

# THE HORN SPEAKER

THE NEWSPAPER FOR  
THE HOBBYIST OF VINTAGE  
ELECTRONICS AND SOUND

## DE FOREST—THE DREAMER OF A DREAM THAT CAME TRUE

By C. S. THOMPSON

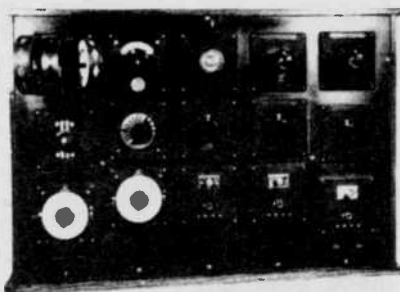
A SLOW-MOVING river—a broad field of green—white tents—the sound of soldiers marching—bands playing—lowering of colors—and my first day in the “Yale” Battery of the Spanish-American War found me alone in the hour of camp hilarity.

My attention was soon attracted by a young soldier, alone too, deep in study, in the tent next to mine. He was a dark, rather tall angular-looking lad.

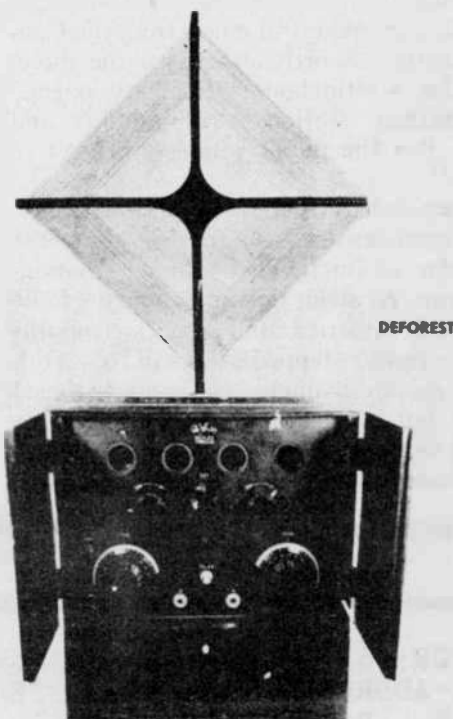
“Studying regulations?” I asked.

“No, just a little of the old college work,” he said, without looking up.

DE FOREST



FIFTEEN PANEL UNIT SET  
1919 \$160.00



RADIOPHONE TYPE D-10  
PORTABLE REFLEX 4 TUBE  
1923 \$150.00

### Radio Broadcast

But that same night, as we were walking along the Niantic River, this soldier-student said to me:

“This little book you’ve found me reading means a good deal to me, in fact, the subject it deals with will mean everything to me after we’ve defeated the Spaniards. I feel it may also prove some time of great importance to humanity—I’ve felt that way ever since I entered college. When my father died, a few years ago, and I was thrown upon my own resources, I decided to continue my studies by working my way through college. I mowed lawns, waited on the table and worked in summer hotels. I graduated from the Sheffield Scientific School in ’06, and ever since I’ve been preparing for a doctor’s degree. It is my thesis you saw me working on just a few hours ago—the subject is ‘The Reflection of Hertzian waves along Parallel Wires.’ Hertzian waves!—that means a whole world to me!—a new world of communication—without wires—wireless!

There’s no other enterprise like it to-day in fascination and in future possibilities.”

Marconi was yet to pave the way for public interest in wireless by his early demonstrations, but even then my soldier friend, Lee De Forest, saw what was to come. The universal development of radio on a practical basis—his life-long dream!

Among the busy duties of camp life, I soon lost track of my enthusiastic companion and forgot the idealistic vision of the future which he had on that one evening revealed to me.

Shortly after the war was over, De Forest obtained his doctor’s degree and went to work in Chicago. His first job was at the Clinton Street shop of the Western Electric Company, at \$8 a week. Teaching night classes in mathematics at the Lewis Institute and translating French at one time or another for the *Western Electrician* also helped. For a year and a half, the young inventor lived on next to nothing, so that he could conduct his research freely at the Armour Institute.

It was in the midst of these early-day struggles and privations that De Forest developed the self-restoring detector to take the place of the Marconi coherer, the telephone receiver to replace the relay and Morse inker and the alternator-generator and transformer to replace the induction coil and the interrupter.

In 1901, with his apparatus perfected to the

point where it could be used commercially, De Forest left for New York. Financial aid was necessary to float his company and develop his new American System, which, even then, had been proved superior to the older and well-established Marconi and Telefunken systems of Europe. Nevertheless, in the summer and fall of that year, De Forest walked his shoes out in Wall Street and Lower Broadway before he obtained the necessary backing.

His first commercial undertaking with the De Forest Wireless Telegraph Company, that same year, was the reporting of the International Yacht races. Then, during the historic tests by the British Post Office between Holyhead and Howth across the Irish Sea, De Forest demonstrated over all competitors the great advantages of his system. In 1904, he attained wider recognition for his system through the spectacular success of the London *Times* war correspondent, Col. Lionel James, in reporting the Naval maneuvers at Port Arthur

during the Russo-Japanese War. In the summer of that same year, also, came the first continental overland wireless service, established by De Forest between Chicago and the Exposition in St. Louis. In 1905, the honor of constructing the first high-powered wireless stations at Colon, Guantánamo, San Juan (Porto Rico), Key West and Pensacola, was accorded him by the United States Government.

Success had come, but only for the moment, for the fortune and recognition, won after so many years of struggle and sacrifice, were soon swept away, and the young inventor saw his company in the hands of others, with even his name removed from the corporation which he had made famous.

