

# THE HORN SPEAKER

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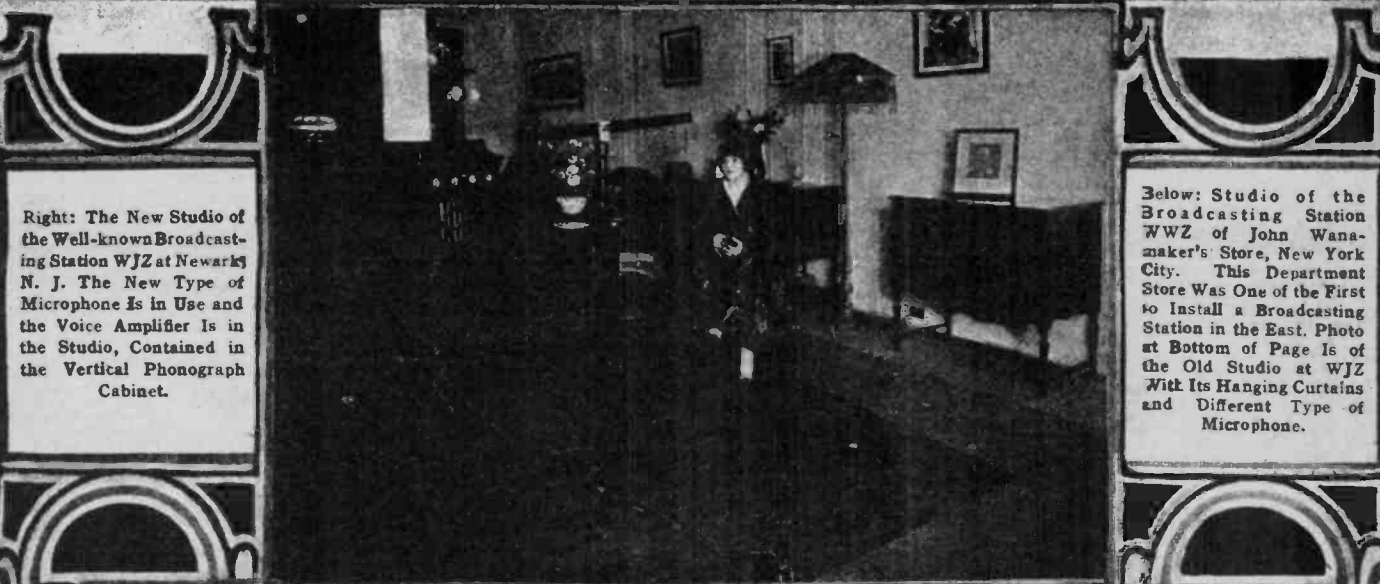
Radio News for September, 1922

## Broadcasting Methods

Apparatus, Equipment, Studios, Programs and Administration of Big Stations a Radio Art

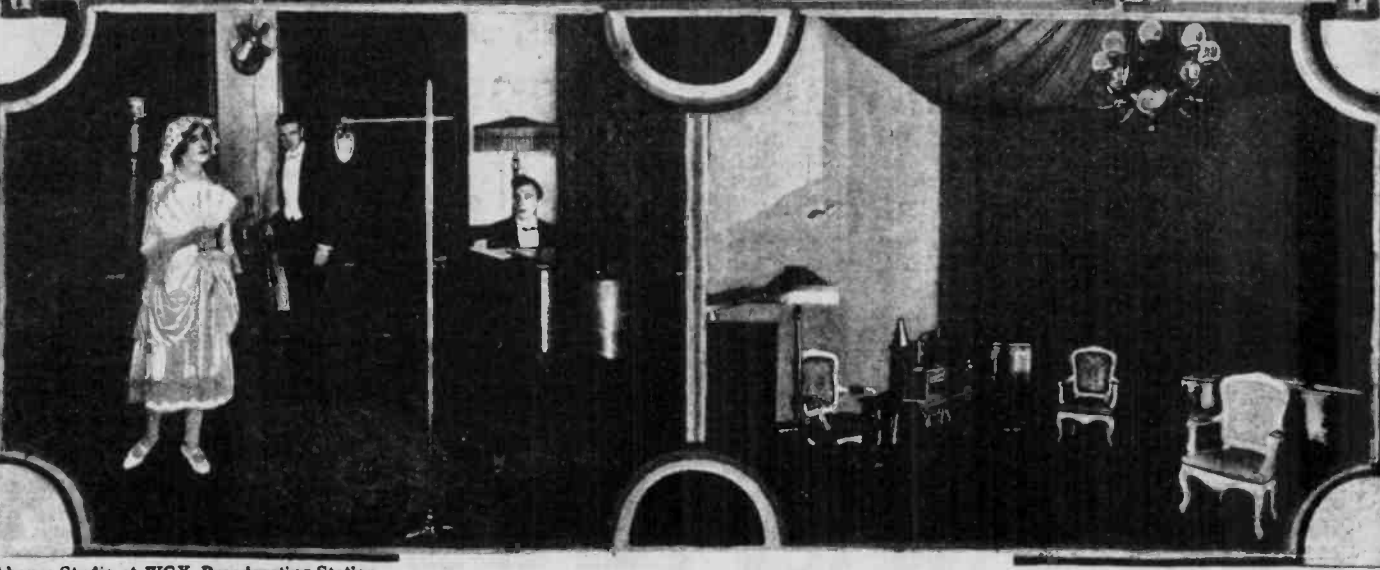
By C. E. LEMASSENA

While the methods employed by each of these stations are similar in many respects, there are numerous details in which they differ; it will be interesting to compare such methods. There are five distinct stages of broadcasting: (1) object, (2) apparatus and equipment, (3) studio, (4) programs and (5) methods. Under each of these heads may be considered the various phases pertaining to it. For example, "Object" includes selling, revenue, expense, advertising, publicity, market for apparatus and public benefits. "Apparatus and Equipment" comprises technical arrangements, amplifiers, microphones, operators, antennae, counterpoise, oscillators, modulators, station, wavelength, tuning, generators, motors, etc. Under "Studio" we have management, arrangement, reception,



Right: The New Studio of the Well-known Broadcasting Station WJZ at Newark, N. J. The New Type of Microphone Is in Use and the Voice Amplifier Is in the Studio, Contained in the Vertical Phonograph Cabinet.

Below: Studio of the Broadcasting Station WWZ of John Wanamaker's Store, New York City. This Department Store Was One of the First to Install a Broadcasting Station in the East. Photo at Bottom of Page Is of the Old Studio at WJZ With Its Hanging Curtains and Different Type of Microphone.



Above: Studio at WGY, Broadcasting Station of the General Electric Co. at Schenectady, N. Y. The Controller and Announcer Is Seen in the Background.



AS soon as the radiophone's adaptability for broadcasting reports, concerts, lectures, religious services, news and other forms of entertainment became recognized, a new field of endeavor was created, known as Radio Art. The beginnings were crude and, therefore, subjected to any and frequent changes in method and in kind. The develop-

ments in a single year have been so astonishing as to warrant the assumption that another twelve months will be even more fruitful with respect to improvements and functions. It is estimated that there will be 25,000,000 receiving sets in use at that time, which presages a world enmeshed in radio. The possibilities for the extension of culture, education, knowledge, advertising, entertainment, religion, politics, etc., are limitless, and therefore beyond man's power to prophesy. It is a tremendous, an astounding outlook, with magnificent opportunities if rightly and correctly employed.

There are over 19,000 licensed radio transmitters, 15,495 being amateurs engaged in sending and receiving messages for personal amusement; 2,783 American shipping; 439 commercial; and 348 experimental. Of the 15,495 regular stations, the most important are located in the East: Pittsburgh (KDKA), Newark (WJZ), Chicago (KYW); Springfield, Schenectady (WGY), operated by the General Electric Co., and New York City (WWZ) by John Wanamaker.

outfit, accessories (pianos, organs, phonographs), transportation of artists. "Programs" include make-up, hours, booking, personnel, requisites, policy, management (impresario), expense. "Methods" embraces a large accumulation of items, such as vocations, criticism (outside and inside), letters, suggestions, improvements, advertising, publicity, compensation, expense, grouping, experiments, and particularly direction upon which the success of the work depends materially. An able guiding mind and hand is the back-

Right: Operating Room of the Broadcasting Station KYW at Chicago. The Transmitter Is Seen to the Left.



Above: Control Room of the Transmitter at WGY.

Right: Studio at KDKA, Pittsburgh, Pa., the Pioneer Broadcasting Station. The New Microphone and Speech Amplifier Are Shown.

bone of radio broadcasting during this present period of florescence. All large broadcasting stations are operated by a staff under the supervision of one responsible person.



The four plants of the Westinghouse group, growing out of the company's experience in equipping American aeroplanes in France with radiophones, are conducted upon the same principles and embody practically the same ideas. It will not be necessary to describe each, therefore we will select the WJZ station as representative, although it did not begin to broadcast until eleven months after its sister station KDKA at Pittsburgh. The apparatus at Newark is efficient, consisting of a six-wire counterpoise antenna, which provides for multiple tuning on far end. There are eleven wires, 150' long and 124' above the roof, which is 100' above the ground. The natural wave-length is reduced to 360 meters by the use of special condensers in series on the Westinghouse aerial. An ingenious arrangement obliterates inherent distortion of the vacuum tube transmitters so that the speech and music is of unusual clarity, limited only by characteristics of the microphone, which transfers the sound-waves in electrical form to the amplifier.

As the pioneer in the art, the Westinghouse Company is entitled to first consideration. KDKA has been in operation since November, 1920, and it is due to the experiments and developments of this station that radio art has advanced so rapidly. Comparing broadcasting of to-day with that of a year ago, the improvement is as remarkable as it is satisfactory. There still are limitations and problems to be overcome, but the listener-in is getting better results every day and radio fans are increasing more rapidly than manufacturers can supply sets. Radio art is a constructive force, so it is the duty of everyone to support it and assist in its progress toward perfection, which ultimately means much to the world at large.

