

THE NEWSPAPER FOR
THE HOBBYIST OF VINTAGE
ELECTRONICS AND SOUND

THE HORN SPEAKER

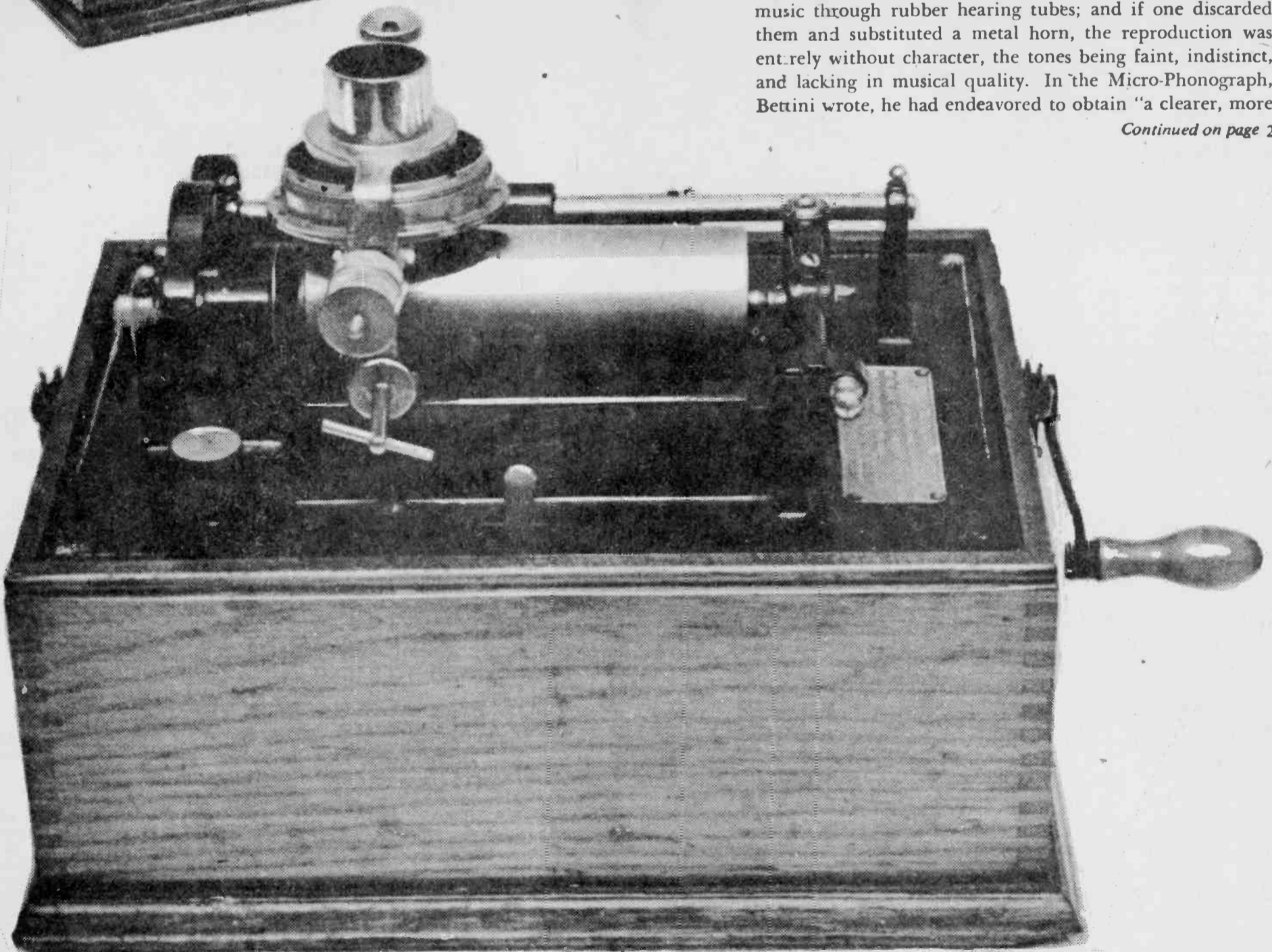


BETTINI, EARLY HIGH FIDELITY

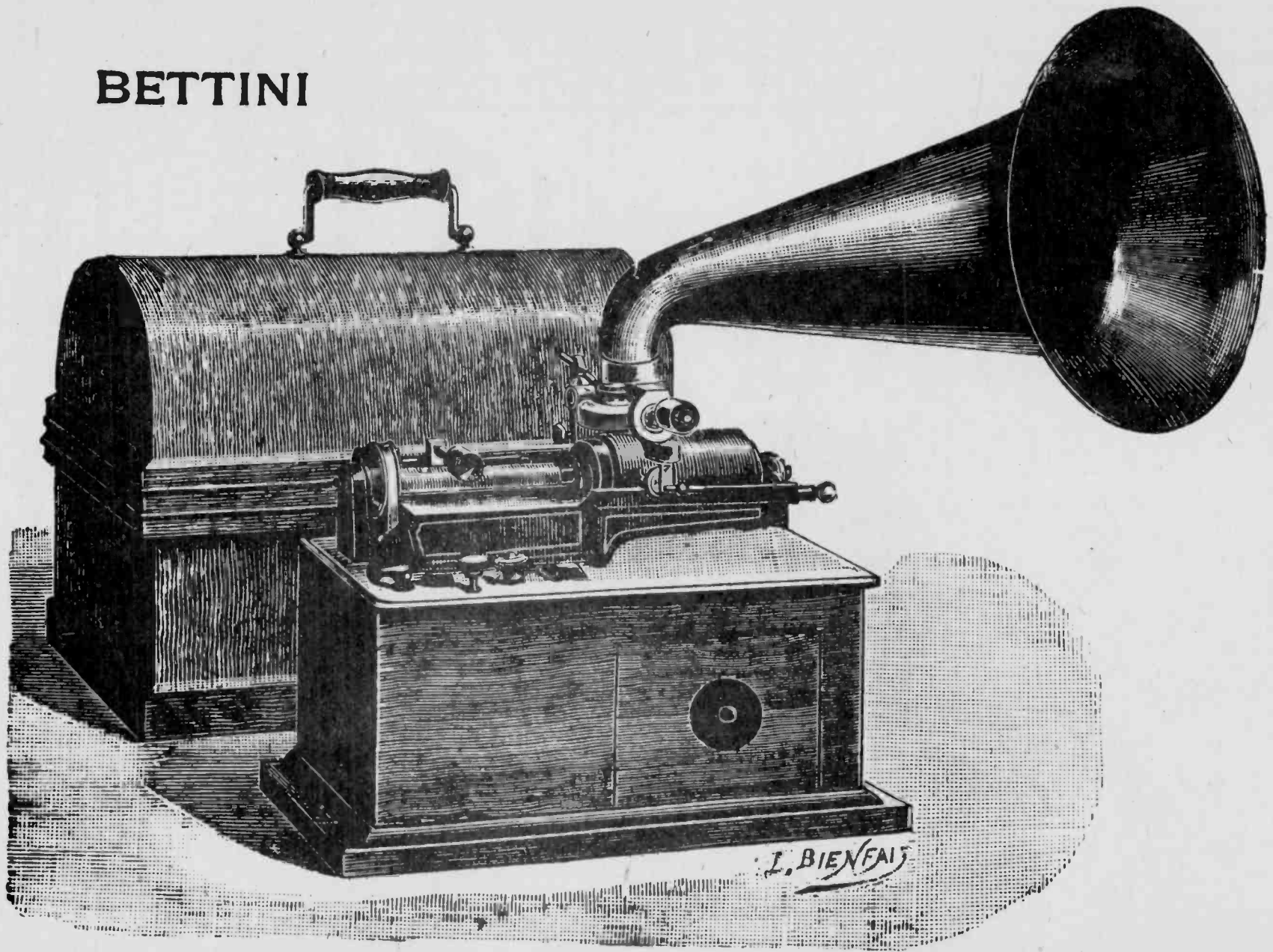
In 1888 Bettini acquired an Edison wax-cylinder phonograph, one of the first that had been manufactured. Being a member of New York's high society as well as an Italian, he was a confirmed and enthusiastic opera-goer, and he listened to the phonograph with a trained, critical ear. What he heard did not please him. But instead of putting the phonograph aside and finding another diversion, Bettini surprised everyone by setting out to improve on Edison's apparatus himself. He had had no scientific training and had shown no special technical talent. Nevertheless, in 1889 Bettini was able to patent an "Apparatus for the Recording and Reproduction of Sounds" based on Edison's wax-cylinder phonograph but embodying several important modifications. He called his machine the Micro-Phonograph, and in June 1890 described it in a short article, which he wrote—being a good Continental—in French.