It was after this period of financial depression that I met him again. De Forest had made a crude laboratory in the old Parker Building in New York City. As he was explaining his laboratory to me, he picked up an audion bulb.

“This is my greatest discovery!” he said. “This little bulb is going to revolutionize the world of communication! It will make it possible for us to talk by radio telephone, not only over short distances, but across the lands and seas. I took out my first patents on this audion a little over a year ago, but it was in the hard days in Chicago that I first conceived the idea.

“I was at work in my room, one night, ex-



perimenting with an electrolytic detector for wireless signals. It was my good luck to be working by the light of a Welsbach burner. That light dimmed and brightened again as my little spark transmitter was operated. The elation over this startling discovery outlasted my disappointment when I proved that the startling effect was merely acoustic and not electric. The illusion had served its purpose. I had become convinced that in gases enveloping an incandescent electrode resided latent forces which could be utilized in a detector of Hertzian oscillations far more delicate and sensitive than any known form of detecting device. And now at last I have managed to bottle this same gas effect!"

As he went on, he became even more enthusiastic:

"I've been asked to put radio telephones on the fleet going around the world. It won't be long then before all the ships will be equipped with it. It'll be on the yachts, tug-boats, steamers and sailing vessels too, and we'll soon be able to talk with our friends at sea. Passengers on moving trains will be able to radiophone to stations, and there be connected with the wire telephone. Church sermons, lectures, orchestral and grand opera music, too, will be sent out by radio throughout the country! The world needs this little audion; it is the one thing towards which I have been working all these years!"

In the spring and summer of 1907, through the transmission of music by radiophone,



Warren  
Radio Loop  
Uncovered

through reporting yacht races on the Great Lakes, and later by broadcasting grand opera from the Metropolitan Opera House at New York, De Forest sought to create interest in the new art.



DR. DE FOREST

Experimented with bulb transmitters for airplane use, during the war, when patriotic service suspended his efforts in the field of broadcasting

Even thus early, foreseeing the field of public interest, he built radio apparatus for the amateur—for the citizen who was interested in picking up words and music out of the air. With his second De Forest Radio company, all his available funds and ingenuity were thrown into the cause of broadcasting.

It is clear that the public of that day was fully informed by De Forest of the possibilities of radio development. Newspapers were filled with his predictions. Reporters obtained from him long interviews. The Sunday pages were highly decorated with the stories of his achievements. Nevertheless, his appeals fell on empty ears. "The radio toy," some described it. Others read and forgot. Leaders in engineering, scientific, and educational circles were skeptical as to

the possibilities of broadcasting.

In the end, borne down by commercial rivalry, the Radio Telephone Company through which the inventor had hoped to interest the public, and to establish the radio telephone, was forced to suspend activity.

All that remained for him in the wreckage was the patent rights to the audion. Even these had been returned to him because they were considered of no value!

There was nothing left apparently, in 1911—the year when I next chanced to meet him—nothing except the spirit of other days.

"I've got to begin all over again," he told me. "and that means—just a little more delay. That's all. The day is coming, when things will be different. I don't mean financially. I can stand the poverty and work—I mean the day will soon be here when people will see the thing as I see it—will recognize the part the audion will play in human progress!"

Nevertheless, that same year, De Forest was reading the Help Wanted ads in the very papers which, only a few years before, had been carrying pages relating his achievements. The position of Research Engineer of the Federal Telegraph Company was offered him in San Francisco, and he was glad to take it—finding joy in the thought of being able to ex-

periment further on his audion. In the summer of 1912, in that little Palo Alto laboratory, he was led to still higher dreams of success. The audion had already proved to be a detector of remarkable sensitiveness as well as an amplifier of telephone currents; he then discovered it could also be made to oscillate, or to generate sustained currents of any frequency!

The engineers of the period were fully informed by De Forest on the possibilities of the audion. The newspapers and technical magazines were filled with it. Full descriptions of it were to be found in the patent office applications of 1906. De Forest took out his first patents applications on the audion as a wire telephone amplifier as early as 1907. But it was not until 1912 that the inventor was given his first opportunity to demonstrate the audion before the engineers of the American Telephone and Telegraph Company—the audion which, when further developed by them, made possible the transcontinental telephone service between New York and San Francisco, and later on the radio conversation from Arlington to Honolulu.

With the funds thus secured, the inventor established his De Forest Radio Telephone and Telegraph Company, and thereby sought to realize his first dream of radio broadcasting. In 1916, many an amateur heard his nightly concerts, news bulletins, and election returns by radio from the Highbridge laboratories. The press told of this and of dancing to radio music, and from these reports emanated the idea of the educational as well as the entertainment value of radio. But though the inventor appealed to many, there was still no one to take the first step in this commercial or public enterprise.

Even government officials, who were in a position to help the broadcasting of news and music, vetoed this "pastime" on the score that it interfered with the Navy's wireless telegraph.

The new era of radio which De Forest had predicted as far back as 1907, which he had so plainly demonstrated, appeared to be fading away!

Patriotic service during the World War interrupted his efforts towards broadcasting. Immediately afterward, De Forest made a desperate appeal to the publishers of the various newspapers of the country for recognition of the many possibilities of radio transmission. Only one responded, and the first newspaper radio service in the world was established in 1920 by the *Detroit News*.

With New York still blind to radio, De Forest went to San Francisco, where he started the broadcasting of orchestral music from the California Theatre. Shortly afterward, the directors of the Westinghouse Company opened their permanent stations at Pittsburgh and Newark. But the public interest was yet to be aroused!