Every broadcasting station, aiming faithfully to transmit radio news or entertainment, must be equipped with high-class apparatus. In the six big stations particular attention has been paid to the installation of material of highest quality, such as is not found in smaller stations. At the beginning it was soon discovered that an equipment-giving satisfactory oral results was inadequate for music transmission. Therefore much experimenting and changing had to be done to improve the quality of transmission so that both voice and music could be faithfully reproduced. The scientific problems of broadcasting having reached a stage of comparative satisfaction, attention could be given to methods.

The station is complete with respect to studio and arrangements. The old broadcasting room has been replaced by one of larger and more adequate dimensions. It is attractively furnished and located on the first floor, convenient to artists and organizations. A grand piano, an organ, a phonograph and other musical instruments form part of the equipment. An interlocking system of switches and light signals connects the studio with the transmitting room on the roof. The microphone used is the cup style suspended from a movable arm attached to a portable stand. The sound-waves are sent through the microphone to an amplifier box in the same room in which they are amplified many times and then transferred to the roof, where they are increased to the required amplification. This is a new method by means of which transmission over a long telephone wire from microphone to main amplifier is eliminated, an obvious advantage.

The daily program is arranged in accordance with the following schedule:  
(Continued on page 8)

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..... Jim Cranshaw



## PART II

# The History of the Development of the United Fruit Company's Radio Telegraph System

Accordingly, Mr. Musgrave in the latter part of 1907 again visited the United States and got in touch with Col. John Firth, who was at that time the selling agent for the newly invented crystal detectors of Professor Greenleaf W. Pickard, and for other radio specialties. Through Col. Firth Mr. Musgrave met Mr. George Schley Davis, who was then in charge of the United States Naval Radio station at the Brooklyn Navy Yard. Mr. Davis, both in his capacity as instructor in the Naval Radio School and as manager of the Navy Yard Radio Station, had been testing and reporting on all the various types of radio apparatus submitted to the Navy Department for test. Mr. Musgrave explained to him the communication problems of the United Fruit Company and requested his advice. The successful tests between the Fessenden stations at Brant Rock, Massachusetts, and Machrihanish, Scotland, and of other Fessenden apparatus coming under Mr. Davis's observation, led him to recommend that system.

As a result, Mr. Musgrave promptly communicated with Professor Fessenden, and, in conjunction with him, mapped out a comprehensive plan for installing his latest inventions in the United Fruit Company's stations. It was also determined to erect a second relaying station at Cape San Antonio, Cuba. Accordingly the Company ordered from Professor Fessenden's company two 25 K. W. 500 cycle rotary synchronous spark transmitters, one to be installed at New Orleans and the other at Cape San Antonio, Cuba, which would give the Company a relay connection between New Orleans and Swan Island. If these two sets proved successful, similar sets were to be installed at Port Limon, Costa Rica, Santa Marta, Colombia, and Colon, Panama.

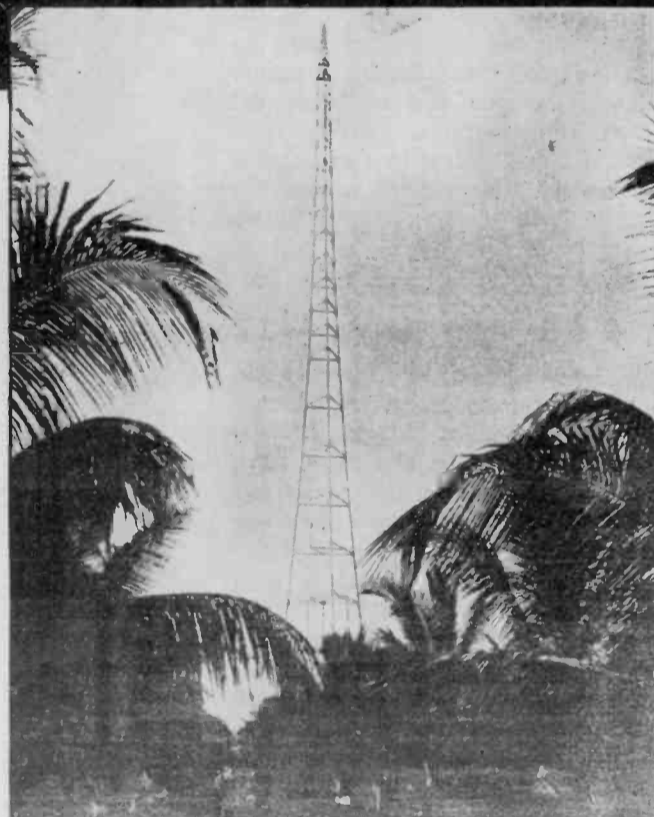
The Company at this time also ordered for each of its ships the Fessenden 2 K. W. 500-cycle rotary synchronous spark transmitters, which were the last word in radio transmitters. The Company was the first to put them into commercial operation on shipboard and they soon became known the world over, not only for the high-pitched tone of their sparks, but for the distances at which they were heard. Signals from the Company ships, while in the Caribbean Sea, were heard both in Port Said, Egypt, and by ships in the vicinity of Honolulu—a remarkable achievement in those days. The performance of these ship sets had a marked influence on ship installations in general, and other companies were soon installing ship sets having similar characteristics.

It is worthy of note and an index of the progress of the radio art that the Company paid from \$6,000 to \$8,000 each for these ship transmitting sets now costing \$4,000, and \$50 each for crystal detectors, selling to-day for \$2.50. The crystal detector receiving sets for which the Company paid \$500. each sell to-day for \$100.

The tube, as a detector and amplifier, had not yet come into use, and Dr. Lee De Forest was still experimenting at his New York laboratories in Park Avenue, with the "third element" of the present-day tube. At about this time also, Dr. De Forest was working in cooperation with Professor Thaddeus Cahill, who had established "Telharmonium Hall" at Thirty-second Street and Broadway, New York City, from which they were broadcasting music generated by Professor Cahill's telharmonium machine. This was probably the first time in history that music was broadcasted by radio for entertainment purposes, and it nat-



Above. The Radio Station at Almirante, Panama, as it looked on April 1st of this year



To the right. A tower of the Almirante Radio Station seen through tropical foliage

urally attracted a great deal of attention. According to Mr. Davis, this music was successfully transmitted by radio from "Telharmonium Hall" to the New York Navy Yard Radio Station, and there transferred to the wire telephone and thus distributed to the various offices of the Navy Yard.

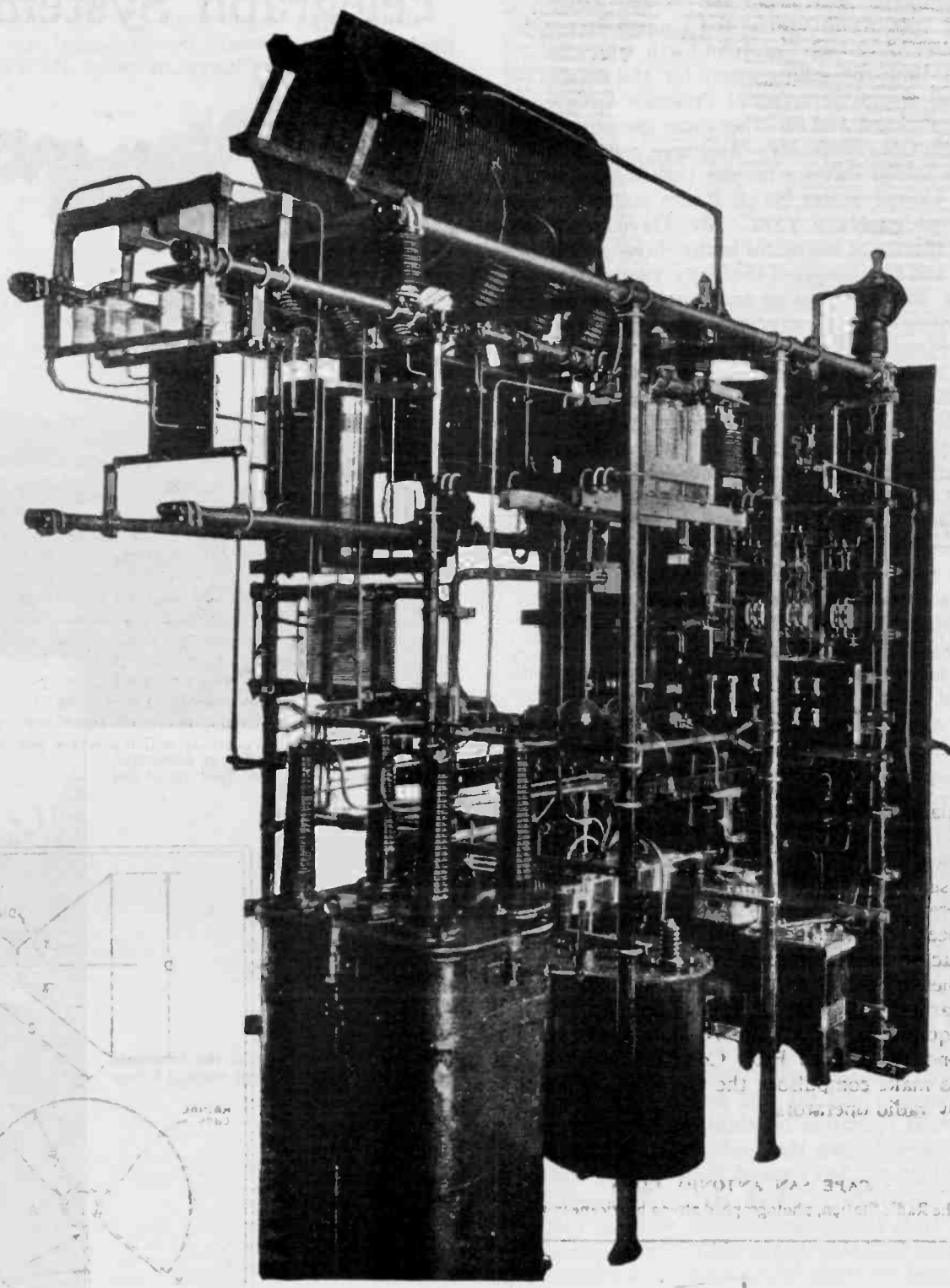
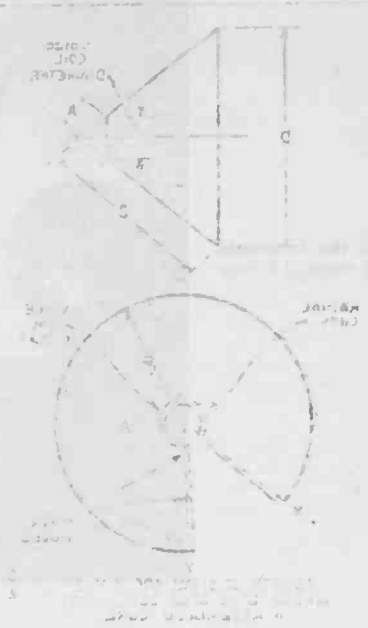
While the construction of a radio station in such an isolated place as Swan Island was very difficult, it was infinitely more so at Cape San Antonio, located at the extreme western end of Cuba. The only site available for the radio station was fifteen miles from the nearest native habitation and fifty miles from the nearest railroad. The Cape was infested with mosquitoes, sand flies, chiggers and almost all other known pests, and construction facilities were wholly lacking. Even the rock for concrete had to be hauled and then broken by hand, and sea sand had to be dug from the beach and the salt washed out of it before it could be used.