He began by detailing the defects of the early phonographs and Graphophones: one could never be sure of getting an audible impression in the wax cylinders; and even if one did, the quality of reproduction lacked the clarity of timbre that enables a listener to distinguish one voice from another. Furthermore, he complained, it was unpleasant to listen to music through rubber hearing tubes; and if one discarded them and substituted a metal horn, the reproduction was entirely without character, the tones being faint, indistinct, and lacking in musical quality. In the Micro-Phonograph, Bettini wrote, he had endeavored to obtain "a clearer, more

Continued on page 2



BETTINI

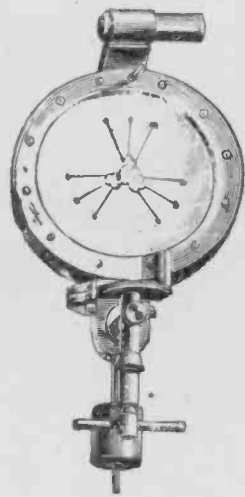


natural reproduction, with a volume sufficient to obviate the necessity of using hearing tubes" and he had tried especially to "avoid a metallic timbre" in the reproduced sound. His researches had taught him that the results he desired could not be obtained with the recording and reproducing elements supplied by Edison. Edison employed a crystal diaphragm with a single stylus projecting from its center; Bettini favored a mica diaphragm, and in place of Edison's straight stylus he substituted a "spider" with radial legs of varying length bearing against the diaphragm at a number of points and culminating in a single recording pin. He justified his innovations in this way:

A diaphragm vibrates over its whole surface, but at varying degrees at different points. The study of acoustics teaches us that a diaphragm contains dead points where the vibrations will be feeble or nonexistent. If the stylus is anchored to only one point of the diaphragm [as in Edison's apparatus], that point may often be dead, or nearly so; such a diaphragm might sometimes make a good recording, but there would be many other times when it would record very imperfectly. Suppose, however, that a "spider" with legs of different lengths be anchored to a diaphragm at several points; two or three of these points may be dead points at times, and consequently incapable of transmitting sound vibrations, but the other legs will be able to actuate the recording pin nevertheless. The "spider" has other advantages: it transmits more force to the recording pin, and because of its many supports that pin is held more rigidly. To sum up, I catch the vibrations of a diaphragm at several different points, and with the aid of independent conductors I concentrate these vibrations on a single recording pin.

The results he modestly described as "perfect." The same "spider" principle was employed in the reproducing attachment, and with the same indicated results.

Sometime in the mid-Nineties, when pantographic duplication became feasible, Bettini began to offer cylinder recordings for sale. He published a twelve-page catalogue in 1897 and a thirty-two page catalogue in 1898—the latter listing over two hundred recordings of serious music (many by artists of celebrity rank) and another two hundred in the popular category. Bettini's performers included some from the Metropolitan Opera, among them the sopranos Frances Saville and Marie Engle, the tenor Dante del Papa, the baritones Mario Ancona and Giuseppe Campanari, and the basso Pol Plançon. Yvette Guilbert was represented by six songs; there were four cylinders by the violinist Henri Marteau; and there were dramatic excerpts read by Bernhardt, Réjane, and Salvini. Prices ranged from \$2.00 to \$6.00 per cylinder—at a time when other companies were offering cylinder recordings at fifty cents each.



COPY' DUPOY PLANÇON



COPY' DUPOY CAMPANARI



COPY' DUPOY ANCONA

Considering Bettini's prices and the small scale on which he operated, it is doubtful whether he sold more than a few hundred copies of any one recording. In no other way can the fact be explained that today Bettini cylinders are even rarer than Gutenberg Bibles or Shakespeare quartos. A group of them was discovered in 1945 in Mexico City—none, unfortunately, by singers of eminent stature—and sold to a collector in Boston. I know of no other authenticated Bettini cylinders in existence; * Gianni Bettini's own collection of "originals" was stored in a French warehouse in 1914 and destroyed by bombing during World War II.

Text from **THE FABULOUS PHONOGRAPH** by Roland Gelatt.

Large illustrations show Bettini reproducers on Edison machines.

Large illustrations enlarged and re-touched from **A GUIDE TO THE EDISON CYLINDER PHONOGRAPH** and the 1898 **COMBINATION CATALOG**.

This Room Is Equipped With

Edison Electric Light.

Do not attempt to light with match. Simply turn key on wall by the door.

The use of Electricity for lighting is in no way harmful to health, nor does it affect the soundness of sleep.

Now you can have an exact 1890 EDISON ELECTRIC LIGHT PLAQUE REPLICAS as used when electric lights were first installed anywhere. . . You can MOUNT and DISPLAY this PLAQUE on any SURFACE because of its ADHESIVE BACK. . . just remove paper from back and mount as desired. . . All design and lettering are ENGRAVED and seated in black. . . A special process added to the GOLD-IN-COLOR Aluminum plate makes it impossible to CORRODE or OXIDIZE. . . Unlimited uses and ideas in the Antique field, makes an EYE-CATCHING DISPLAY, HUMOROUS, but serious. . . A fine gift for any occasion. . . ORDER NOW, ONLY \$4.95 Postpaid. . . MIDCO HS10 BOX 15370, LONG BEACH, CA 90815.

Blazing the Amateur Radio Trail

Memories of By-Gone Days When Spark Coils, Slide Tuners and Electrolytic Detectors Were in Style

By OLD TIMER



Everything being in readiness, the great moment arrived. The whole family gathered about to hear the wonderful wireless messages. For one hour nothing happened, and one by one the members of the family drifted away to less interesting but more positive forms of diversion. Suddenly, thanks to constant coaxing, the bell began to ring. It was a signal, no doubt. The decoherer did not perform its function, so it had to be jollied along. But each time the coherer was restored to its passive state, the bell would again ring. Surely these were signals.

Not Realizing the Importance of a Relay, I placed the Coherer in Circuit With a Simple Bell Arranged as a Decoherer. Then I discovered That Each Time My Neighbor Used His Hammer the Coherer Went Out. Hence My First Radio Messages Were Nothing More Than Hammer Blows.



TAKE away the present radio laws, licenses, vacuum tubes, simple tuning apparatus, radio telephone and a few other characteristics of present-day radio and you are back to the pioneer days of radio. In time, it is but a dozen short years, but in wireless history it is an age, punctuated by a number of epochs or eras marking the wonderful development of the greatest hobby of all time.

My first contact with radio was during the first electrical exposition in New York City. The center of attraction was the exhibit of the Marconi company, consisting of two simple stations for sending and receiving messages back and forth across the wide floor of the old Madison Square Garden. Each station, which was mounted on an ordinary table, comprised a ten-inch spark-coil, a key, the necessary primary current supply, a magnetic detector, and a pair of telephone receivers, not to mention the huge aerial and the ground connection. Each station was in charge of a fastidiously dressed young man, with a very, very sagacious look. A buzzer would have been sufficient to span the short distance between the two stations, but then why use such an unimpressive device as a buzzer? The crashing purple sparks, jumping the large spark-gap, never failed to attract a large crowd of inquisitive persons. For that matter, the operator at either end could read the signals by the noise of the other operator's spark gap—but I must not give away such secrets. It spoils the whole effect, does it not?

At any rate, that was my first encounter with radio, and whether it was the sagacious and contented looking young men or the purple sparks that did it, I do not know; but from that time on I became a confirmed radio enthusiast.

Somewhere I read about Marconi's early experiments with a coherer, and I immediately proceeded to construct one with a piece of glass tube, two solid silver wires, a couple of binding posts and an old box as a base. Not realizing the importance of a relay, I placed the coherer in circuit with a simple bell, arranged as a decoherer. The aerial consisted of one of the household pie tins, hanging at the end of a ten-foot wire that dangled from the fire-escape in a city apartment.

All the while I had failed to hear the loud hammering going on in an adjacent room, until finally it dawned on me that this radio outfit was a pretty sensitive affair after all, and that even a light tap on the box made it set off the bell. Then and there I discovered that each time my neighbor used his hammer, the coherer went off. Hence my first radio messages were nothing more than hammer blows.

A short time later I went to the old carbon grain coherer, with which I soon succeeded in obtaining audible signals by means of a single 75-ohm telephone receiver. If nothing else, the carbon grain coherer was the means of obtaining loud signals from nearby stations, but it did not bring in the stations outside of a 25-mile range.

Things progressed rapidly in radio, even in those early days. By 1908 we were all using electrolytic detectors. Most of us made our own. We purchased a short length of Wollaston wire—platinum wire with a silver coating—which we placed in a short length of glass tubing. The glass tubing was then placed in a Bunsen burner flame and heated to a bright red, so that the plastic glass could be slowly drawn out at the point where the wire lay. Then the glass tube became two pointed pieces of glass tubing, and the wire was firmly embedded at the fine tip of each piece. The next step was to cut the wire and take each piece of glass tube and grind the point on an oil stone, until the wire was absolutely flush with the ground glass surface, thus exposing only the actual cross-sectional area of the wire.

The electrolytic detector then consisted of a simple cup holding the electrolyte, generally consisting of one part of nitric acid to four or five parts of water, and the glass-encased wire dipping into the former. A very delicate potentiometer control had to be used for the local battery current pass-

ing through the telephone receivers and the electrolytic detector. The action consisted simply of the decomposition of the electrolyte under the battery current flow, resulting in the formation of a thin layer of gas which finally insulated the delicate point and prevented the further flow of current. However, with the reception of signals the induced current caused the thin layer of gas to be perforated, and restored the flow of current momentarily, only to have the gas again form and the current shut off. Obviously, the telephone receiver gave an audible indication of this action, thus resulting in audible signals.

