DEVELOP FOREIGN RADIO STATIONS

Powerful Broadcasting Studios May be Heard in U. S.

Tuned Radio Frequency Receivers Get Good DX Results, Covering Great Distances at Longer Wavelengths.—Time Difference Cause of Some Confusion.

BY M. B. SLEEPER.

Rapid strides are being made in the development of England's broadcasting system, the latest addition to which is the high-powered experimental installation at Chelmsford. This powerful transmitter, formerly the Marconi experimental station 2BS, is now in regular operation as 5XX, working on 1600 metres. A regular programme and a schedule of operating hours has not been worked out yet, but 5XX can be heard, weather conditions permitting, at 2 to 6 p. m., Eastern standard time.

Experimenters who are interested in tuned radio frequency receivers will find that surprisingly long distances can be covered with such circuits at the longer wave lengths, and with very much less interference from oscillations than with sets designed for the ordinary broadcast range of 200 to 600 metres. It is unfortunate that we are behind the time in England for it makes it necessary to listen in to English stations during daylight hours. It is probably for this reason that English stations have less trouble in copying the United States, for 7 o'clock programmes, Eastern standard time, are picked up at midnight at the British Isles.

The British Broadcasting Company's London station (2LO) operates on 365 metres, sending out a concert from 11 to 12 a. m., time signals and first news bulletin at 2 to 2:30 p. m., a musical programme at 3 to 5 p. m., from 5 to 5:30 p. m. the time signals and second news bulletin, and another musical programme at 5:30 to 6 p. m. On Mondals and Wednesdays the Hotel Savoy Orchestra plays until 6:30, and on Saturday until 7 p. m. All these schedules are Eastern standard time.

In addition, there are Manchester, 2ZY, operating on 375 metres. Birmingham, 5IT, at 475 metres; New Castle, 5NO, at 400 metres; Bournemouth, 6BM, at 385 metres; Cardiff, 5WA, at 350 metres; Glasgow, 5SC, at 420 metres, and Aberdeen, 2BD, at 495 metres. These stations operate on approximately the same schedules as 2LO, and transmit by relay the music from the Savoy Orchestra.

Eiffel Tower, in Paris, operates at 2600 metres, under the call FL. The morning programme starts at 2:40 o'clock. At 6 a. m. market quotations and the weather forecast is transmitted, with time signals at 7:15 a. m. The concert programme starts at 1:10 p. m. and continues until 6:10 p. m. Vox Hous, the Berlin station, sends on 430 metres. Transmission starts at 5 a. m. and is almost continuous until 5 p. m. During the afternoon the programme is relayed by another Berlin station at 500 metres.

Other stations which may be picked up irregularly are Brussels, Belgium, station SBR, at 262 metres; Lyons, France, PTT, operating on 470 metres; The Hague, Holland, PA5, at 1050 metres; The Hague, Holland, PCUU, at 1050; Rome, Italy, 450 to 470 metres, and Stockholm, Sweden, AICT, at 470 metres.

It is difficult to give accurate data concerning foreign stations since their hours of transmission and operating wave lengths are not definitely established but the data just presented has been carefully checked and was corrected within the last 30 days.

There are other stations broadcasting in Austria, Czechoslovakia, Hungary, Spain and Switzerland, but there is little likelihood that they will be heard in the United States. Last winter English broadcasting was picked up clear across the United States to the Pacific coast, and, during the coming season, with the new developments in super-heterodyne and turned radio frequency outfits, it is expected that all previous records for long-distance work will be far surpassed. At least, with the foregoing information, it is possible to go about the reception of foreign stations in an intelligent manner. Few DX experimenters seem to realize that it is useless to listen in late at night for transatlantic broadcasters, because, by the time our evening programmes start the foreign stations are closed down for the night.

Vagrant Waves of Interest to Fans

Dry cells cannot be recharged.

In winding loose couplers, the two coils should be wound in the same direction.

An audion should have ventilation, so bore holes in the cabinet.

Keep the B battery leads short and they are less liable to short circuit.

Don't forget to clean off the flux after soldering.

Ammonia quickly neutralizes acid if the latter is accidentally spilled on the floor.

When you vary your coupling it will require a change in your condenser values.

If your filament rheostat acquires a greenish deposit, clean it off or your set will be noisy.

Distant stations can be copied better on the longer wave lengths than they can on 300 metres.

Be careful not to "spring" the plates of condensers, either variable or fixed, when tightening nuts and screws.

Keep connections short and straight. A straight wire from binding post to binding post may not be quite so artistic as the right-angled turns but it saves wire.

Two dry cells will not work better with a WD-12 tube, but they will have a longer life if they are connected in parallel.

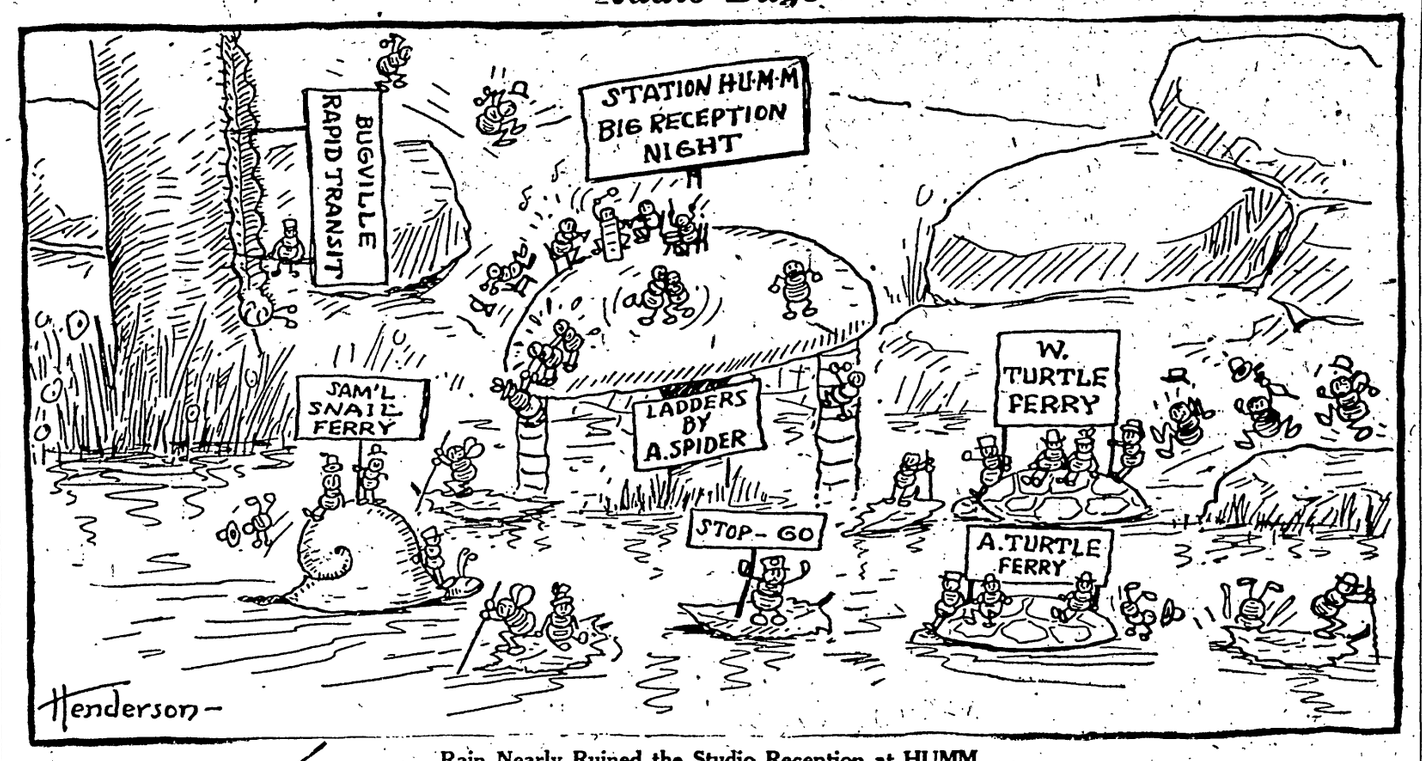
Believing that the high-power station will be obsolete in two or three years, Australia is planning to build beam radio stations.