The Cape San Antonio station was planned for only one tower 250 feet high with an umbrella type antenna, an operating house and residence and a power and store house. All of the radio apparatus, tower steel, kerosene oil engines and building materials (except sand and rock) were loaded on a steamship at Baltimore and shipped to Havana, where they were transferred to a chartered schooner and transported to their destination. Cape San Antonio resembles Swan Island in only one respect, *i. e.*, it has no harbor or wharf facilities and everything must be unloaded on the beach from rowboats and small lighters in the open sea. The apparatus and materials were shipped the latter part of 1908 and the station erected during the summer of 1909. The new Fessenden apparatus had in the meantime been installed at New Orleans, and communication between Cape San Antonio and New Orleans was established during this same summer.

Even with a 25 K. W. 500-cycle spark set, communication between New Orleans and Cape San Antonio, a distance of only 600 miles, suffered at times from delays due to the severe static, although, during perhaps six months of the year, good service could be maintained at night or in the early morning hours.

The Company had not yet, even with the new Cape San Antonio and New Orleans stations in operation, attained uninterrupted hourly communication between the United States and Central America. It was during this period that the Company conceived the idea of a part cable and part radio connection between the United States and Central America to tide over the time until new and better radio apparatus could be developed and installed at its stations. The schedules of their steamships, equipped with 2 K. W. Fessenden radio sets, were so arranged that one of these vessels was in Colon harbor six days out of each week. These ships, while lying at the dock in Colon, could communicate with Port Limon and thus came into being the telegraphic route to Central America known as "Via Colon Radio." Messages over this route were sent by direct cable from New York to Colon, where they were delivered to the United Fruit Company offices and then to their ships in port for transmission to points in Costa Rica, Nicaragua and to Bocas del Toro via Port Limon radio. Service over this route was first established in 1909, and it materially decreased the time required for telegraph service between the United States and Costa Rica and Nicaragua, as well as materially increasing the efficiency of telegraph communication between these countries. This Colon radio service via United Fruit Company ships continued without interruption until the passage of the law prohibiting the use of radio transmitters on ships in Colon harbor. Since that time messages over this route have been handled through the United States Government Radio Station at Cristobal and thence via Port Limon.

It is interesting to note in connection with the "Via Colon Radio" route that during the Nicaraguan revolution against President Zelaya in 1909, when cable communication between the United States and Europe with Nicaragua and Costa Rica was interrupted at San Juan del Sur, Nicaragua, it was only by



THE ALMIRANTE TRANSMITTER

means of the Company's radio service, through its ships at Colon, that telegraphic communication was possible with those countries. This service, during the Nicaraguan revolution, was so important both to the Government and to the commercial interests of the United States that the Company exerted every effort to keep it going and secured for its ships the best land wire and cable operators in New York. This was prior to the passage of the law prohibiting the use of the American Morse code and requiring operators to be licensed, so that it was possible in those days to procure operators from a wire or cable office and place them on board ship, without previous radio training. Operating, while at the dock in Colon, was no sinecure; the noise from deck winches and the static made the work of these operators exceedingly difficult. However, during the period of the Nicaraguan revolution and for a considerable time thereafter, the Colon-Port Limon radio route was one of the fastest and most accurate telegraphic routes in the world.

Below. View of the Radio Station at Swan Island, once the haunt of buccaneers in the days of the Spanish Main



Above. In spite of its loneliness and perils, the Swan Island radio men are not always depressed





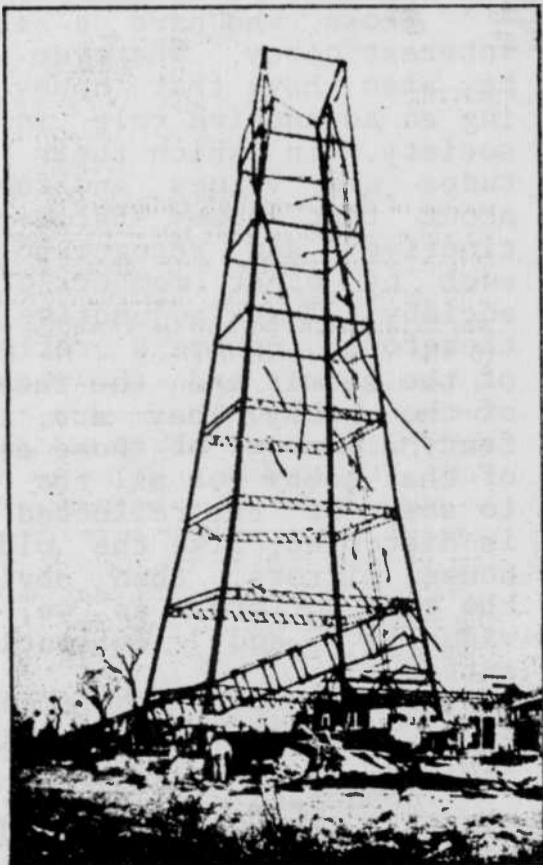
GEORGE SCHLEY DAVIS

In charge of the United Fruit Company's Radio Activities. Mr. Davis is General Manager of the Radio Telegraph Department, General Manager of the Tropical Radio Telegraph Company, and President of the Wireless Specialty Apparatus Company, and is a Director of the Radio Corporation of America and of the Wireless Specialty Apparatus Company

It was during this period that the Company made it a standard requirement of its service for all receiving operators to transcribe radio messages directly on the typewriter. Although used in wire telegraph offices for a long time previous, typewriters had not up to this time been considered essential as a time-saving factor in the receipt and delivery of radio messages. So far as is known, this is the earliest adoption of typewriters as standard equipment for a ship or shore radio station, and the United Fruit Company was the first to make compulsory the use of the typewriter by radio operators.

CAPE SAN ANTONIO, CUBA

The Radio Station, photographed after a hurricane in 1915



During the hurricane season of 1909, the Cape San Antonio station was partially blown away. It was rebuilt but again seriously damaged by a hurricane the following year. It was again rebuilt, but in August, 1915, an unusually severe hurricane swept the western

end of Cuba, completely demolishing the station. It was not again restored because of the refusal of the Cuban Government to permit the Company to move the station about fifty miles inland, out of the centre of the hurricane zone.

*continued*

# RADIO SERVICE

RADIO-CRAFT March, 1932

By WALTER L. LYONS

## REPAIRING CONES

**T**HE Service Man will now and then have a set to repair in which the cone of the speaker, or even the voice coil, has been damaged. In many cases, he may find that he cannot get the cone without sending to the manufacturer. Or the manufacturer may insist on doing the repair job himself. Either situation means loss of time and profit, and possibly a dissatisfied client. Yet a bit of ingenuity will get around many of these service calls if the repairman will follow the procedure outlined below.

