

THE NEWSPAPER FOR  
THE HOBBYIST OF VINTAGE  
ELECTRONICS AND SOUND

# THE HORN SPEAKER

## The Classic Radio

Earnest Humphrey Scott



## The Stradivarius of Radio

by J.W.F. Puett

Like that proverbial old violin at the auction - worthless until the old master picked it up and played - so would be the field of classic radio without the touch of perfection it received from Earnest Humphrey Scott. From 1924 to 1945, E. H. Scott designed and built the world's finest radios (CONSENSUS OF A GROWING NUMBER OF COLLECTORS), many of which, although nearly half a century old, are still treasured by their original owners.

What sort of man was responsible for manufacturing radios which inspire this kind of devotion? - Scott was not a man who enjoyed being second to anyone. He was, by temperament, a perfectionist, an engineer, whose all consuming desire was to be first - to produce radios which were guaranteed to "outperform any other radio or sound reproduction system in either a tone or long distance reception test." This was no idle boast. In the August, 1935, Scott News, he wrote, "During the past ten years, I have repeatedly challenged the whole world of radio to any kind of competitive test, but during this period, not a single manufacturer has been willing to accept this challenge."

E. H. Scott was born in Dunedin, New Zealand, on June 1, 1887. He spent his early years in Australia. His father was killed in a railroad accident when he was only five. When he was fourteen, his mother died suddenly, leaving him an orphan. Confronted with the necessity of self-support, he became a messenger boy, but soon progressed to the position of salesman.

With the advent of World War I, he enlisted in the Australian New Zealand Army Corps and served in France. During this time he invented "a simple little gadget" (the Telecor) for locating troubles in automotive engines. The United States government purchased the rights for his invention which eventually amounted to a total of \$46,000.00. Telecorators were provided as standard equipment in army machine shops, and were installed on tanks and tractors.

Scott made many American friends while stationed in France. When he was discharged in London at the end of the war, he decided to come to the United States, making Chicago his home.

During his first two years in America, he wrote a column entitled "The Care of an Automobile," which was syndicated in fifty newspapers in the United States and Canada. In this time period, Scott became "intensely interested in radio." In addition to his automotive column, he soon found himself supplying weekly articles on the construction of radio sets. In 1922, he originated the pictorial wiring diagram which "helped thousands of non-technical radio enthusiasts to build their first radio sets."

During the years he wrote radio articles, Scott maintained a well-equipped laboratory where he tested hundreds of different circuits. This was necessary, since he was supplying radio articles to 112 different newspapers.

After four years in America, Scott decided to visit his native New Zealand again. He was determined to take with him a radio capable of receiving U.S. broadcast stations in New Zealand.

Before leaving Chicago, he arranged for stations WGN and WQJ (now WMAQ) to send him special programs when he reached New Zealand. These programs began at 1:00 a.m. and lasted until 4:00 a.m. The distance from Tasman, New Zealand to Chicago is about 8,300 miles. In 1924, very few receivers were capable of tuning in broadcast band signals from that great a distance. Scott tuned in both special broadcasts, logging them for over an hour. The morning after each program was broadcast, he cabled program details to the stations and sent them his logs by registered mail.

During his thirteen week stay in New Zealand, Scott logged 117 programs from 19 different stations, all 6,000 miles or more distant, establishing four world's records for the "consistent night after night reception of stations 6,000 miles or more away." THIS WAS 1924!

To prove that he did not have a "freak set," Scott cabled Chicago for a duplicate set of parts and built a second receiver there in New Zealand. The second set performed as well as the first, and Scott named this receiver the World Record 9. The second set was left in New Zealand when Scott returned to America.

Upon his return to the U.S., Scott checked his logs personally with the managers of Los Angeles stations KHJ, KFI, and KNX. The station manager of KNX could hardly believe that it was possible to pick up his 500-watt station almost every night 6,000 miles away. To prove this kind of reception was possible, a test program was arranged with station KNX. A cable was sent to the man in New Zealand who purchased the second World Record 9, asking him to pick up the program and report it by cable. The following morning, a cable arrived from New Zealand giving program details and several weeks later, the log arrived by mail.

When Scott arrived in Chicago, he received hundreds of requests from radio fans in all parts of the country asking for construction details on the World Record 9. He published and sold hundreds of copies of a booklet which contained all technical data on this set.

Many who constructed this receiver had difficulty aligning the circuits and came to Scott for assistance. In that time, very few laboratories had the necessary equipment to "properly match" I.F. transformers. Mr. Scott was thus "forced to go into the radio business," and began supplying matched sets of I.F. transformers.

He opened his first laboratory, The Scott Transformer Company, in 1924. It consisted of two rooms, each about fifteen feet square, one an office and the other the laboratory. In the September, 1933, Scott News, he wrote, "Right from the start, my only interest and ambition has been to design and build the very finest radio receiver possible."

The growth of the company was rapid in spite of the depression, a tribute to the business genius of Scott. In 1933 he doubled the size of the laboratory. Expansion continued, and by 1935, the company was housed in a large modern three-story building with 97 employees.

Unfounded claims of fantastic sensitivity, selectivity and fidelity made by other manufacturers annoyed Scott. Upon reading an

advertisement that a certain receiver "would give reception on the broadcast band of stations up to 5,000 miles in broad daylight," Scott offered to wager \$1,000.00 that it could not be done. His wager was refused. When a manufacturer offered "an open challenge to any and all reception records," Scott accepted by registered letter, offering a side-by-side public reception test. The letter was never answered. Scott concluded, "Bluff is all right until someone calls it."

Scott's designs and innovations were often copied by other manufacturers. When another company offered four consoles which were "Chinese copies" of Scott console designs, he retorted by quoting Kipling:

"And they asked me  
how I did it,  
And I gave 'em the  
scripture text;  
'You keep your light  
so shining  
A little ahead of the  
next.'  
They copied all they  
could follow,  
But they couldn't  
copy my mind,  
And I left them  
sweating and  
stealing,  
A year and a half  
behind."

Scott guaranteed his receivers for five years, with only the tubes excluded. Holding to his belief that "the fine things are always hand made," he never considered mass production.

Scott radios probably still hold more verified long-distance broadcast-station reception records than the sets produced by all other manufacturers combined. The following records were established in 1924:

(1) Greatest number of broadcast band stations and programs 6,000 miles or more distant:

- (a) 19 stations 6,000 to 8,000 miles distant.
  - (b) 19 programs from stations 8,000 miles or more distant.
  - (c) 19 programs from stations 7,000 miles or more distant.
  - (d) 79 programs from stations 6,000 miles or more distant.
- (2) Greatest distance over which voice and music had been heard - 8,375 miles.

As an advertising promotion and demonstration of the performance of the new All-Wave De Luxe, Scott offered an all-expenses-paid trip around the world. The contest was limited to Scott All-Wave owners and spanned the first six months of 1932. During the first four months, Scott owners sent in verified reception reports covering 231 different foreign stations and 13,280 foreign-station programs, which were heard from 41 different countries.

