To-day's Hook-Up

Three-Tube Set Said to Have Almost as Much Power as Six

New Inverse Duplex Receiver Employs Two Stages of Radio Frequency and Three of Audio Amplification.

Transformers of Low Turn Ratio Essential

Mr. Grimes himself, in conjunction with Mr. Neely, worked out this circuit. Tech-nically, it is known as the Grimes-3XP tuned radio-frequency crystal-detector in-verse-duplex circuit.

In any circuit, the values of the inductances and capacities, as well as the me-chanical arrangement, is of prime importance. The fan who wishes to build this new receiver for himself must follow all directions and specifications to the letter. Before beginning construction of this re-celler bear in mind that it is necessary to place all instruments exactly as speci-

The receiver uses only three tubes and a crystal detector. However, there are two stages of radio-frequency amplification and also three stages of audio amplification, which is accomplished by reflexing. When using more than two stages of audio amplification it is important to mount the audio transformers at right angles to one another.

It is also essential that the transformers

be of low turn ratio. Transformers having a ratio of higher than five to one rarely give greater amplification and also have a tendency to distort.

Many fans have tried to use the inverse duplex system on their regular reflex sets but the combination didn't work. If the usual reflex hook-up does not work it is to be expected that the inverse hook-up will also fall.

This receiver employs three tuning controls, as does the familiar neutrodyne re-ceiver. The selectivity of the set is very good. Its tuning is sharp, which is, of course, an essential in any good radio re

Following is a list of materials neces-

Pwo 7x1S bakelite panels.

Three neutroformer colls. Three Hammarlund .0005 Three tube sockets, standard base

Three Jefferson audio-frequency transformers, ratio 3½ to 1.

One Sleeper or Rusla fixed crystal. One Federal double-circuit jack. One Federal single open-circuit jack.

Three theostats. Two Dubiller .001 fixed condensers. Two Dubiller .002 fixed condensers.

Two Dubiller 3005 fixed condensers, Three UV201A or C301A tubes. For the fan who wants to wind his own colls the following directions are given: The colls dre would on a 212-inch section of three-inch insulating tubing. Three pieces of tubing are required, one for each transformer. On the tubing at one end is

wound about 10 turns of wire, which forms the primary winding.

Next to this is wound another coil of about 50 to 55 turns of wire, constituting the secondary. It does not make much difference whether the wire is size No. 22, 24 or 26. Use double cotton-covered wire. The above number of turns will be sufficient for a .0005 mfd, condenser. If a small condenser is used it will be neces

sary to increase the number of turns on the secondary of the transformer. In laying out the panel, the centre holes for the shafts of the neutroformer should be spaced as far apart as possible. The distance between centres is approximately seven inches. To prevent feedback, the neutroformers are mounted at an angle of about 57 degrees, as in the neutrodyne receivers.

It was found advisable to use a subpanel, measuring seven by 18 inches. The sub-panel is fustened to the front panel high enough from the botton edge of the panel to allow the mounting of the audiofrequency transformers.

The only parts showing above the sub-panel, not including the neutroformers, are the three tube sockets, the binding posts and the fixed crystal. By this ar-

In the receiver the bases of the sockets are placed below the sub-panel, that is, holes are drilled in the sub-panel large if the usual number of turns is used on the sub-panel large if the usual number of turns is used on the sexceeding to the sexceedings to of the socket to extend above the sub-

on the front panel and placed as far apart Sest results will probably be obtained with separate rheostats for each tube. In wiring some fans may find it easier

AERIAL

LOOP

JV-201A

FIL.

10044

2nd AUDIO

3%101

GROUND

The three-tube set herein described does almost the work of six tubes. It has just been developed by Henry M. Neely, Delence, N. J., and is based on the inverseduplex system invented by David Grimes. side of the primary of the three neutro-formers. Connect from the aerial to the other side of the first neutroformer.

Connect from the plate of the first tube to one side of the .002 fixed condenser and from the other side of the condenser to the primary of the second neutro-The plate of the second tube is former. connected to the primary of the third neutroformer in the same manner.

The grid of the second tube is con-nected to one side of the second neutroformer, and from there to the fixed plate terminal of the second variable condenser.
Connect the movable plate terminal of this condenser to the other side of the secondary.
From the fixed plates of the third con-

denser a wire is run to the crystal and from there to the secondary of the last neutroformer. The other side of the secondary is connected to the movable plates of the same condenser and also to the "P" terminal of the first audio transformer. The "B" plus terminal of this audio transformer is connected to the crystal unit. A.001 fixed condenser is con-nected across the primary of the audio transformer.

The plate of the first tube is connected to the "P" terminal of the third audio transformer, the "B" terminal of this transformer and the "B" terminal of the second audio, as well as one side of the single circuit jack go to the plus 90-volt

single circuit jack go to the plus so or binding post.

The "P" terminal of the second tube is connected to the "P" terminal of the second audio transformer. The grid of the last tube is connected to the "G" terminal of the third audio transformer.
The "B" terminal of the first audio transformer is connected to the secondary of the second neutroformer.

"G" terminal of the second audio transformer is connected to one side of the .001 fixed condenser, and from this point to the movable plates of the first condenser and to the bottom spring of the loop jack. The other side of the the loop jack. The other side of the adio-frequency transformers too close to the audio transformers.

filament terminal of the first tube.

The fixed plates of the variable condenser are connected to the grid of the first tube and to the top spring of the loop jack. The secondary of the first neutroformer is connected to the inside springs of the loop jack.

Let a define the description of the loop jack are the loop jack.

Let a define the loop the loop jack are the loop jack.

tubes. It is strongly recommended (UV201A or C301A) be used in this circuit. It may be possible to get good results using other types of tubes, but this circuit was designed primarily for the tubes specified. WDI1 and WDI2 type sorved in

the crystal detector units specified gave excellent results.

Fans who already have neutroformer

ratio audio-frequency transformers. Some fans prefer to use a loop antenna. A loop that has been found to work very

well with this set has the following dimensions: It is 18 inches on a side, or about 25¼ inches by diagonal measurement. It is wound with ordinary No. 22 dec. wire, and consists of 15 turns, tapped at every other turn. An inductance tup switch is fastened to a small piece of bakelite on the side of the loop frame and is used to select the number of turns wanted.