The cone which is to be duplicated should be separated from the rest of the speaker as intact as possible. A sharp knife or razor blade will usually suffice to open the joint between the cone and the leatherette rim which usually holds it to the frame; this is illustrated in Fig. 1. A bit of ether applied with a small brush will help to soften joints in which the "dope" has become too crusty for the knife to cut. It will probably be necessary to remove the fiber "spiders" which center the voice coil around the field pole, as shown in Fig. 2. Note carefully their positions on the coil by a scratch or measurement, as well as the point of attachment of the coil itself to the

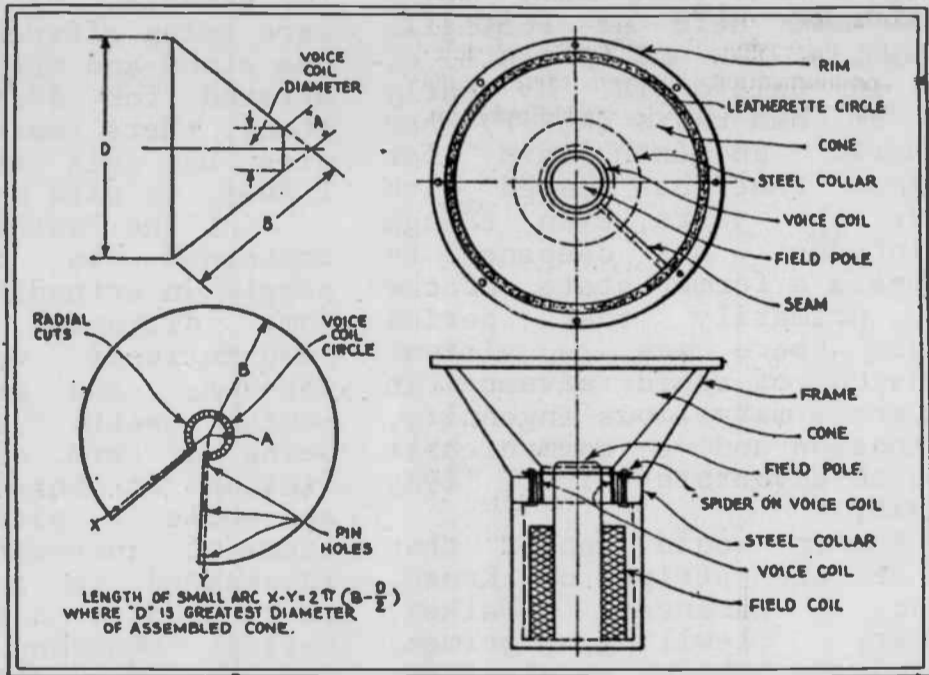


Fig. 1, upper right. The old cone is cut from the leatherette which holds it to the frame.

Fig. 2, lower right. Cross-section of the speaker showing the location of the spider.

Fig. 3, left. The old cone flattened out which may be used as a template. The upper sketch aids in illustrating how the cone openings may be calculated.

Doubtless, many Service Men have tried to lay out patterns for cones, only to find on assembling that the cone was a bit larger or smaller in some dimension, rendering it useless. The method as outlined will reproduce the cone exactly, if it has no corrugations or other features impossible to produce with a sheet of flat paper, scissors and cement.

Paper of the same quality as that used in the cone may be bought at the stationery store in the size 2 by 3 feet for twenty cents or less. In cones ten inches or larger of the dynamic type, the use of a heavier paper tends to accentuate the low frequencies. For smaller sized dynamic cones, the use of heavier paper merely means more difficulty in handling.

small end of the cone. The seam of the cone must be opened before it can be stretched out flat to make a pattern. Before this is done, however, the seam must be "pinholed."

That is, in order to reassemble the new cone pattern accurately, a small pinhole is made in each end of the seam and a third midway between them, all, of course, on the seam as shown in Fig. 3. The seam may now be opened, care being taken not to mutilate either the edges of the seam or the pinholes. Use a bit of ether if the seam proves obstinate.

When spread out absolutely flat, the cone now looks as shown in Fig. 3. Usually, a small flange on the cone (used to fasten on the voice coil) is so saturated with "dope,"

# Views

## Winds of Change

Observations from an old timer about modern radio collecting. We hope that his criticisms will help the modern collector.

### THE OTHER SIDE OF THE MIRROR BY D. H. Moore

THIRTEEN years amid foreign cultures, foreign languages and foreign women can, upon one's return, create a slightly psychological dislocation-- in one's perspective, values, wonder.

One naturally notices first social changes. The social mores and tribal tabus have altered to such an extent-- for those of my generation-- that in some inexplicable sense, one feels one has returned to a foreign place.

However, those aspects have been written about in another place. Here, I would like to share a few comments on changes noted amid the ham and vintage radio fraternity at a recent meet held at Foothills College, a few mile south of here in California. My early days in ham radio (K6KFP) had engendered an enthusiasm for the game that has stayed with me over the years, even though my interest has deepened to encompass a former state of the art, primarily that period wherein there was a virtual explosion of rapid advance in the art, marvellous ingenuity, imagination and a communicable sense of adventure-- i.e., 1924 to 1930.

But it would appear that men of the stripe of Kruse, geloso, Harkness, Walker, Sleeper, Flewling, grimes, Bernard, Gernsback, et al., are no longer with us. True, we have men such as Herbig, Parry, Giganti, Boucher, Wilson, Grannoff, Schneider and such, but my impression is that they all seem to be operating in a vacuum, not in a fraternal arena. Let me explain that, as I do not presume to sit in judgement, I simply wish to be understood-- and with the obvious if not blantant carelessness that seems to have crept into the language during my absence, it seems that conversation today has become a matter of two monologues with impolite pauses...

Any special interest hobby is a shared experience on all

levels. Anything less makes it quite something else, obviously. In the old days, in ham radio, for example, one went on the air to share their hobby, exchange information and technical gossip, to resolve each other's problems. When one pulled in a remarkable bit of DX, hams all over congratulated one, sincerely, fraternally. I suppose "fraternally" is the operative word here, as my paramount impression with the foothill Meet was an almost total lack of shared fraternality. This is a new element in the game.

There were those who, I noticed, quibbled over the difference of 50 cents for a component. There were those who always started their reply to the question: How much is it? -- with the pat expression: "Well, I have x-dollars in it and I wouldn't take anything less..." And, of course, there were those who patently were not interested in the game, per se, but were only interested in making a buck. Vintage tubes, for example, of the same type, were being offered for \$4.00 at one stand and the same tube was offered for \$9.00 at another stand. There were other examples but this one will suffice, I feel, to make my point.

At the Foothill Meet I was impressed by the number of people in attendance, many from some distance. stands were comparatively neat in their set-ups, and many were well stocked with "junk" -- "junk" being a term of wistful affection in this connotation. And while I picked up several items of interest, I was more interested in the people-- as it is people, not things, which reflect changing mores, values and attitudes. There were quite a few dutiful wives and girl friends there, who mostly without exception openly admitted to being bored, impatient for the affair to be over and all the air of neglected martyrs. One exception was Mrs. Robert Herbig, who seemed to have a sense of proportion about it all.

Speaking of vintage literature... early literature of any special interest group, be it engineering, radio, motor cars, cameras have always been the basis of the distinctive authority of that special interest group or discipline. At the Foothill Meet there was one stand displaying in stacks,

carefully indexed and compiled copies of very early RADIO NEWS, among other media. Truly, a treasure trove of the "real dirt" on the early days of the game and certainly of inestimable value as well as interest to any genuine collector. Yet I noted that very little interest was shown in that booth.

The pioneer wireless and vintage groups seem to be much more highly organized than a couple of decades ago, and their media reflect this. Yet it seems that they are much more interested in their advertising revenues than justifying their existence-- which is to promote, advance and enlarge awareness of a special interest hobby.

I easily admit that I left the Foothill Meet with an ambivalence of feelings, which is still with me. granted, all things change, without fundamentally changing, but I missed the former underlying spirit of the game, the sense of fraternity, the atmosphere filled with the spirit of the ingenuity and adventure and romance of the game. Such aspects of any on going hobby should not and cannot change-- otherwise, it becomes something else, wouldn't you say? In mentioning a few of my observations to some at the Foothill Meet, the replies I received I received ranged from they hadn't noticed what I had noticed, on the one hand; to indifferent shrugs, on the other. Once or twice I encountered thoughtful responses and a couple of agreements.

Those who have a special interest hobby, whatever it may be, also have that hobby forming an adjunctive role in their society, in which their attitudes and values and feelings about that hobby becomes distinctive and recognizable as such by other members of the society. That adjunctive role, therefore, become a reflection of the spirit and the integrity of the hobby. They are, in affect, a mirror of those aspects of that hobby for all the world to see, If the reflected image is distorted, like the old fun house mirrors, then obviously the game suffers, as we, individually and collectively, suffer.

The point, gentlemen, is that a mirror has no image of its own.

Condensed from the original THE OTHER SIDE OF THE MIRROR.



AUTUMN SEASON 1982 --- OLDE TYME RADIO COMPANY ---- 2445 Lyttonville Road, Silver Spring, MD 20910. (301) 585-8776. -- After 7:00 p.m. local time. No. 182B

- 1. HEADPHONES --- a) general service .. \$3.00 each. b) vintage .. \$6.50 each.
- 2. REPLACEMENT SPEAKERS PM OR DYNAMIC. Many sizes from 2" ovals to 10" rounds. Send us your needs for quote.
- 3. 60uf 250V filter caps. 50 cents each or 3/\$1.00. --
- 4. NEW VOLUME CONTROLS 1/4" SHAFT. MANY SIZES FROM 10 OHMS TO 1.0 MEG. OHMS. \$1.25 EACH OR 3/ \$3.00
- 5. WIRE DEPARTMENT - 6 conductor AK style \$1.25/ft. - 5 conductor AK style \$1.00/ft. - brown silk type power cord .30/ft. - white small size silk type power cord .20/ft. - old style cloth twisted pair power cord .45/ft. - single conductor hookup wire (cloth) .12/ft. - #20 magnet wire double cotton wrap 80 feet \$3.50 ft. - #18 bare stranded copper wire .25/ft. --
- .. VINTAGE TEST EQUIPMENT. WRITE FOR LIST.
- 6. Exact replacement Radiola II or VIII leather handle. only \$4.50. --
- 7. OLDE TYME RADIO TUBES tubes from the 20's thru the 60's used and new. write for a quote.
- 8. Need name plate or escutcheon screws? We got them. guage length respectively 0-1/4", 0-3/8", 1-1/4", 1-3/8", 2-1/4", 2-3/8" 10 for 50 cents. Above are brass. Can be ordered with flat or round head style.--
- 9. Ant., rf, osc. coils manufactured by Meissner. Broadcast band and some SW band and multiple band coils only \$3.00 each (higher for special units) --