In 1932, a Scott All-Wave receiver in the United States established a record for the most consistent foreign-station short-wave reception - every broadcast from station VK2ME in Sydney, Australia for twelve consecutive months - distance 9,500 miles.

E. H. Scott installed an All-Wave De Luxe receiver aboard the S. S. Manganni on which he sailed to New Zealand in February of 1933. He was able to pick

up station WBBM in Chicago all the way to the amazement of passengers and crew alike. He furnished music direct from Chicago for the passengers to dance to each night of the voyage. Scott commented, "There seems to be no other way to definitely establish our right to make the claims we do and to overcome what I know are exaggerations by some of the manufacturers who claim to compete with us to the confusion of some of our prospective customers."

"Once more we will have proven beyond fear of contradiction the supremacy of our receiver."

Radio station WBBM read cablegrams received daily from E. H. Scott during his voyage and announced his reception reports.

The chief Radio Operator of the S. S. Manganni issued this statement, "In all my radio experience, I have never heard such reception of broadcast stations on board ship as that accomplished by the Scott receiver."

On this 1933 trip to New Zealand, Scott visited the man who purchased the second World Record 9 receiver from him in 1924. Although this set had been in continuous use on an average of three hours a day, it was still bringing in stations from all parts of the world. It took a great deal of persuasion, but Scott was finally instrumental in trading a new All-Wave De Luxe for the World Record 9, which was later placed on exhibit at the E. H. Scott Radio Laboratories in Chicago.

Scott did not change the appearance of his sets each year as some manufacturers do for sales purposes. New innovations were constantly incorporated into existing receiver designs, but the models remained essentially the same in appearance. Only when significant developments could not be utilized without drastic changes, was a new model introduced.

Continued on page 2

## Meeting For Dallas Collectors

A meeting has been scheduled to get together the radio and phonograph collectors of the Dallas area. Everyone is welcome to bring their ideas and anything they want to sell or swap. Of course, all collectors from out of town are welcome.

Walt Jackson, a well known radio collector, will arrange for everyone to meet at Electronic Center, located at 2929 N. Haskell in Dallas. Activities for the meeting should take place about 7:00 p.m., on October 19, 1974. For more information call Walt, 262-7855 evenings or 526-2023 days.

All Clubs about vintage electronics and sound should send news about meetings and other affairs so that we can print the information.

## FIND OF THE MONTH

We are trying to encourage our readers to write in our monthly column, "Find of the Month" how they unearthed a rare collectible item that brought joy to them. Alan Diaz, as you remember in the September issue, told about discovering the Crosby Pup in an old junk shop for 50¢.

THE HORN SPEAKER is looking forward to printing how you made your "find."

## E.H. SCOTT

Scott not only stayed abreast with the state-of-the-art, he often surged far ahead of his time. A few of the "firsts" attributed to his designs are listed herein:

- (1) First to successfully use more than one tuned RF stage.
- (2) First all-wave receiver offered to the general public (1928).
- (3) First to successfully utilize the screen grid tube.
- (4) First 15 - 500 meter super-hetrodyne set without plug-in coils.
- (5) First to utilize triple-grid "super control" type 57 and type 58 tubes.
- (6) First minimum usable sensitivity of .025 uv per meter at 600 KHz and a maximum sensitivity of .006 uv per meter at 1400 KHz.
- (7) First to provide 10 KHz selectivity at a field strength of 600 to 1.
- (8) First true high fidelity radio capable of reproducing the entire audio range (30 Hz to 15 KHz).

(9) First to provide variable selectivity control of both RF and IF stages.

(10) First accurately calibrated dial - within .1% on the broadcast band and within 3% on all short wave bands.

E. H. Scott was probably the first radio manufacturer to employ modern reliability testing devices. He designed and utilized electric rotators to test moving parts, electro-mechanical shaking tables to test the permanence of all adjustments, and a special refrigeration cabinet to simulate humid conditions encountered in a tropical climate.

At the Century of Progress (1933 Chicago World's Fair), a Scott All-Wave De Luxe in a Napier console was placed in operation in the control room at the top of the elevator of the Observation Tower at the Sky Ride. Each day, eight to twelve thousand people visited the control room. They heard music and news coming from the radio without the slightest trace of electrical interference, yet the

set was situated in the center of a mass of motors, dynamos, and control contractors. This unusual demonstration "proved the perfection of shielding in the Scott All-Wave De Luxe."

In 1935, Scott ads heralded the 23-tube Full-Range High-Fidelity Receiver, also known as the All-Wave Imperial. Four of Chicago's largest theaters were slated to use "two well known receivers" to pick up the Joe Louis vs. Max Baer fight. This program material was to be connected from the receivers to the theater \$20,000.00 sound systems. It was found that neither of the receivers was capable of bringing a sufficiently clear signal into the theaters. The theater owner asked E. H. Scott if he thought his new 23-tube All-Wave might do the job. Scott replied, "It is not only capable of bringing in the signal, but of delivering the volume required without feeding it into the theater sound systems!" The next morning, an All-Wave Imperial in a Napier console was installed

in the Drake Theater. To the owner's amazement, it brought in the desired station without even a crackle from the ambient downtown electrical interference and "filled every corner of the theater with the volume turned only one-third on." With a standing-room-only audience, the volume was turned one half on.

The supremacy of Scott receivers was now legendary, and their elegance increased as time marched on. There was the \$2,500.00 forty-tube Quaranta, a special version of the All-Wave Imperial with a very elaborate audio system, and finally, perhaps the greatest of all classics - the Philharmonic. There were countless custom built installations, some with remote control systems for both tuning and volume. Some affluent customers even had their large yachts equipped with Scott receivers for entertainment purposes.

Famous people in all walks of life owned Scott receivers. In the world of music, many well known concert masters such as Arturo Toscanini, Eugene Goossens and John Barbirolli treasured the quality sound-reproduction that only a Scott could bring. The list goes on and on - Frank Lloyd Wright, Guy Lombardo, Deems Taylor, Walter Winchell and countless other connoisseurs of the very best.

The period from 1935 to the end of World War II represents Scott's grandest years. His long time feud with McMurdo Silver ended in 1938 when Silver succumbed to bankruptcy and Scott purchased the company assets. Scott commented, "I did this rather than let the tradition for custom built radio pass to someone who might tear down the high standards of quality a custom built product represents."

In 1939, radio station WCFL in Chicago broadcast The Scott Music Lover's Program from 10:30 to 11:30 p.m. Monday through Saturday. E. H. Scott loved fine music and even included "The Scott Record Review" for SCOTT NEWS readers in 1940.

Scott's mind was always full of improved designs. In 1940, he developed an elaborate 26-tube communication's receiver which was produced in very limited quantities. Known as the Scott Special, this set was perhaps the last and greatest of his ingenious designs. The circuitry bore some similarity to the Philharmonic. There were seven short-wave bands (1.7 to 64MHz) and two other ranges from 140 to 395 KHz and 520 to 1710 KHz. This set utilized two separate tuners on the same chassis, one for the short-wave bands and the other for the broadcast and low frequency bands. The performance of the Scott Special High Fidelity Communications Receiver was not equaled until years after World War II.