The largest frame wireless aerial, eight feet high, with 1536 feet of wire, has been mounted on Bush Terminal building in London.

The American Society of Authors, Composers and Publishers is collecting $16,500 annually for the privilege of broadcasting its members' songs.

A panel should be virtually moisture-proof. If the panel absorbs moisture, dust and dirt will collect on the panel and provide a path for leakage of high-frequency current between terminals.

Radio Bugs



Rain Nearly Ruined the Studio Reception at HUMM

RADIO PROGRAMMES

Music in various forms is the chief offering of both local and out-of-town broadcasting stations to-day and for most of the week. Studio directors are already working out more elaborate programmes which will be started just as soon as the summer season closes and people give up their outdoor activities, and have more time for listening in during the early evening hours. WJAR offers the Capitol Theatre concert and an organ recital this evening. On the WEAN schedule are two local church services and a band concert to be relayed from New York. Chimes will be put on the air by WKBF this morning and a special concert programme is to be broadcast this evening.

WJAR, THE OUTLET COMPANY

(360 METRES)

TO-DAY

7:20 p. m.—Musical pgrogramme from the Capitol Theatre, New York city, by courtesy of the Capitol Theatre management and S. L. Rothafel (Roxy). The first part of the programme will be taken direct from the stage of the theatre and will consist of music by featured artists and selections by the Capitol Grand Orchestra. The second part of the programme will consist of a special presentation by Mr. Rothafel of vocal and instrumental artists direct from the broadcasting studio in the theatre.

9:15 p. m.—Organ recital direct from the studio of the Skinner Organ Company, New York city.

MONDAY.

10:00 a. m.—Housewives Radio Exchange. A department conducted by Mrs. Wood on all matters of household interest.

10:45 a. m.—Miss Marie Koester, talk, "Styles of To-day."

1:05 p. m.—Regis Masterson, soprano; Madelina Robarge, pianist.

8:00 p. m.—Baseball scores.

8:05 p. m.—Concert. Wade Veillieux, baritone; Miss Mae Gallegan, soprano; Jimmie Furlong, tenor; John D. McKenna, Jr., pianist.

TUESDAY.

1:05 p. m.—Providence Biltmore Hotel Orchestra, direct from the hotel.

8:00 p. m.—Baseball scores.

8:05 p. m.—Special programme under direction of Souther Abbott.

8:30 p. m.—Joseph P. Ferrucci will speak on behalf of the Providence Safety Council.

WEDNESDAY.

10:00 a. m.—Housewives Radio Exchange, a department conducted by Mrs. Wood on all matters of household interest.

10:45 a. m.—Miss Marie C. Koester, talk, "Styles of To-day."

1:05 p. m.—George Arpin, pianist.

7:30 p. m.—Programme from New York studio. Cordes and Marks dance orchestra.

7:30 p. m.—Alberta Kawashima, violinist, accompanied by Winifred T. Barr.

8:40 p. m.—Matilda Durr Lindsay, soprano, accompanied by Winifred T. Barr.

9:00 p. m.—Hawaiian entertainers.

9:45 p. m.—Alberta Kawashima, violinist.

THURSDAY.

1:05 p. m.—Providence Biltmore Hotel Orchestra direct from the hotel.

Silent night.

FRIDAY.

10:00 a. m.—Housewives Radio Exchange, a department conducted by Mrs. Wood on all matters of household interest.

10:45 a. m.—Miss Marie Koester, talk, "Styles of To-day."

1:05 p. m.—Twin Elm Orchestra, direction of Martin J. Casey.

8:00 p. m.—Baseball scores.

8:05 p. m.—Willie Lutz, cornet; R. Kennedy, pianist.

8:50 p. m.—Battery instruction talk, George C. Furness.

11:00 p. m.—Biltmore Hotel Orchestra direct from the hotel.

SATURDAY.

1:05 p. m.—Providence Biltmore Hotel Orchestra direct from the hotel.

7:05 p. m.—Baseball scores.

7:10 p. m.—Concert. Miss Bedad, banjo; Anna McGarrity, violin; Everett Pierce, pianist.

WEAN, THE SHEPARD STORES

(273 METRES)

TO-DAY.

10:45 a. m.—Service of First Baptist Church. Prelude, "Andante in B Minor," Rheinberger; choir sentence, invocation, hymn, responsive reading, solo, "Let Not Your Heart be Troubled," Speaks, David A. Mitchell; scripture, prayer, offertory solo, "A Voice in the Wilderness," Scott, Miss Dorothy Burnham; prayer, hymn, sermon, benediction, postlude, "Pastorale from Sonata in G," Rheinberger. Organist, George Faulkner.

3:30 p. m.—City of Boston band concert relayed from WNAC.