De Forest sailed for Germany in November, 1921 to experiment on still another use of the audion—the production of talking motion-picture films. At about this time came the radio awakening in America, and some six months later, the inventor stepped ashore in New York from a European steamer. His hair was tinged with gray, but in his eyes shone a new light, as he turned to me and said: "My dream of radio is finally coming true!"

Radio Broadcast, December 1922

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January, 1932

RADIO-CRAFT

419

# RADIO-CRAFT KINKS

*Practical hints from experimenters' private laboratories.*

## TUNING IN SHORT WAVES

By John C. Heberger

If one has a modern broadcast receiver equipped with a power amplifier tube and a short-wave set with at least one stage of audio amplification, foreign short-wave broadcast stations can be tuned in on the loud-speaker of the broadcast receiver if the two receivers are connected together according to the simple diagram shown in Fig. 1.

The writer tunes in daily, by means of this combination, the afternoon programs from G5SW at Chelmsford, England, with volume and quality equal to a local station. Three stages of amplification are none too many because the level of background noise is usually very low on the short waves. Howling caused by mechanical feed-back from the speaker may be avoided by using a longer speaker cord or, if necessary, placing the speaker in another room.

Referring to Fig. 1, the lamp cord "A" joining the two receivers can be of any length, and if the sets are located in different rooms the phones "B," which are left connected all the time, can be used to find the station before putting it on the speaker.

The switch SW is placed inside the cabinet of the broadcast receiver in any convenient position. One side of the switch connects the output of the short-wave set to the input of the audio amplifier of the broadcast set; the other side is used for normal operation of the broadcast receiver. Care should be taken in connecting the leads to the switch so that the connections to the transformer are not reversed when reconnected to the detector of the broadcast receiver through the switch.

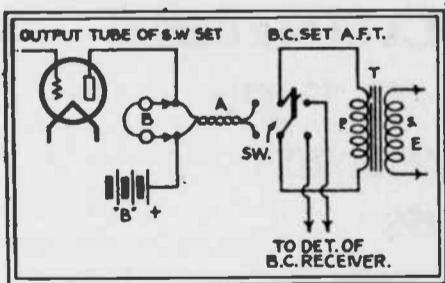


Fig. 1

Short or broadcast waves on the L. S. by switching the S. W. set to the A.F. of the B. C. set.

## A HINT TO SHORT-WAVE FANS

By Wayne Starch

MANY short-wave fans, like myself, may have short-wave sets which tune up to about 150 meters. Probably, at times, they wished that they could tune a little higher in order that they might receive broadcasts when the short-wave stations

are not on the air. In my case, it happened that I wanted a friend of mine to hear the dynamic speaker that I was using, but was unable to do so in view of the lack of short-wave stations at the time. I decided then and there to fix up my receiver so that I would be able to tune in a few of the higher wave broadcast stations.

Instead of winding a new R.F. coil, I obtained an old one from my junk box (most radio experimenters have junk boxes) and used its secondary as the secondary of a new plug-in coil, and the primary as the tickler. This idea is shown in Fig. 2. I found it necessary to reverse the tickler connections on the new coil in order that regeneration might be secured. The antenna was connected to the P terminal of the tickler rather than the antenna coil as shown.

The type of plug-in system to use depends on the type that the short-wave receiver uses, and obviously should be made so as to fit.

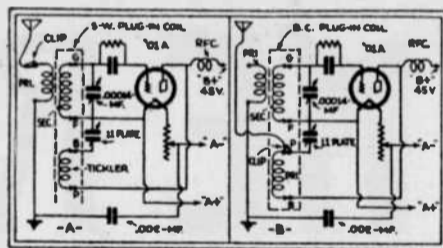


Fig. 2

At A, a standard short-wave connection. At B, circuit changes for longer wave reception.

With the size tuning condensers as shown and using a standard R.F. coil, the range of the set was extended up to 345 meters.

## A SOLDERING IRON HOLDER

By Louis Rick

THOSE of us who have used soldering irons for a few hours at a time know that it requires frequent manipulation of the line plug in order to keep the iron at a constant working temperature. The simple arrangement depicted in Fig. 3 has been in use by myself for some time, and I have found it very satisfactory.

The idea is merely to connect a 60-watt lamp in series with the soldering iron. When the iron is removed from its holder. the contact K closes, short-circuiting the lamp; the full line voltage is then applied to the iron. When not in use the iron is placed on its holder, which opens the contact and connects the lamp in series with the iron; reducing the voltage applied to the iron. With the usual amount of use, the iron is thus kept at a constant temperature.

At A is shown a schematic diagram of the circuit. The entire arrangement may be housed in a box illustrated in B, Fig. 3, and then mounted in any convenient location.

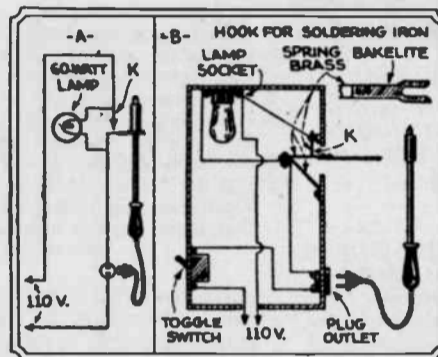


Fig. 3

A novel soldering iron holder. At A, its electrical circuit; and B, the mechanical arrangement.

## OPTIONAL DETECTOR CIRCUITS

By John C. Simorsin

FOR those experimenters who are still in doubt as to the relative merits of the "power" and "grid-leak" methods of detection, the following scheme should enable them to prove to themselves which is best for their particular receiver.