E. H. Scott spent many happy hours with his own Scott Special, which his wife "would not allow in the living room." Gladys Scott much preferred the Philharmonic in a Chippendale Grand console for living room listening. Scott maintained a special listening station in his upstairs den where he kept the Scott Special which was connected to an elaborate outside antenna system.

Scott had two other interests. The first was flying. As a passenger, he logged over half a million miles in his later years. His second hobby was photography, especially making movies. He made many movies on travel in foreign countries and also wrote books on that subject.

Like many others who excel in their field, Scott was eccentric, demanding, a strict disciplinarian, and at times even hotheaded. From the privacy of his rooftop office, he often checked on his salesmen's talks with prospective customers by means of microphones hidden behind pictures in the Chicago sales salon.

He once dozed off while driving his car and crashed into a Chicago bungalow. As a reminder that sleep can be dangerous, he had an artist paint a picture of the wreck which he hung in his office.

On the other hand, Scott was a man of depth and feeling and a generous employer. Perhaps the greatest testimony to his generosity could be obtained from hundreds of Australian and New Zealand service men who trained in Canada during World War II. Scott financed and operated a club for these men in Chicago. They were treated royally, taken to ball games and on sight seeing tours. Scott made pictures of each man and if one was killed or wounded in the war, he wrote a personal letter to their families. If Scott ever received any recognition for this humanitarian endeavor, it is not known, although others who probably did less received special awards. Mr. Scott's reward was the personal satisfaction he received from helping others in need.

At the outset of World War II, German submarines used direction finders to locate ships at sea up to 100 miles away by tuning in on the minute signal from the local oscillator in any superhetrodyne receiver aboard ship. In only 36 days, Scott designed and developed a receiver which produced no detectable radiation beyond 25 feet. The company immediately began to manufacture these low-radiation receivers which were used both for communication and crew entertainment aboard Navy and Merchant Marine vessels. The firm received the Navy E, the Maritime M, and the Treasury T awards for their part in the war effort.

By the end of the second World War, the last Philharmonic had long since been assembled, tested and shipped to some lucky customer, and the great days were waning for E. H. Scott. In 1943, the company was doing a \$2,800,000.00 business with the U.S. Navy, but when Mr. Scott totaled the profits, he found with renegotiation and taxes that he had only \$90,000.00 left. Discouraged by previous deficits, and dubious about the immediate postwar future of radio, Scott sold his interest in the company for \$260,000.00, remaining in the capacity of president and still in charge of all company business.

From 1943 to 1945, the relationship between Scott and other company officials declined sharply. Returning from a trip to New Zealand in June of 1945, Scott found that the company capitalization had increased from 6,000 shares to 251,000 shares on the strength of war time sales. Almost 225,000 shares had already been sold to the public for \$703,125.00. Scott further found that he had been demoted from president to advertising and sales manager. He turned down the job in a 3,500 word letter. Purchasing large ads in two leading Chicago newspapers, he publicly announced his resignation and disclaimed any responsibility for the stock sale. Without Scott's leadership, the company gradually faded away in the 50's.

Retired, E. H. Scott moved to the municipality of Saanich near Victoria in British Columbia, Canada. His home still stands near the top of the southern slope of Mt. Tolmie, a rocky isolated hill. This location provides a beautiful view of the city and surrounding country including the Olympic Mountain Range in the State of Washington about twenty miles across the Strait of Juan de Fuca.

E. H. Scott passed away in 1951, leaving a legacy of quality and perfection which may never be equaled in the world of radio. The instruments he manufactured were truly "THE STRADIVARIUS OF RADIO RECEIVERS" and in spite of his eccentricities, Mr. Scott will be remembered as the old master whose magic touch made them play.

The author extends special thanks to Mr. Jack Rhodes for contributing invaluable information used in this article. Our thanks also to John Caperton, Anthony Ciardi, Brent Dingman, Earl England, Bob Fabris, John Field, Joe Halser, Walt Jackson, Robert Lynd, Russ Mappin, George Sartor, Buford Smith and John Tishopp.

## The Air Is Full Of Music

### Miraco Vacuum Tube Radio Receiver

including 22½ volt "B" Battery, 150 feet aerial and insulators

\$20.00

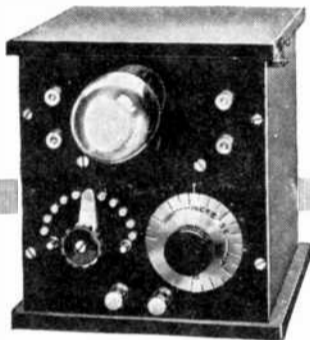
Price without these accessories \$18.00

THE air is filled with music, lectures and news of the world. You have but to hitch a Miraco Vacuum Tube Radio Receiver to 'phones, batteries and aerial wires and listen in.

No trouble with crystal detector adjustments. The Miraco Vacuum Tube Receiver does away with this. Designed for perfect radiophone reception on wave lengths from 150 to 600 meters. Sensitive to every detail. All you need for a complete outfit are 'phones, vacuum tube and 6-volt storage battery or dry cells.

### Dealers:

Write or wire at once for our attractive proposition. You will be proud to handle the Miraco equipment. Sells readily and insures lasting satisfaction.



## The Midwest Radio Co.

CINCINNATI, OHIO

All  
3  
ads  
1922

## The Radio Phonolier

A step forward and upward



THE Radio Phonolier constructively marks a decided advance in Radio reception, and completely transforms the unsightliness of the average Receiving Set to an object of art, thereby elevating it from the oft-times humiliating surroundings of a basement to harmonize with the furnishings of the most particularly appointed room in the home.

Briefly the Radio Phonolier is a 3-step Radio Receiver and Loud Speaker artfully yet artistically inbuilt and moulded in the form of a beautiful table lamp.

By means of the scientifically designed ALL WAVE coupler with a guaranteed wave length of from 150 to 3000 meters, exceedingly fine tuning is possible and a remarkably clear, loud long distance reception is attained. The base of the lamp conceals the loud speaker being beautifully finished in gold, silver, or bronze.

The illumination from two electric light bulbs inside and underneath the shade gives the whole a brilliant setting. All wires, batteries, and other units concealed. No technical knowledge required to operate it.

Priced from \$300 up

Complete descriptive circular "B" FREE

If your nearest electrical or phonograph dealer cannot supply you, send us his name and your order—we will supply you direct or through him.

JOBBER. There is still some territory open—write.

The Capitol Phonolier Corporation

58 Lafayette St. NEW YORK



De Forest  
D-7  
Reflex  
Radiophone

## Listen to Half the Continent This Christmas!

HERE'S the latest De Forest triumph, the D-7 Reflex Radiophone\* Receiver. It's the newest and most sensitive set of them all, with a thousand mile range on a two-foot indoor aerial! That's what you've been waiting for. No outside aerial is needed. The whole set is as you see it here.

Easy to control with its single knob—small, compact, super-efficient—and an ornament to any library table!