It is necessary to use fewer turns when listening to near-by powerful stations, because otherwise the tubes have a tendency to choke. The number of turns used changes the setting of the first con-

It may be found upon completing the receiver that it gives out "squawks." The squawks may be classified under three powerful

the socket to extend above the sub-panel.

The socillation may be every condenser sightly.

If the usual number of turns is used on the whole subject of "overloading" is the neutrodyne transformer primary that exceedingly complex. Overloading, how-the receiver may break into oscillation, ever, does no damage to equipment or This oscillation may be everywhere. audio transformers are mounted by using the regular neutralizing professor panel and placed as far apart cedure or else by reducing the number of the primary. Use of about 10 Reflex sets have a tendency to pick up

ored wires are used. It is usually best through the field of the other. The 57 de-to begin by wiring the filaments. Congree angle mounting should be followed. by electric light lines will probably eliminect a wire from the minus A battery It may be that the squawk still per-binding post to the rheostat, and then sists even after the turns on the primary from the other side of the rheostat to one have been reduced and the coils placed may be encountered. A microphonic noise

UV-201A

OIGUA 321

3/261

스. 스

90 to 150 Volte



During Those Long Campaign Speeches

placed across the negative "B" and the 90-volt binding posts at the set.

Now, a few words about crystals and ers, oscillations may be stopped.

When using the loop aerial it is often the case that feedback occurs due to the closeness of the loop to the neutroformers. Shielding the set will eliminate this trouble. Care, however, should be obtubes specified. Will and tubes will not prove satisfactory. It is any other. Do not place metal close to important that the tubes selected be good inductances. Improper shielding will spoil radio frequency amplifiers.

It has been found by experiment that inductances. Improper shiel an otherwise good receiver.

When using three stages of audio amplification, such as is used in this receiver, an audio howl may develop. units will find the changing of their pres- greatest tendency toward an audio howl ent hook-up a comparatively simple matter. It is only necessary to get three low dio transformers or in the "B" battery To prevent audio feedback be tween the transformers care should be exercised in placing them at right angles to

> Audio howl caused by feedback in a mmon "B" battery circuit may be done away with by reversing the primary connections on the audio transformers: reversing the two primary connections on the last audio transformer is usually all that is necessary to clear up this howl.

> If the above means fail the by-pass condenser across the secondary of the second audio transformer should be increased to .005 mfd. as has already been suggested. Some types of audio transformers require higher value by-passing condensers. Keep the value of these condensers as low as

An "overload howl" is due to a nearby ing, which gives the receiver a very neat squawks, may be classified under three appearance.

In the receiver the bases of the sockets

It is important to eliminate the squawks, and overload nowly is due to a nearby powerful transmitting station. The set respectively. The set of the sockets of the sockets. It is important to eliminate the oscil- this, but the simplest is merely to detune

fields from interfering with one another, turns, it has been found, will keep the noises from adjacent power lines. The noise may be recognized as a hum. Usual-It is also to be remembered that the ly it can be reduced or changed by open-neutrodyne coils must be mounted so that follow the circuit when different col- the magnetic field of one does not cut in the house. This affords a good clue to

filament terminal of each tube socket. properly. If this condition exists examine is caused sometimes by a loose filament in Connect another lead from the A minus the leads to the "B" batteries. They binding post to the F terminals of the three audio-frequency transformers.

To overcome the effect of long battery the last stage where the noise caused by It will be not noticeable.

O SLEEPER FIXED CRYSTAL

PHONES OR

0

RADIO PROGRAMMES

To-day Providence radio listeners will companied by Miss Iva Fielder. Piano save an opportunity to tune in on one of the most important musical events in the distory of the community. For the benefit of those who cannot attend the concert, WJAR will put on the air at 2 o'clock this chestra in a programme of dance selections. have an opportunity to tune in on one of the most important musical events in the of those who cannot attend the concert WJAR will put on the air at 2 o'clock this afternoon the entire dedication programme which is to be given at the Benedict Monument to Music in Roger Williams Park. This week WSAD, which has been silent during the summer, will resume broadcasting. Programmes are scheduled for every day except this afternoon, but the new features being planned by the director will not get away until later, it is announced. WKBF does not begin its fall schedule until next week. WEAN will broadcast two church services to-day, and

WJAR, THE OUTLET COMPANY. (360 METRES)

TO-DAY.

1:45-Announcement concerning dedication concert at the Benedict Memorial to Music, relayed from Roger Williams Park.

2:00 p. m.—Dedication concert at the Benedict Monument to Music, relayed from Roger Williams Park. The concert will be given by the Providence Festival Chorus, organized and directed by John B. Archer, the United States Marine Band of Washington, conducted by William H. Santelmann, and Mme. Marie Sundelius of the Metropolitan Opera Company. The complete programme as it will be broadcast is printed on the Music Page of to-

day's Sunday Journal.

7:20-9:15 p. m.—Musical programme by ding March," De Koven; "Solr d'An"Roxy and His Gang," from the Capitol
Theatre, New York city, by courtesy of the Capitol Theatre management and S. L.
"The Lord's Prayer;" quartet, "Let Not Rothafel (Roxy). The first part of the Your Heart Be Troubled," Foster; Psal-programme will be taken from the stage ter, "Thirty-eighth Sunday Evening;" of the theatre, and will consist of music "Gloria Patri," Greatorex; Scripture les-

broadcasting studio in the theatre.
9:15-10:15 p. m.—Organ recital direct from the studio of the Skinner Organ Company, New York city. · MONDAY

10:00 a. m.-Housewives' Radio change. A department conducted by Mrs. 10:00 a. m.—Style talk. 1:05 p. m.—Studio programme 8:00 p. m.—Baseball scores.

8:05 p. m.—The Woodlawn Baptist Violin Concert Orchestra of Pawtucket, Quartet, Misses Florence Brown, Elsie Splistiser, Alice Wright, Artemese Ander-

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

7:30 p. m.—Baseball scores.
7:30 p. m.—Musical programme under direction of A. Ligouri. 8:00 p. m.—Talk by Arthur S. Berber-an, President of Stammerers Club, in schalf of the Providence Safety Council. 9:00 p. m.—Entertainment relayed from New York studio.

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

10:45 a. m.—Style talk. 1:05 p. m.—Studio programme, 7:30 p. m.—Programme direct from our New York studio by Amphion Male Quaret, Harry Foley, first tenor; Arthur Foley, second tenor; Hubert Leister, baritone; Charles Hohmann, bass. 7:50 p. m.—"Wanted, Business Trained Leaders of Farmers," by Prof. C. S. Mor-

gan of the School of Business of Columbia University. 8:00 p. m.—The Three Peasants, programme of Sicilian dance music played on the mandolin, guitar and violin. 8:20 p. m.—Amphion Male Quartet.