The general idea is depicted in Fig. 4. While the scheme is not new, nevertheless it affords an easy way to instantly switch from one type of detection to another. It consists of the ordinary detector circuit so connected with a double pole double throw switch, that when it is thrown to one side the grid leak and condenser are short-circuited and a negative bias is placed on the grid. When the switch is thrown to the other side, a positive bias of four volts is placed on the grid through the grid leak and condenser. By properly selecting the point K, the positive bias may be adjusted to any desired value.

The resistors R1 and R2 should be calculated from Ohm's Law for any plate voltage desired. The values shown are for a plate voltage of 140 volts. With S1 thrown to the right, a grid bias of 8 volts is obtained; when thrown to the left, the positive grid bias is 4 volts.

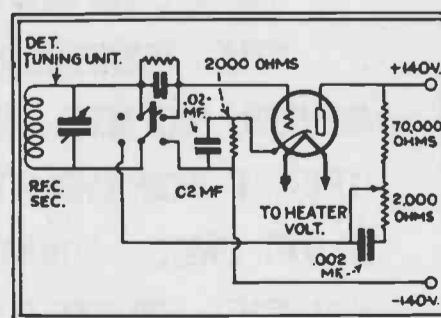
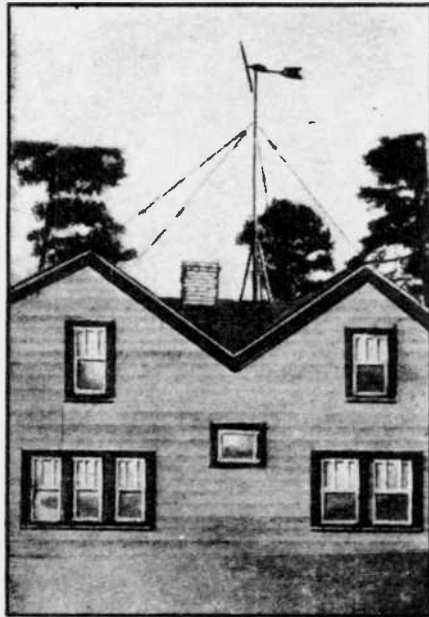


Fig. 4

A simple circuit for the experimenter; either grid or plate rectification is available.

RADIO NEWS FOR OCTOBER, 1936



**A TYPICAL INSTALLATION**  
An extension mast may be inserted between tower and propeller assembly, as shown in the photo of a farm-home installation.

**A**PPARATUS especially designed for unwired homes is offered by the Wincharger Corporation. The new De Luxe Wincharger, shown in the photograph, starts battery charging at wind velocities as low as 8 3/4 miles per hour. In most sections of the country velocities in excess of this are normal and fairly constant.

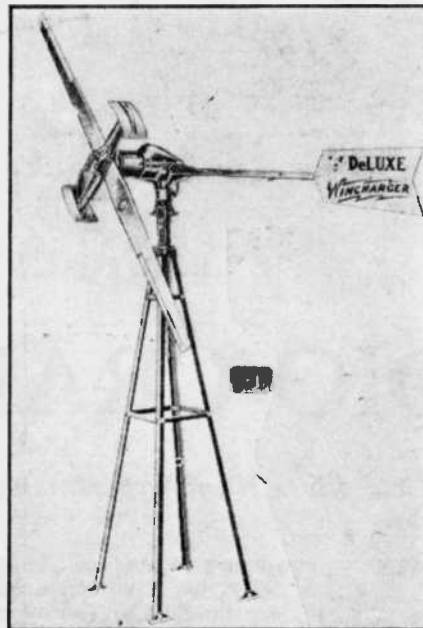
The type of windmill shown is designed particularly for radio work. The

# "Wind" RADIO for the FARM

By Joseph Powell

**D**URING the past five years there has been a constantly increasing interest in the use of windmills to operate electric-current generators. When relatively small power is required, such as is needed for the operation of 6-volt radios, a wind-operated generator provides the most economical method for charging the battery in homes not wired for electricity. It is not generally realized that there are five million such homes in this country.

generator requires a minimum of attention and the cost of operation for the entire apparatus is estimated not to exceed fifty cents a year. The manufacturers recommend that the Wincharger be installed well above trees, houses and other wind-breaking objects. A typical house installation is illustrated. A storage battery of generous proportions,



**DETAILS OF THE EQUIPMENT**  
The entire assembly is shown here, requiring only a cable to carry the generated current down to the storage battery. The generator is in the small cylinder mounted immediately behind the 6-foot propeller and its spring tension governor arms.

such as the 160 ampere hour size is desirable.

This combination of windmill and battery makes the present highly efficient 6-volt radios available for unelectrified areas. It should prove a boon to the millions of such homes now using less economical and less satisfactory radio installations.

## TELEVISION

**T**ELEVISION, which, to the radio world, outside of the research laboratories, was dormant for so long, has now bloomed forth and is one of the fastest-moving branches of the electronic art. A few of the high-lights of last month's developments are given:

The Bell Telephone Labs. announced a new tube, a dual pentode for ultra-high-frequency amplification and oscillation, which will greatly aid transmission on the "television" frequencies.

Pope Pius XI made known that a television transmitter would be erected soon in the Vatican to enable the world to see important functions of the Papal State.

The Radio Center in Moscow reported that plans had been completed to build a "Television Center" operating on ultra-short waves at 343 lines.

The Japan Broadcasting Corp. in Tokyo will start construction on a \$60,000 television transmitter, according to a statement from Dr. K. Takayanagi, director of television research in Japan. It is planned to make a complete television coverage of the 1940 Olympics to be held in Tokyo:—Germany take note!