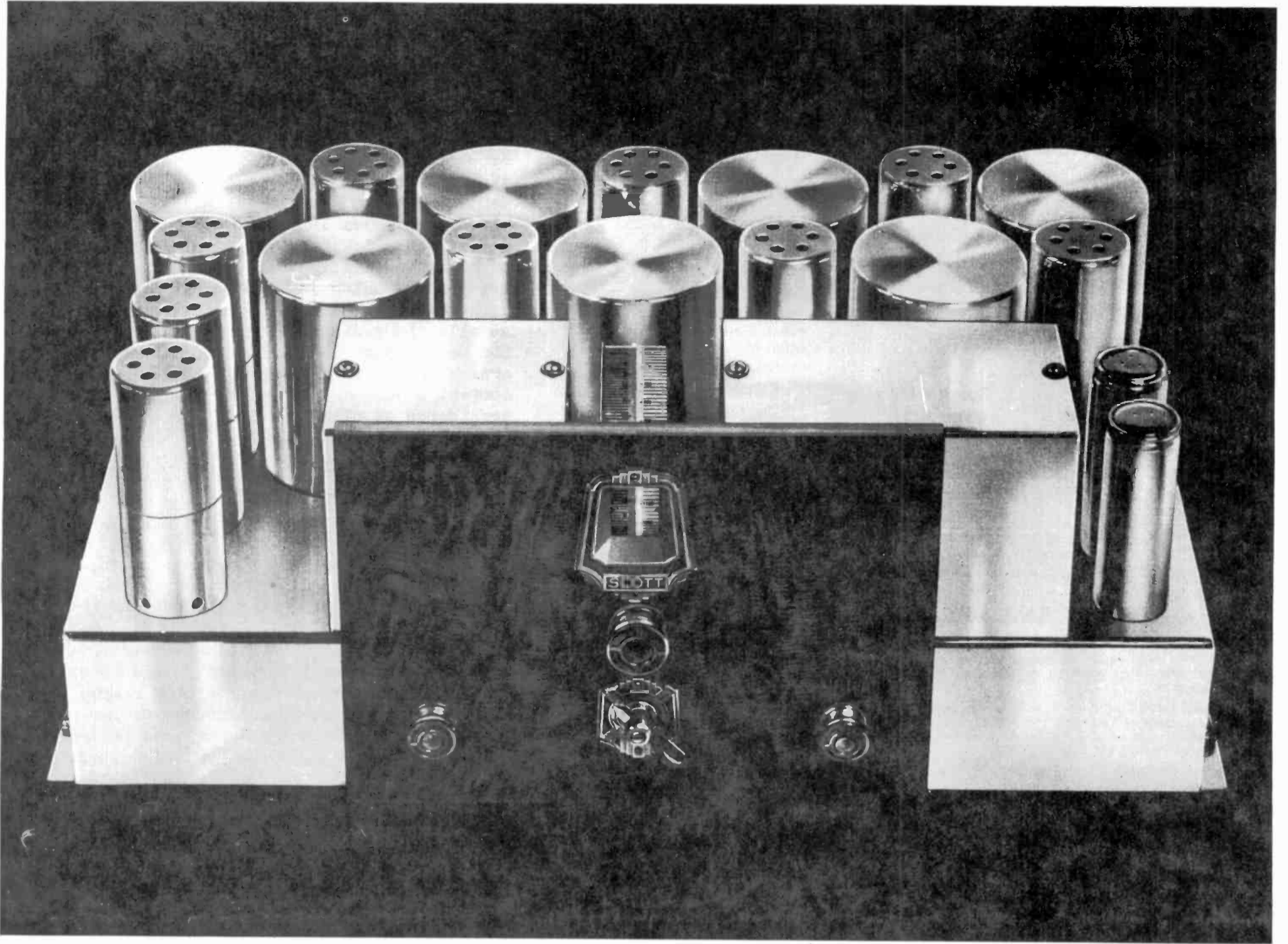
Economical to operate, too, because you get five stages of amplification on three tubes, and correspondingly longer life for your storage batteries.

If you want to bring into your home the news, the music, the lectures of half the American Continent—with no trouble—clearly without interfering noises—this is the set for you. Remember it's a Radio Christmas—and here's one set that is all you ever hoped a receiver could be. Ask your De Forest dealer about D-7 and other De Forest sets—to-day.

De Forest Radio Tel. & Tel. Co.  
Jersey City, N. J.



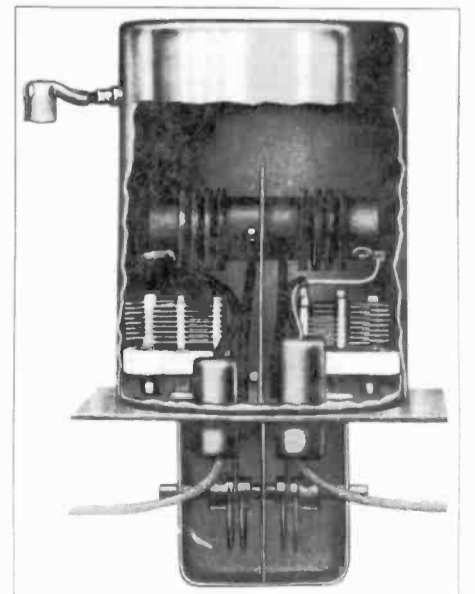
\*Reg. U. S. Pat. Off.



THE SCOTT ALLWAVE DELUXE CHASSIS

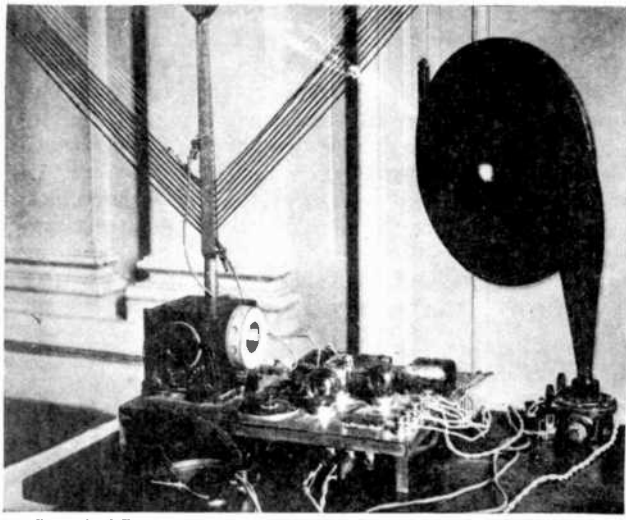


MR. SCOTT AT DIALS OF FIRST RECEIVER, THE WORLD'S RECORD SUPER 9, WHICH HE DESIGNED AND BUILT IN 1924



I.F. Transformer Showing Four P1. Lit-zendrath Coils, Air Tuning Condensers and Part of HI-FI Control.

## Armstrong Uses Pacent Radio Essentials in His New Super-Regenerative Circuit



Pacented Equipment used by Major Armstrong to demonstrate his super-regenerative circuit before the Institute of Radio Engineers

WHEN Major Edwin H. Armstrong recently demonstrated his new super-regenerative receiver before the Institute of Radio Engineers, he was able to receive from the famous WJZ station at Newark (25 miles distant) by the use of three vacuum tubes, although only a small loop aerial was used in the steel framed building of the Engineering Societies, New York City. The program was reproduced with such great volume that it filled the lecture hall and corridors.

