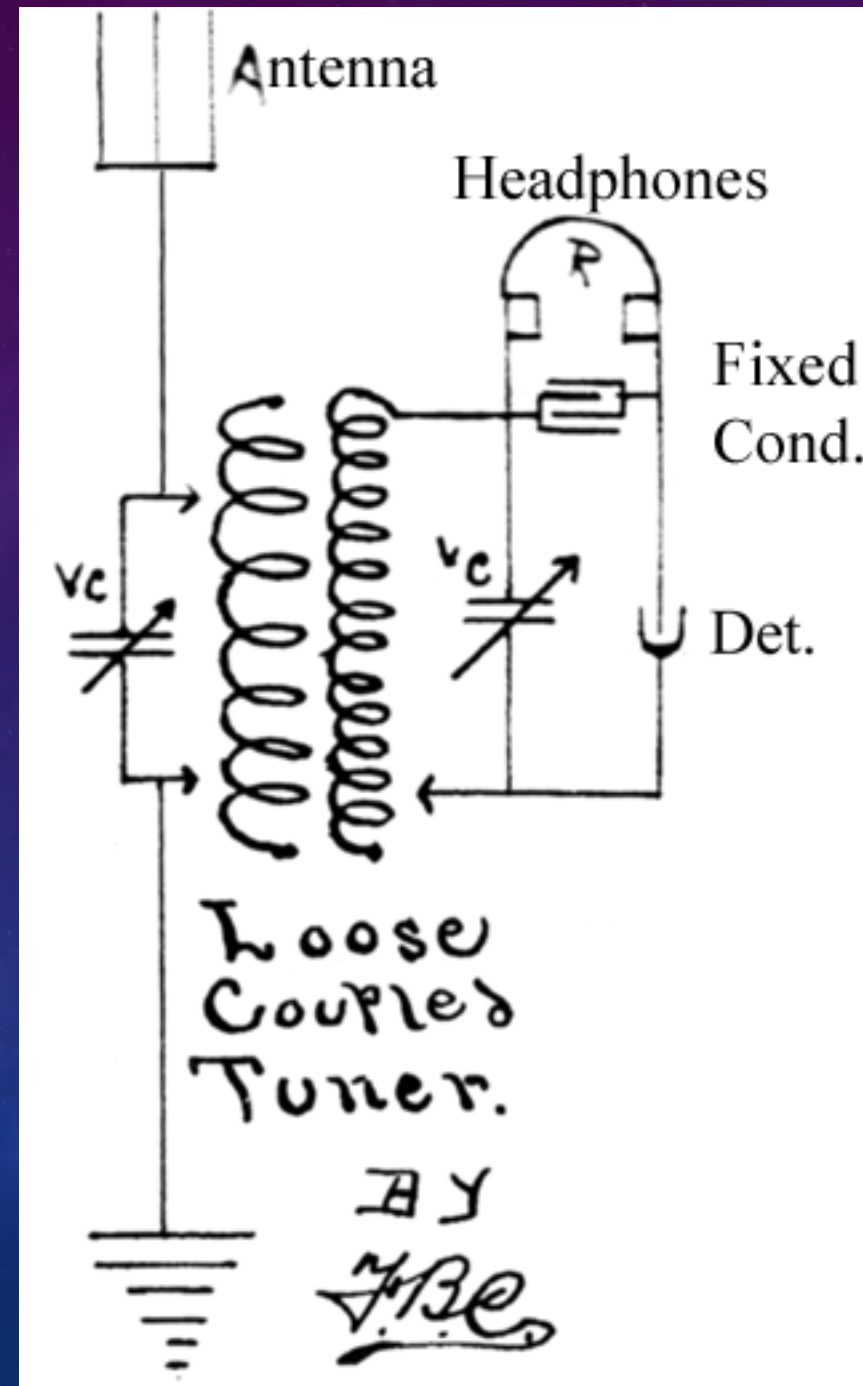
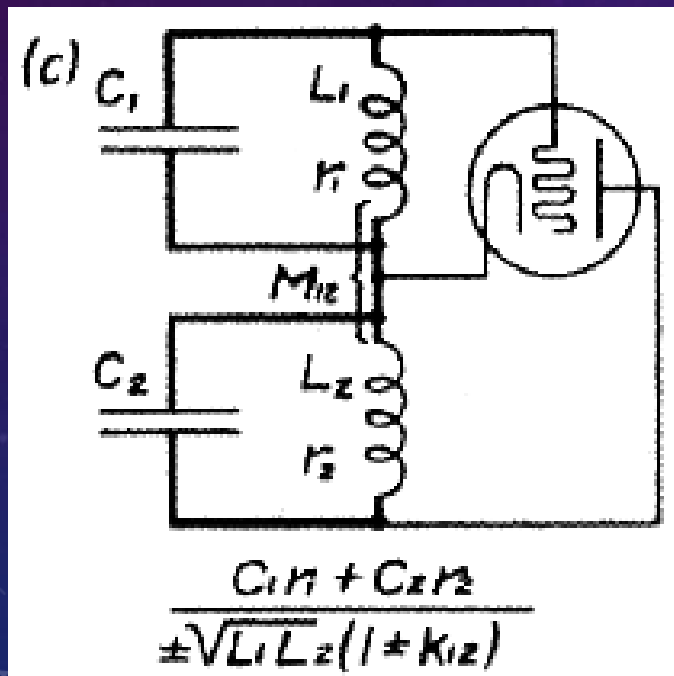
- Philadelphia: Mr. “NR”
- State: PA Wireless Association
- Experimental Wireless Station 3XC
 - 300, 400, 480 meters (1,000, 750 Kc, 625), 1 KW @ 6100 Market St.
- National: Post War Effort to keep Amateur Radio - 12/18/1918
 - Represented:
 - W.A. of PA: Mississippi Valley, and Colorado,
 - St. Martin’s College in Lacey, WA
 - Amateurs of 13th Naval District in Puget Sound
 - Used “amusing and graphic word pictures” to Congress in objecting to Navy wireless control and arguing for longer wavelengths and keeping 1 KW output