The Telefunken Co. was able, by means of a new tube, to demonstrate television pictures projected on a wall 3 x 3 1/2 ft. last month. The new tube is very small, flat on the end and has an aperture of 2 x 2 1/2 ins.; the accelerating voltage is 20,000.

RADIO-CRAFT for

JANUARY, 1937

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January, 1932

RADIO-CRAFT

# A Modern All-Wave "SUPER"

*A Description of a Modern Superheterodyne*

By  
W. H. HOLLISTER\*

**I**N the new Lincoln Model DeLuxe SW-32 All-Wave Receiver, a front view of which is shown in Fig. A, we find the latest "last word" in short-wave radio receiver design.

The pentode tube ordinarily is incorporated as a means of obtaining high power output and, due to its rising characteristic, ordinarily requires some form of high frequency compensation in the audio output circuit; however, the power output of the model SW-32 is so great that no advantage was to be obtained by the use of pentode tubes, and the use of type '45 power tubes in push-pull made it unnecessary to include in the output circuit any form of frequency compensation.

### The Receiver

Perhaps the greatest single factor in the high power output of this chassis is the use of four stages of high-gain screen-grid amplification; these screen-grid tubes are V1, V3, V4, V5, and V6 in the schematic circuit, Fig. 1. Each intermediate frequency transformer is shielded, as indicated by the dotted lines. Within each shield are the I.F. transformers and the primary tuning



Fig. A  
Front view of the  
Lincoln All-Wave  
Superheterodyne.

condenser, one above the other. There are five of these tunable transformers and after they have been adjusted for maximum signal strength from a local station, are to be re-balanced for greatest volume from the weakest station which can be picked up.

The Model SW-32 receiver has been designed for 10 kc. selectivity when all of the circuits are correctly aligned.

The simplicity of control which has been achieved in this receiver design is best appreciated by reference to Fig. A. The cen-

tral control on the small front panel, of course, is the tuning knob which operates the two-gang bathtub-type variable condenser. The knob to the right of the tuning control operates a combination volume control resistor and off-on power switch; the one at the immediate left varies a trimmer condenser. At the extreme left is another and ornamental knob which controls the band-selector switch; and at the extreme right, a low-high switch which prevents over-

President, Lincoln Radio Corp.

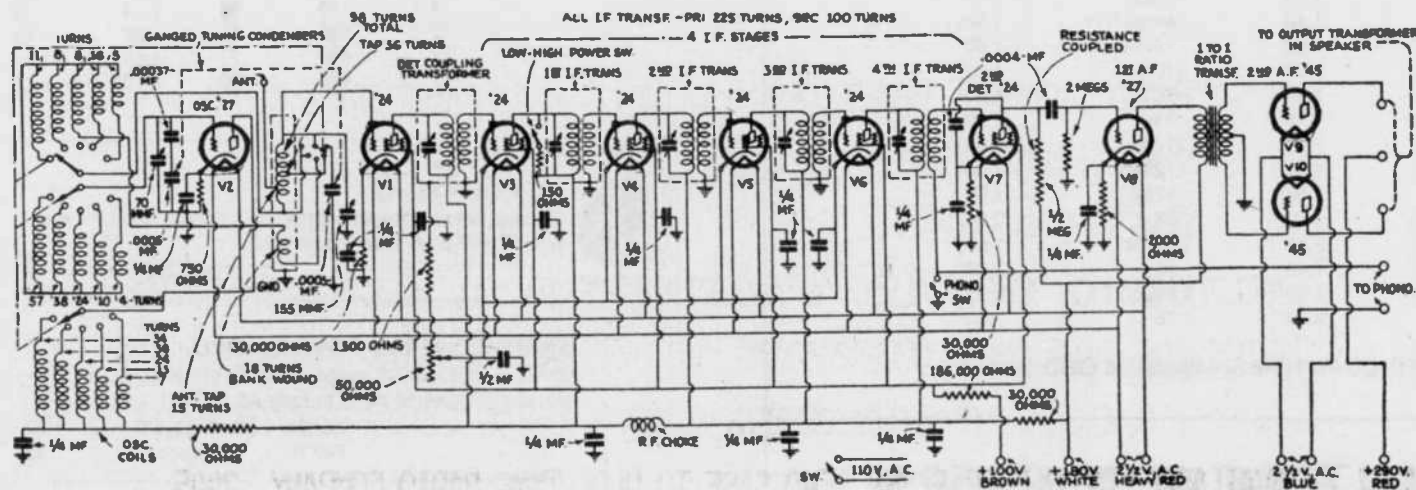
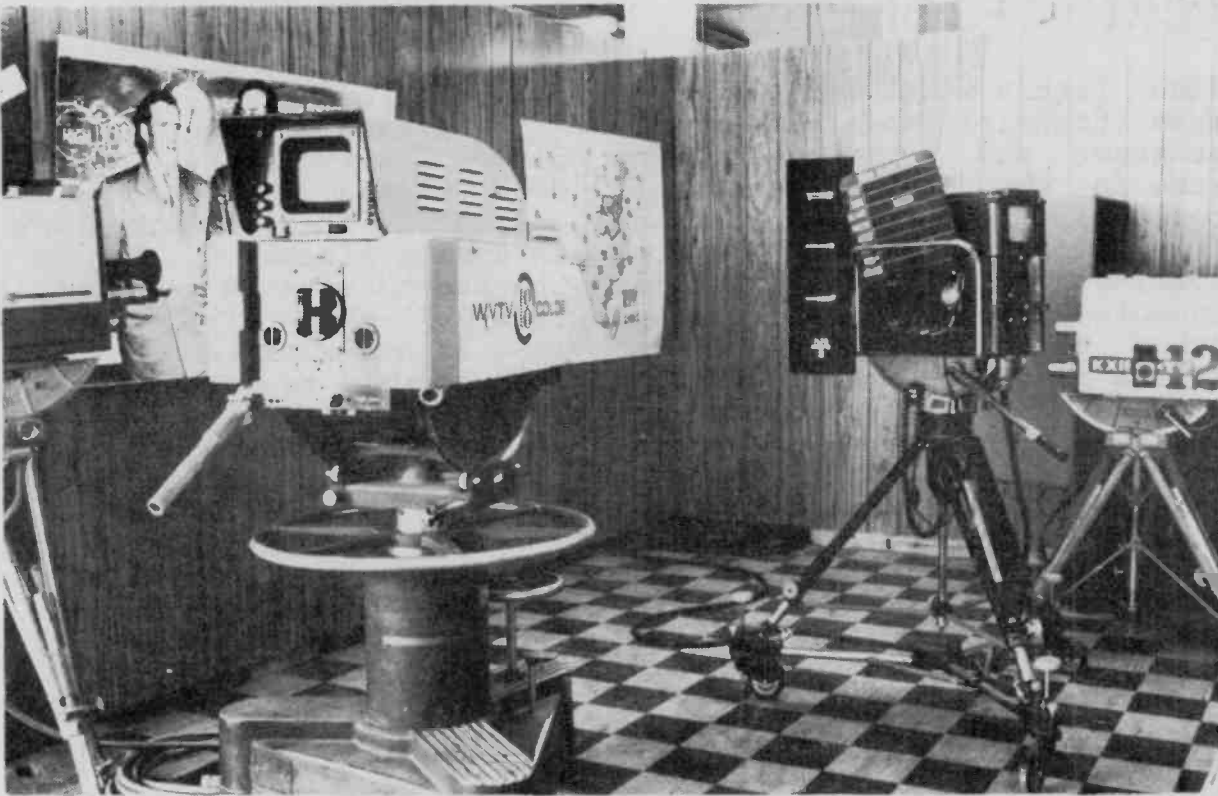