7:30 p. m.—Service of Mathewson Street Methodist Church. Organ solo, "Evensong," Johnston; hymn, "Softly Now the Light of Day," Mercy; prayer; tenor solo, "The Everlasting Hills," Nevin; psalter, 33rd Sunday evening; Gloria Patri, scripture lesson; offertory, Duo for soprano and tenor, "Sun of My Soul," Nevin; doxology; sermon, "The Tears of Our Lord," Rev. Oscar J. Aldrich; hymn, "Jesus Calls Us." Jude; benediction; organ postlude, "Te Deum Laudamus," Claussmann.

MONDAY.

12:00 p. m.—Colonial Concert Orchestra.
12:10 p. m.—Weather report.
12:15 p. m.—Musical programme.
12:55 p. m.—Time signals.
4:00 p. m.—Selections on phonograph.
4:10 p. m.—Selections on reproducing piano.
4:20 p. m.—Weather report.
4:30 p. m.—Musical programme.
7:30 p. m.—Programme furnished through the courtesy of the Emery Theatre.

TUESDAY.

12:00 p. m.—Colonial Concert Orchestra.
12:10 p. m.—Weather report.
12:15 p. m.—Musical programme.
4:00 p. m.—Organ recital broadcast direct from Emery Majestic Theatre, Edward Benedict, organist.
4:30 p. m.—Weather report.
4:35 p. m.—Musical programme.
8:10 p. m.—Orchestra, to be relayed from Station WNAC, Boston.

WEDNESDAY.

12:00 m.—Colonial Concert Orchestra.
12:10 p. m.—Weather report.
12:15 p. m.—Musical programme.
12:55 p. m.—Time signals.
10:45 p. m.—Organ recital by Edward Benedict, broadcast direct from Emery Majestic Theatre.

THURSDAY

12:00 p. m.—Colonial Concert Orchestra.
12:10 p. m.—Weather report.
12:15 p. m.—Musical programme.
12:55 p. m.—Time signals.
4:00 p. m.—Incidental music by the Emery Theatre Concert Orchestra.
4:25 p. m.—Weather report.
6:00 p. m.—Colonial Dance Orchestra.
6:15 p. m.—Bedtime stories for the children by Aunt Bedee.
6:30 p. m.—Dance music by Arthur's Radio Orchetsra.
7:00 p. m.—Tenor solos by Joseph Heller.
7:10 p. m.—Continuation of programme by Arthur's Radio Orchestra.
8:00 p. m.—McDowell Concert Company, to be relayed from Station WNAC, Boston.

FRIDAY

12:00 p. m.—Colonial Concert Orchestra.
12:10 p. m.—Weather report.
12:15 p. m.—Musical programme.
12:55 p. m.—Time signals.
4:00 p. m.—Organ recital broadcast direct from Emery Majestic Theatre.
4:30 p. m.—Weather report.
8:10 p. m.—"Happy Moments," broadcast from the Gaiety Theatre, Boston, to be relayed from Station WNAC, Boston.

SATURDAY

8:45 a. m.—Group singing by employes of The Shepard Stores.
12:00 p. m.—Shepard Colonial Concert Orchestra.
12:10 p. m.—Weather report.
12:15 p. m.—Musical programme.
12:55 p. m.—Time signals.
4:00 p. m.—Incidental music by the Emery Theatre Concert Orchestra.
8:00 p. m.—Address, "The Radio, The Auto and The Airplane," Richard K. Morton.
8:10 p. m.—Charles W. Selen and Gordon A. Burnham and the "Radiofilmites."
9:30 p. m.—Dance music, broadcast from Copley Plaza Hotel, Copley Plaza Orchestra. Popular songs, Ted and Dick Waterson, with Don Ramsay at the piano. Popular songs by Irving Crocker, to be relayed from Station WNAC, Boston.

WKBF, DUTEE W. FLINT, INC.

(286 METRES)

TO-DAY

10:00 a. m.—Chimes.
10:00 p. m.—Special radio recital, programme to be announced by radio.

WEDNESDAY.

9:00 p. m.—Arcadia orchestra, Al Mitchell, director.

THURSDAY.

9:00 p. m.—Organ recital by Ralph Kinder of Holy Trinity Church, Philadelphia, formerly organist at Grace Episcopal Church, Providence.

WCAP, WASHINGTON, D. C.

(469 METRES)

TO-DAY

12:00 noon—Service at Calvary Baptist Church of Washington. Dr. James S. Kirtley, pastor of Church of Our Father, Baptist, of Cleveland, O., will deliver the sermon.

5:00 p. m.—Open-air services held at the Peace Cross on the National Episcopal Cathedral grounds at Mt. St. Alban, Washington. Very Rev. Samuel R. Colladay, D. D., of Hartford, Conn., will deliver the sermon.

7:20 p. m.—Same as WJAR.
9:15 p. m.—Same as WJAR.

WGR, BUFFALO, N. Y.

(319 METRES)

TO-DAY

11:45 a. m.—Weather forecast as issued by the U. S. Weather Bureau for marine and aviation interests.

3:00 p. m.—Vesper services. Rev. Mortimer Heisler, Kenmore Methodist Church.

WLW, CINCINNATI, O.

(423 METRES)

TO-DAY

10:30 a. m.—School conducted by the

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Army Radio Operator Causes Commotion

Well-disposed neighbors in the vicinity of McCook Field, Dayton, have the interest of United States aviators at heart, a radio announcer discovered recently after causing a near commotion. Tiring of repeating numbers and phases for the ear of the receiving operator at the flying field, he started singing. Suddenly there burst upon the air: "London Bridge is falling down, falling down, falling down." The phone in the radio laboratory began to ring continuously. To the operator's answer a femine voice announced that she had just gotten in touch on her radio set with an airplane. "There's a man up there in distress. He keeps calling 'falling down, falling down,' and I thought you might want to send up another plane to help him." The announcer now sticks to meaningless numbers when testing the airplane transmitter.

To-day's Programmes in Brief

For the convenience of radio fans the following hourly schedule of broadcasting to-day is given in brief form, the complete programme being given under the regular listing of announcements.

The hours are based on Daylight-Saving time.

LOCAL STATIONS

10:00—Chimes, WKBF.
10:45—Church, WEAN.
3:30—Band Concert, WEAN.
7:20—Concert, WJAR.
7:30—Church, WEAN.
9:15—Organ recital, WJAR.
10:00—Concert, WKBF.