8:30 p. m.-Sadie Eskin, concert planist. S:45 p. m.—"History of Cane Sugar and Food Value of Ices and Beverages," George A. Zabriskie. 8:55 p. m .- The Three Peasants.

9:10 p. m.-Sadie Eskin, concert pian-9:30 p. m.-Hotel Graystone Orchestra E. J. Dantzig, director.

THURSDAY. 1:05 p. m.-Studio programme. Silent night. FRIDAY.

10:00 a. m.—Housewives' Radio Ex-change. A department conducted by Mrs. Wood on all matters of household interst. 10:45 a. m.—Style talk.

1:05 p. m.—Style talk.

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

8:00 p. m.—Baseball scores.

8:05 p. m.—Roy Partington, tenor, ac-

SATURDAY.

1:05 p. m.—Studio programme. 7:05 p. m.—Baseball scores. 7:10 p. m.—Musical programme. 7:30 p. m.—Isabel Tarrago, soprano, acompanied by Miss Gladys E. A. Smith.

WEAN, THE SHEPARD STORES.

(273 METRES.) TO-DAY.)

. 10:45 a. m.—Service from the First Baptist Church. Prelude, "Priere," from the "Suite Gothique," Boellman; choir sentence, "Chorale," Bach: invocation, "Sutte Gothique," Boellman; choir sentence, "Chorale," Bach; invocation, prayer of thanksgiving; hymn, "When Morning Gilds the Skies," Laudes Domini; responseive reading, Psalm 27; anthem, "Sometimes I Catch Gilmpses of His Face," Gounod; Scripture lesson, Luke, vi., 27-45; prayer, the Lord's Prayer; offertory, "There is a Land of Pure Delight," Shelley; prayer; hymn, "Just as I Am, Without One Plea," Dunstan; sermon, "The Wise Man's Way in a Chaotic non, "The Wise Man's Way in a Chaotic World," Dr. Cleaves; prayer, chant, benediction; postlude, "Toccata," from the "Suite Gothique," Boellman. John B.

Archer, musical director; Miss Louise Tracy, soprano; Mrs. George F. Hiller, contralto; Walter R. Morris, tenor; David

by featured artists and selections by the Capitol Theatre Orchestra. The second part of the programme will consist of a special presentation by Roxy of vocal in the Right Place?" R. D. Hollithgton; and instrumental artists direct from the laymn, "Fight the Good Fight," Pentecost; benediction; amen, Greek Liturgy organ postlude, "Grand Choeur," Rogers

MONDAY.
12:00 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.-Colonial Dance Orchestra 4:15 p. m.-Selections on reproducing

4:30 p. m.—Weather report. 4:35 p. m.—Colonial Dance Orchestra. 8:00 p. m.-Concert programme.

TUESDAY. 10:00 a. m.—Message to housewives, by sladys J. L. Peckham.
12:00 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.—Colonial Dance Orchestra. 4:10 p. m.—Incidental music by the

4:30 p. m.—Weather report. 4:35 p. m.—Colonial Dance Orchestra. 8:00 p. m.-Orchestra, relayed from staion WNAC, Boston.

WEDNESDAY. WEDNESDAY.

12:00 m.—Colonial Concert Orchestra.

12:10 p. m.—Weather report.

12:15 p. m.—Musical programme.

12:35 p. m.—Time signals.

4:00 p. m.—Organ recital by Edward

Benedict, broadcast direct from Emery

Majestic Theatre.

4:30 p. m.—Weather report.

4:35 p. m.—Colonial Dance Orchestra.

Emery Theatre Concert Orchestra

a small wire so as to form a spiral

is wound like a delicate spring. Because of the special material of which

This tube protector, made either as

4:35 p. m.—Colonial Dance Orchestra. 6:30 p. m.—WNAC dinner dance, broad-cast from Checker Inn, Checker Inn Or-chestra, to be relayed from station WNAC,

Boston. 10:45 p. m.—Organ recital by Edward

THURSDAY 10:00 a. m.-Message for housewives by Hadys J. L. Peckham.

12:00 m.—Colonial Concert Orchestra.

12:10 p. m.—Weather report.

12:15 p. m.—Musical programme.

12:15 p. m.—Time signals.

4:00 p. m.—Colonial Dance Orchestra.

4:10 p. m.—Incidental music by the Emery Theatre Concert Orchestra.

4:30 p. m.—Weather report. 4:35 p. m.—Colonial Dance Orchestra.

8:00 p. m.—Concert programme FRIDAY 12:00 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 by Edwar

4:30 p. m.—Weather report. 4:35 p. m.—Colonial Dance Orchestra

8:00 p. m.-Concert programme. SATURDAY .-Message to housewives by

10:00 a. m.—Message Gladys J. L. Peckham: 12 00 m —Colonial Concert Orchestra. 12:10 p. m.—Weather report.
12:15 p. m.—Musical programme.

4:00 p. m.—Colonial Dance Orchestra. 4:15 p. m.—Selections on phonograph. 4:30 p. m.—Weather report. 4:35 p. m.—Colonial Dance Orchestra.

4:35 p. m.—Colonial Dance Orchestra. 8:00 p. m.—Musical programme by Dor-othy C. Eaton, soprano; Marion Whitney, planst; Mary A. Girard, soprano; Frank Bernier, tenor; Mrs. Hazel E. Ferri, plan-9:15 p. m.—Dance music broadcast from

State ballroom, to be relayed from Sta-WNAC, Boston.

uon WNAC, Boston.

10:00 p. m.—Dance music broadcast from Copley Plaza Hotel, Copley Plaza Orchestra. Popular songs, Ted and Dick Waterson with Don Ramsay at the plano. Popular songs by Irving Crocker, to be relayed from Station WNAC, Boston.

WSAD, THE FOSTER COMPANY (261 METRES.)

MONDAY 2:30 p. m.—Concert. 6:00 p. m.—Foster's story lady. 6:15 p. m.-Musical programme. TUESDAY 2:30 p. m.-Concert

Continued on Page Six.

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 10:45-Church, WEAN. 1:45-Monument to Music concert WJAR.