- 10. Slip over replacement coil for ant. and RF coils. Just tell us the diameter of your defective coil form \$1.50 each. --
- 11. I.F. transformers (Meissner) most frequencies. \$3.00 each (higher for special units) --
- 12. WHITE TUBE CARTONSSize G, 2x2x6 20 cents, lots of 100 18 cents each. Size large G, 1 1/2 x 1 1/2 x 5, 18 cents, lots of 100 16 cents. Size GT, 1 1/4 x 1 1/4 x 3 3/4, 16 cents, lots of 100 15 cents. Size miniature, 1x1x3, 15 cents each, lots of 100 14 cents.
- 13. Used power transformers. From \$1.00 to \$10.00. state your needs and we will send a quote. --
- 14. Mallory electrolytic capacitors small fr type 10 uf x 10 uf at 450V \$1.00 each or 6 for \$5.00. last ones.
- 15. We cannot provide WD-11's but we can provide WD-11A's made with 864's in WD-11 bases. 864 tubes are new. Work better than WD-11. \$15.00 each or 2 for \$25.00. --
- 15. DIAL LAMPS - 25 cent each or 5 for \$1.00.
- 16. Crystal set items - a) galena xtals \$1.50 each b) xtal detector ass'y w/xtal \$3.50 each c) unmounted xtal detector ass'y without xtal \$2.00 each.
- 17. Headphone replacement cords a) Brandes and Baldwin types \$4.35 each b) Olde tyme speaker replacement cords \$3.50 each. c) replacement pin jack tips 25 cents each or 5/\$1.00
- 18. Schematics for sets manufactured from 1920 thru 1946 \$1.50 each for complete data package \$2.50 --
- 19. Fahnestock clips 15 cents each or 8 for \$1.00 --
- 20. Stancor output transformers primary imp. 2,000 ohms secondary imp. 3.2 ohms. Good for matching triode to speaker. \$2.50 each.

... If you don't see it, ask..

- 21. Olde tyme phone plug \$1.85 each --
- 22. SPECIAL SMALL SIZE 40 uf., 200V CAPACITOR.. \$1.00 EA OR 3 FOR \$2.75. --
- 23. SCREW BASE CAPS.. TAKE THE HUM OUT OF ANYTHING. 40 uf/ 40 uf at 450V \$3.00 each or 2 for \$5.00.
- 24. RESISTOR LINE CORD REPLACEMENT KIT. - 5 TUBE SET TYPE RLC-2 \$4.50 - 4 TUBE SET TYPE RLC-1 \$3.50 --
- 25. CAPACITOR BONANZA ASSORTED 20 / \$1.00 20 PF. TO 0.5 UF. 200 TO 600V
- 26. OLDE TYME AC PLUGS.. \$1.10 EACH OR 3/\$2.95 --
- 27. Olde tyme toggle switch with short bat with ball \$1.85 each. Good for AK-37, etc. Radiola 17, 18, etc. --
- 28. SPEAKER GRILL CLOTH, 2 PATTERNS.. \$3.25 SQUARE FOOT. SEND FOR SAMPLE.

PLEASE NOTE: All items previously advertised are still advaialbe plus much more. If you don't see it in the ad, write and we will respond immediately with a quote or, if possible, let you know where else to try if we don't have it or can't get it. Free flyer available anytime.

OUR SHIPPING POLICY -----  
We ask that you send sufficient funds to cover shipping and handling costs. Overages if under \$1.00 will be credited to future orders or refunded if requested. Overages over \$1.00 will be returned with your order when it is shipped. Unless specified otherwise, orders weighing 1 lb. and under will be mailed by first or third class mail. Order over 1 pound will be shipped by U. P. S. When making an inquiry, please send S.A.S.F. PHONE AFTER 7:P.M. E.S.T. (301) 585-8776.

NOTE TO READERS .. These cards advertising. Some of the names, an interesting calling card and are displayed for their design possibly, might be out of the it is not too difficult to interest. They are not paid hobby altogether. If you have print, we can display it, here.

HISTORIAN & COLLECTOR

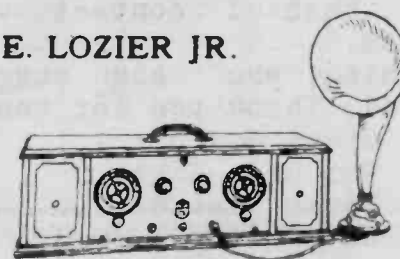
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Ary Santos of Sao Paulo, Brazil posed along with his radio collection. He said that very few people in Brazil collect old radios. He added, "Radios are difficult to get, expensive and generally in poor condition. Parts are no longer available and even if available they are too expensive to import. Therefore, you must have: personal interest in the hobby, money, and time. Generally, it is difficult to have all three at the same time.

But, if you like it, you do it the way you can. That's myself.

## Mailbox

Hi Jim

I am back on my feet again and have been accepting orders for replica parts. I had a long recovery from the last surgery. I am now like the Bionic man. I have by-pass arteries from the aorta down into the two leg arteries. They are made of Dacron. They are working well as my feet are warm again and I can feel a pulse in my feet.

Yours,  
Keith Parry  
17557 Horace St.  
Granada Hills,  
CA 91344

Gentlemen:

I am trying to locate an advertiser who had bakelite panels for sale. He advertised that he could make reproduction front panels for old radio.

I have researched my back issues of THE HORN SPEAKERS to March 1981 when I started my subscription and can find nothing. Keith Parry of California suggested that I contact you for more information.

Anything you can suggest will be appreciated. Thank you for reading this.

Steve Morton  
905 West First  
North Platte  
NE 69101

## Broadcasting Methods

(Continued from page 2)

ance with air traffic regulations, and with a view to giving a variety of entertainment and instruction. This program usually consists of agricultural reports and prices, opening prices on stocks and bonds, weather forecast and standard time signals, interspersed with music, during the morning. Then come mid-day prices on stocks and bonds, shipping news, sporting scores and results, fashion news, more weather forecasts, agricultural reports and prices, shipping news, closing market prices and music in the afternoon. The evening is devoted to concerts, recitals, lectures, stories, talks, final scores, etc. A special feature of the WJZ program is the "Man in the Moon" stories for children every Tuesday and Friday, and the literary evenings conducted by the editorial staffs of several New York publications. The concerts heretofore have been of a high order, but lately, due to an inability to secure high-class talent because of the aversion of artists to give their services gratis, it has been impossible to maintain the former standard. WJZ broadcasted the first grand opera and the first operetta. The former was Mozart's "The Impresario," presented by William Wade Hinshaw, and the latter, C. E. LeMasena's "Pandora," presented by the composer. The time signals from Arlington are received by a standard Westinghouse medium wave receiver, using a long single-wire antenna and transferred electrically to the radiotelephone transmitter. This enables those with short-wave receivers to pick up the message. All stations have radio chapel services on Sunday, some in the morning, others in the afternoon. In addition to the sermon by a well-known preacher, there is usually excellent music by a choir and soloists, all of which is impressive and indispensable as a counteraction against Sabbath desecration. This is one of the most beneficial instrumentalities of radio service, and its influence for good is incalculable.

Upon arrival at the Newark station the artist is received by the announcer. If the artist be a woman she is introduced to the lady attendant, who looks after her comfort and entertainment. Artists are accorded every courtesy and instructed beforehand regarding the points to be observed after entering the broadcasting studio. It is the custom of the Westinghouse to defray all expenses, including transportation. Programs are arranged on schedule far in advance. There is a booking department and a canvassing department under the direction of experts. When one considers that each of the seven days requires a diversified program of ten to a dozen different items, with several cancellations and changes entering into the day's work, the magnitude of the enterprise is apparent.

In East Pittsburgh a single Westinghouse condenser microphone of two stretched steel diaphragms is used. The announcer in the studio is in constant communication with the operator on the roof, as at the Newark station.

Censorship and supervision is exercised by those in charge. The studio director is able to cut off the microphones in or out of the circuit by means of a control switch. The illumination of a red lamp, as soon as the switch is closed, is the signal for quiet as the great invisible audience is then in contact with the studio. The censor is stationed in the apparatus room. He listens to everything that enters the microphone and makes such adjustments as he deems necessary to improve the tone quality. He is also in telephone communication with the transmitting department, which maintains a constant watch on the operator, who likewise keeps a sharp eye on his apparatus. All circuit adjustments are under control of the censor and no changes may be made without his consent. For broadcasting events that enlist the services of a number of participants, several microphones are used in parallel. The positions of the artists and the tonal variations are directed by a series of cards with such phrases as, "Please Sing More Softly," "Please Stand Nearer Microphone," "Please Enunciate More Clearly," etc. This station

has found that the string quartet or the small symphony orchestra is reproduced the most perfectly, while the brass band is one of the difficult problems because of its "edge" in brilliant effects, but cornet, trombone and saxophone solos go over the radio in excellent

The great organ dedicated in November, 1921, by two of the world's leading organists, is in line for broadcasting purposes. Experiments have been made as to its availability for transmitting the tones of this wonderful instrument via radio, but to date the results have been unsatisfactory. This furnishes one of the problems that probably will be solved in the near future and will give the station a distinct position among broadcasters. The big organ, located in the Philadelphia Wanamaker store, will also be used for radio broadcasting if certain variants between the low and high tones can be transmitted, which the microphone does not now receive accurately.

The transmitting room is equipped with three tubes of 50 watts each, an oscillator, amplifier and modulator. The instruments are enclosed in a roll-top desk. The antenna is 180' long, with counterpoise over the roof of the building between 9th and 10th Streets. In addition to the broadcasting department, the store maintains a complete radio merchandising section where one may obtain advice from experts, and purchase receiving sets as well as a full line of parts of standard make. The section will soon be enlarged to include receivers of large type.