There was another type of electrolytic detector in which a bare platinum or Wollaston wire was employed, barely dipping in a solution held in a carbon or platinum cup. At any rate, the electrolytic detector, back some dozen years ago, was considered the very last word in ultra-sensitive radio detectors.

For transmitting, we amateurs of those days employed anything in the way of a spark coil, ranging from an old jump spark-coil that had seen service in an automobile, to a ten-inch spark coil of the home-made construction, soaked in an oil bath. For my part I made use of a 3-inch coil and a large number of dry cells. Soon, to my dismay, the dry battery died down to nothing, for that 3-inch coil seemed to have an insatiable appetite for current. So I resorted to an electrolytic interrupter and the house lighting current. The electrolytic interrupter consisted of a piece of heavy glass tubing in which was sealed a piece of heavy platinum wire. This interrupter was placed in series with the induction coil primary and the source of current. The spark coil produced a hot, flaming spark when operated in this manner; and with the proper arrangement of inductance and capacity, some 25 miles could be covered with little trouble, even in those days when receiving sets were anything but sensitive. The only trouble was that the interrupter had a way of breaking down right in the middle of a message, due to an excess of heat which caused the glass tube to crack or even melt. And then the fuses! Time after time the house lights would go out as the consequence of the interrupter's pranks.

The comradeship of radio in those days was quite marked. There were no radio laws, and we did more or less as we pleased. True, there were leaders among us who constantly warned us of the certainty of severe legislation if we continued to act as we pleased. An amateur might decide to work on 600 meters or 200 meters, as his fancy dictated. Or again, in most cases he did not know what he was operated on and cared still less.

One evening I received a call from an amateur but a mile away. He asked me what power I was using, and seemed surprised at the loudness with which I came in. He invited me to call and see his outfit. To be sure, this amateur's transmitter came in like a ton of bricks anywhere in the city, for I had had occasion to hear him on other amateur receiving sets. So I set out for his home.

To my mind, here is one of the most remarkable stories of early radio days. This amateur was a doctor who, so the story goes, had a pet grudge against a large wireless company then operating. Perhaps he had purchased much more or less worthless stock from that concern now long since defunct; perhaps it was a more personal reason: but the point is that he had one of those grudges that stop at nothing to attain their end. His whole aim in life, just then, was to embarrass that wireless company in every possible way, which was not a difficult matter considering the absolute absence of radio laws, crude tuning circuits, and the proximity of one of that company's crack stations.

At any rate, the doctor had got together two huge X-ray transformers, a whole box full of home-made condensers soaked in oil, a huge spark gap which had to be muffled to cut down the noise, and a large ten-wire aerial. The doctor was located on the ground floor of an apartment house, and his lead-in came all the way down from the roof six stories above the transmitter. Every time the key was pressed, the lead-in wire glowed with a purplish brush discharge at night; but what was the differ-

ence? Efficiency meant little or nothing, for the distance to be covered was less than 10 miles.

That station was the greatest nuisance that ever existed. When it was sending, it was impossible, or nearly so, to receive anything from any other station, because said station was operating on a very broad wave which came in all over the tuning coils then in general use for reception purposes.

Within a radius of 25 miles, that amateur station was simply formidable. It had a harsh, unpleasant spark that could be picked up on almost any adjustment of the tuner. It sounded for all the world like a Transatlantic station—at least when within a reasonable range. But the joke of the matter was that this station did not carry very far. I well remember trying to pick it up some 30 miles distant. I finally succeeded in getting it, but the signals were so weak that they could barely be identified. It was simply one of those instances of a big splash so to speak, which did not get very far. For that matter, it was the same with some of the commercial stations of those early days. Take the old "DF" station—Manhattan Beach—a dinky collection of radio odds and ends thrown together and attached to an aerial located in the swamps back of Coney Island, near the sea. Nearby, that station had a rather low tone, none too loud. But that old station carried! Night after night it carried way down to the Gulf, where fruit steamers were cruising. In fact, it made many of the early radio records.

On the other hand, there was a model station known as "WA," located on the roof of the Waldorf-Astoria Hotel in the very heart of New York City. Nothing in the way of expense had been spared in making that station the very last word in radio; indeed, it was a demonstration station where visitors were introduced to the marvels of wireless and the commercial possibilities of radio. Nearby, that "WA" station came in with a roar. Even with our crude receiving sets then available, we could lay the telephones on a table and hear the signals five feet away. But if we got 100 miles away, then "DF" came in about as loud as when heard some few miles away, while "WA" had lost its roar and was, if anything, far weaker than "DF." At several hundred miles distant, "WA" was lost altogether, while "DF" continued to be heard. So this business of loudness in those early days was quite deceptive, as we soon found out.

Pardon me for the digression. I must get back to the doctor with the grudge. The doctor had a practice which he had to attend to, and his calls took him out of his office not a little. But so that no time might be lost, he invited the amateurs from far and wide to visit his station and keep the transmitter busy during his absence. How about having nothing to send? How about having nobody to talk to? Little matter; the doctor suggested that we simply take a newspaper, magazine or any other "copy" and send sentence after sentence, hour after hour! I never saw the electric light bills, but rumor has it that the monthly bills ran up to \$60, and over. I believe it. The doctor was pulling something like 10 kilowatts out of his meter hour after hour. Needless to say, he embarrassed the wireless company greatly; in fact, he made its life almost unbearable about New York. I don't know what was the final outcome of this story. Perhaps the doctor received a just settlement for his efforts, perhaps not. If this were fiction, I could certainly supply a "happy ending" by saying that he finally got his stock certificates cashed for their face value, with compound interest to boot!

The doctor was not the only one who tormented the commercial and Government stations. The chatter passing through the ether was simply dreadful. Everybody was talking at once, and it seemed that perhaps no one was listening in. Every once in a while some commercial operator, with a thunderous spark, which should have commanded a certain degree of respect, would break in, saying: "Go to bed! Haven't you had enough for one evening?" and other phrases with like import.

Little wonder that radio laws were finally passed. Mr. H. Gernsback, then editor of MODERN ELECTRICS, never missed an opportunity of calling attention to the abuse of our liberties, but even though the more conservative among us appreciated our radio freedom and did not want to jeopardize it in any way, there were certain amateurs who simply did not care.

All in all, we were not always a nuisance so far as the commercial and Government operators were concerned. For instance, the old Brooklyn Navy Yard station was located down in a hollow among the several steel bridges that span the East River. Wirelessly speaking, it was more or less screened. Many a time the Navy operator would not be able to copy a message being sent to him, and some thoughtful wireless amateur would break in to tell the Navy operator that he, the amateur, had the message. Then the Navy operator would call up the transmitting station, and tell him to stand by while he got the message from the nearby amateur. The same applied to the commercial operators, who on more than one occasion had to resort to some amateur operator located in a dingy apartment-house bedroom.

By 1909 we got around to the crystal detectors. Some of us used carborundum, but it was so difficult to get good pieces of this material that we generally used something else. Carborundum had at least one good feature, and that was the tightness with which it could be clamped in a detector stand, making it practically proof against mechanical disturbances. Silicon was a great favorite, and later came galena. For my part, I had read in a copy of *The Electrician* of London—that awfully deep but authentic British journal that has ever been the official organ for the foremost wireless workers—that the Germans were using galena with a fine graphite point. So I made detectors from tiny springs on which I soldered the galena, and hard leads for automatic pencils, pointed to a needle point. These detectors were remarkably sensitive. I was able to hear "DU," the station on the DuPont Hotel in Wilmington, in New York City on a two-wire aerial less than 15' long.

The radio telephone in those days was a laboratory experiment, little more or less than just that. One day, while listening I happened to detect a hissing, steam-like noise on one part of my two-side tuning coil. Upon finer adjustment the noise grew quite loud, drowning out everything else. Then I caught a few words, followed by music. But how crude! A few words, then a horrible break, a few more words, and another break, and so on. It was an experimenter some few miles away, using an arc to generate the high-frequency oscillations.

Another novel experience was when DeForest first introduced the quenched spark. It sounded like music, for his gap made all kinds of notes, whistling all the while. His station was then located in the Metropolitan Tower, and his apparatus, so I understand, was of the Lorenz design, made in Germany.

By 1910 we began to get into vacuum tubes. These were crude at first, but their sensitiveness over the crystal detectors was so marked that they soon became the most widely used detectors. With these developments came the present radio laws. From that time on progress became more rapid. Better tuning methods were introduced, the vacuum tube became more highly developed, the regenerative circuits were introduced, and with the advent of the war, far greater improvements took place.