WJAR.
7:20—Concert, WJAR.
7:30—Church, WEAN.
8:15—Organ recital, WJAR.
OUT-OF-TOWN STATIONS
9:00—Children's hour, WJZ. 10:30—Church, WGY. 10:45—Church, WBZ.

Church, WIP.

11:00—Church, WJZ. Church, KDKA. Church, WNAC. :45-Weather forecast, WGR. 12:00-Church, KYW. Church, WCAP. 1:00—Church, WSB.

2:00—Church, KFI. 2:30—Bible class, WJZ. Recital, WOO. 2:45—Concert, KDKA. 3:00—"Hymn sing," WEAF. Church, KGO. Religious service, WHN. Church, WGR.

3:30—Chapel service, KYW. 4:00—Religious service, WEAF. 4:45-Vespers, KDKA. 5:00—Adventure hour, music. Talk, WGI. Religious service, WCAP. 6:00—Orchestra, WWJ. Recital, WOO. 6:15—Baseball scores, KDKA. 6:30—Concert, KDKA. Memorial service, WCAP. 6:45—Church, WNAC. 7:00—Orchestra, WJZ. Church, WSB. 7:20—Concert, Weaf. Concert, WCAP.

Concert, WMAF. 7:30—Orchestra, KGO. 7:45—Church, WGY. 7:45—Church, WGY Church, WOO. Church, KDKA. 8:00—Church, WFAA. 8:15—Specialty, WJY. Recital, WJZ.

8:30—Church, WWJ. Concert, WBZ. 9:00-Concert, WBZ. 9:15—Organ recital, WEAF. Organ recital, WCAP.

9:30—Church, WSB. 10:00—Concert, WJZ. 10:45—Concert, KFI. 11:00—Recital, WFAA.
11:30—Orchestra, WFAA.
Revue, WHN.
11:45—Church, KGO.
12:00—Concert, KFI.

1:00-Concert, KFI. 2:00-Concert, KFI.

One of the valuable accessories for radio the filament is made, the resistance is sets is a device which makes it impossible only a few ohms as long as just a small current is flowing through it, that is, not enough to make it glow. Instantly, how-ever, when a heavier current, enough to light the filament, is passed through, the resistance increases to over 900 ohns, a value so great that it is not possible for sufficient current to flow to burn out the vacuum tube filament. Thus, when the circuit is completed from the B battery through the tube filament and the little down the current to less than 0.04 ampere with a 45-volt B battery.

Tubes Will Not Blow Out When

Protected by New Radio Device

Bulb Protector Made As Binding Post or Switch Said

to Limit Current Which Reaches Filament.—Glow

Warns of Short Circuit Due to Wiring Errors

binding post or a switch, has in the centre part a long thin electric light, mounted on a "miniature base. The lamp itself is not as large as the end of a lead pencil. The development of this lamp has been a difficult problem. In the first place, the resistance of the filament must increase to maximum instantly. That regulared as exceedingly fine wire in order for it to heat culckly enough. device is connected between the plus A sistance, when cold, could not exceed a sistance, when cold, could not exceed a few ohms, for as has been pointed out radio set of one or more tubes. It is necmany times, any excessive resistance in essary, of course, to remove the connection that is ordinarily provided between other hand, the resistance when hot must rise sufficiently to hold down the current below the value which would burn out UV-199 or DV-3 tubes.

Another limiting factor was the neces sity for having the filament glow when only 22 volts were applied to it and yet not burn out at 100 volts. This was necessary so that the glowing of the filement would warn the operator of short circuits, due to errors in the wiring or to slips when working on the set, with metal tools, while the batteries are connected. There is scarcely an experimenter or set owner who has not burned out tubes by a slip of the screw driver in bending up a tube socket contact.

The protection afforded by this device is particularly important to those who are not familiar with the proper connections for batteries on their radio sets. tions for batteries on their radio sets. It is almost fun to make a mistake and It is almost fun to make a mistake and see the bulb light when the device is on duty guarding the filaments, but there is hardly anything that can happen to the operator of a radio outfit which gives such a sinking feeling as to make a mistake and see the tubes suddenly flash up and go out forever.

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WSAD RESUMES BROADCASTS

Will Be on the Air Every Day This Week.

After being silent during the summer nonths, WSAD will resume broadcasting daily to-morrow afternoon with a musical programme at 2:30 o'clock. The station is returning to the air somewhat earlier than was expected and several new features which it is planning for this season will not commence for a week or two. Sunday afternoon concerts which were given all last year are to be a part of this season's schedule, but will not start

Thursday evening each week is to be known as "Musical Evening," when programmes of classical and semi-classical music by well-known local artists are to be presented. Occasionally Thursday evening will be devoted to a distinctive type of popular programme, and the first of these is planned for Oct. 2 at 8:30 o'clock. Talks by prominent speakers

on subjects of general interest will be one of the new features at WSAD. Special attention will be given to the arrangement of programmes for children. Foster's Story Lady, Bessie Archer Anderson, who last year gave four talks each week, will speak to the youngsters every evening this week at 6 o'clock. WSAD will continue to broadcast on a wavelength of 261 metres and its activities continue under the direction of announcer XYZ.

PLAN RADIO EXPOSITION

Arranged for National Show in

New York Nov. 3. The American Radio Exposition Company has changed the date of the third annual National Radio Exposition, at the Grand Central Palace, New York, from October to the week of Nov. 3. This was done in order to have a longer period elapse between the Radio World's Fair to be held Sept. 22-28 and the exposition. The exposition this year will be in progress on election day. Election returns will be broadcast at the show.

The entire main floor of the Grand Central Palace and mezzanine floor will be

taken up by exhibits.

Several features have been planned for the exposition. A series of motion pic-tures will be shown which will illustrate the problems of radio transmission as well as radio reception. American scientists and radio engineers are now working to complete these films, which will be ready for exhibition in November.

A series of set-building and other con-tests that will bring to New York the leading radio amateurs of the United States will be announced shortly. The United States Army Signal Corps,

he Marine Corps and other branches of the service have been invited to participate in the exposition, and it is expected that their displays will demonstrate the part that radio is destined to play in national defence.
In addition, it is planned to have the announcers from a number of the larger broadcasting stations throughout the coun-

try take their turn before the microphone. thus enabling the public to see their favorites in action.

PREDICTS LITTLE CHANGE

Engineer Believes Reception Methods Will be Same for Many Years.