In his precision radio work, Major Armstrong chose his equipment with the greatest care and with a keen sense of engineering values. PACENT Radio Essentials were selected by Major Armstrong because they were of correct design and constructed with honest materials.

### ARMSTRONG CHOSE

**Pacent Duo-Lateral Coils**, as the best suitable inductances for the auxiliary frequency circuits. Duo-Lateral Coils are the last word in inductances.

**Pacent Universal Plug**, because of the perfect, constant contact they produce, which is absolutely essential in any radio receivers employing extremely high amplification.

**Pacent Multijacks**, because, aided by the Pacent Universal Plugs, they allow him to make perfect contacts and to rapidly change connections.

**Dubilier Micadons**, because they have constant capacity and entirely eliminate the noises caused by paper condensers. Dubilier condensers are essential for steady, continuous operation.

**Pacent Radio Jacks**, because they were designed especially for radio and they form perfect contact with Pacent Universal Plugs.

**Pacent Duo-Lateral Coil Receptacles and Plugs**, because of their convenience and the perfect electrical contact they form.

Let Pacent Products help you to build up the efficiency of your radio equipment

### Don't Improvise—Pacentize

See the local Pacent Distributor or send for bulletins



**PACENT ELECTRIC COMPANY**  
INCORPORATED  
150 Nassau Street NEW YORK  
Member Radio Section, Associated Mfrs. Electrical Supplies

Branches:  
PHILADELPHIA, PA.  
Bourse Bldg.  
CHICAGO, ILL.  
33 So. Clinton St.  
WASHINGTON, D.C.  
Munsey Bldg.

1922 ad

## TROUBLESHOOTING THE GRID LEAK

BY  
William E. Hemrick

If your radio reception is not up to par, check the grid leak, it has probably increased or decreased in value and you will have trouble such as - the stations fades out, and adjustments has to be made continuously, and at times the program dies away, and other times there is a distinct clicking noise with alternate periods of clear and muffled reception. If so chances are you are using an incorrect value grid leak. In some cases the grid condenser cannot function at all. Long distance records in radio reception depend upon the precise adjustment of several elements in the radio set. Too often, the correct adjustment of grid leak resistance is considered of minor importance and frequently it is much too high or too low for the best operation of the detector tube. For every tube and for every circuit there is a certain value of resistance that allows the charge which piles up on the detector grid to leak off at just the proper rate. If this value is too high the charge accumulates, and the tube chokes, if too low, reception is mushy. Unless a leak of the proper resistance is placed across the grid condenser, the tube will either choke or the effect of the condenser will be destroyed.

Many radio receivers are unable to operate at their maximum efficiency simply because the grid leak is not of the proper resistance value. Grid leaks are used having a resistance from 200,000 to 5,000,000 ohms.

The following table gives the approximate values of grid leak resistance recommended by some vacuum tube manufacturers.

Audion (DeForest) DV-6..2	Megohms
C-200.....	2 Megohms
C-299.....	2 to 5 Megohms
C-301-A.....	2 Megohms
UV-199.....	2 to 5 Megohms
UV-200.....	2 Megohms
UV-201-A.....	2 Megohms
WD-11 and WD-12.....	3 Megohms or more

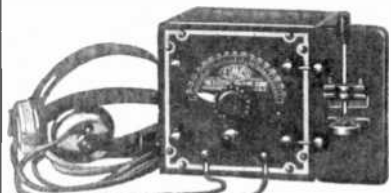
The volume of the detector tube increases gradually as the proper amount of grid resistance is approached.

William E. Hemrick, Route 1, Box 93 A, Terra Alta, West Virginia 26764.

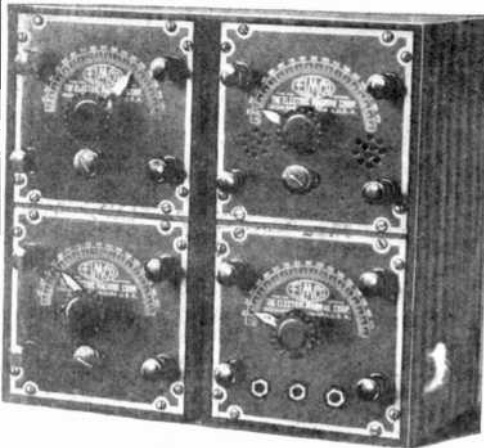
1922 ad

## Elmco Apparatus

Free from body capacity  
Do you know what that means?



Elmco Crystal Detector



Elmco S No. 1 Tuner, Detector and Two-Stage Amplifier

Users of the Elmco set illustrated here report that they have consistently heard telephone conversations and music from distances greater than 800 miles.

We guarantee every Elmco Tuner Type S-1 to be perfect in material and workmanship and to perform, when used with the Elmco Type A-3 Detector Two-Stage Amplifier, as well if not better than any set of equal price for sale to-day.

Elmco S-1 Tuner and A-3 Detector, Two Stage Amplifier	\$100.00
Elmco A-3 Detector, Two Stage Amplifier	60.00
Elmco S-1 Tuner	40.00
Elmco Crystal Detector Set	28.00

We are also able to make quick shipment on all parts such as:  
Variable Condensers, .0005 - 4.00  
Vacuum Tube Sockets - 1.00  
Vernier Rheostats - 1.50  
Audio Frequency Transformers, mounted - 6.00

Write for our Catalogue "R"

The ELECTRIC MACHINE CORP.  
INDIANAPOLIS INDIANA

1922 ad

### THE SEARCH

House wreckers in most areas are a good source for "finding" old radios, phonograph, telephones, etc. of ancient vintage. One collector, who had a large collection of early sets had a "contact" with a man, who worked for a contract wrecker. This worker every month or so would present him with a telephone, phonograph or radio that he had found in the house that was being torn down. Sometimes the sets were old and rare sometimes they were only "garden variety!" He said, "I usually buy the bitter as well as the sweet,"

1921 ad

### STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION (Act of August 12, 1970: Section 3685, Title 39, United States Code)

- Title of publication: THE HORN-SPEAKER.
- Date of filing: Sept. 24, 1974
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- Location of the headquarters or general business offices of the publishers (Not printers): 9820 Silver Meadow Drive, Dallas, Texas 75217.
- Names and addresses of publishers, editor, and managing editor: Publisher: Jim Cranshaw, 9820 Silver Meadow Drive, Dallas, Texas 75217. Editor: Jim Cranshaw, 9820 Silver Meadow Drive, Dallas, Texas 75217. Managing Editor: Jim Cranshaw, 9820 Silver Meadow Drive, Dallas, Texas 75217.

7. Owner (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual must be given.) Jim Cranshaw 9820 Silver Meadow Drive Dallas, Texas 75217

8. Known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages or other securities (if there are none, so state): None.