The present status of amateur radio is almost unbelievable to one who, but a short 12 years ago, was experimenting in this same field. Indeed, if the development during the next dozen years is just as great, what remarkable things we can look forward to! I have in mind the evening entertainment in the average American home. There will be music, the news of the day, stock reports, baseball scores, and so on. In fact, that already exists to a limited extent. I also look forward to the reception of pictures of the day. Having followed Mr. Edouard Belin's work with great interest, especially his recent experiments in radio transmission of drawings between France and the United States, I have every reason to believe that in the future the amateur, not content with receiving audible signals, will turn to the reception of drawings, type matter, and even photographs. Why not? The ingenious Frenchman has devised a simple receiving apparatus which in time may be reduced to the amateur's needs, and then, when connected with the regular amplifier circuit, it will reproduce anything which may be broadcasted from a Belin transmitter.

Then, too, the radio telephone must develop rapidly. I predict simpler and cheaper transmitters. They must come, for there is a vast demand for simple transmitters within the reach of all. Vacuum tubes must become a common commodity, just as electric lamps are today.

MEETING FOR IHR'S MEMBERS

Members of the Indiana Historical Radio Society are holding an OLD TIMER meeting at the Indiana State Museum on November 25th during the afternoon.

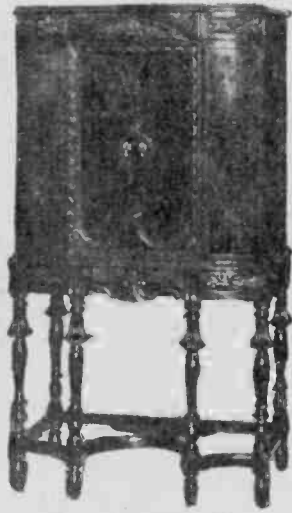
Special RADIO TRADE-SHOW Section



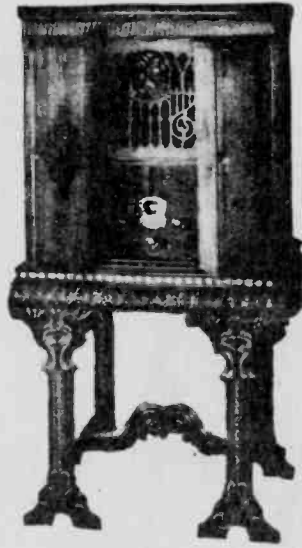
F. A. D. Andrea, Inc.
Model 41



F. A. D. Andrea, Inc.
Model 42



F. A. D. Andrea, Inc.
Model 46



Superior Cabinet Corp.
Model 630



Superior Cabinet Corp.
Model 530



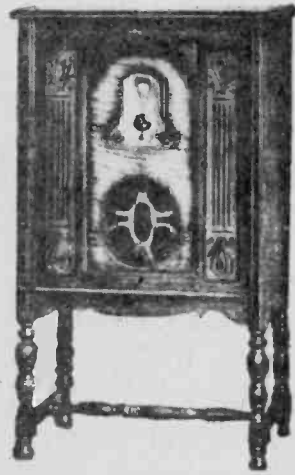
Howard Radio Co.
"The Puritan"



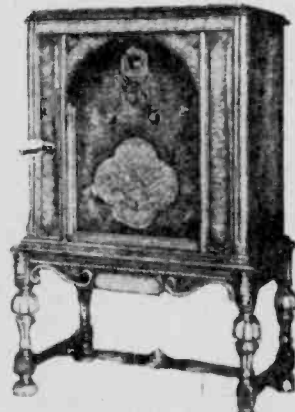
Howard Radio Co.
"Consolette"



Howard Radio Co.
"Plymouth"



Stewart-Warner Corp.
Model 31



Transformer Corp. of America
Model AC-53



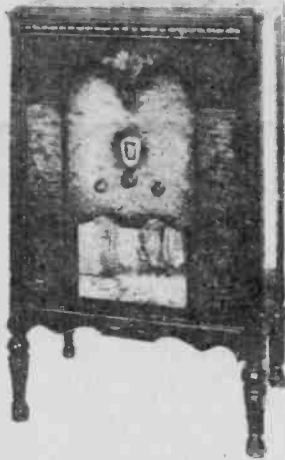
Audiola Radio Co.
Model 80



All American Mohawk Corp.
Model 11



All American Mohawk Corp.
Model 29



All American Mohawk Corp.
Model 39



Audiola Radio Co.
Model 70



Bush & Lane Piano Co.
Model 55



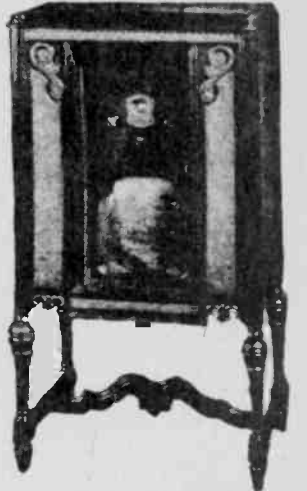
Federal Wood Products Corp.
Writing Desk



Bush & Lane Piano Co.
Model 75



Federal Wood Products Corp.
Radio Desk



Superior Cabinet Corp.
Model 730



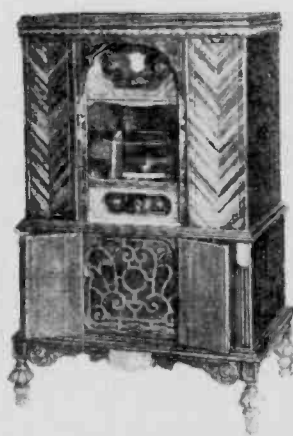
The Platter Cabinet Co.
Nickel in Slot Machine



Excello Products Corp.
Model R71—Phono-Radio Console



The Capehart Corp.
Model 110



Decca Disc Phonograph Co.
"Crestone" Model 99K



Radio Master Corp.
Model 218—Phono-Radio Combination



TRADE NAME: "Kennedy."
 MODEL: XV.
 TYPE: Two radio, detector and two audio.
 TUBES: Five.
 BATTERIES: "A" and "B" needed.
 CONTROLS: Two.
 AERIAL: Inside or outside.
 PRICE: \$142.50 without accessories.
 MANUFACTURER'S NAME: Colin B. Kennedy Company.

TRADE NAME: "The Lasher Capacidyne."
 TYPE: Two stages radio frequency amplification, detector and two stages of audio frequency amplification; built-in loud speaker.
 TUBES: Five.
 BATTERIES: Not furnished, "B" battery compartment in cabinet.
 CONTROLS: Three.
 AERIAL: Indoor or outdoor.
 PRICE: \$175.00 without accessories.
 MANUFACTURER'S NAME: LaMar Manufacturing Co., Inc.

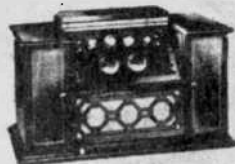


TRADE NAME: Magnavox receiving Set.
 MODEL: TRF-50.
 TYPE: Tuned radio frequency.
 TUBES: Five.
 BATTERIES: Not furnished.
 CONTROLS: Two.
 AERIAL: Outdoor or indoor.
 PRICE: \$150.00.
 MANUFACTURER'S NAME: Magnavox Co.

TRADE NAME: Malone-Lemmon Neutrodyne Receiver.
 TYPE: Hazeltine neutrodyne circuit.
 TUBES: Five.
 BATTERIES: No batteries furnished.
 CONTROLS: Three.
 AERIAL: Outdoor or indoor.
 PRICE: \$175.00 without accessories.
 MANUFACTURER'S NAME: Carloyd Electric & Radio Co.



TRADE NAME: Master Craft Aristocrat.
 MODEL: 15-4.
 TYPE: One-stage tuned radio frequency, detector and two-stage audio frequency amplification.
 TUBES: Four.
 BATTERIES: "A," 6-volt storage; "B," 90 volts.
 CONTROLS: Two.
 AERIAL: Indoor, outdoor.
 PRICE: \$65.00 without accessories.
 MANUFACTURER'S NAME: LaMar Manufacturing Co., Inc.

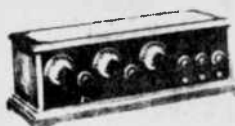


TRADE NAME: "Kennedy."
 MODEL: XI with built-in loud speaker.
 TYPE: Detector and three audio.
 TUBES: Four.
 BATTERIES: "A" and "B" needed.
 CONTROLS: Two.
 AERIAL: Outside.
 PRICE: \$185.00 without accessories.
 MANUFACTURER'S NAME: Colin B. Kennedy Company.

TRADE NAME: "Liberty Scaled Five."
 TYPE: Transformer coupled tuned radio frequency, detector and two audio.
 TUBES: Five.
 BATTERIES: "A" and "B" needed.
 CONTROLS: Three.
 AERIAL: Indoor or outdoor.
 PRICE: \$100.00 without accessories.
 MANUFACTURER'S NAME: Liberty Transformer Company.



TRADE NAME: "Magnatrol."
 TYPE: Two stages of tuned radio frequency amplification, detector and two stages of audio frequency amplification.
 TUBES: Five.
 BATTERIES: None furnished.
 CONTROLS: Three.
 AERIAL: Indoor or outdoor.
 PRICE: \$65.00 without accessories.
 MANUFACTURER'S NAME: Magnus Electric Company, Inc.