"Don't worry about attempting to receive short wave long distance signals on your broadcast receiver. For many years radio will be carried on almost identically as it is to-day." Thus spoke Ernest Walker Sawyer, prominent radio engineer recently in discussing radio subjects with interviewers.

"Programmes will change," he continued "radio and account to the continued "radio and account to the continued area of the continued area of the continued area.

ued, "and new departures in entertain-ment will come, but short wave directional will be, at least for some years yet, for control only. Naturally with improved control of distant stations you will wish to listen in mostly on your local stations. Broadcast receivers' manufacturers are meeting this situation by redesigning their sets to give clearer, sweeter and purer tones and overtones.
"Resistance coupling, impedance coup-

ling and radio amplification are replacing ordinary audio amplification. Crystals are again being brought out and this coming season will see various modifications in use of these devices to improve tone qualities. 'Eliminate distortion' is the war cry for the season."

Schematic Diagram of Grimes Three-Tube Set

"B"

upon the expedient of installing two grid-leaks of different values, shifting from one to the other quickly by aid of

a switch. Fans who are fond of experi-menting may find this hint of value.

ACCOUNTS OF CONTROL OF

Extraordinary

Bargains

In High-Grade

Receiving

Sets

1—"Grebe" \$75.00

1-"Grebe" \$60.00

I-"Grebe"
Rorn R. F. \$20.00
(All of above without tubes or batteries.)

1-Radiola \$150.00

1—Radiola \$190.00
Both Radiolas complete with Loud Speaker, Phones and Tubes—without batterles.

Neutrodyne Parts

Freed-Eisemann Set \$75 if assembled by us. . \$75

Hosters

Radio Broadcasting

RADIO ACTIVITY HERE INCREASES

Hook-Up and DX Fans Welcome Cool Fall Days. >

Dealers Prepare for Record Season and Local Broadcasting Stations Church, Pittsburgh. Will Soon be Working on Maxi-

With the arrival of cool fall days and the return of hundreds of vacationists to their city homes Providence is preparing for a season of unprecedented radio activity. Although the past summer proved that radio is established as a year-around pastime, dealers and broadcasters point out that there is increased interest in the art as the weather grows cooler and fans spend more of their time indoors. Then, South too, the summer atmosphere dampens the enthusiasm of the BCL who likes to tune in stations on the Pacific coast, in Cuba and in Canada in the course of one eve- Mrs. A. E. Waite, contraito; William L. ning, but from now until spring the Splttall, tenor; Albert Edwards, bass. weather favors him.

the season is now well under way. Listeners are beginning to report the reception of distant stations which they have not picked up since last spring. Dealers are levoting more attention to the display of new sets for neophytes and accessories for the experienced hook-up fan. Local radio merchants report that business is improving, and some are already predicting that this will be a banner year from their

Providence broadcasting stations within Charles H. Wiland, speakers. few weeks will be working on a maximum schedule. WJAR and WEAN, which have been on the alc all summer, are plan ning to give listeners as many varied fea-tures as possible. WBKF, which has broadcast intermittently during the summer, will be on its regular schedule again the first of October and has announced special events expected to interest fans. WSAD, which closed the first of the sum mer, plans to feature musical entertainments of the best type when it reopens some time this week or next.

Important questions of interest to local

tans as well as to others throughout the country will be discussed at the third national radio conference, to be held in Washington, D. C., Sept. 30. The way has been cleared for the allocation of additional wave bands from 200 to 222 metres to broadcasters, and if this is done some of the present congestion in the ether will be cleared. Other questions which it is expected will be discussed deal with broadcasting advertising and linking Western stations by land wires with the Eastern stations.

Another indication that the radio season is here is the announcement of an inter-national broadcasting test scheduled for Nov. 24 to 31. It is expected that many local fans having powerful sets will listen in on the signals which United States sta-tions participating in the test will send from 10 to 11 o'clock; Eastern standard time, and which the foreign stations will transmit from 11 o'clock to midnight, Sta-tions not participating will be silent so that listeners will have an opportunity to test the sensitiveness and range of their receivers without interference.

RADIO PROGRAMMES

Continued from Page Five.

8.00 p. m .- Foster's story lady. 6:15 p. m.—Musical programme WEDNESDAY

2:30 p. ni.-Concert. 6:00 p. m. -Foster's story lady.

6:15 p. m.—To

THURSDAY 2:30 p. m.-Concert. 6:00 p. m.-Foster's story lady.

6:15 p. m.-Musical programme.

FRIDAY 2:30 p. ni.—Concert.

6:00 p. m.—Foster's story lady. 6:15 p. m.—To be announced. SATURDAY

2:30 p. m.—Concert. 6:00 p. m.—Poster's Story Lady.

6:15 p. m.-Musical programme.

WKBF, DUTEE W. FLINT, INC. TUESDAY

9:30 p. m.—Arcadla Orchestra, Al Mitchell, director. (286 METRES.)

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

11 a. m.—Services of the First United

Presbyterian Church, Rev. J. Alvin Orr, D. D., minister. 2:15 p. m.—Organ recital by Josiah Poole, from the Calvary Episcopal

4:45 p. m.—Vesper services of the Shadyside Presbyterian Church, Pittsmum Schedule. — Trans-Atlantic burgh, Pa., Rev. Hugh Thomson Kerr, minister. 6:15 p. m.-Baseball scores.

6:30 p. m.—Dinner concert by the Pitts-burgh Athletic Association Orchestra, Gregorio Scalzo, director.
7:15 p. m.—Services of the East End Christian Church, Pittsburgh, Rev. John Ray Ewers, minister.

WBZ, SPRINGFIELD, MASS. (337 METRES.)

TO-DAY. 10:55 a. m.—Church services from the south Congregational Church, Rev. James Gordon Gilkey, pastor, music by Professor Wilson P. Moog, organist and choir of 24 voices. The quarter is as follows: Mrs. Grace R. Donovan, soprano

8:30 p. m.-Concert from the Estey Or weather favors him.

There is no official opening of the fall radio season scheduled in Providence, but in various ways there are indications that the season is now well under way. Listentials the season is now well under way. Listentials and the season is now well under way. Listentials are season in the season is now well under way. Listentials are season in the season is now well under way. Listentials are season in the season is now well under way. Listentials are season in the season is now well under way. Listentials are season in the season is now well under way. Listentials are season in the season in the season in the season is now well under way. Listentials are season in the season in the season in the season in the season is now well under way. Listentials are season in the season in the season in the season is now well under way. Listentials are season in the season in the

> WGR, BUFFALO, N. Y. (319 METRES.)