CHAMBERS: BUSINESSMAN OR ENGINEER?

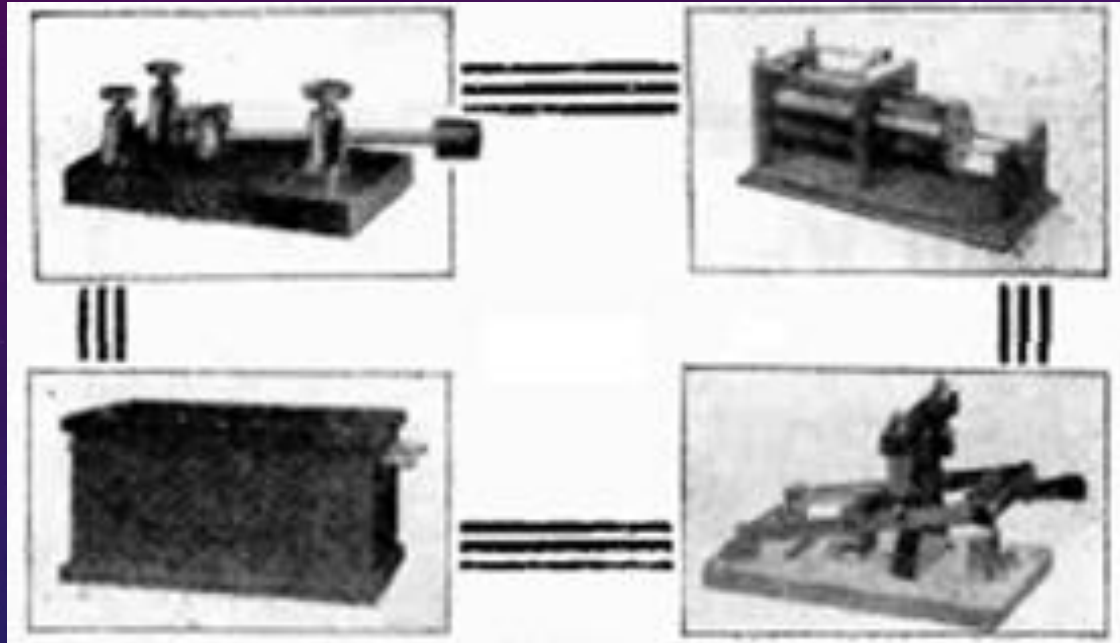
- Variety of Chambers' circuits in Catalog B-24
 - Spark & Coils
 - One with a tube (next slide)
 - Supplied Another Business, Merker-Flocker, in 1913
- Side note: Accepted stamps as payment (up to 50¢)!