Fig. 1

Circuit diagram of the Lincoln DeLuxe SW 32 All-Wave Receiver. This receiver utilizes a tapped coil arrangement to facilitate wave length changes, obviating the necessity of using plug-in coils. All values are marked on the diagram.





# National Broadcast Museum

By Jim Long  
Continued from the June, July  
and August 1983 edition.

At the National Broadcast  
Museum displays are organized  
so that the learning process  
can be enhanced as visitors  
participate as well as observe,  
through the many hands-on dis-  
plays.

As well as all the more  
than 50 phonographs mentioned  
last edition, recorders have

A TYPICAL SIXTIES TELEVISION STATION CONTROL ROOM  
photo by Jim Long



CONTROL CONSOLE WHERE GUESTS CAN PLAY DISC JOCKEY  
photo by Jim Long





your readers peddle. A monthly most of the time is infrequent enough. I hesitate to advertise now because the wait is so long and often I can already locate what I need through other channels.

As to the printing and lasting quality of paper, I feel qualified to speak at length on those topics. I headed the big printing department at Oklahoma State University for twenty five years and the the university press for ten. Printing quality comes from using quality materials from beginning to end. This starts with the type used, the illustrations, the darkroom expertise. the use of excellent printing presses and on through the entire process. Quality costs money.

I can't see printing THE HORN SPEAKER on anything other than the present newsprint unless you want to price yourself out of business. Why should anyone want to keep copies more than a reasonable span of years? If proper care is taken of current issues, they should outlast the reader. And unless the entire operation is cleaned up markedly, it would be a disservice to improve the paper without improving the typesetting, halftones and so on. It is possible that the present method of printing with better quality paper would look worse. Good paper requires good to excellent presswork.

I recommend that you check with one of your big printing paper supply houses in Dallas and see if they can supply you with some sample sheets in the corret size of Warren's Olde Style offset paper in the lightest they stock. It may be that 60 lb. is all that is now available but 50 lb. might be better for your use. This particular sheet is widely used in the prodution of permanent university press books where longevity is important, not to mention ease of reading. But it takes good work to get an acceptable job. This paper will last from 100 to 300 years because of the way Warren makes all of its papers. It does not cost more than comparable other sheets made by other companies but without the long life built in.

Sincerely,  
John  
John W. Hamilton  
1405 W. 9th  
Stillwater, OK  
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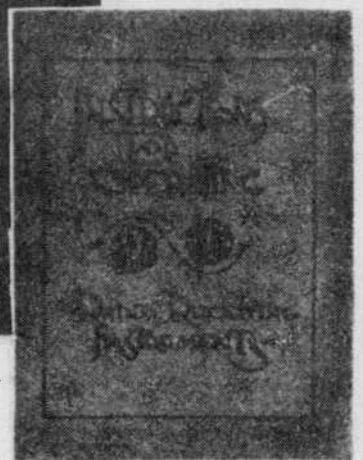
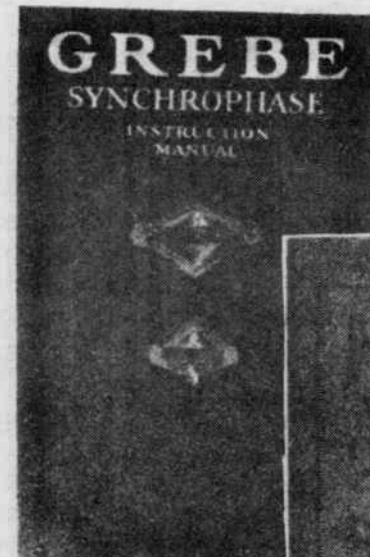
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FOR SALE: REMLER TYPE 710 RF AMPLIFIER W/ANTENNA COMPENSATOR ON COPPER CHASSIS, CABINET AND