TO-DAY.

11:15 a. m.—Weather forecast as issued duct this service, by the United States Weather Bureau for sarine and aviation interest. 3:00 p. m.—Vesper services, Buffalo Council of Churches, W. W. Shannon and

WNAC, BOSTON, MASS.

(278 METRES.) 11:00 a. m.-Service from Cathedra thurch of St. Paul. 6:45 p. m.—Service from Park Street

ongregational Church. WOO, PHILADELPHIA, PA. (509 METRES)

m .- Musical exercises opening 2:30 p. m.-Musical exercises opening he regular Sunday afternoon session of Bethany Sunday school. 6:00 p. m.-Sacred recital on the Wananaker grand organ, Clarence K. Bawden

t the console. 7:30 p. m.—Evening services from Bethany Presbyterian Church, Twenty-second and Bainbridge streets, Philadelobia. Broadcasting will include an organ recital from 7:30 to 7:45, with Miss Caroine Quigg at the console; sermon by the pastor, Rev. Dr. A. Gordon MacLennan.

KFI, LOS ANGELES, CAL. (469 METRES)

TO-DAY 2:00 p. m.—L. A. Church Federation 10:45 p. m .- Metropolitan Theatre pro-

12:00 midnight-Ambassador Hotel Con-

cert Orchestra. 1:00 a. m.—Programme from studio. 2:00 a. m.-Orchestra.

WCAP, WASHINGTON, D. C. (469 METRES)

TO-DAY

12:00 noon—Service from the Rhode Island Avenue, M. P. Church at Washington. Rev. James H. Straughn will cliver the sermon.

5:00 p. m.-Open-air service held at the Peace Cross on the grounds of the National Episcopal Cathedral at Mount St. Alban, Washington. 6:30 p. m.-Speches and exercises in-

cidental to special services to be held at the Monument Grounds, Washington, under the auspices of the National Holy Name Convention in the capital city, including an address by the President of

7:30 p. m.-Same as WJAR. 9:15 p. m.-Same as WJAR.

KGO, OAKLAND, CAL.

(312 METRES)

TO-DAY

3:00 p. m.—Service of the Tenth Avenue
Baptist Church, Oakland, Cal.

Radio Station Built in Glass Cage

The latest novelty in radio broad-casting stations is WGBS, New York city, which is inclosed in a glass cage. So that the public may see how broadcasting is done and how the apparatus functions, the entire station, including the studio in which the artists per-form, the transmitting room and the power room, is in a glass in-closure. Each instrument is la-belled and its purpose briefly explained. Visitors will be allowed in the studio when programmes are being put on the air and a special receiving room is being built which will enable persons to gather and hear important events broadcast by other stations. The towers of the station will be 135 feet high, with, the aerial 325 feet above the street. WGBS expects to go on the air officially about the first of October. and will operate on a 316-metre

7:30 p. m.-Concert by the KGO Little Symphony Orchestra, Carl Rhodehame conducting; and All Souls' Episcopa Church choir of Berkeley, Cal., Kathleen Sherris Luke, accompanist and director. 11:45 p. m.-Service of the Tenth Avenue Baptist Church, Oakland, Cal.

KYW, CHICAGO, ILL. (536 METRES)

TO-DAY
12:00 noon—Central Church service will be broadcast from Orchestra Hall, Chi-cago. Dr. F. F. Shannon, pastor. Musical will be under the direction o

Daniel Prother,

3:30 p. m.—Studio chapel service will
be broadcast from KYW's studio in the Commonwealth Edison building, Chicago The Chicago Church Federation will con-

> WEAF, NEW YORK CITY (492 METRES)

TO-DAY

3:00 p. m.—"Sunday Hymn Sing,"
auspices Greater New York Federation of
Churches, William B. Miller, General Secretary, presiding.

m.-Interdenominational serv ces, auspices Greater New York Federa tion of Churches, William B. Miller presiding. Address by Rev. E. LeRo Dakin, D. D., pastor of the Baptist Temple, Brooklyn, N. Y. Music by the Eederation Radio Choir, with Arthur Billings Hunt, baritone and musical director; Bernadine Wolf, soprano; Carlos Abba, harpist; Frank D. Penney, violints, and Corre Vance, particular linist, and George Vause, planist. 7:20 p. m.—Same as WJAR. 9:15 p. m.—Same as WJAR.

> WFAA, DALLAS, TEX. .. (476 METRES)

TO-DAY 8:00 p. m.—Radio Bible class. Dr. Wil-

liam M. Anderson, pastor First Presbyterian Church, teacher: Bible study and

gospel song. 11:00 p. m.—Sacred song recital by choristers from Cliff Temple Baptist Church, Dr. Wallace Bassett, pastor. 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; musicale: talk, auspices Greater Boston Federation of Churches.

> WJY, SCHENECTADY, N. Y. (380 METRES)

TO-DAY

10:30 p. m.—Service of First Baptist
Church, Schenectady, N. Y.

7:30 p. m.—Service of First Baptist
Church, Schenectady, N. Y.

WHN, NEW YORK CITY (360 METRES)

TO-DAY

3:00 p. in.—Queens County Christian
Endcavor. Programme: Address by the
Hon. Burt Jay Humphrey, county judge
of Queens, "Uniting All Religious Sects to Promote Religious Training (in the sense of morality and honesty) in the Public School Curriculum." Programme by the Crabb Family Orchestra of Queens 11:30 p. m .- Ted Lewis Revue with Cliff Edwards and Joyce White, from the Parody Club.

WIP, PHILADELPHIA, PA.

(509 METRES)
TO-DAY.
10:45 a. m.—Morning service, broadcast direct from Holy Trinity Church, Rittenhouse squarc, Philadelphia, Rev. Floyd W. Tomkins, D. D., rector.

WJY, NEW YORK CITY (405 METRES)

·TQ-DAY. 8:15 p. m.-Specialty numbers.

WJZ, NEW YORK CITY (455 METRES)

TO-DAY. 9:00 a. m.—Children's hour. stories by authors, music by the com-posers, conic stories by the originators of famous comedies.