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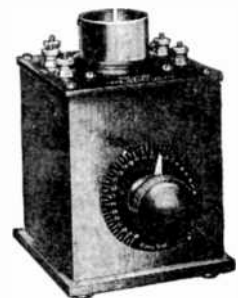
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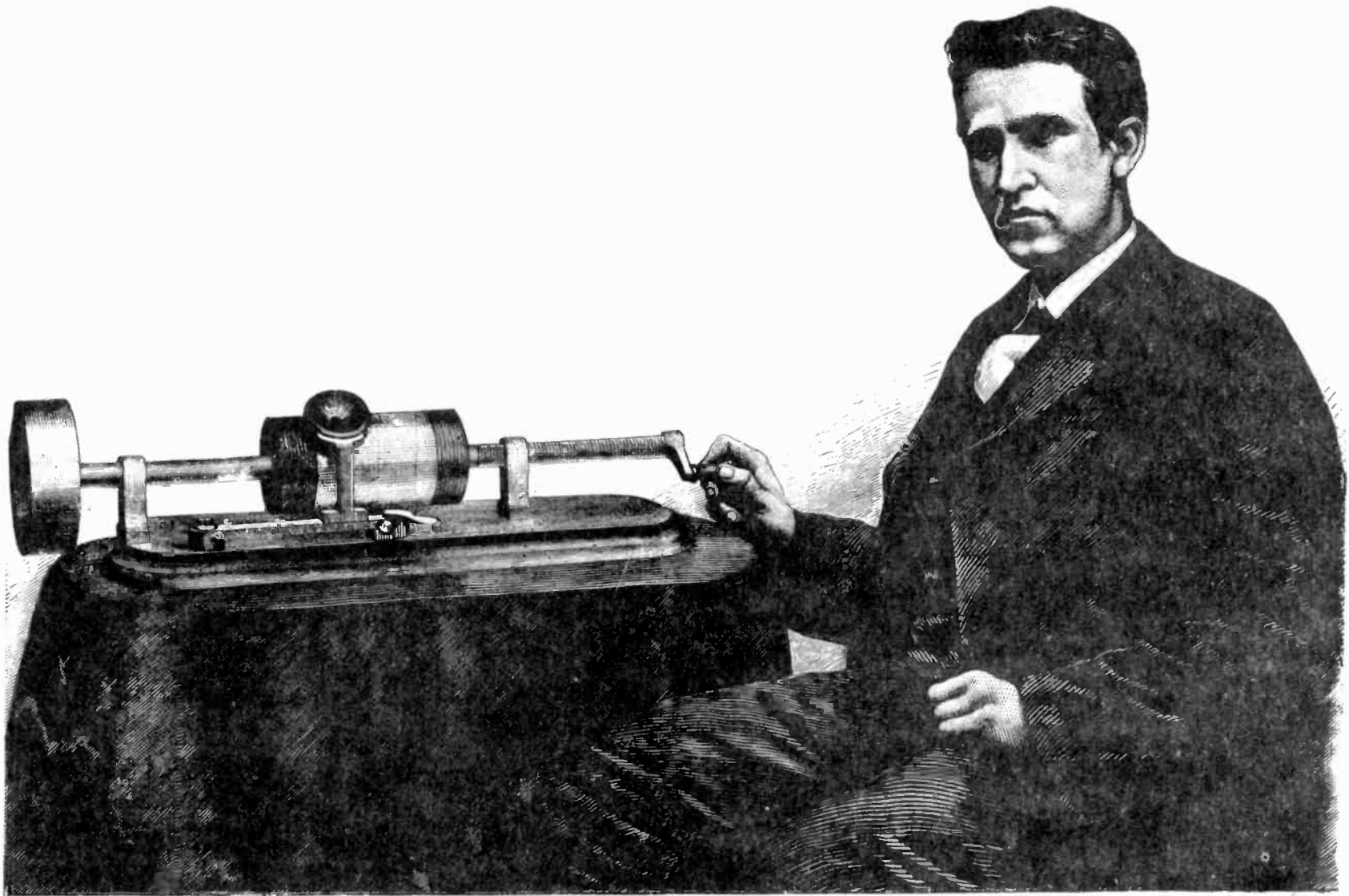
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MR. THOMAS A. EDISON.

Many of our readers will recognize in the engraving the face of Mr. Thomas A. Edison, and others, who are not familiar with his appearance, may form a good idea of how the great inventor looks. Every one is acquainted with his telephone, phonograph, and other remarkable inventions, therefore we shall not notice them here.

Mr. Edison is above the medium height, and although he is only thirty-one years old, his iron gray hair and thoughtful eye show the effects of continued study. He is genial, liberal, and entirely unostentatious. His mind, day and night, is on his projects; and even while eating his thoughts dwell on his inventions. His table conversation consists of occasional ejaculations regarding some new point in whatever project he may have in hand. He is at home in his laboratory, which is very large and complete in all of its appointments. He has a number of assistants, who are competent and quick to carry out his wishes, and they are often engaged on several widely different subjects at the same time. The experimental apparatus which is completed during the day is often tried at night when all is quiet and no visitors are present.

Notwithstanding his great mental labor, he avers that his health is good, and that as his occupation is pleasurable it does not tire him.

His residence and laboratory at Menlo Park are beautifully situated upon the brow of a hill that overlooks a picturesque valley. The beautiful landscape and the mountain

air—Nature's best restoratives for the brain-weary—he has without the seeking.

Mr. Edison may well pride himself as to his position in the world of science, standing, as he does, first among the inventors of the day; and having, by his own energy and persistence, secured an income that enables him to carry forward on a grand scale such experiments as his prolific mind may suggest.

SCIENTIFIC AMERICAN, July 6, 1878

SCIENTIFIC AMERICAN, December 31, 1887

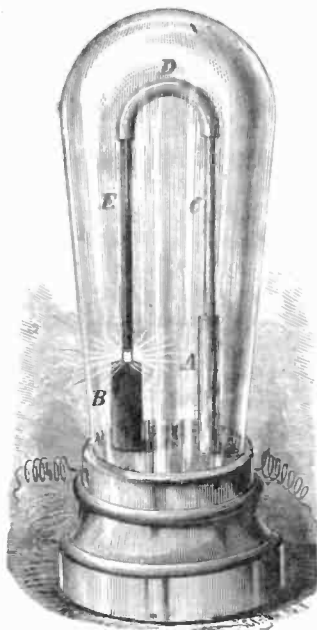


THE PHONOGRAPH IN COURT.

AN ELECTRIC LAMP FOR AN ENGLISH SHILLING.

Blazoned in brilliant colors on a box cover in a show window not a long distance from this office is a representation of a miniature electric lamp, below which are these words, "Real Electric Light.

Price 1s. This wonderful lamp will produce instantaneously an electric light of great steadiness and power. Its action being automatic, it requires no attention, and will burn for hours, costing a trifle only above gas. It is adjusted readily for immediate use, and is so simple that a child can work it." The box contains a little lamp like that shown in the engraving, and all that is said in regard to it is undoubtedly true, providing the lamp is furnished with a sufficiently strong and constant electric current; but to generate the required current cheaply and conveniently will probably trouble our youthful experimenters, as it has the older heads for a half century. In fact we think a battery capable of running the



TOY ELECTRIC LAMP.

lamp for any considerable length of time can hardly be made for less than \$25.