ORIGINAL CARTON. \$75.00 WITH 2-X199 AND 1-UX120 TUBES. RADIOOLA III, GOOD AUDIO \$45.00. PARTS FOR A-K 20, 40, 46, 55, BOSCH AND FADA. ALL PLUS SHIPPING, STAN LOPES, 1201-74 MONUMENT BLVD., CONCORD, CA 94520. (415) 825-6865

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\*14 PAGE LIST OF RADIO MAGAZINES, catalogs, books, service literature and misc. Available October 1st. Send \$1.20 in stamps or money. Gary B. Schneider, 9951 Sunrise Blvd., #R-9, North Royalton, OH 44133

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CLARION AC-40 (19317- CATHEDRAL- EXC- WORKS) \$90 (NICE STYLING; HEADPHONE JACK ADDED ON SIDE MANY YEARS AGO) -- FLEETWOOD, (1925- WOODGRAIN BAKELITE FRONT PANEL- EXC- UNTESTED) \$55.00 (BELIEVED TO BE CANADIAN VERSION OF FRESHMAN MASTERPIECE VR PAGE 89 #1) -- SEND LARGE 2 STAMP S.A.S.E. FOR COMPLETE AND UP TO DATE PHOTO LIST. RON BOUCHER, 376 CILLEY ROAD, MANCHESTER, NH 03103, (603) 669-1698.

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AUTHENTIC OLD TIME GRILL CLOTH HANDWOVEN IN TWO SHADES OF GOLD AND BLACK RAYON. Send \$6.95 for 10" x 10" square or \$1 for samples. Available in limited quantity in September. -- RADIO AGE has reprinted the Grebe Synchronphase Manual in original brown inks and on high quality paper (not a photocopy). This manual is loaded with history of the company and is documented with many photos, 71 pages. Definitely will enhance your collection. \$11.25 ppd. -- Grebe instructions for operating with charts, graphs, block diagrams and schematics of CR-3, CR-5, CR-8, CR-9, RORK, RORD and RORN. Printed in beige cover with deep brown ink, 62

pages. Companion sales brochure showing inside and outside photos of all models above. On high quality gloss stock, 12 pages. \$5.50 ppd for both. -- Gerald Tyne's SAGA OF THE VACUUM TUBE in hardcover, \$11.20 ppd. and softcover, \$8.20 ppd. (limited quantity available). -- Make check payable to Radio Age, 606 Cambridge Road, Augusta, GA 30909.

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 APEX METAL BOX AC SET of late 20's. Similar to AK 40 series, very good condition and working, comes with PEERLESS "box shaped speaker. \$65. 2. RADIOLA 20 - excellent to mint condition. \$125 less tubes. 3. TYRMAN 50 - very unusual portable set. has built in wooden horn and takes 4 UX 199's and one UX 222. mint condition. \$75 less tubes or \$120 with. 4. FRESHMAN MASTERPIECE AC FLAT-TOP - small tombstone style set. Refinished and in very nice condition. not working, \$45 5. BECKLEY-RALSTON BATTERY SET - excellent condition. very nice oak cabinet. \$50 less tubes or \$75 with 01A's. 6. FADA 7 - fair condition. comes with loop antenna. \$40 less tubes, \$65 with. 7. RADIOLA III - excellent condition. \$70. less tubes. 8. AK 20C - 1925 compact 5 tube TRF. good condition. \$45 less tubes. \$70 with 9. AK 32 - 1926 7 tube TRF. excellent condition. \$45 less tubes. \$80 with. 10. RCA Tombstone - model BT 6-3. farm radio of 1930's. tube complement 1C6, 34, 1B5, 30, 49, and 49. excellent to mint condition. \$50 with tubes. 11. SILVERTONE 1923 - battery operated farm set. tombstone style. fair to good condition. \$40 with tubes. 12. SILVERTONE 1919 - excellent condition. battery operated tombstone. beautiful cabinet. \$45 with tubes. 13. PHILCO 39-86 - late 30's farm radio. good condition. \$25 with tubes. 14. ENJAY farm radio - tombstone style. good condition. \$20 with tubes. 15. AMERICAN BOSCH 460 - AC tombstone. very good condition. not working. \$45 with tubes. 16. PHILCO 37-610 - excellent condition. untried. AC tombstone. \$45 with tubes. 17. PHILCO 20 CATHEDRAL - this is a restored set. cabinet is not original. looks good however and works some. chassis good condition. \$30 with tubes. 18. PHILCO 60 CATHEDRAL - excellent condition. refinished. untried. \$75 with tubes. 19. MAJESTIC B BATTERY ELIMINATOR - untried \$15. ---