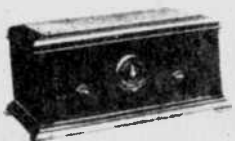
TRADE NAME: Magnavox Receiving Set.
 MODEL TRF-5.
 TYPE: Tuned radio Frequency.
 TUBES: Five.
 BATTERIES: Not furnished.
 CONTROLS: Two.
 AERIAL: Outdoor and indoor.
 PRICE: \$125.00 without accessories.
 MANUFACTURER'S NAME: Magnavox Co.



TRADE NAME: Malone-Lemmon Neutrophone Panel.
 MODEL: ML-400.
 TYPE: Neutrodyne circuit.
 TUBES: Four.
 BATTERIES: Not furnished.
 CONTROLS: Two.
 AERIAL: Outdoor and indoor.
 PRICE: \$104.00 without accessories.
 MANUFACTURER'S NAME: Carloyd Electric & Radio Co.



TRADE NAME: "Lafayette Neutrodyne."
 MODEL: K60.
 TYPE: Two radio, detector and two audio.
 TUBES: Five.
 BATTERIES: Not furnished.
 CONTROLS: Three.
 AERIAL: Inside or outside.
 PRICE: \$160.00 without accessories.
 MANUFACTURER'S NAME: The Kor-Rad Company, Inc.



TRADE NAME: Master Craft DeLuxe.
 MODEL: 18-4.
 TYPE: One-stage radio frequency.
 TUBES: Four.
 BATTERIES: "A" 6-volt storage; "B," 90 volts.
 CONTROLS: Two.
 AERIAL: Outside or inside.
 PRICE: \$100.00 without accessories.
 MANUFACTURER'S NAME: LaMar Manufacturing Co., Inc.



Radio News for March, 1925

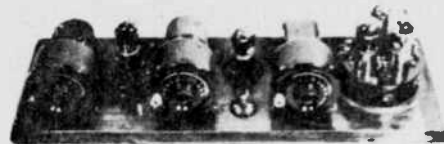
TELEGRAPH BOOK. "History, Theory & Practice of the Electric Telegraph." The orig. copy of this book was first printed in 1860 by George Prescott, Supt. of Electric Telegraph lines. Over 500 pgs. of information on the telegraph & many illus. of early telegraph equipment. Reprints of this book \$7.50 ea., ppd.

JUST OFF THE PRESS



NEW 1923 VINTAGE RADIO

Enthusiastic readers bought out our first edition. Now you can send for the fascinating new edition of this pictorial history of wireless and radio, 1887-1929. It's the collector's bible, with 263 pages and over 1,000 illustrations. Available in handbook or deluxe hard cover.



McMAHON'S 1921-1932 GUIDE

Be an instant expert. Lists 9,000 radio models by maker and year introduced, with original price, description and circuit type. A must for every radio buff or antique collector.

Vintage Radio, handbook \$4.95
 Vintage Radio, hard cover 6.95
 McMahon's 1921-32 Radio Guide 3.95

THE FABULOUS PHONOGRAPH

From Edison to Stereo

Ever since 1877 when Thomas Edison invented a curious tin-foil apparatus to reproduce sound, the phonograph has provided entertainment and the delights of music for millions of listeners.

Roland Gelatt's history of this truly fabulous invention is a classic work in its field, and this revised edition covers new developments in stereo, recordings, and tapes.

\$6.95

- 1906 Columbia Graphophone Catalog, 32 pp., @ \$3.25
- 1909 Babson Bros. Edison Phonograph Catalog, 16 pp., 8x10, @ \$3.50
- 1896 Berliner Gramophone Instruction Manual, 8 pp., @ \$1.50
- 1900 Eldridge Johnson Gramophone Catalog (Consolidated), 40 pp., @ \$3.50
- 1902 Berliner Gramophone Catalog, 32 pp., @ \$3.25
- 1909 Victor Talking Machine Catalog, 32 pp., @ \$3.95

Edison Cylinder Records, 1889-1912, With an Illustrated History of the Phonograph, by A. Koenigsberg, 8 1/2 x 11, 200 pages, coll-binding, @ \$12.95

The Phonograph and How to Use It, Edison Lab Manual, orig. pub. 1900, Facsimile Edition, hard bound, 182 pp., @ \$12.95

1899 Chicago Talking Machine Catalog, 64 pp., @ \$3.25

1907 Edison Phonograph Catalog, 32 pp., @ \$2.95

Set of 5 Antique Phonograph Posters, 12" x 17", 1877-78, @ \$5.00

- EDISON 1901 CATALOG \$1.50
- 1902 ZONOPHONE PHONOGRAPH CATALOG \$1.00
- 1902 VICTOR CATALOG \$1.00 NO COLOR
- 1906 VICTOR CATALOG \$1.00
- 1906 COLUMBIA GRAPHOPHONE CATALOG \$1.50

1901 IVER JOHNSON TALKING MACHINE SUPPLIES, 80 pp., @ \$4.50

1905 EDISON PHONOGRAPH OPERATING INSTRUCTIONS, 8 pp., @ \$1.75

1898 COMBINATION CATALOG (EDISON, COLUMBIA, PATHE, and BETTINI), 64 pp., @ \$4.95

Send _____ PLEASE PRINT

 Enclosed is \$ _____
 Name _____
 Address _____
 City _____ State _____ Zip _____



EDISON PHONOGRAPHS 1912-13 (Cylinder Models), illustrated 5 x 8" catalog reprint, \$3.00 ppd. Satisfaction guaranteed.

The Horn Speaker Book Sales

Box 12 Kleberg, Texas 75145

MASKING DECALS AND NAMEPLATES

Ben Creamer

The difficulty of spray painting around decals and nameplates can be overcome not only by tape but by art maskoid.

Art maskoid is applied with a pen or brush --extra suitable for fine detail. Brushes should first be wetted and soaped before dipping in art maskoid.

Allow to dry (approx. 5 min.) then spray over the maskoid. Remove by peeling or rubbing away with soft eraser.

Commercial art outlets are the best sources to buy the art maskoid. A large mail order outlet for art supplies is Dick Blick, P. O. Box 1267, Galesburg, Ill. 61401.

I used the art maskoid to protect the decal when I was refinishing the bell on my Music Master horn Speaker.

LETTERS

EDITOR'S MAILBAG

Dear Jim,

Enclosed is a list of items I want to buy. If you have any items for sale, I would appreciate a copy.

Enclosed find a stamp for a sample back issue of "The Horn Speaker". Send advertising rate and subscription blank.

I have old radios from 1923 to 1960. Also, old radio tubes and receiver components. I am always interested in talking to anyone with the same interest.

Very best regards,
(Signed)
William E. Hemrick
203 Ringer Avenue
Terra Alta
West Virginia 26764

Gentlemen:

Recently I acquired an Atwater Kent Breadboard in pieces. On each of the R. F. transformers is written RADIODYNE. Each part has an Atwater Kent name plate and has brass thumb nuts to secure it to the wires. All the metal parts are painted green.

I would appreciate if if one of your readers could furnish me with the proper A. K. part number for this set and possibly a photograph of the underside to show how to wire up the set. Any and all help would be appreciated.

Thank You,
(Signed)
Arnold H. Schwartz
7055 Lennox Ave. # 239
Van Nuys, Calif. 91405

Dear Mr. Cranshaw,

I am a subscriber to The Horn Speaker and enjoy the publication very much since I am a collector of old radios.

Recently I acquired a model 55FC Atwater Kent Radio. It is called a "table radio" because the radio is camouflaged to look like a six-sided table. The table top opens to expose the radio. Under the top is a tag which reads "Atwater Kent Radio, Table by Kiel-Milwaukee. Another tag reads "Kiel Golden Voice Table". Tubes are 2,224, 2-227, 2-71A, and 1-80.

I have never seen a similar radio and wonder if you could tell me whether it is rare and about how many have been built. I believe it was built in about 1929.

Cordially,
(Signed)
Larry Babcock
8095 Centre Lane
E. Amherst, N. Y. 14051

Gentlemen:

In reply to a recent inquiry, RCA of New York City has advised me to contact you for information regarding a golden oak upright Victor Talking Machine which I recently purchased at an auction.

This Victrola is Model VV-XIV, Serial # 85874.

I am not interested in selling it, but merely would like this information for myself. It still reproduces very well, and I have some fine old records, including one of Whispering Hope sung by Mme. Alda and Louise Homer, and some original Bing Crosby, Al Jolson and the original Ink Spots group.

Any assistance you can give me in this matter will be appreciated.

Very truly yours,
(Signed)
Mrs. L. A. (Ester) Woodruff
P. O. Box 76
Purdy, Mo. 65734

Gentlemen:

In response to a letter of inquiry which I sent them, RCA has advised me to contact you for information concerning the age and value of an old victrola which has come down through the generations.

A plate on the side reads: Mfg. by Victor Talking Machine Co., Type MS 13536.