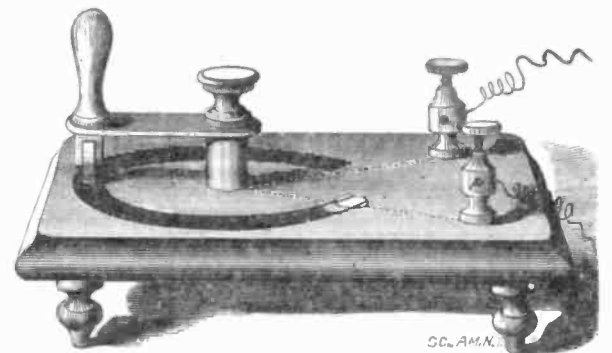
Directions are furnished for making a battery; but a little experience in this direction will soon make plain the unpleasant fact that a strong and steady current cannot easily be maintained by the use of batteries. It will be found that a great deal of electric energy will be required to maintain a single lamp, even a toy lamp. A boy with one of these lamps is in about as good a position, so far as the question of general electric lighting is concerned, as the most experienced in these matters.

The lamp costs 75 cents of our money, and any boy can make it. From the base project a brass tube, A, and a carbon cylinder, B. These are each provided with a wire which projects from the base to be connected with the electrodes of a battery. A wire, C, fits loosely in the brass tube, A, and a curved tube, D, is soldered to its upper end. A slender carbon pencil, E, is inserted in the curved tube, D, and rests upon the carbon cylinder, B. The whole is covered with a glass shade. When the current is allowed to pass through the lamp the light will appear at the juncture of the carbons, E B.

SCIENTIFIC AMERICAN, November 8, 1879

IMPROVED RHEOSTAT.

The rheostat shown in the engraving is the invention of Mr. John Butler, of this city. It is designed for introducing more or less resistance into an electrical circuit. The bed plate is made of non-conducting material, and in an annular groove in its upper surface there is a film or plate of material that offers considerable resistance to the electrical current. Generally the groove is partly filled with plumbago. One end of the resistant is connected with a battery, and the current is completed through a movable key whose pivot is at the center of the circular groove. The key is provided with a roller

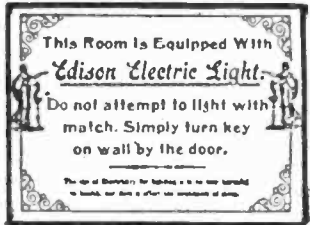


BUTLER'S RHEOSTAT.

which rests upon the plumbago and moves over its surface without abrading it.

This rheostat seems especially adapted to the use of physicians and experimenters.

SCIENTIFIC AMERICAN, September 6, 1879



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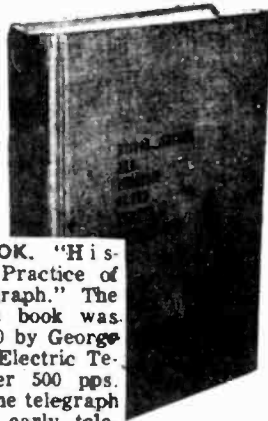
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WANTED: For Federal Model 61 Audio interstage transformer, Antenna - loop control, main tuning condenser. For Stromberg 635 AC treasure chest, cabinet lid and metal feet. F. Ciancia, 10 Glenwood Ave., Leonia, N. J. 07605.

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IN TABLES 1, 4 & 6 THE SYMBOL n INDICATES THAT A TUBE IS AVAILABLE NEW AND THE SYMBOL u INDICATES THAT IT IS AVAILABLE USED.