When we contemplate the vastness of the radio world, when we figure the stupendousness of the industry now and calculate vaguely what it will be one year hence, when we realize the untold possibilities of this latest art-science, then we may say truly that we are living in a marvelous age. The momentum of radio is grandiose in the strength and velocity of its movement. It bends all to its will. If it is to be harnessed and controlled, we must deal with it as with Niagara, carefully and cunningly in order to compel its application to our needs and to avoid being swept aside by its irresistible might.

The program is arranged on a somewhat different order from others. It follows a definite scheme and carries out a prearranged plan. There is a diversity of entertainment, including music, literature, sports and miscellany. Every afternoon at 1.40, Edna Beatrice Bloom, official soprano soloist of the Auditorium, gives a brief recital of three or four songs. At 2.40 there is a short recital of music by the Ampico piano or the victrola. At 3.40 another song recital or talk. At 4.40 on Tuesday and Thursday, one may hear the latest news on fashions, and on Wednesday and Friday, the children's hour is conducted by Elsie Jean. Beginning at 10.30 an evening musical program is given, the lateness of the hour affording listeners an opportunity to hear clearly, as all other stations are out of the air.

The concert broadcasting room is in the South building, on the auditorium floor. It contains a grand piano, an upright piano, a phonograph, the transmission set and appropriate furniture. It is of ample size for ordinary use and is encased in curtains. Instead of the familiar microphone, a pair of telephones are used. A small megaphone is inserted in the mouthpiece of the phone that stands on the switchboard box. The other phone may be shifted about to convenient points, being equipped with an extra long cord. In broadcasting piano music, this second phone is placed on a bench near the piano. The aim of the department is to develop radio service of a high standard, including timely discourses on interesting subjects. No effort is wasted on trivial experimenting. Applicants must pass a rigid test or be well recommended before they are granted permission to sing, play or speak. Auditions are frequently held in the Auditorium in order to ascertain the qualifications of the applicant, while others are drawn upon by reason of their having made successful appearances at Auditorium concerts. Radio Director Noe is a musician as well as a radio expert, with an intimate knowledge of the wishes of the music department and also of the Wanamaker policy, which permits of nothing mediocre or cheap. Therefore WWZ entertainments are of a quality in keeping with such standards.

EDITOR... As soon as we get our back issues organized and completed in our computer we can easily answer your question.



that any attempt to flatten it will result in cracking off the flange, which should be allowed to stick up.

**Marking the New Paper**

The new sheet of paper should be placed on a flat wooden surface and the old cone placed on top of the sheet, and both flattened out by the application of heavy objects such as flatirons, plate glass, etc. There are now six pinholes, 3 in each edge. Through each of these, pass a thumb tack straight down through the new sheet and into the wood. With a sharp, soft pencil, the outlines of the cone may be traced, supplying, where necessary, any of the outline obliterated by the razor blade.

The small inner circle should be traced very carefully as the fitting of the voice coil depends on its accuracy. In addition, a third circle of a radius about 3/16-in. less is traced by a compass inside this one, in order to make the flange, if one is required. When the outline is complete, the thumb tacks are removed and the pattern cut out with sharp scissors (small surgical scissors are very good) on the line.

It may be impossible to trace the voice-coil circle accurately due to ruggedness of the surface. In this case, draw in a circle using a compass with a radius a hair's breadth larger than that of the voice-coil circle, as measured on the flattened pattern. If the pinholes on the seam have been made in a straight line, it will only be necessary to extend the lines passing through the pinholes till they meet. This point marks the center if the lines have been accurately drawn. Otherwise, locate the center point by trial, using the compass.

To make the flange on the small end of the cone, a series of radial cuts must be made in the pattern, reaching just beyond the voice-coil circle. The square stubs so produced are now bent so as just to include the pencil line of the circle in the bend, allowing in this way for the width of the paper which makes the flange. A perfect fit is thus assured the voice coil.

After collodion cement is applied to the seam edges, these are put together to make coincide the pinholes through which thumb tacks are passed into a flat board. The seam is thus held tightly against the board until dry. When dry, the cone should be placed on a flat surface, large diameter downward, and a small book placed on top of the cone until the paper sets.

**The Voice-Coil Tube**

To make a voice coil, the paper used must have straight edges, an absolutely even surface and uniform quality. The two-inch paper used in adding machines fills the bill in all particulars and is just wide enough.

The paper must be wound on a form of some kind. In many cases the pole of the speaker field can be used. Where this is possible, experimentally wind this paper ribbon tightly upon the pole until it takes up nearly half the space between the pole and the steel collar surrounding it. The diameter of the paper ribbon is then that of the voice coil to be made. We say "nearly half the space," because room must be allowed for the voice-coil wire.

Now, slide the paper tube off the pole piece and unwind it from the inside until just two layers of paper are left to form the tube. Nick the paper at this point and then unwind the rest of the tube. Cut the paper straight across at the point where nicked. These two pieces give us the exact dimensions for cutting two new strips which are wrapped carefully around the pole in the proper order; first the "flange" strip and then the "coil" strip, using thin cement in strategic places to keep each from unwinding. Of course, cement must not be put between the separate strips.

While the paper is on the mandrel or pole piece the second time, the wire can be wound off the form according to the position and number of turns of the old voice coil. The same numbered wire or a close approximation to it should, of course, be used. Extra wire should be allowed for leads to the proper terminals within the speaker.

Collodion lightly applied to the coil ends will keep the wire from unwinding and rattling. (Collodion applied over the entire surface of the voice coil tends to flake loose and produce buzzes at high frequencies, and should therefore be applied sparingly.) If too long, the voice-coil form must, of course, be cut down and can be quite easily done with small surgical scissors. The winding helps the form to retain its circular shape but the real secret lies in making the joints of the core-form neatly and with a minimum of cement or "dope." The form may be dipped in hot paraffin which serves further to stiffen the coil and protect it against moisture.

**Reassembly**

The sequence of reassembling will differ according to the type of speaker so that this must be left to the judgment of the repairman. Certain general requisites apply to all speakers, however. The cone and voice coil must be centered with regard to frame and field pole, and the latter must not touch the coil. The leads from the voice coil must be "doped" onto the cone and "spiders" to prevent vibration, since even a half-inch of loose lead-wire may introduce an unpleasant buzz.

The problem of repairing cones is one that does not seem to receive much attention. While Service Men in large cities may be in a position to obtain replacements in a relatively short time, those located in the more sparsely settled sections of the country must develop methods of their own to effect speedy repairs.

**PANTOPHONE-BIJOU**



**This Month's Bargains From ARS**

HERE ARE OUR FEATURED ITEMS FOR THIS MONTH. THESE ARE BEING OFFERED AT SPECIAL SAVINGS FROM OUR REGULAR CATALOG PRICES JUST FOR READERS OF THIS PUBLICATION.

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SAMS early set 1-550 in 55 binders. Cover earlier sets. Excl. \$125 plus shipping!  
 Remington Standard Model 12 TYPEWRITER. Right-hand carriage return. Circa 1900. With cover & ribbon. Excl. working cond. \$25 plus shipping.  
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 Ten pounds of technical booklets, magazines and servicing information. Just \$3 here  
 Ten technical and electronic BOOKS. These are hardcover, older texts in good cond. \$9  
 RIDER RADIO volume 20. Just one left. \$40 while it lasts, postpaid in the U.S.  
 RIDER RADIO master INDEX for 1-23. Photocopy, bound with cover. Only a few left. \$18.  
 SUPREME PUBLICATIONS master INDEX for TV and Radio. Photocopy Just \$5 here.

Ten pounds of older radio/electronic parts: meters, plugs, sockets, capacitors, wire resistors, transformers, speakers, etc. \$10.95 -  
 Assortment of five speakers - variety of sizes. All in good shape. \$9  
 Twenty pounds of electro/mechanical parts: relays, motors, pressure meters, switches, etc. \$14.95.  
 Twenty capacitors 50¢  
 Assortment of four meters - \$7.95  
 Ten pounds of hardware - screws, bolts, nuts, solder tabs, brackets, rivets, washers, anchors, screw eyes, springs, etc. \$8.95  
 One pound of old printer's type. This is the old style not in use for years. \$3  
 Table top microphone stands \$1 each.

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# PUETT ELECTRONICS

PUBLISHERS OF P.O. BOX 28572 DALLAS TX 75228

ANTIQUE RADIO TOPICS &

LIST NO. 20A THE CLASSIC RADIO NEWSLETTER

NOTE PLEASE ORDER BY CATALOG NUMBERS LISTED HEREIN - EXAMPLES - (B1), (E1), (P010); TUBES BY TYPE NUMBER - 6L6 ETC.