The cabinet on this machine (table model) is in very fine shape. . . and the machine plays records (78 rpm) quite well.

Any information you can give me will be appreciated.

Yours very truly,
(Signed)
Grace Reid
25369 U. S. 20, West
South Bend, Indiana 46628

Gentlemen:

Recently I sent a letter to RCA Corporation requesting information on an RCA Wind-Up Phonograph. (I have enclosed a copy of my letter for your convenience.) They advised me that they no longer have information available concerning old phonographs and they recommended I write to you. I would appreciate your answering the questions, I put forward in my letter to RCA. In addition to the phonograph needles, can you supply a needle holder? Thank you for your kind cooperation and help.
Barbara Gattuso
46 Robin Hood Road
Clifton, New Jersey 07013

Gentlemen:

We own a Victrola (Victor Talking Machine Company) Serial # VV-405 11317. Any information you could send me regarding this machine, and the maintenance, care and use of Victrolas, in general, availability of parts, needles, etc., would be very appreciated. Thank you very much.

Sincerely,
(Signed)
David S. Jones
7490 Brompton Blvd.
Houston, Texas 77025

Dear Sirs:

Mass Communications, Inc., of Westport, Connecticut makes cassette series in oral history for high school, college and research libraries.

I write you concerning your holdings of the Fireside Chats of Franklin D. Roosevelt. Our audio research at the National Archives and the Library of Congress has revealed that there are three "missing" Fireside Chats--nor are these Chats available through the audio holdings of the Franklin D. Roosevelt Library in Hyde Park, New York. The three are: No. 3, 7/24/33, "The Simple Purposes and the Solid Foundations of our Recovery Program"; No. 4, 10/22/33, "We Are On Our Way, and We Are Headed in the Right Direction"; and No. 5, 6/28/34, "Are you better off than you were last year?"

I would appreciate it if you could tell me if you do have tapes of these Chats, in their entirety or excerpts. If you do, I would also appreciate any information on the possibility of obtaining copies of these tapes.

Thank you very much for your assistance.

Sincerely yours,
(Signed)
Judith Chasek, Editor
Mass Communications, Inc.
25 Sylvan Road South,
Westport, Conn., 06880



FOR YOUR COLLECTION OR MUSEUM

INTERRUPTER AND DETECTOR.

BY H. GERNSBACK.

Experimenting with different magnetic and electrolytic interrupters, the idea occurred to me that it might be possible to construct an interrupter whose chief functions would be based upon the expansion and contraction of mercury, when heated, by passing a current through it.

After many fruitless experiments I succeeded in making such an interrupter, and the definite form that proved most satisfactory is explained in the following lines:

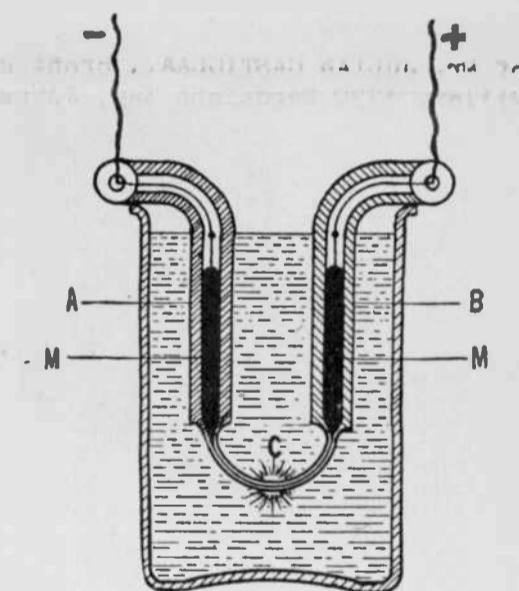
A barometric glass tube of about 15 centimeters length, with a central opening of 3 millimeters, is heated in an alcohol flame and drawn into the shape, as shown in the accompanying drawing. This is by no means easy, as the tube, C, which represents the main part of the interrupter, must be so attenuated as to leave a capillary bore within, its minute diameter not surpassing $\frac{1}{8}$ of a millimeter.

Heat the middle part of the tube over the flame by constantly rolling the ends between three fingers of each hand, till it is red hot and soft. Take the tube quickly out of the flame, and draw it straight out, till it is thin enough; then bend it into the right shape, and let it cool slowly. Of course, these manipulations have to be done quickly, because the glass will not remain soft very long in the open air, and it is nearly impossible to draw the capillary tube when the flame touches it. The tube has to be filled then with chemically-pure mercury, which is easily done by placing the end of the open column, A, in a receptacle containing the quicksilver. By drawing the air out of B, the mercury will quickly mount in A, then pass through C, and rise up in B. It is well to only half fill both columns. The apparatus will generally work satisfactorily, when the whole arrangement can be placed in any desired position without the mercury flowing out of it. This is a sign that the capillary tube, C, is sufficiently attenuated.

Two thin platinum wires are introduced into A and B till they dip in the mercury. The apparatus is put into a vessel containing water, which serves to constantly cool C, which part would

soon break in the open air. Connect the two wires with two small storage cells, and the interrupter will start instantly. In the middle of C there will be a bright bluish-green spark, and a high-pitched tone will emanate from the interrupter, indicating that the interruptions are of high frequency.

I found that this interrupter works most satisfactorily with 4 to 6 volts; it will consume, when made according to directions, from $\frac{1}{4}$ to $\frac{1}{2}$ ampere, and run as long as desired. By making the part C, of a larger cross-section, the voltage may be higher and more current will be absorbed, but the interruptions will be very unsteady and irregular, and will very often give out entirely.



If we fill the V tube with diluted sulphuric or nitric acid, or with a solution of caustic potash, and if the part at C is sufficiently attenuated, quite a sensitive oscillation detector is produced. As may be easily understood, the opening at C must be extremely small, in fact the entire success of this detector depends upon this.

Two different liquids may be used in the U tube, and these liquids do not mix, owing to the minute part at C. If two liquids are used the sensitiveness of detector is about 20 per cent higher.

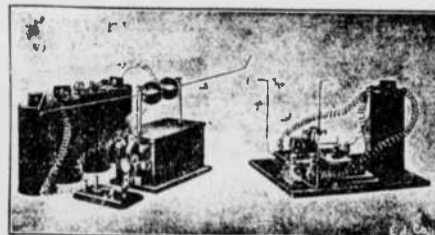
The explanation as to how this interrupter works is as follows:

The instant the current is closed, the mercury at the smallest cross-section in C will become so heated that it commences to boil, and the force of the resulting bubbles, falling against each other, will be sufficient to make a momentary rupture in the thin mercury column. There will be a little shock, and the expanding quicksilver will rise in A and B. Of course, a vacuum will be created at the place where the rupture occurred; and as the tube is immersed in water, the mercury will stop boiling; it cools instantly, then contracts, and the atmospheric pressure, combined with the weight of the quicksilver columns in A and B, will help to bring the metal in contact again, after which the same play recommences as described. — Reprinted from "Scientific American."

Wireless Telegraph Outfit

GREATEST INVENTION OF THE AGE.

1908 Ad



Not a toy. A scientific, high grade apparatus. Will work up to one mile. Comprises: Powerful 1-inch Spark Coil, Oscillator, Balls, Key, Coherer and De-coherer, 75 Ohm. Relay, Sending and Receiving Wires, etc., etc. Guaranteed in every respect. Price remarkably low.

CARRIED IN STOCK IN SAN FRANCISCO

LEVY ELECTRIC CO.

SAN FRANCISCO, CAL.

MODERN ELECTRICS, 1908

MART

No. Words	One Issue	Two Issues	Three Issues	Twelve Issues
1-25	1.35	2.45	3.45	12.75
26-30	1.70	2.90	4.15	15.30
31-35	1.95	3.40	4.80	17.80
36-40	2.25	3.90	5.50	20.35

MISC.

A BRASSPOUNDER from DOWN UNDER collects MORSE KEYS as a hobby and would like to hear from anyone with a similar interest. He is looking for 'spark' keys or early marine but seeks all types and in any condition. Will swap or buy. Please write to Alan Shawsmith, VK4SS., 35 Wynnot St., West End, Brisbane, Q 4101 AUSTRALIA.

NOSTALGIA AT ITS BEST: "Remember When" is a new monthly magazine with photos and articles on the Golden Age of Radio, movies, comics, etc. If you remember the '30s, '40s and '50s, you'll enjoy "Remember When." Four issues \$2.50, eight issues for \$4.50 from: NOSTALGIA INC., Box 34305, Dallas TX 75234.

GOT AN OLD RADIO? Want it repaired or restored? Write for free estimate to fix your Crystal set or 1940 Superhet. Bob Lucas, 9014 Mahoning, Houston TX 77036.

PROFESSIONAL CW operators, retired or active, commercial, Military, Gov't, police, etc., invited to join Society of Wireless Pioneers, W7GAQ/6, Box 530, Santa Rosa, CA 95402.

PLEASE: I need the correct address of Mr. JULIAN CASTIGLAA. Brent R. Miller, 1730 Magdalene Way, Johnstown PA 15905.