OUT-OF-TOWN STATIONS

9:00—Children's hour, WJZ.
10:30—Church, WLW.
Church, KDKA.
Church, WJZ.
Recital, WFAA.
11:45—Weather forecast, WGR.
12:00—Church, KYW.
Church, WWJ.
Church, WLW.
Church, WCAP.
1:00—Church, WSB.
2:00—Church, KFI.
2:30—Bible class, WJZ.
2:45—Concert, KDKA.
3:00—"Hymn sing," WEAF.
Orchestra, WWJ.
Vesper service, WGR.
3:30—Chapel service, KYW.
Church, WCAE.
Concert, WIP.
4:00—Religious service, WEAF.
Concert, WWJ.
5:00—Adventure hour, music.
Talk, WGI.
Lecture, WEAF.
Religious service, WCAP.
6:00—Orchestra, WWJ.
Church, WHAS.
6:15—Baseball scores, KDKA.
6:30—Concert, KDKA.
7:00—Orchestra, WJZ.
Concert, WCAE.
Church, WSB.
7:20—Concert, WEAF.
Concert, WCAP.
Concert, WMAF.
7:30—Choir, WLS.
Orchestra, KGO.
7:45—Church, WIP.
8:00—Talk, WJZ.
8:15—Concert, WJY.
8:25—Concert, WJZ.
8:30—Church, KDKA.
Talk, WJY.
Concert, WJY.
9:00—Organ recital, WBZ.
Concert, WSB.
9:15—Organ recital, WEAF.
Organ recital, WCAP.
9:30—Church, WSB.
Concert, WIP.
10:00—Recital, WHN.
Concert, KSD.
Concert, WLW.
10:45—Concert, KFI.
11:30—Recital, WFAA.
12:00—Concert, KFI.
1:00—Concert, KFI.
2:00—Concert, KFI.

Radio Phonograph Attachment Solves Cost Problem for Fans

Headphone Unit, Piece of Steel Wire and Soldering Outfit All That Is Needed to Construct Novel Apparatus.—Will Not Rattle or Distort

A novel type of radio phonograph attachment has been produced by two radio experimenters. Factors considered in the design of this speaker unit were: Elimination of distortion, ease of construction, low cost and adaptability. The experimenters realized that if they could build a device that could be attached to a phonograph it would solve the cost problems for many fans.

Many receivers were tried which fitted into the tone arm of the talking machine. It was found that the ordinary receiver diaphragm began to rattle and distort the music when too much amplification was used.

For a while it seemed that the experimentation was coming to an end with poor results. Finally an experiment was tried to determine if the magnet in a headphone would actuate the metal lag on the tone box of the talking machine. This worked to a certain extent.

Upon close inspection of the tone arm it was seen that the lever principle operated to cause the diaphragm of the phonograph to vibrate. A slight movement of the phonograph needle moves the diaphragm of the tone box a considerable amount. That is, the movement is amplified. This may be clearly seen from Fig. 1.

It was seen that if the motion of the headphone diaphragm could be impressed upon the lever arm of the phonograph sound-box, the problem was solved. By soldering a piece of bent steel to the metal diaphragm of the receiver and using the free end in the needle hole, it was found that the speaker worked and worked well.

The first step in the construction of the speaker unit is to take the diaphragm out of a good headphone unit. Single units can be bought in the open market. This unit should be the best obtainable. The metal diaphragm is set on a flat surface and the centre is cleaned with very fine emery cloth. The exact centre is then found with a pair of dividers. The dividers are set so that when swung from the outside, as shown in Fig. 2, they will make lines as shown.

It is important that a small "box" be drawn. If the box is too small, when the soldering is to be done, the lines will be covered and the exact centre will thus be lost and the process will have to be repeated.

A thin coating of flux is spread on the centre of the diaphragm. The clean soldering iron with only one drop of solder on it is now touched to the centre and sticks on the diaphragm. The diaphragm is now tinned. It is most important that too much heat is not applied as it would cause the diaphragm to expand in the middle and buckle.

The wire to be soldered to the diaphragm is a piece of No. 14 steel wire whose total length is one and one-half inches. A right angle is bent three-eighths inches from one end and the long end is "tinned" with solder. Tinning is done by applying soldering flux and then rubbing the soldering iron lightly over the surface. There should be only a thin film of solder on the iron.

All that remains to be done is to put the tinned end of the wire on the diaphragm and apply some heat to make them stick together. This is perhaps the most difficult part of the construction. As said before, it is highly important that too much heat be not used.

The accompanying diagrams give a clear conception of how the unit is constructed. Figure 1 shows the method of mounting. The diaphragm of the headphone must be in the same plane as the diaphragm of the sound, or tone-box, of the phonograph.

The reason for this can be found by investigating how the sound-box receives the vibrations from the record when it is used as a talking machine. By using a magnifying glass it will be seen that the record is covered with wavy lines that go from side to side. On some types of phonographs the lines go up and down in the record. The speaking unit here described can not be applied to such types of machines. Find out which type your phonograph is before you build this unit.

The side-to-side motion is transmitted to the diaphragm of the sound-box, which vibrates producing sounds. The steel wire from the headphone is inserted in place of the needle sound-box. This same side-to-side motion is transmitted to the tone-box from the healphone diaphragm, provided that it is placed as shown in the accompanying Figure 1. This is important.

It is highly important that the fan who desires to hitch his receiving set to a phonograph, by using the unit herewith described, first find out if the phonograph is of the horizontally registering type or the vertically registering type.

If you take a powerful magnifying glass (not a microscope) and examine the trough of the lines on records used with the majority of types of phonographs, you will find that the minute "humps and hollows" that produce sounds by causing the diaphragm of the phonograph to vibrate occur along the sides of the trough of the record and not along the bottom of the trough.

It is therefore evident that the arm which is fastened to the diaphragm of the phonograph sound-box moves from side to side, instead of up and down. Any device, therefore, which is to take the place of the phonograph record and actuate the diaphragm of side-to-side motion and not the up-and-down motion. There are types of phonigraphs in which the sound impressions are registered at the bottom of the trough in the record.

If you are in any doubt concerning which type of phonograph you have, consult any reliable dealer in phonographs. If he is not able to tell you, he will at least inform you how you can obtain such information.

Another point. Don't forget that the steel wire which is to be soldered to the centre of the diaphragm of the headphone unit must be of a size that will fit in the needle-holder of the sound-box of the phonograph.

No. 14 steel wire has been specified in the description preceding, but any good steel wire of approximately the same size (but no larger) will do. But the fan can easily determine this matter by simply trying the wire in the holder. If it fits too snugly, do not attempt to use it by filing one end down. The wire should be reasonably uniform in thickness along its entire length.

Mounting the pin in the exact centre of the phone diaphragm and keeping it at right angles to the diaphragm surface is not an easy job. And it is one of the most important features of the entire construction.

One way to accomplish this is to lay the phone diaphragm on a perfectly flat surface. See Fig. 3. With the aid of calipers and by drawing lines across the face of the diaphragm, determine the exact centre, making the "box" as described in the foregoing part of this article.