TABLE 1 - OLDER TYPE NUMBER TUBES - used tubes are half new price

0	n	523	nu	62T5	nu	11C5	n	55	n	33
143	n	524	nu	7A4	nu	11C7	n	39	n	33
144	n	525	nu	7A5	nu	11F8	n	26	n	33
145	n	526	nu	7A6	nu	11H7	n	59	n	33
146	n	527	nu	7A7	nu	11J7	n	59	n	33
147	n	528	nu	7A8	nu	11K7	n	59	n	33
148	n	529	nu	7A9	nu	11L7	n	59	n	33
149	n	530	nu	7B1	nu	11M7	n	59	n	33
150	n	531	nu	7B2	nu	11N7	n	59	n	33
151	n	532	nu	7B3	nu	11O7	n	59	n	33
152	n	533	nu	7B4	nu	11P7	n	59	n	33
153	n	534	nu	7B5	nu	11Q7	n	59	n	33
154	n	535	nu	7B6	nu	11R7	n	59	n	33
155	n	536	nu	7B7	nu	11S7	n	59	n	33
156	n	537	nu	7B8	nu	11T7	n	59	n	33
157	n	538	nu	7B9	nu	11U7	n	59	n	33
158	n	539	nu	7C1	nu	11V7	n	59	n	33
159	n	540	nu	7C2	nu	11W7	n	59	n	33
160	n	541	nu	7C3	nu	11X7	n	59	n	33
161	n	542	nu	7C4	nu	11Y7	n	59	n	33
162	n	543	nu	7C5	nu	11Z7	n	59	n	33
163	n	544	nu	7C6	nu	12A7	n	59	n	33
164	n	545	nu	7C7	nu	12B7	n	59	n	33
165	n	546	nu	7C8	nu	12C7	n	59	n	33
166	n	547	nu	7C9	nu	12D7	n	59	n	33
167	n	548	nu	7D1	nu	12E7	n	59	n	33
168	n	549	nu	7D2	nu	12F7	n	59	n	33
169	n	550	nu	7D3	nu	12G7	n	59	n	33
170	n	551	nu	7D4	nu	12H7	n	59	n	33
171	n	552	nu	7D5	nu	12I7	n	59	n	33
172	n	553	nu	7D6	nu	12J7	n	59	n	33
173	n	554	nu	7D7	nu	12K7	n	59	n	33
174	n	555	nu	7D8	nu	12L7	n	59	n	33
175	n	556	nu	7D9	nu	12M7	n	59	n	33
176	n	557	nu	7E1	nu	12N7	n	59	n	33
177	n	558	nu	7E2	nu	12O7	n	59	n	33
178	n	559	nu	7E3	nu	12P7	n	59	n	33
179	n	560	nu	7E4	nu	12Q7	n	59	n	33
180	n	561	nu	7E5	nu	12R7	n	59	n	33
181	n	562	nu	7E6	nu	12S7	n	59	n	33
182	n	563	nu	7E7	nu	12T7	n	59	n	33
183	n	564	nu	7E8	nu	12U7	n	59	n	33
184	n	565	nu	7E9	nu	12V7	n	59	n	33
185	n	566	nu	7F1	nu	12W7	n	59	n	33
186	n	567	nu	7F2	nu	12X7	n	59	n	33
187	n	568	nu	7F3	nu	12Y7	n	59	n	33
188	n	569	nu	7F4	nu	12Z7	n	59	n	33
189	n	570	nu	7F5	nu	13A7	n	59	n	33
190	n	571	nu	7F6	nu	13B7	n	59	n	33
191	n	572	nu	7F7	nu	13C7	n	59	n	33
192	n	573	nu	7F8	nu	13D7	n	59	n	33
193	n	574	nu	7F9	nu	13E7	n	59	n	33
194	n	575	nu	7G1	nu	13F7	n	59	n	33
195	n	576	nu	7G2	nu	13G7	n	59	n	33
196	n	577	nu	7G3	nu	13H7	n	59	n	33
197	n	578	nu	7G4	nu	13I7	n	59	n	33
198	n	579	nu	7G5	nu	13J7	n	59	n	33
199	n	580	nu	7G6	nu	13K7	n	59	n	33
200	n	581	nu	7G7	nu	13L7	n	59	n	33
201	n	582	nu	7G8	nu	13M7	n	59	n	33
202	n	583	nu	7G9	nu	13N7	n	59	n	33
203	n	584	nu	7H1	nu	13O7	n	59	n	33
204	n	585	nu	7H2	nu	13P7	n	59	n	33
205	n	586	nu	7H3	nu	13Q7	n	59	n	33
206	n	587	nu	7H4	nu	13R7	n	59	n	33
207	n	588	nu	7H5	nu	13S7	n	59	n	33
208	n	589	nu	7H6	nu	13T7	n	59	n	33
209	n	590	nu	7H7	nu	13U7	n	59	n	33
210	n	591	nu	7H8	nu	13V7	n	59	n	33
211	n	592	nu	7H9	nu	13W7	n	59	n	33
212	n	593	nu	7I1	nu	13X7	n	59	n	33
213	n	594	nu	7I2	nu	13Y7	n	59	n	33
214	n	595	nu	7I3	nu	13Z7	n	59	n	33
215	n	596	nu	7I4	nu	14A7	n	59	n	33
216	n	597	nu	7I5	nu	14B7	n	59	n	33
217	n	598	nu	7I6	nu	14C7	n	59	n	33
218	n	599	nu	7I7	nu	14D7	n	59	n	33
219	n	600	nu	7I8	nu	14E7	n	59	n	33
220	n	601	nu	7I9	nu	14F7	n	59	n	33
221	n	602	nu	7J1	nu	14G7	n	59	n	33
222	n	603	nu	7J2	nu	14H7	n	59	n	33
223	n	604	nu	7J3	nu	14I7	n	59	n	33
224	n	605	nu	7J4	nu	14J7	n	59	n	33
225	n	606	nu	7J5	nu	14K7	n	59	n	33
226	n	607	nu	7J6	nu	14L7	n	59	n	33
227	n	608	nu	7J7	nu	14M7	n	59	n	33
228	n	609	nu	7J8	nu	14N7	n	59	n	33
229	n	610	nu	7J9	nu	14O7	n	59	n	33
230	n	611	nu	7K1	nu	14P7	n	59	n	33
231	n	612	nu	7K2	nu	14Q7	n	59	n	33
232	n	613	nu	7K3	nu	14R7	n	59	n	33
233	n	614	nu	7K4	nu	14S7	n	59	n	33
234	n	615	nu	7K5	nu	14T7	n	59	n	33
235	n	616	nu	7K6	nu	14U7	n	59	n	33
236	n	617	nu	7K7	nu	14V7	n	59	n	33
237	n	618	nu	7K8	nu	14W7	n	59	n	33
238	n	619	nu	7K9	nu	14X7	n	59	n	33
239	n	620	nu	7L1	nu	14Y7	n	59	n	33
240	n	621	nu	7L2	nu	14Z7	n	59	n	33
241	n	622	nu	7L3	nu	15A7	n	59	n	33
242	n	623	nu	7L4	nu	15B7	n	59	n	33
243	n	624	nu	7L5	nu	15C7	n	59	n	33
244	n	625	nu	7L6	nu	15D7	n	59	n	33
245	n	626	nu	7L7	nu	15E7	n	59	n	33
246	n	627	nu	7L8	nu	15F7	n	59	n	33
247	n	628	nu	7L9	nu	15G7	n	59	n	33
248	n	629	nu	7M1	nu	15H7	n	59	n	33
249	n	630	nu	7M2	nu	15I7	n	59	n	33
250	n	631	nu	7M3	nu	15J7	n	59	n	33
251	n	632	nu	7M4	nu	15K7	n	59	n	33
252	n	633	nu	7M5	nu	15L7	n	59	n	33
253	n	634	nu	7M6	nu	15M7	n	59	n	33
254	n	635	nu	7M7	nu	15N7	n	59	n	33
255	n	636	nu	7M8	nu	15O7	n	59	n	33
256	n	637	nu	7M9	nu	15P7	n	59	n	33
257	n	638	nu	7N1	nu	15Q7	n	59	n	33
258	n	639	nu	7N2	nu	15R7	n	59	n	33
259	n	640	nu	7N3	nu	15S7	n	59	n	33
260	n	641	nu	7N4	nu	15T7	n	59	n	33
261	n	642	nu	7N5	nu	15U7	n	59	n	33
262	n	643	nu	7N6	nu	15V7	n	59	n	33
263	n	644	nu	7N7	nu	15W7	n	59	n	33
264	n	645	nu	7N8	nu	15X7	n	59	n	33
265	n	646	nu	7N9	nu	15Y7	n	59	n	33
266	n	647	nu	7O1	nu	15Z7	n	59	n	33
267	n	648	nu	7O2	nu	16A7	n	59	n	33
268	n	649	nu	7O3	nu	16B7	n	59	n	33
269	n	650	nu	7O4	nu	16C7	n	59	n	33
270	n	651	nu	7O5	nu	16D7	n	59	n	33
271	n	652	nu	7O6	nu	16E7	n	59	n	33
272	n	653	nu	7O7	nu	16F7	n	59	n	33
273	n	654	nu	7O8	nu	16G7	n	59	n	33
274	n	655	nu	7O9	nu	16H7	n	59	n	33
275	n	656	nu	7P1	nu	16I7	n	59	n	33
276	n	657	nu	7P2	nu	16J7	n	59	n	33
277	n	658	nu	7P3	nu	16K7	n	59	n	33
278	n	659	nu	7P4	nu	16L7	n	59	n	33
279	n	660	nu	7P5	nu	16M7	n	59	n	33
280	n	661	nu	7P6	nu	16N7	n	59	n	33
281	n	662	nu	7P7	nu	16O7	n	59	n	33
282	n	663	nu	7P8	nu	16P7	n	59	n	33
283	n	664	nu	7P9	nu	16Q7	n	59	n	33
284	n	665	nu	7Q1	nu	16R7	n	59	n	33
285	n	666	nu	7Q2	nu	16S7	n	59	n	33
286	n	667	nu	7Q3	nu	16T7	n	59	n	33
287	n	668	nu	7Q4	nu	16U7	n	59	n	33
288	n	669	nu	7Q5	nu	16V7	n	59	n	33
289	n	670	nu	7Q6	nu	16W7	n	59	n	33
290	n	671	nu	7Q7						