11:00 a. m.-West End Presbyterian Church services, direct; sermon by Dr. A. E. Kiegwin

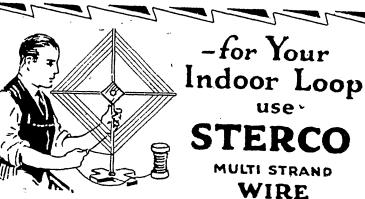
2:30 p. m—Radio Bible class, auspices

Freater New York Federation of Churches, 'God's Contract with Man,' Rev Timothy Tinsley, pastor, Ridgewood Heights Christian Church; Church Community Chorus, C. W. Allen, director; Royal Male Quartet, Charles N. Kerr, Walter Sellers Sidney Sellers and Edwin Baldwin. 7:00 p. m .- Nathan Abas's Orchestra.

8:15 p. m.—Anna Pinto, harpist 9:00 p m.—Alphonse Bohrer, pianist 10:00 p. m.—Elizabeth Gibbs, contralto.

WMAF, SOUTH DARTMOUTH, MASS. (363 METRES)

7:20 p. m.—Musical programme direct



—Better Reception

—Greater Distance -More Selectivity

STERCO Multi-Strand Wire will give you full value from your Indoor Loop or Coils. For this wire is made up of 22 individual strands of fine silk-insulated wire and has more than 31/2 times the value of solid wire of equal diameter. STERCO insulation is applied by patented machinery. It cannot

STERCO has been endorsed by the slip. largest users of multiple strand wire. will give you greater value.

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this mark on the yellow tag.

Why let all those battery noises spoil your radio fun when you can get rid of them and save money at the same time? Willard Rechargeable B Batteries will do it.

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Rechargeable Batteries for

from the stage of the Mark Strand Theafrom the stage of the Mark Strand thea-tre, 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. 7:00 p. m.—Sabbath twilight sacred proadcast m.-Wesley Memorial Church

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

6:00 p. m.—Orchestra. 8:30 p. m.—Services at St Paul's Epis-

copal Cathedral, broadcast from the ca-thedral

GRID ADJUSTMENTS

Good Grade of Variable Grid-leak Im portant Unit.

Have you ever noticed that a grid-leak which works fine on the lower wave which works fine on the lower wave length may not always work as well on the upper wave length? This is not always the case, but it does happen. That is one reason why a good grade of variable gridleak is very necessary.

You may find that your set requires two different grid-leak adjustments—one for the high-wave length reception, and another adjustment for low-wave reception.

In this connection, some fans have hit

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Splendid salary, under pleasant working conditions, with steady em-

Beginners and men with some experience given intensive evening course at the company's school preparing them for license and position.

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2nd Floor, Butler Exchange Providence, R. I.

School office open every evening, 7 P. M. to 9 P. M., for information

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Sets at the Lowest Prices Ever Quoted Before. This Sale Will Last One More Day, Monday, Sept. 22. Don't Miss the Last Day.

Our Red Tag Sale Was a Success. We Sold Radio

A FEW ADDITIONAL SPECIALS FOR MONDAY

Genuine Radiotron Tubes. Every one tested on the oscillating machine. On sale for Monday at— See our window before

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Eveready "B" Batteries Are 3200 ohms On Sale. See Us Before You Buy 95c and up Cabinets,

Regular \$5.00. Monday only. All Other Sizes in Stock

Mahogany Finish Cabinets, 7x26

at the Lowest Prices Murdock Condensers, 23 and 43

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PLENTY IN STOCK Preferred Low Loss Condensers

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Navy Type. A Real \$2.69 Royal Phones at a Special Price.....

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All Standard Makes Loudspeakers at Greatly Reduced Prices

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Federal No. 110, list \$105.00..... \$49.00

E. I. S., Model C 8-Tube Super-Heterodyne. Formerly \$275.00, for \$159.00

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THE NEW 30 WATT

GERMAN TUBES ARE HERE **RCA** Transmitting Tubes in Stock—All Sizes, Including the Largest New Type After months of ex-

perimenting we have installed a real AMA-TEUR 1000-WATT TRANSMITTER, with the latest and most MODERNANTENNA SYSTEM. This station SYSTEM. This station has been reported from 🕏 8000 MILES

DISTANT. Those wishing to see this station may make appointment at our

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Easy Hook up---Simple, Safe, Sure! YOUR radio batteries respond like magic to APCO Battery Chargers. Hook 'em up over night—and the next morning they're like new! Almost noiseless in operation, no complicated parts, greaseless,

clean and complete with battery clips, plug and wire, ready to use these Chargers are necessities to every owner of receiving sets of two Attractively finished in black enamel and polished aluminum- ornaments to any livingroom.

APCO "A". Charger 7½ ampere \$18.50 capacity...

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> At Radio, Hardware and Electrical Stores and Battery Service Stations

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Why Not

"Leave It To Us and Be Satisfied" We sell sets only, and the ones we handle are the recog-

nized leaders. A "Specialized-Personalized" service goes

FREE BOOKLET which explains WHY you may safely "Leave it to us and be satisfied." Whether you already own a set or not there is a Vital Message in this booklet for YOU!

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BLANCHARD RADIO & ELECTRIC CO., INC. 187 Westminster St. (208 Woolworth Bldg.) Providence, R. I.

Gentlemen: Please send your booklet to



Blind Make Own Radio Receivers Using Diagram of Raised Lines

Realizing the Educational and Entertainment Value of Wireless, Sightless Folk Have Taken Up Radio Construction.—Some Build Complicated Sets

arnot and asserting themselves more and more in the affairs of the world. They gre going forth to lectures, to concerts, enbarking on travel tours and generally bettering their lives-via radio.

There are a lot of things in this world can be classed as conveniences, but unwittingly two or three fellows ew-found sense. The coming of the autocan actually be regarded as the dawn of: a new and ever-brightening day. It does not seem necessary to draw vivid

ward pictures in order to drive home what radio means to the blind. Hardly, for their knit a nam or women alive who han't sufficient feeling in his make-up to appreciate, even in a minor degree, the enormous good that blind folks can and in radio. Scated in their tocking chairs whiling away their time, busy at beir work benches making odds and ends of useful things, going to theatres accomon their way—the reader may draw his own pleture of the various blind people that perchance he knows. But, no matter they are or what manner of living comes the major task of their lives to overcome the handleap of departed sight. Living apart in his curtained world the blind man. Alone and left to his outlook and thoughts—the blind man. More or less dependent upon those who can see to take him about—the blind man A priemer in a house without windows a victim of a compelling though restricted

to do his seeing for him.