Now mount a flat piece of board at right angles above the diaphragm so that the edge of this board or metal cuts across the exact middle of the phone diaphragm. Raise the flat board so that there is about one-half inch clearance between the edge of the board and the diaphragm.

This is to allow for space in soldering the pin fast. Now draw on the surface of the flat board a straight line running downward toward the centre of the diaphragm. This line must be absolutely perpendicular to the diaphragm. Take the pin and by using thin nails, fasten it to the board along this straight board and just loosely enough so that it may be moved up and down easily and so that the end to be soldered will drop exactly on the middle of the diaphragm. But it must be fastened firmly enough so that it will be held to the straight line.

After the centre of the diaphragm has been "tinned," as already described, the end of the pin may be soldered to the diaphragm. In doing this, the pin may be held by the bent end with a pair of pliers and pressed down against the hot solder on the diaphragm. When the solder is cold and firm the nails can be pulled out and the unit picked up.

As the flat board is mounted at right angles to the diaphragm, and as the pin is held along the line pointing to the exact centre of the diaphragm, it is cer-

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Radio Sets Donated by Local People Boon to War Veterans

Scores of Disabled Ex-Service Men in Rhode Island Homes and Hospitals Enjoy Receivers Purchased With WJAR Fund.—New Equipment Planned

Generosity of Rhode Island people who contributed $15,000 to the WJAR Radio Fund has been the means of bringing entertainment and comfort to scores of disabled veterans of the World War in this State. The committee which has charge of spending the fund has installed nine powerful receiving sets in various hospitals in Rhode Island and 28 individual sets in the homes of as many disabled veterans. Special outfits with as many as 24 headsets attached have been installed in the larger hospitals. Thus far only $7500 of the fund has been expended and new installations will be made just as fast as there is demand for them.

Radio fans in Providence and throughout the State, realizing the entertainment and educational value of radio receivers, have been generous supporters of the drive started last spring by WJAR to place receivers at the disposal of disabled veterans. The local campaign was inspired by the drive for funds to give radio receivers to the veterans in Walter Reed Hospital at Washington, D. C., which was carried on by S. L. Rothafel (Roxy) of the Capitol Theatre, New York.

Listeners in and many people who do not own radio sets quickly caught the spirit of the campaign to raise money to furnish sets for local ex-service men. The fund, it was early announced, was to be used for the exclusive benefit of Rhode Island boys, whether they were in hospitals or had been sent to their homes to be cared for. Broadcasting in behalf of the WJAR fund began early in April, contributions were received from every section of the State, and not long afterward a total of $15,000 was rolled up.

Most of the money received came from individuals, in many instances the contributions being in small amounts.

Contributions were taken up in many industrial plants, the employes in one of the mills making up a purse of $500. Many contributions were to the extent of but $1, although there were quite a few of $5 and $10 each.

That the fund might be carefully made use of, a volunteer committee to have charge of it was organized as follows:

Chairman—Col. G. Edward Buxton. Secretary—Maj. Percy J. Cantwell, liaison representative of the American Legion. Treasurer—Walter F. Farrell, Vice President of the Union Trust Company. Bertram W. Wall, State Commander, American Legion; John J. Boyle, State Commander, Veterans of Foreign Wars, Edwin Young, Commander, Disabled Veterans of the World War; Frank T. Carr, Newport Post, American Legion; Dr. Arthur T. Ruggles, superintendent of Butler Hospital; Walter W. Massie, radio engineer, and Col. Joseph Samuels, Leon Samuels and Joseph Gettler of the Outlet Company.

The committee planned to not only give radio sets to disabled Rhode Island veterans in hospitals and homes within the State, but also those outside the borders of the State. Thus far the committee has located quite a few boys in other States.

When the fund reached $15,000, the committee, feeling that it had sufficient money on hand with which to carry out its undertakings, deemed it advisable to discontinue soliciting further contributions for the time being. If it happened that any disabled veterans were overlooked, the committee felt that there were those in the State who would provide the required additional money.

Thus far but $7500 of the fund has been expended, and radio sets have been installed as follows: Four at Butler Hospital; one at the Soldiers' Home, Bristol; one at Hillsgrove Sanitorium; one at the State Hospital for Mental Diseases at Howard; one with 24 head sets at Wallum Lake, headsets being especially arranged for the convenience of veterans who are confined to their beds; one at the Naval Hospital, Newport, with a large receiver in the main hall, and further equipment to include 75 bedside headsets; one at Red Cross House, U. S. Naval Hospital, Newport; 28 individual radio sets in the home of as many disabled veterans. All of this equipment was obtained at cost. The committee is still investigating cases and will see that additional sets are installed where needed.

That radio plays an important part in ameliorating the condition of the war veterans who are suffering mentally as well as physically, is explained by Dr. Arthur H. Harrington, Superintendent of the State Hospital for Mental Diseases. Writing to Col. Buxton, Dr. Harrington stated: "Our radio was put into operation on Friday, June 27. To state that this gift of the WJAR Radio Fund has been a delight to the patients is hardly descriptive of their reaction to this source of entertainment. They each day and evening have an opportunity of listening to whatever is being broadcast. . . . The patients gather in this ward and are eager to have music, speaking or whatever is coming through begin . . . The keenest interest was displayed in the doings of the national Democratic convention. The Sunday evening concerts from the Capitol Theatre and the studio of Roxy, and the organ recitals have been a source of gratification in numerous ways. For instance, as the evening hours wear on, many of the patients retire to their beds which are all within hearing of the radio and in numerous instances have been observed to all quietly asleep.

"Our aim in everything that is done in this hospital is to make it count for a therapeutic or curative effect. Therefore, a great deal of study is given to means of diversion, amusement and occupation which are all helpful. Through these we gain attention to matters outside of the patient—the patient is diverted from self-absorption and various obsessions. He is lifted out of himself, and his thoughts directed into other channels. It is our experience already that there are no means which can bring our patients in touch with the realities of the world outside the bounds of hospital walls and which are so generally applicable as this latest discovery of the age.

"We believe that this radio set will prove itself a wonderful boon to our patients who are reached by its operation, and furthermore, that it will point to a valuable therapeutic measure which will lead to a wide application in this hospital in the future. It is safe to predict that it will be the means of improving the condition of many patients and that it may even promote their recovery."

Thomas F. McLaughlin, a veteran, writing from East Greenwich, says: "I don't know what to say because I am pleased and enjoying my radio set. I thank you very much. I remain an unseen audience always ready to thank the Outlet Company for what it did for me."