FOR SALE OR TRADE

BOOKS FOR SALE: Modern Radio Servicing by Ghirardi 1935; Radio Physics Course on Electricity and radio by Alfred H. Ghirardi, 1930; RCA Receiving Tube Manual from 1933 to 1940; Riders Manuals; Automatic Frequency Control Systems 1937; Zenith Radio Service Manual, Vol. I. 1931-1940; Servicing Superhetrodynes, John R. Rider, 1934; Servicing Receivers by means of Resistance Measurement, 1932; Radiotron Designer's Manual, 3rd ED. 1941 old radio magazines.

EQUIPMENT FOR SALE: Seco grid circuit tester model GCT-8; Oscilloscope/oscillograph Dumont Cathode ray oscillograph Type 224; Eico Condenser Ghecker, eye tube is missing; Clough-Brengle signal generator Model G 140; Army signal corps head set Model R 14. Arnold Bromeland, Route 2, Blue Earth, Minn. 56013. Phone; 507 878-2860.

RADIO SHOWS on tape or cassette, add the old time sound of radio to collection display. SASE for price list. J. W. F. Puett, 3008 Abston, Mesquite TX 75149.

FOUND some old SILK WRAPPED COPPER RADIO WIRE. Write for Details. Malcolm Blackard, P. O. Box 1504, Decatur Ala. 35601.

FLAME PROOF KEY dated 1922 \$12.95 pp., Western Electric Sounders \$25.00 pp. Walt Jackson, P. O. Box 19406, Dallas Texas 75219.

FEW HUNDRED Old radio tubes. SASE for list. Frank Oglesbee, 900 E. Park No. 17, Carbondale IL. 62901.



Rudy Vallee, popular stage and radio entertainer, "looks in" on a television feature coming in through the television receiver

BAIRD TELEVISOR

1930

Features of the Baird Television System

1. Small in size. Panel is only 15" x 15", permitting installation in a console no larger than a standard radio cabinet.
2. Universal in its application. Can be adapted quickly and easily for reception of 24, 45, 48 or 60 line pictures at speed of 15 or 20 pictures per second.
3. Synchronization on signal instead of on power line, making the speed of the scanner independent of variations in the power line frequency, voltage or load.
4. Receiver portion of the outfit may be used for both short-wave and broadcasting wavelengths by means of interchangeable plug-in coils.
5. Uses a resistance-coupled audio amplifier giving a comparatively low gain per stage, but free from interstage coupling and distortion, thus eliminating the need for expensive filtering arrangements.

NEW 1973 MIDCO'S RADIOS/WIRELESS ANTIQUERS DIRECTORY & COLLECTORS GUIDE, 4th Edition, OVFR 650 Names/Addresses, Phone Numbers, Call Letters, Data of Traders, Buyers, Sellers, Clubs, Museums in U. S. A. & Canada, Associations, Collections, Societies, Old Radio Reprints, Jokes, Collecting Hints for Both the Beginner or Advanced Collector. SERVICES OFFERED: Antique R/W Appraising, Advertising, Restoring, Repairing, Publications, and related subjects. ONLY one Known, EXPERTS in this hobby Keep Directory at Their Finger-tips. ORDER \$5.00 PP., MIDCO HS10, Box 15370, Long Beach CA 90815.

VICTOR BELT BUCKLES- Showing NIPPER and BERLINER phonograph. Heavy brass with Tiffany hallmark. Satisfaction guaranteed. \$21.50 postpaid. Dave Martens, #7 Constitution Blvd., New Castle, Delaware 19720

OLD TIME RADIO SHOWS Biggest and Best in The Industry, WE CREATED--VINTAGE RADIO: Catalogue 35¢. MAR-BREN SOUND, 420 Pelham, Rochester, New York, 14610. WE'RE OFTEN IMITATED, BUT NEVER DUPLICATED.

FOR SALE: Power supplies for battery-operated radios, standard and custom. WANTED: Colin B. Kennedy Model 281. G. B. Schneider, 6848 Commonwealth Blvd., Parma Hgts., Ohio 44130.

WD11 Adaptors, use UX199, 120, VT24. No Wiring changes, Radiola III's Battery hook up included \$5.25 pp., 2 for \$9.25. Keith Parry, 17557 Horace St., Granada Hills CA 91344.

RADIOS For Sale, MAGAZINES To Swap. Roland Matson, 388 Concord Road, Bedford, Mass. 01730. Pho: 617 663-3877 after 5PM.

PHILMORE CRYSTAL SET: Early metal case, glass enclose Crystal, \$25.00. Everett Boese, Box 423, Moundridge, Kansas 67107.

OLD TUBES for sale, write for list, SASE please. J. W. F. Puett, 3008 Abston, Mesquite TX 75149.

COLLECTOR CLEARING out many Radios, Phonographs and Other Items. Send SASE for list. Richard Cane, 103 Spring St., Passaic, N. J. 07055.

ANTIQUATE TELEVISIONS from 1930s & 1940s 3" to 10" screens, over 50 sets, sell one or all or trade? Send \$1.00 for list & Picture. Charles Seidel, 767 Westwood Dr., Santa Barbara CA 93109. Phone: 805 962-3620.

FOR SALE: Display your Radio's Schematic along with it. The perfect compliment of every set, \$1.00 each. Cecil Bourds, Pine Springs Route, Carlsbad, N. M. 88220.

WANTED

WANTED: Crystal Radio Receiver Schematics from early 1920's including details of construction, wire sizes, etc., also Tesla coil, Jacob's Ladder, etc. George Seidel, 1201 Powell St., Norristown PA 19401, Pho; 215-275-6333.

WANTED: December 1926 issue Citizen's Radio Callbook, need not be perfect. Edward Crosby, 441 Cedar Ave., East Greenwich, R. I. 02818.

WILL BUY complete tube and parts stock any quantity. New. Must be priced for quick cash sale. William L. Poston, 3212 Peachtree Ct., Bakersfield CA 93301.

OLD MICROPHONES, 1920 to 1940. Also Microphone catalogs and specification sheets. Bob Paquette, 443 N. 31 St., Milw., Wis. 53208.

WANTED: 1925-26 Freshman Masterpiece with Built-in horn, three dials, Quote condition, price, or will trade 29" X 10" X 15" receiver having two meters, seven O-1-A's. Albert Alley, 4054 North Kostner, Chicago, Illinois 60641.

WANTED: 3-TUBE AIRLINE, Midwest, Radak, Crosley, Meteor, 5-tube Splitdorf, Apex, Grebe, Silvertone, Freed Eismann, 6-tube Kolster Day-Fan, 1914-'29 Sears, Wards Catalogs. C. E. Strand, Box 3053, Marion, Ind. 46952.

WANT GOOD used ALTEC LANSING Model 601 and 604 Speaker without cabinet. Give price and condition, etc. Malcolm Blackard, P. O. Box 1504, Decatur, Alabama 35601.

TUBE PRICE LIST NO. 6 -- Tube prices in this list supersede prices in Lists No. 1 through 5.

J.W.F. PUETT 3008 ABSTON DRIVE MESQUITE, TEXAS 75149

SEPTEMBER 1973

ALL TUBES ARE THOROUGHLY TESTED ON A MUTUAL CONDUCTANCE TUBE CHECKER BEFORE SHIPMENT. REFUNDS are mailed with your order for out-of-stock tubes. INCLUDE 10% FOR POSTAGE AND HANDLING. TEXAS RESIDENTS ADD 5% STATE SALES TAX. Tubes are priced from \$2.50 to \$1.00 in the following tables

NEW TUBES IN ORIGINAL CARTONS -- \$2.50 EACH:

2A3	2A4	2A5	2B7	30	31	32	33	34	35/51	36	41	45	46	48	49	58	77
-----	-----	-----	-----	----	----	----	----	----	-------	----	----	----	----	----	----	----	----

SPECIAL (used)

OIA's \$3.00 UV 99's \$4.00

NEW TUBES IN ORIGINAL CARTONS -- \$2.00 EACH:

3C6	6B4	6D6	6F8	6K7	6L7	7A4	7X7	24A	39/51	56	70L7	79	85	100-79	117Z3	5881	XXL
6A8	6B7	6F6	6K6	6L6	6N5	7F8	19	38	55	70A7	76	80	89	117L7	117Z6	XXB	XXFM

NEW TUBES IN ORIGINAL CARTONS -- \$1.50 EACH:

0A2	1C7	1LB4	1T5	5W4	6AL5	6C7	6N7	6SH7	6X5	7B8	12A6	12K7	12SQ7	14J7	35Z5
0B3	1D5	1LC5	1U4	5X4	6AQ5	6C8	6P5	6SJ7	6ZY5	7C5	12A7	12KB	12SR7	14N7	50B5
0C3	1D7	1LC6	1U5	5Y3	6AT6	6D7	6Q7	6SK7	7A5	7E6	12AN7	12L6	12V6	14Q7	50C5
0D3	1E4	1LD5	3A4	5Y4	6AT8	6D8	6R7	6SL7	7A6	7E7	12AT6	12Q7	14A4	14R7	50L6
0Y4	1E5	1LE3	3A5	5Z3	6AU6	6E6	6S4	6SQ7	7A7	7F7	12AT7	12SA7	14A7	14W7	50Y6
0Z4	1E7	1LQ5	3A8	5Z4	6AV6	6F5	6S7	6SS7	7A8	7K7	12AU6	12SC7	14AF7	25A6	50Y7
1A3	1F4	1LH4	3LF4	6A4	6B5	6Q6	6S8	6SU7	7AD7	7L7	12AU7	12SF5	14B5	25A7	5686
1A4	1G4	1LN5	3Q4	6A5	6B6	6H6	6SA7	6SV7	7AF7	7N7	12AV6	12SF7	14B6	25L6	5691
1A5	1G6	1N5	3Q5	6A6	6B8	6J5	6SB7	6T7	7AG7	7R7	12AX7	12SQ7	14B8	35Z5	5751
1A6	1H5	1P5	3B4	6AB7	6BA6	6J6	6SC7	6T8	7AH7	7S7	12BE6	12SH7	14C5	28Z6	5814
1A7	1H6	1Q5	3V4	6AC5	6BE6	6J7	6SD7	6U8	7B4	7V7	12C8	12SJ7	14C6	35A5	5879
1B5	1J6	1R5	5T4	6AC7	6C4	6K5	6SF5	6V6	7B5	7W7	12F5	12SK7	14F7	35B5	6842
1C5	1L4	1S5	5U4	6AD6	6C5	6L5	6SF7	6V7	7B6	7Y4	12J5	12SL7	14F8	35C5	6973
1C6	1LA4	1T4	5V4	6AF6	6C6	6N6	6SG7	6X4	7B7	12A5	12J7	12SN7	14H7	35L6	7-H-11

NEW TUBES IN ORIGINAL CARTONS -- \$1.00 EACH:

1B3	3CB5	4DT6	5CG8	6AK5	6AX5	6BN6	6CG7	6DQ6	8AW8	12BY7	19AU4	25DN6	45Z5	955
1D21	3EN6	5AN8	5CL8	6AK6	6BC5	6BQ6	6CG8	6DX8	10DE7	12CA5	19BG6	26A7	50A5	1633
1X2	3BZ6	5AQ5	5J6	6AN8	6BD6	6BQ7	6CM7	6SN7	12AX4	12DQ6	25AC5	28D7	50C6	2050
2EN4	3CB6	5AT8	5KE8	6AS5	6BJ6	6BY6	6CQ8	6W4	12BD6	12W6	25AX4	32L7	185R8	2051
2W3	3GK5	5B8	5X8	6AU4	6BK5	6BZ7	6CQ6	6W6	12BF6	12Z3	25BK5	35Z3	809	9002
2X2	4BQ7	5BQ7	6AQ7	6AW8	6BK7	6CB6	6CU6	6Y6	12BH7	17AX4	25BQ6	35Z6	884	9003
3AU6	4CB6	5BR8	6AJ5	6AX4	6BN4	6CD6	6CUB	7AU7	12BQ6	17DQ6	25CD6	45Z3	930	

USED TUBES IN CARTONS -- THOROUGHLY CHECKED -- \$1.00 EACH:

1A4	1LB4	1S4	3B4	6B6	6Z4	7S7	12V6	24A	40A1	75	CK1005	1614	K-49-A
1D5	1LC6	1T4	3Q4	6D6	7AK7	12A8	14A7	33	42	78	W1148	1625	L-55-C
1D8	1LD5	1U5	3Q5	6K8	7C6	12K7	14Q7	35Y4	43	84	1273	1626	VT52
1H4	1LN5	2C26	6A7	6P5	7H7	12Q7	14H7	37	57	100-77	1299	1635	FM1000
1J6	1Q4	2W3	6AR6	6Y7	7Q7	12SQ7	15	70L7	807	1617			L-42-B

FOR SALE OR TRADE -- SET OF RIDER PERPETUAL TROUBLESHOOTER'S MANUALS -- Volumes 1 through 2 abridged and Volumes 5 through 21 with all index books. Covers schematic diagrams and technical data on nearly all radios from the early twenties through 1953. This set is in good condition. \$75.00 f.o.b. Mesquite.

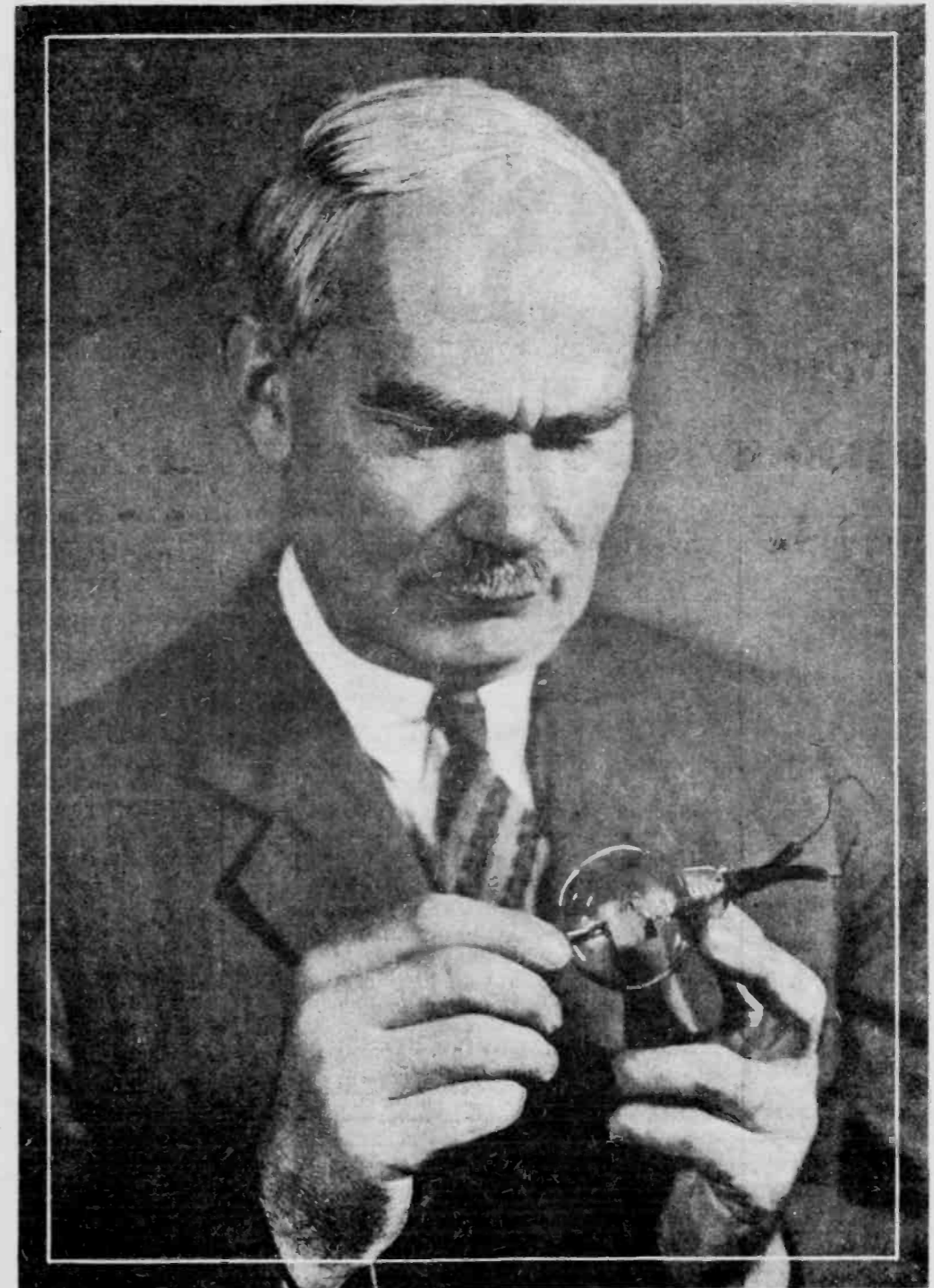
WANTED -- WILL BUY OR TRADE FOR -- GOLD COLORED HORN TO FIT MAGNAVOX HORN-SPEAKER DRIVER TYPE M-1 MODEL A.

WANTED -- McMURDO SILVER AND E.H. SCOTT RADIOS, LITERATURE PRODUCED BY EITHER OF THESE COMPANIES, MAGAZINE ADVERTISEMENTS AND ARTICLES, BY McMURDO SILVER OR E.H. SCOTT.

I AM VERY INTERESTED IN CORRESPONDING WITH COLLECTORS OF McMURDO SILVER AND SCOTT RADIOS AND WITH ANYONE WHO WAS EMPLOYED BY EITHER OF THESE COMPANIES.

THE HORN SPEAKER

NOVEMBER 1973



Dr. Lee de Forest

Mr. Gary B. Schneider
6878 Commonwealth Blvd.
Parma Hts., Ohio 44130