CHAMBERS' CIRCUITS

- Page 33 in Catalog B-24 =>
- One-tube circuit reworked & cited by Hazeltine*



MERKER-FLOCKER 1913 AD



Vol. V, No. 11, Feb. 1913 F.B. Chambers Products

MODERN ELECTRICS

1187



Don't Forget!

when comparing prices,
that we use nothing but
the best material in our
wireless goods.

Why Not Get the Best?

Everything we manufacture is for Wireless, and if you give us one order, we feel sure of more to follow, as every article is just as represented; and mail orders receive prompt attention. Every Instrument is thoroughly tested before leaving the factory. We not only sell the finished article, but any or all parts to those who wish to make up their own Instruments.

Why not begin by trying one of our $3\frac{1}{2}$ " Coils at \$10.00 net? or, a Loose Coupler at \$8.50. All parts for this Coupler complete, unassembled; tubes wound, woodwork stained, etc., \$5.00 net. Receiving Set, consisting of Tuning Coil, Fixed Condenser, and Detector Stand mounted on Mahogany Base, \$5.50. 7-Strand No. 22 Copper Antenna Wire, 60c. per 100 ft. No. 14 Aluminum 50c. per lb. Positively 2c. stamp for Catalogue M-2.

F. B. CHAMBERS & Co.,
217 North Ninth St., Phila., Pa.

Merker-Flocker Apparatus

is not the cheapest,
but it is dependable.

*Send 2c stamp for catalogue
and special holiday prices.*

Merker-Flocker Electric Co.
Pittsburgh,
Pa.



POST WAR EVOLUTION

- Manufacturing → Sales
- War Impact
 - Vacuum Tube Technology for Transmitting & Receiving
 - Chambers Institute for Telegraphy & “Wireless Apparatus” Sales Are Dominant Ads



APPARENT SHIFT TO RADIO SALES ONLY

- Atwater Kent Mfr. Co called a 1926 meeting in an effort to form a business association in Philadelphia.
- Musical jobbers were the primary business attendees
- AK urged radio dealers to organize
- Chambers won a Window Dressing Award at the meeting

DEATHS

- Frank – 1/3/47 at 68 - Coronary Occlusion comp. by arteriosclerosis
- Hester – 2/12/1949 – 79 – no cause given; was residing in the Masonic Home in Elizabethtown, PA

CONCLUSIONS - FRANK

- “Electrical and Radio Engineer” per his Congressional Testimony
- Experimental Radio Station Operator
- Figured prominently locally, regionally, and nationally in advancing civilian (amateur) use of radio to spur scientific development
- Electrical Engineer whose wireless enthusiasm led to...
- Radio manufacturing and parts sales and then to...
- Telegraphy School and Household radio sales

CONCLUSIONS: HESTER

- Ardent Wireless Operator ca 1905
- First Licensed Woman Operator (1913), then Licensed Instructor (1918)
Story Carried Nationally, e.g., PA, VT, NJ, KS, CA
- Radio Manufacturer & Wireless Experimenter
- Retail Radio Apparatus and Household Set Sales

CONCLUSIONS - COUPLE

- Devoted to one another
- Suffered the loss of their small son
- Particularly supportive of child wireless operators
- Jointly pursued wireless and its advancement
- Poured their wireless interest into a business ON AN EQUAL BASIS