The communications received by WJAR from disabled war veterans are all expressive of gratitude. One of the men writes: "I cannot tell you how delighted I am with my radio—it works beautifully. I never expected anything so wonderful, even in imagination, to say nothing of reality. I am grateful for it and appreciate it; also the thought that prompted people to do such kind acts. If I could I would thank all."

Another veteran writes: "I am a great lover of music, and it is a wonderful thing to be able to hear it over my radio. Through your kindness I am able to hear all kinds of orchestras, symphony included. I was confined in a hospital six months and was in bed for some time at home. I know how much I would have enjoyed a radio during the long days and nights while I was in the hospital. I know the radio will bring joy and comfort to many of the boys who are unable to obtain sets of their own."

Dr. Ruggles, writing from the Butler Hospital, said: "I am forwarding a letter handed me by Mr. Peter Finley. I would like to add to what he has said, that during the past week he has been suffering from a surgical condition which necessitated a minor operation that has confined him to his bed, and that during that time the radio has been a special blessing to him."

"It gives me great pleasure to extend my sincere thanks and appreciation to you and through you to all others who helped to bring cheer to the disabled soldiers who did their bit while serving their country," writes Ernest Tedeschi of Natick. "Words fail to explain to you just what my radio means to me—it is a friend, a companion, and, most of all, medicine for me. I appreciate most of all the personal interest and co-operative spirit of the WJAR radio fund committee. You may tell the world what my radio set means to me."

An East Providence veteran writes: "I cannot express in words the grateful appreciation I have of your very kind act. I can assure you that I have enjoyed many pleasant hours listening in—time that formerly was dull, with nothing but pains. Being almost wholly confined to my home, the radio is a great source of happiness to me."

Marion Rickert, field director, American Red Cross, Newport Hospital Service, writes: "The radio is the most splendid piece of recreation equipment added to the convalescent house for a long time, and all the boys join me in thanking those who so generously contributed to their pleasure."

German Trains Radio-Equipped.

Express trains in Germany are to be equipped with combination radio and wireless telephones, enabling the sending of wireless messages, telephoning and the giving of radio concerts while trains are speeding on their way. The wireless telephones will be connected with regular telephone systems at receiving stations. For radio messages special compartments will be built in the trains, and transmission stations erected at principal railway depots.

RADIO PROGRAMMES

Continued from Page Eight.

editorial staff of Sunday Publications of the Methodist Book Concern.
12:00 noon—Services of the Church of the Covenant, Dr. Frank Stevenson, minister.
10:00 p. m.—Concert by the Western and Southern Orchestra, directed by Erwin Bellstedt.

WCAE, PITTSBURGH, PA.
(462 METRES.)
TO-DAY.

3:30 p. m.—People's radio church services.
7:00 p. m.—Dinner concert transmitted from William Penn Hotel.

KFI, LOS ANGELES, CAL.
(469 METRES.)
TO-DAY.

2:00 p. m.—L. A. Church Federation service.
10:45 p. m.—Metropolitan Theatre programme.
12:00 Midnight—Ambassador Hotel Concert Orchestra.
1:00 a. m.—Concert programme.
2:00 p. m.—Orchestra.

KDKA, EAST PITTSBURGH, PA.
(326 METRES)
TO-DAY

11:00 a. m.—Services of the First Baptist Church, Pittsburgh, Pa., Rev. Carl Wallace Petty, minister.
2:45 p. m.—Concert.
6:15 p. m.—Baseball scores.
6:30 p. m.—Dinner concert by the Pittsburgh Athletic Association Orchestra, Gregorio Scalzo, director.
8:30 p. m.—Radio chapel.

KGO, OAKLAND, CAL.
(312 METRES)
TO-DAY

7:30 p. m.—Concert by KGO Little Symphony Orchestra and soloists, Carl Rhodehamel, conducting.

KDS, ST. LOUIS, MO.
(546 METRES)
TO-DAY

10:00 p. m.—Music programme broadcast direct from Grand Central Theatre.

KYW, CHICAGO, ILL.
(536 METRES)
TO-DAY

12:00 noon—Sunday morning service broadcast from St. Chrysostom's Episcopal Church, 1424 North Deaborn parkway, Chicago. Rev. Norman Hutton, rector.
3:30 p. m.—Studio chapel service broadcast by the Chicago Church Federation.

WBZ, SPRINGFIELD, MASS.
(337 METRES)
TO-DAY.

9:00 p. m.—Concert direct from Estey Organ Studio, George Abel organist, Hotel Brunswick Studio, Boston.

WEAF, NEW YORK CITY
(492 METRES)
TO-DAY.

3:00 p. m.—"Sunday Hymn Sing," auspices of Greater New York Federation of Churches, Frank Goodman, presiding.
4:00 p. m.—Interdenominational services, auspices of Greater New York Federation of Churches, Herbert F. Laflame, presiding. Music by Federation Male Quartet; Federation Radio Choir; Carlos Abba, harpist; George Vause, pianist, and Arthur Billings Hunt, baritone and musical director. Address by Rev. John H. Clifford, D. D., Chaplain of United States Marines; harp prelude by Carlos Abba, "Souvenir of Naples" (Alvarez); "A Shelter in the Time of Storm" (Sankey) by the Federation Radio Choir; "My Anchor Holds" (Towner) by the Federation Male Quartet; scripture; harp revery by Carlos Abba; prayer; "Saviour Hear Us When We Pray" (Strickland) by Marion Holt Brown, soprano; address by Rev. John H. Clifford, D. D.; "I've Found a Friend" (Stebbins) by the Federation Male Quartet; benediction; "Take Time to be Holy" (Stebbins) by the Federation Radio Choir.
5:00 p. m.—"The Religion of the Wider Outlook," the 10th of the series of lectures on "The Literature of the Old Testament," by Prof. Herbert B. Howe of Columbia University.
7:30 p. m.—Same as WJAR.
9:15 p. m.—Same as WJAR.

WFAA, DALLAS, TEX.
(476 Metres)
TO-DAY

11:00 a. m.—Sacred song recital by choristers from Cliff Temple Baptist Church.
11:30 p. m.—Jack Gardner's Orchestra in popular music recital.

WGI, MEDFORD HILLSIDE, MASS.
(360 Metres)
TO-DAY

5:00 p. m.—Adventure hour; musical; talk under auspices of Greater Boston Federation of Churches by David S. Klugh, D. D., People's Baptist Church, Boston.

WHAS, LOUISVILLE, KY.
(400 Metres)
TO-DAY

6:00 p. m.—Church service, under auspices of Broadway Christian Church, Rev. Dr. W. N. Briney, pastor; Mrs. Harry W. Long, organist and choir director.