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0A3	\$3	1N5	\$6	2A5	\$10	6A6	\$5	6B7	\$8	6K5	\$7	6SS7	\$6	7B6	\$7	12AT6	\$7	12SQ7	\$6	25A7	\$7	37	\$7	70A7	\$7	1203	\$6
0A4	\$3	1N6	\$6	2A6	\$9	6A7	\$12	6B8	\$8	6K6	\$6	6ST7	\$6	7B7	\$9	12AT7	\$9	12SR7	\$5	25AC5	\$6	38	\$6	70L7	\$9	1231	\$6
0B3	\$4	1J5	\$6	2A7	\$7	6A8	\$9	6B9	\$6	6K7	\$8	6SU7	\$5	7B8	\$7	12AU6	\$5	12SM7	\$5	25B6	\$7	39	\$6	71A	\$12	1232	\$10
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1A3	\$6	1LA6	\$7	3A4	\$6	6AD5	\$7	6C6	\$8	6A5	\$15	6A5	\$18	7E7	\$7	12B7	\$7	14A7	\$7	25Z6	\$7	43	\$9	79	\$7	1294	\$6
1A4	\$6	1LA6	\$7	3A4	\$6	6AD5	\$7	6C6	\$8	6A5	\$15	6A5	\$18	7E7	\$7	12B7	\$7	14A7	\$7	25Z6	\$7	43	\$9	79	\$7	1294	\$6
1A5	\$6	1LA6	\$7	3A4	\$6	6AD5	\$7	6C6	\$8	6A5	\$15	6A5	\$18	7E7	\$7	12B7	\$7	14A7	\$7	25Z6	\$7	43	\$9	79	\$7	1294	\$6
1A6	\$6	1LA6	\$7	3A4	\$6	6AD5	\$7	6C6	\$8	6A5	\$15	6A5	\$18	7E7	\$7	12B7	\$7	14A7	\$7	25Z6	\$7	43	\$9	79	\$7	1294	\$6
1A7	\$6	1LA6	\$7	3A4	\$6	6AD5	\$7	6C6	\$8	6A5	\$15	6A5	\$18	7E7	\$7	12B7	\$7	14A7	\$7	25Z6	\$7	43	\$9	79	\$7	1294	\$6
1A8	\$6	1LA6	\$7	3A4	\$6	6AD5	\$7	6C6	\$8	6A5	\$15	6A5	\$18	7E7	\$7	12B7	\$7	14A7	\$7	25Z6	\$7	43	\$9	79	\$7	1294	\$6
1A9	\$6	1LA6	\$7	3A4	\$6	6AD5	\$7	6C6	\$8	6A5	\$15	6A5	\$18	7E7	\$7	12B7	\$7	14A7	\$7	25Z6	\$7	43	\$9	79	\$7	1294	\$6
1B4	\$6	1LC6	\$6	3A5	\$6	6AD7	\$7	6C8	\$8	6A7	\$6	6A7	\$10	7F8	\$10	12BA6	\$5	14B5	\$6	26A6	\$7	45	\$14	81	\$10	1852	\$7
1B5	\$6	1LC6	\$6	3A5	\$6	6AD7	\$7	6C8	\$8	6A7	\$6	6A7	\$10	7F8	\$10	12BA6	\$5	14B5	\$6	26A6	\$7	45	\$14	81	\$10	1852	\$7
1B6	\$6	1LC6	\$6	3A5	\$6	6AD7	\$7	6C8	\$8	6A7	\$6	6A7	\$10	7F8	\$10	12BA6	\$5	14B5	\$6	26A6	\$7	45	\$14	81	\$10	1852	\$7
1B7	\$6	1LC6	\$6	3A5	\$6	6AD7	\$7	6C8	\$8	6A7	\$6	6A7	\$10	7F8	\$10	12BA6	\$5	14B5	\$6	26A6	\$7	45	\$14	81	\$10	1852	\$7
1B8	\$6	1LC6	\$6	3A5	\$6	6AD7	\$7	6C8	\$8	6A7	\$6	6A7	\$10	7F8	\$10	12BA6	\$5	14B5	\$6	26A6	\$7	45	\$14	81	\$10	1852	\$7
1B9	\$6	1LC6	\$6	3A5	\$6	6AD7	\$7	6C8	\$8	6A7	\$6	6A7	\$10	7F8	\$10	12BA6	\$5	14B5	\$6	26A6	\$7	45	\$14	81	\$10	1852	\$7
1C4	\$6	1LH4	\$7	3L4	\$7	6AE7	\$7	6D7	\$8	6R7	\$7	6A4	\$4	7K7	\$9	12F5	\$6	14C7	\$6	30	\$9	47	\$14	84	\$6	9001	\$6
1C5	\$6	1LH4	\$7	3L4	\$7	6AE7	\$7	6D7	\$8	6R7	\$7	6A4	\$4	7K7	\$9	12F5	\$6	14C7	\$6	30	\$9	47	\$14	84	\$6	9001	\$6
1C6	\$6	1LH4	\$7	3L4	\$7	6AE7	\$7	6D7	\$8	6R7	\$7	6A4	\$4	7K7	\$9	12F5	\$6	14C7	\$6	30	\$9	47	\$14	84	\$6	9001	\$6
1C7	\$6	1LH4	\$7	3L4	\$7	6AE7	\$7	6D7	\$8	6R7	\$7	6A4	\$4	7K7	\$9	12F5	\$6	14C7	\$6	30	\$9	47	\$14	84	\$6	9001	\$6
1C8	\$6	1LH4	\$7	3L4	\$7	6AE7	\$7	6D7	\$8	6R7	\$7	6A4	\$4	7K7	\$9	12F5	\$6	14C7	\$6	30	\$9	47	\$14	84	\$6	9001	\$6
1C9	\$6	1LH4	\$7	3L4	\$7	6AE7	\$7	6D7	\$8	6R7	\$7	6A4	\$4	7K7	\$9	12F5	\$6	14C7	\$6	30	\$9	47	\$14	84	\$6	9001	\$6
1D4	\$6	1LH4	\$7	3L4	\$7	6AE7	\$7	6D7	\$8	6R7	\$7	6A4	\$4	7K7	\$9	12F5	\$6	14C7	\$6	30	\$9	47	\$14	84	\$6	9001	\$6
1D5	\$6	1LH4	\$7	3L4	\$7	6AE7	\$7	6D7	\$8	6R7	\$7	6A4	\$4	7K7	\$9	12F5	\$6	14C7	\$6	30	\$9	47	\$14	84	\$6	9001	\$6
1D6	\$6	1LH4	\$7	3L4	\$7	6AE7	\$7	6D7	\$8	6R7	\$7	6A4	\$4	7K7	\$9	12F5	\$6	14C7	\$6	30	\$9	47	\$14	84	\$6	9001	\$6
1D7	\$6	1LH4	\$7	3L4	\$7	6AE7	\$7	6D7	\$8	6R7	\$7	6A4	\$4	7K7	\$9	12F5	\$6	14C7	\$6	30	\$9	47	\$14	84	\$6	9001	\$6
1D8	\$6	1LH4	\$7	3L4	\$7	6AE7	\$7	6D7	\$8	6R7	\$7	6A4	\$4	7K7	\$9	12F5	\$6	14C7	\$6	30	\$9	47	\$14	84	\$6	9001	\$6
1D9	\$6	1LH4	\$7	3L4	\$7	6AE7	\$7	6D7	\$8	6R7	\$7	6A4	\$4	7K7	\$9	12F5	\$6	14C7	\$6	30	\$9	47	\$14	84	\$6	9001	\$6
1E4	\$6	1LH4	\$7	3L4	\$7	6AE7	\$7	6D7	\$8	6R7	\$7	6A4	\$4	7K7	\$9	12F5	\$6	14C7	\$6	30	\$9	47	\$14	84	\$6	9001	\$6
1E5	\$6	1LH4	\$7	3L4	\$7	6AE7	\$7	6D7	\$8	6R7	\$7	6A4	\$4	7K7	\$9	12F5	\$6	14C7	\$6	30	\$9	47	\$14	84	\$6	9001	\$6
1E6	\$6	1LH4	\$7	3L4	\$7	6AE7	\$7	6D7	\$8	6R7	\$7	6A4	\$4	7K7	\$9	12F5	\$6	14C7	\$6	30	\$9	47	\$14	84	\$6	9001	\$6
1E7	\$6	1LH4	\$7	3L4	\$7	6AE7	\$7	6D7	\$8	6R7	\$7	6A4	\$4	7K7	\$9	12F5	\$6	14C7	\$6	30	\$9	47	\$14	84	\$6	9001</	



# CLASSIFIED

AD RATE: 10 cents per word  
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## \* FOR SALE \*

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SEND LARGE SASE FOR PICTURED LIST OF 20'S AND 30'S RADIOS, TUBES, BOOKS AND PARTS. JERRY FINAMORE, RD # 2, BOX 623, NEW CASTLE, PA 16101 (412) 656-0338.  
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\*\*\*\*\*  
SCOTT RADIOS AND PARTS. GERNSBACK AND GHIRARDI MANUALS. LIST SENT TO STAMPED REPLY ENVELOPES. VICTOR CUBILETTE, 2910 LANCASTER DRIVE, PUEBLO, CO 81005.  
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RADIO BROADCAST, POPULAR RADIO MAGAZINES, EARLY TELE-GRAPHY AND RADIO BOOKS. SEND SASE FOR LIST. ROBERT AND HELEN CORUM, 125 LOCUST AVENUE, WASHINGTON, NJ 07057.  
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PHILCO 84B (1936- CATHEDRAL-EXC- WORKS) THIS VARIATION HAS THE COMPLETELY CIRCULAR SPEAKER OPENING, \$85.00 -- AIRLINE 62-147?? (1936- SQUARE- TOP-GOOD- UNTESTED) AIRPLANE DIAL, NO KNOBS, \$35.00 -- RCA RADIOLA III (1923- SQUARE BOX- EXC-AUDIO OK) SEE V. R. PG. 109, \$65.00 -- RCA RADIOLA IIIA (1923- RECT BOX- EXC- AUDIOS OK) SEE V. R. PG. 110, \$110.00 --- SEND LARGE S.A.S.E. FOR COMPLETE AND UP- TO- DATE LIST. RON BOUCHER, 376 CILLEY ROAD, MANCHESTER, NH 03103, (603) 669-1698.  
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TUBES - ALL TYPES, including 01A, 99, WD-11 and other hard to find tubes. 2,000 different types in stock. SASE for list. ANTIQUE RADIO & TUBE COMPANY, DEPT. 101, 1725 University, Tempe, AZ 85281.  
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FOR SALE - RADIOLA 20 \$100.00, MUSIC MASTER HORN \$85.00, SPLITDORF HORN \$65.00, REMO HORN \$60.00, RADIOLA UZ1325 HORN \$60.00, THOROLA HORN \$60.00, WESTERN ELECTRIC 10D \$80.00, WESTERN ELECTRIC 7A AMP \$75.00, FLAME PROOF KEY \$20.00, UNKNOWN SUPER 4 RADIO \$50.00, WARE TYPE KEY \$130.00, MAGNAVOX R3 HORN \$75.00, BURNELL SOUNDER \$20.00, AERIOLA SENIOR \$120.00, PHILMORE CRYSTAL SET \$8.00, ROCKET CRYSTAL SET \$15.00, DAVEN AMP. \$40.00, RADIOLA ACM \$150.00 (CRACKED BAKELITE PANEL) -- ANTHONY CASERTA, 47 VISTA LANE, LEVITTOWN, NY 11756, (516) 731-7175.  
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MANY ANTIQUE RADIOS AND SPEAK-