----- 20. AIRLINE KIT / PEERLESS CATHEDRAL SPEAKER - 5 tube 3 dial set of 20's in excellent to mint condition in beautiful oak case. speaker fair to good condition. both for \$50 less tubes or \$75 with. 21. AMERICAN BOSCH model 04 - small AC of 30's. cabinet excellent. not working. similar to Philco Jr. \$28. 23. WESTERN ELECTRIC 7A AMPLIFIER - EARLY 3 tube amp. (See VINTAGE RADIO). excellent condition. \$85.00 less tubes. 24. CROSLY 51 - early two tube receiver. very good condition. \$80. less tubes. 25. RCA 5T - AC tombstone set. excellent condition. works great. \$50. 26. DEWALD CATHEDRAL - excellent - refinished. works. \$90. 27. PHILCO 50-T-1400 TV - one of first Philco television sets. mint condition with original operating manual and schematics. not working. 12 inch screen. \$50 complete. 28. REKORD JUNIOR 196 - small German made AC set. works. excellent condition. \$25. 29. RCA 100B SPEAKER - fair condition. needs grille cloth on one side. \$15. 30. CROSLY 90 - large 1926 RFL 6 tube console. excellent condition. no shipping. \$45 less tubes. 31. METEOR CATHEDRAL - beautiful barn-shaped art-deco cathedral. excellent condition. works. very unusual. \$120. 32. CLARION 80 - vevy good condition. console. not working. no shipping. \$40. 33. ZENITH CONSOLE - AC-DC (6V OR 110V). has short wave. untried. excellent condition. no shipping. \$40. 34. Majestic B eliminator - \$15. 35. ACME B ELIMINATOR - \$10 less tube. \$12 with tube. 36. assorted antique headphones - \$10 each. 37. STEWART WARNER 91-62 - fair condition. \$10 with tubes. 38. NATIONAL RADIO INSTITUTE RADIO COURSE - Over 100 phamplets from 1931 to 39. very good condition. \$25 for set. 39. AC tubes of 20s and 30's. Send need for quote. 40. 01A's. \$5 each. duds \$2 --- WANTED: base and driver for Madera/ Clear-tone horn. Bell for Musicmaster horn, AK 558, 165 or 217. ----- FIRESIDE WIRELESS - PRICES DO NOT INCLUDE SHIPPING. ALL BATTERY SETS ARE LESS TUBES UNLESS OTHERWISE STATED. MAKE MONEY ORDERS OR CHECKS PAYABLE TO GARY HILL. CALL TO RESERVE SETS IF POSSIBLE: (412) 654-9335 -- FIRESIDE WIRELESS, 1507 RIDGE AVENUE, NEW CASTLE, PA 16101. \*\*\*\*\*  
 ELECTRIC: PHILCO 20 - excellent, plays good, \$90. \*\* PHILCO 20 - miniature console,

excellent, plays good, rare, \$90. \*\* U. S. GLORITONE 26 - excellent, plays extremely good \$90. \*\* PHILCO 60 - very good, hums loud \$60. \*\* KOLSTER K-60 - excellent, works, gothic, \$65. \*\* RCA ? - early screen grid circuit, excellent, works, \$55. \*\* HALLICRAFTERS - lunch box radio in original box, never plugged in, \$50. \*\* STROMBERG CARLSON shortwave converter, excellent, 4 tube circuit, \$70. \*\* PHILCO 116 - very good, 5 bands, unusual, works, \$55. \*\* NATIONAL NC - 44 page 239 F.O.S., very good, \$45. \*\* VIDIODYNE TV - 6" tube, channel 1, very good, \$75. \*\* HALLICRAFTERS - projection TV, PAGE 99 F.O.S., WITH CABINET \$80 \*\* ATWATER KENT 40 - excellent, works, \$50. \*\* AK 46 - with F-2 speaker, very good, works, \$75. \*\* CROSLY 148 - very good, plays, curved top \$55. \*\* CROSLY 5M3 - good, plays, small flat top \$35. \*\* BATTERY: (with tubes) \*\* GREBE CR-9 - excellent \$350. \*\* GREBE CR-5 - excellent \$350. \*\* AM-BASSADOR - early 3 tube, red and black marble bakelite front \$65. \*\* CROSLY TRIRDYN - very good \$85. \*\* RADIOLA IIIA - excellent, no tubes \$120. RADIOLA 28 - excellent, with loop, can ship U.P.S. \$120. \*\* HORNS: MAGNAVOX M-1A - excellent, works \$75. \*\* BRANDES TABLE TALKER - very good, works \$50. \*\* RCA UZ-1325 - excellent, works \$75. \*\* BARTLETT THOMPSON MODULATOR - good, works \$50. \*\* TRIMM HOME SPEAKER - good, works \$50. \*\* ATLAS - excellent, works \$75. \*\* SPEAKERS: ATWATER KENT E-3 - excellent, works \$35. \*\* PEERLESS - excellent, works \$35. \*\* RCA 100 - very good, works \$25. \*\* CROSLY type F - excellent, untried \$25. \*\* KOLSTER 6 - excellent, works \$40. \*\* ATWATER KENT E - excellent, works \$50. \*\* TEMPLE - excellent, works \$30. \*\* 01A's - 10 for \$35. \*\*\*\* Phone (412) 656-0338 \* Jerry Finamore, 501 Miller Avenue, New Castle, PA 16101. \*\*\*\*\*  
 RADIOS, SPEAKERS, NEW AND USED TUBES, PARTS, SPEAKER CORDS BROWN BLACK \$3.25. SASE FOR LISTS. FRANKLIN HASS, 207 WEST 30TH, HUTCHINSON, KS 67501. \*\*\*\*\*  
 2 AK HORNS less bases. \$15.00 each. NRI TESTER and COURSE \$18.00. CLOUGH-BRENDEL SIG. GEN. \$25.00 SOLAR CAP. CHECKER and BOOK \$22.50. ESSENTIALS OF RADIO, NO COVER \$3.00. WANTED: BOTH REAR COILS FOR AK-12BB. JOHN MARTIN, 817 COOK, BILLINGS, MT 59101. \*\*\*\*\*