WHN, NEW YORK CITY
(360 Metres)
TO-DAY

10:00 p. m.—Paul Specht's Lodge Orchestra, Harold Oxley, director..

WIP, PHILADELPHIA, PA.
(509 METRES)
TO-DAY.

3:35 p. m.—Concert by Comfort's Philharmonic Orchestra, Roy B. Comfort, conductor, broadcast from the WIP control station on Steel Pier, Atlantic City, N. J.
7:45 p. m.—Evening service broadcast from Holy Trinity Church, Philadelphia, Rev. Floyd W. Tomkins, D. D., rector.
9:30 p. m.—Sunday evening concert, with soloists, broadcast from the WIP control station on Steel Pier, Atlantic City, N. J.

WJY, NEW YORK CITY
(405 METRES)
TO-DAY.

8:15 p. m.—Estrella Mandolin Club.
8:30 p. m.—Educational talk.
9:00 p. m.—Estrella Mandolin Club.

WJZ, NEW YORK CITY
(455 METRES)
TO-DAY.

9:00 a. m.—Children's hour. Original stories by authors, music by the composers, comic stories by the originators of famous comedies.
11:00 a. m.—Grace Methodist Episcopal Church service direct; sermon by Rev. Wallace McMullen.
2:30 p. m.—Radio Bible class, under auspices of Greater New York Federation of Churches; Rev. Robert F. Y. Pierce, D. D., chaplain New York city police department, will speak on "Meeting the Intellectual Difficulty of an Earnest Inquirer;" Church Community Chorus, Clarence W. Allen, director; X. L. Male Quartet.
7:00 p. m.—Nathan Abas's Orchestra.
8:00 p. m.—"The Annalist's Talk for Business Men."
8:25 p. m.—New York Philharmonic Orchestra, direct from Lewisohn Stadium; Willem Von Hoogstraten, director.

WLS, CHICAGO, ILL.
(345 METRES)
TO-DAY.

7:30 p. m.—Y. M. C. A. Choir.

WMAF, SOUTH DARTMOUTH, MASS.
(263 METRES)
TO-DAY

7:20 p. m.—Musical programme direct from the stage of the Mark Strand Theatre, Broadway and Forty-eighth street, New York city, by courtesy of Moe Mark. Second part of the programme from the broadcasting studio in the theatre by the featured vocal and instrumental artists, personally presented by Mr. Plunkett.

WSB, ATLANTA, GA.
(429 METRES)
TO-DAY

1:00 p. m.—First Presbyterian Church service.
7:00 p. m.—Sabbath twilight sacred broadcast.
9:30 p. m.—Wesley Memorial Church service.

WWJ, DETROIT, MICH.
(517 METRES)
TO-DAY

12:00 Noon—Services at St. Paul's Episcopal Cathedral, broadcast from the cathedral.
3:00 p. m.—Orchestra.
4:00 p. m.—Concert by Schmeman's Concert Band, broadcast from Belle Isle Park.

POTENTIOMETER USEFUL

Will Control Grid Voltage in Amplifier Tubes.

A potentiometer is a very useful device in any radio receiving set. The place where it is most often employed is in radio frequency amplifiers, where it is used to prevent oscillations by controlling the grid voltage of the radio frequency amplifier tubes. When used for this purpose the two outside terminals of the potentiometer are connected to the two A battery terminals and the slider is connected to the grid return of the radio frequency amplifier tubes.

Another use for a potentiometer is to vary the plate voltage for soft detector tubes. This may be accomplished by connecting negative B battery wire to the slider on the potentiometer and then connecting the resistance coil of the potentiometer across the A battery. With the potentiometer connected in this manner it is possible to vary the B battery potential six volts—i. e., when a six volt A battery is used to heat the filaments.

A third use for a potentiometer in a receiving set is to increase the resistance of the aerial and in that way reduce the radiation from regenerative receivers. When the potentiometer is used for this purpose it is connected as a rheostat rather than a potentiometer, for the slider of the potentiometer is connected to the aerial, and one side of the resistance is connected to the aerial binding post on the receiver.

The resistance of the average potentiometer is between 100 and 500 ohms and for receiving sets a potentiometer of about 400 ohms resistance is usually required.

SCRATCHY NOISES

Loose Connections or Corrosion May be Cause of Trouble.

Scratching noises in a radio receiver seem to be the noises that are prevalent in most sets that are noisy. These noises may be due to one or more of several causes. Those fans having sets that are scratchy will do well to read over the following list and then look over their sets for the points mentioned.

The first place to look for trouble is the aerial and ground. If there is any corrosion in any of the joints they should be taken apart and cleaned. Then resoldered. Any joint that is not soldered is liabole to cause scratchy noises in the phones.

The next place to look for trouble in this line is on the tube prongs. If there is any corrosion here it should be filed off and the prong preferably given a coating of solder. Use rosin as a flux in this case.

The binding posts on the sockets, rheostats and other parts of the set, if loose, will cause scratchy noises. All nuts should be tightened with a pair of pliers to eliminate any chance of overlooking one nut.

Loose soldered connections in any of the leads in the set will cause scratchy noises and also clicks that are easily traced by touching the wires when the phones are in the circuit and the tubes lit.

Any friction bearings on variable condencers, variometers or vario couplers will cause any amount of scratchy noises. It would be better to put pigtail connections on all the equipment that now have this type of bearing and forego the necessity of cleaning the shafts and rods every time the set becomes noisy.

Scratchy noises are often due to loose phone connections. This is easily traced by shaking the phone cord while the phones are connected to the set with the tubes turned on.

ANTENNA 30 MILES LONG

Extensive Aerial System Used by Long Island Station

The development of the central receiving station at Riverhead, L. I., has already reached the point where the signals from Europe are received on an antenna system 30 miles long and the signals from South America on another antenna system 20 miles long. The antenna consists of two telegraphic wires mounted on telegraph poles.

The basic element of this receiving system is the so-called "wave antenna" or "Beverage antenna." In its simplest form it consists of a single wire, one wave-length long, mounted on telegraph poles or even laid on the ground, explains the New York Tribune This antenna is sensitive to waves from only one direction. A wave is started by the ether wave in one end of the wire and travels along the wire with the velocity of light. In the meantime energy is continuously added to the wave in the wire from the ether wave which travels alongside it, so that the wave in the wire continuously increases and reaches a maximum at the opposite end of the wire, where the receiving set is located.

Radio Show in October.

The week of Oct. 2 to 8 is to be "Radio Show Week" this year. During those seven days in Grand Central Palace, the American Radio Exposition Company will conduct the third annual national radio show.