ERS. Send long SASE for list. Gary Hill, 1507 Ridge Avenue, New Castle, PA 16101

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SEND LARGE SASE FOR LIST OF 60 1920's and 1930's operable radios, phonographs and accessories. Donna Cooley, 57 Adams, Akron, CO 80720 (303) 345-6616.  
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TEN GOOD 01-A'S FOR \$37.00. A few other radio items for sale. Pin-ball machine, one cent coin operated, pre-electric, very old. Send S.A.S.E for list to Arthur Harrison, 1021 Falcon Drive, Columbia, MO 65201.  
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FOR SALE: A.K. "55" AND SPEAKER. EXCELLENT SHAPE. PAGE 77 OF VINTAGE RADIO. \$100.00 PLUS U.P.S., GEORGE FRIEDRICH, 7162 JACQUELINE LAKE, CUSTER, WI 54423.  
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FOR SALE- CATHEDRAL, BATTERY and A.C. radios. Send SASE with two stamps. J. Albert Warren, Box 279, Waverly, PA 18471.  
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:-----WANTED-----:-----

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CHASSIS FOR FRESHMAN Masterpiece cathedral and Philco 60, Music Master horn bell and Riders Vol. I, Gary Hill, 1507 Ridge Avenue, New Castle, PA 16101.  
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"WANTED ATWATER KENT GRAND-FATHER CLOCK; ALSO A.K. CONSOLES OF THE "LATER" ('34 THROUGH '36) YEARS. ALL A.K. TABLE SETS OF THE '30'S. ALL A.K. ADVERTISING. WRITE ARTHUR AXELMAN, 19652 WEEBURN LANE, TARZANA, CA 91356."  
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WANTED: Lincoln 8-80, Crosley Gembox AC, Bandbox Jr., model 52, 5-38, VC and X., Grebe KT-I portable, Chelsea Radio regenerative, Jewett Super Twelve, MRC-4, New Paragon Two, Three and Four, Armstrong regenerative ACE type V, Radiocraft D-4 and D-5 2 step amplifier, Ware type T, Workrite Aristocrat 5-T Neutrodyne, Majestic Century Six model 463, Freed Eisemann model 350, Etherphone one tube reflex, Remler type 333 amplifier panel, 330 Detector, 331 amplifier panel, 502 variometer and 505 variocoupler panels. D'arcy Brownrigg, Chelsea, Quebec, J0X 1N0, Canada  
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WANTED: WESTERN ELECTRIC AUDIO EQUIPMENT; 1930- 1950, amps, preamps, mixers, surplus tubes, manuals, horns, drivers, speakers, crossovers, catalogs, repeater coils, etc. Marantz and McIntosh tube equipment, 1950- 1965. Anyone having or

knowing the whereabouts of such items or related theatre audio/projection equipment, please contact Charles Dripps, Kurluff Enterprises, 4331 Maxson Road, El Monte, CA 91732 (213) 444-7079.  
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WANTED: PRE 1930 MILITARY SETS, partial or missing parts OK. Also pre 22 wireless spark gear. Trade A. K. no. 4052, Federal 59, Nazi field set. Always buying Grebe CR series and amps. Thank you. Ray Garner, Route 1 Box 320, Big Sandy, TN 38221.  
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WANTED: PICTURE OR OTHER INFORMATION about very ornate Timmons 20" paper cone speaker. Also AK 55 metal case, UZ 1325 driver, Philco 20 knobs. Jim Conaway, 709 Halstead Road, Wilmington, DE 19803.  
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WANTED: SCHEMATIC FOR RCA SCOPE 3" MODEL 155A, MANUAL OR REPRO. JACKSON SIGNAL GENERATOR MODEL 641, TELE-SWEEP GENERATOR TSW-50, TUBE TESTER TRIPOLET MODEL 2413. JOHN G. MC DADE, 429 RANGE ROAD, BALTIMORE, MD 21204.  
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WANTED (FOR CASH OR TRADE): (1) DeForest sets and items. (2) Kellogg early AC sets. (especially Marti, Pathe and Rogers). (3) 1920s portables. (4) mirrored radios. (5) fancy horn speakers. -- Mel Rosenthal, 507 S. Maryland Avenue, Wilmington, DE 19804.  
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REQUIRED FOR RESTORATION: Federal 141 cabinet, Harko Senior and two stage amp. panels, Amplion Dragon AR-19 driver. Richard B. Jehlik, 8320 North 28th Ave., Omaha, NE 68112 (402) 393-7124 after 7:00 p.m.  
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WANTED: GUILD "GRAFANOLA" RADIO IN GOOD CONDITION. DANIEL GAIDOSZ, 342 West River Road, Orange, CT 06477.  
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WANTED: XEROX OR ORIGINAL COPIES of sales brochures and owner booklets (not Riders schematics) for the following: Stromberg-Carlson 'All Wave Selector #69', G. E. model S-22, International Kadette Jr., Regency TR-1, Stewart-Warner R125-A, Masterpiece III. Tell me what you have first... all letters answered. R. E. Lozier, 600 Green Street, Monroe, NC 28110.  
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WANTED: 21 INCH MAHOGANY MUSIC MASTER BELL. CONDITION NOT IMPORTANT. CHARLIE STEWART, 900 GRANDVIEW AVENUE, REMO, NV 89503  
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NOVEMBER

# THE HORN SPEAKER

1982

## BACK ISSUES

THE HORN SPEAKER, BOX 53012, DALLAS, TEXAS 75253

January 1978 to May 1978

### INDEX AND BACK ISSUE LISTING

DATE	TITLE	AUTHOR	CLASS	K1	K2	K3
78-01-A	RADIO AND COPYRIGHT .....	H L JONE	PROGRAM	LEGAL	CULTU	1925
78-01-A	MIDGET RECEIVERS.....	R POWERS	RADIO..	TABLE	SMALL	1931
78-01-A	OUR GAL SUNDAY.....	RADIO (G)	PROGRAM	MODEL	DANCE	1938
78-01-A	SMALL SETS.....	T H S....	RADIO..	MIDGE	SMALL	1931
78-01-A	MUSIC FOR THE DANCE.....	EDISON ..	PHONOGR	DANCE	PLAY.	1902C
78-02-A	FLAME MICROPHONE.....	DE FOREST	RADIO..	FLAME	MIKE.	1922C
78-02-A	HOW TUBES ARE EVACUATED	BAZZONI	RADIO..	VACUUM	PUMP.	1926
78-02-A	USE OF KILOCYCLES- RADIO	R N 1923	RADIO	FREQU	WAVES	1923
78-02-A	REMOVING SPEAKER RATTLES	T H S	RADIO	RATTLE	SPEAK	1927C
78-02-A	OF THIS WEEK CBS	RADIO (G)	PROGRAM	ALLEN	MALON	1938
78-02-A	MIDGET RECEIVER	R N 1931	RADIO	SMALL	TABLE	1931
78-02-A	EDISON GEN AND STANDARD	EDISON	PHONOGR	GEN	STAND	1899
78-02-A	POLYPHONE	SCI AMER)	PHONOGR	POLYP	TWO	1899
78-03-A	MYSTERY DE FOREST SET	LIVINGSTO	RADIO	DEFOR	MYSTE	1925
78-03-A	THE LOUD SPEAKER COLUMN	M ENTLEK.	RADIO	DK	EXPER	1925
78-03-A	ROBERTS REFLEX RECEIVER	C GENTLEM	RADIO	ROBER	REFLE	1926
78-03-A	CLUB NEWS NWA	T H S	CLUB	NWA	SHORT	1978
78-03-A	ZONOPHONE TYPE B	BOOKLET	PHONOGR	TYP B	SHORT	1900C
78-04-A	RADIO BROADCASTING	T H S	PROGRAM	WEAF	WJZ	1925
78-04-A	FIRST EXHIBITED GRAMOPHON	T H S	PHONOGR	REKL	PIX	1888
78-04-A	BIRTHPLACE OF LAMP	EDISON	LIGHT	HEML	LAMP	1885
78-04-A	RADIO STARS	RADIO (G)	PROGRAM	HEPL	ERINT	1938
78-04-A	CLUB NEWS N. F. W. A.	BARBOCK	CLUB	NEET	THIRD	1978
78-04-A	STANDARDIZATION RADIO	TELEGRAM	RADIO	STAND	ARR	1925
78-05-A	TELEVISION... A FACT	R N 1926	T. U.	RADIO	SIGHT	1926
78-05-A	SPEAKER SERVICING	M R S	REPAIR	MAGNE	ADJUS	1957E
78-05-A	JOHN FIELD MUSEUM	PULLOCK	MUSIC	FIELD	JOHN	1978
78-05-A	AN OLD RADIO FACTORY	BAKER	RADIO	GREEN	SYSTE	1926
78-05-A	CLUB NEWS NWA WAPS	T H S	CLUB	SE ME	SW ME	1978
78-05-A	FIND OF THE MONTH	KAPPEL	RADIO	H K	M 78	1978

75 cents each



MR. GARY B. SCHNEIDER  
 9951 SUNRISE BLVD #R-9  
 NORTH ROYALTON OH 44133  
 \*\*S1283  
 \*\*73\*\*