DESCRIBES RADIO PHONOGRAPH UNIT

Continued From Page 8

tain that the pin, if the soldering is neatly done, will now be mounted at right angles to the entire surface of the phone diaphragm.

The pin should be at right angles to the diaphragm no matter what point on the diaphragm surface is considered. To determine this, obtain a block of metal or a wooden block that has an absolute right angle. Lay the diaphragm, with the pin soldered to it, on one of the surfaces of

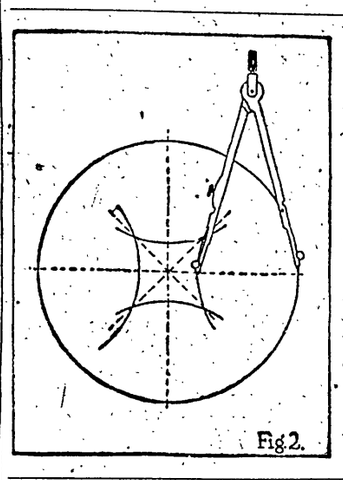


Fig.2.

such a block, and let the pin extend downward along the other surface.

Now turn the diaphragm slowly around, and if the pin touches against the other surface of the block all the time the diaphragm is being turned around, then it is mounted at an absolute right angle to the entire surface of the diaphragm. If it "pulls away" from the surface more than 1-64 of an inch, the pin should be resoldered.

Another way is to mark a circle around the pin and measure from this to the circumference of the diaphragm, all the way around. If the distance in each measuring is the same, the pin is equally distant from all points on the circumference.

In this connection, it should be remembered that the end of the pin to be soldered should be squared off, particular-

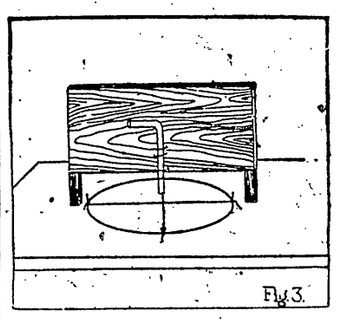
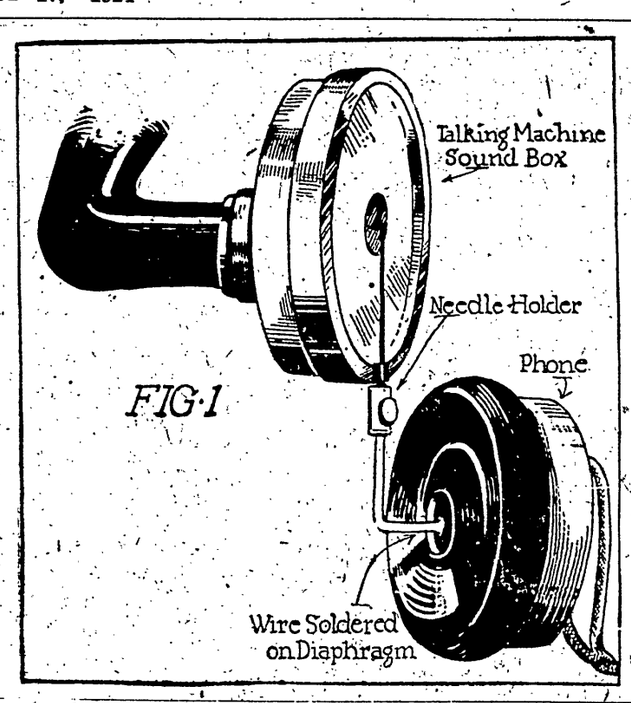


Fig.3.

ly if the pin is cut from a longer piece of wire. In cutting off a piece of wire, the pliers often leave a pointed end on the pieces severed. If the pin is to be accurately mounted, the end must be squared off with a fine file.

During the soldering operation the diaphragm should, of course, be held firmly in place. This way be done by placing thin nails or brads around the circumstances of the diaphragm and bending them inward slightly. See Figure 3. But be very, very careful you do not "bulge" the diaphragm or bend it in any way in doing this. The entire method of mounting and soldering the pin is shown in the drawing, Figure 3.

It would be well for the fan to make



FIG·1

a base on which the finished phone reproducer can be placed while it is being used with the phonograph. Of course, this base is placed on the disc of the phonograph, which revolves while a record is being played. Of course, this disc must not be


Fig.4.

allowed to revolve while the unit is being used! Be sure the brake of the phonograph works well before you attempt to use the new reproducing unit

The base can be made of a small block of wood. Hollow out one side of it so that the hollow will fit around the edge of the phone unit, as shown in Figure 4. If a strip of thick felt is pasted inside the hollow it will serve to take up the effects of jars to the phonograph set and prevent microphonic vibrations.

It is best, also, to place the radio receiving set as close as possible to the phonograph. Long leads may be run from the set to the phonograph, but in such a case more power will be needed to insure undistorted and loud sounds. But leads running as far as from the front room of a house to the rear of the house have been successfully used.

Don't drop the sound reproducing headphone unit, though this is a precaution which must be rigidly observed in the case of all headphones and sound producing units such as headphones and loudspeakers. Also take great pains in mounting the steel pin in the centre of the headphone diaphragm. This is very important.

If a special base is not used, then the entire strain of holding the phone unit upright must be borne by the pin and the diaphragm. In time this would loosen the solder and the unit would come apart.

The fan need not go to the trouble of hollowing out a block of wood. Any scheme he may devise that will support the phone unit in an upright position and hold it firmly will serve as well.

In fact, there isn't anything to prevent the fan from using his ingenuity in working out any portion of this project. Only be sure you are right before you attempt any scheme of construction. It saves time, money, labor and temper.

Dance Music from Hotels.

Arrangements have been made for WJZ and WJY, twin stations on top of Aeolian Hall, to broadcast dance music played by 12 of New York's leading orchestras. Direct wires will connect with microphones in the hotels and clubs where the orchestras play.

New Station Open in Brazil.

Four radiophone transmitting stations will be installed in Brazil for the purpose of broadcasting notices of general interest, concerts and conferences. The stations will be located in Bahia, Pernambuco, Sao Paulo and Bello Horizonte.

SPECIAL RADIO ANNOUNCEMENT

The I. B. S. A., through the courtesy of The Shepard Store Station, WEAN, 273 metres, will broadcast Monday, August 18, from 4 to 5 p. m. the interesting lecture, "Radio and the Bible," by J. A. Payette of Attleboro.

Friday, August 22, 4 to 5 p. m., "God's Promise to Mankind," by W. H. Pickering of Providence.