Such is the picture that flashes into the mind of the average person who enjoys the sense of sight. Such is the picture that presented itself to the writer until, very fortunately, he made the acquaintance of a blind man, who quickly brushed this illusion to one side and showed him the silver lining of radio that had begun to encircle the cloud. About a year ago the writer published

urge, dependent upon his ears an 1 fingers

the story of Patrick O'Keefe, a blind ex-policeman of New York city. Mr. O'Keefe had been shot and his sight destroyed by a bullet 25 years previous, while en-gaged in the performance of his duty. Imagine a stalwart, active man suddenly deprived of his sight! But the misfortune did not deprive him of his courage and ambition. He took hold of himself and ald many things that it might be thought only a sighted person could do, such as repair clocks and carve chains out of pleers of wood. So when the broadcast wave broke over the land Mr. O'Keefe nisde a radio set, entirely unassisted, and tuned in on some of the good things that were being carried by radio thither and

yon.

The article was reprinted widely. Mag azines and newspapers took up the story and carried it to all parts of the world It appeared in various forms throughout the United States, Canada, England, Ireland, Australia and New Zealand. Great interest had been stimulated throughout the unsighted world, such as Mr. O'Keefe had hoped it would be, for no one can appreciate at heart the privations of the blind quite as much as a person who has become blinded blinself.

in the meantime various officials who held the destinies of many of the blind in their hands had foreseen the tremendous value that radio would be for persons de-prived of their sight. Notably among these officials was Walter G. Holmes, President and manager of the Matilda Ziegler Magazine for the Blind, a publi-cation which is printed in what is known as the revised "Braille" and also "New York Point," the alphabet which consists of raised dots. A combination of sists of raised dots. A community ples compensating bases over the radio appreciate what comes over the radio appreciate which appreciate which appreciate what comes over the radio appreciate which a one letter, another combination another letter, and so on. By running their finger the over the page the bilind can read quite as readily what is printed thereon, and thus are kept in touch with the afternation and thus are kept in touch with the afternation. one letter, another combination another

This institution was founded by Mrs. William Ziegler 16 years ago, and has been supported personally by this woman ever since. The magazine is sent free to all blind persons in the United States and fills a great need. But although each issue his a great need. But atthough each issue is approximately three-quarters of an inch thick, it cannot by the very nature of the lettering employed, contain very much reading matter. The Bible, printed in Braille, requires 21 huge volumes, each as large as a standard dictionary, and even if it were printed in sufficient guaraas large as a standard dictionary, and even if it were printed in sufficient quantity to permit wide distribution few biind beople could find space enough in their homes to keep it. The same is true of most other books, and as a consequence blind people have no great amount of rodding matter at their disposal, but are more or less dependent upon friends and relatives to read out loud to them from relatives to read out loud to them from

the printed page.

But radio! Where is the man with a soul so dead that he cannot visualize what a radio receiving set means to the blind? Souted there in a big armchair is one whose eyes forever are denied the light: sitting there with a pair of phones on his cars and a smile beaming on his face as electrical music dances over the ether lines. And now the lines of thought gather on his brow as he follows a speech or lecture, or the warmth of happiness as be becomes pleased over the result of a boting match or baseball game—everything everywhere coming from out the visible into the invisible world. But let Mt. O'Keefe tell in his own good words Mist radio means to him, and then we'll inquire of Mr Holmes as to what the Matilda Zeigler magazine is doing so other blind folks may likewise obtain the bene-fts of radio.

No one knows the amount of good I

set out of this little set," says ex-Police-man O'keefe in his Harlem home. "And be one can know but myself, for it is like at emotion—very hard to explain. I am a great lover of music and get the concerts very clear. They have a wonderful effect on me—simply lift me right out of my world of limitation and place me on the grandest heights. Before radio come in I used to attend good musical recitals whenever I was given the opportunity, but the renditions that come to me through the carphones carry me equally as well into the celestial spheres. They certainly compensate me adequately for my inabil-ity to reach the concert halls.

"Then the trips you can take via radio are certainly great. A short time ago a man gave a series of travel talks on tours in foreign lands-and I went with him. I could visualize the foreign peoples he described, their ways of living, and every bit of the wonderful scenery. The man never knew how much I enjoyed that tro! p! I have gone completely around the orld, and it didn't cost me a cent. And then I went down to the dock on the East both beautifully and naturally, and he so simple any woman can dye or tint or when the more into detail about the different lingeric, silks, ribbons, skirts, waists, goods.

places. Wasn't he surprised when I be-Yes, the blind are girding on their san to tell him about Australia? He wonhow I knew!

"But the best sport of all comes from people who do not know they are broad-casting. For instance, at some of these banquets, the speeches are picked up by microphone and relayed to a station to be broadcast. Now the average man doesn't know how sensitive a microphone is, and is nothing less than a God-sent blessing few can be regarded in the light of a near the microphone will discuss the ladies or drop whispers to one another regarding the Volstead act, all in a purely confimobile did wonders for people isolated in the Volstead act, all in a purely confidence and farms, but to some people, especially the blind, the coming of radio can actually be regarded as the dawn of will be wafted by the radio waves to will be wafted by the radio waves to fail on attentive listening ears.

"At one of these forms: gatherings the toastmaster announced that Charles M. Schwab would speak. Mr. Schwab gave a very fine address, and during the cours of it commenced to laugh. That laugh tickled me; and I remembered it. One evening I heard the same little chuckle again, and I said to my wife, 'My friend Charlie Schwab is here,' and sure enough he was afterward introduced to speak. He had evidently been sitting near the micro-phone, unaware that people with phones "An opportunity to listen in and keep in touch with the rest of the world means over their ears, among whom there was at least one blind man, were enjoying the merrymaking, too.

ing or saying of it. How often in our own daily lives we remark about the "The world's, series, the big football game, the horse races—all the sports come weather: 'Looks like the sun might shine to-day,' etc. Even we are always looking for brightness and never tire of to me right from the fields. Last summer a friend of mine dropped in after supper and I began telling him all about th looking for it. The same is true of blind people only we will have to agree that in their case they look for the sunshine of ball game. 'How did you hear about it?' he asked. He had been to the game that very afternoon himself and had got soak life even more than we do. Therefore we aim to continue to supply radio inforing wet in the rain, whereas I sat here perfectly contented and heard, 'Now the mation and help the blind acquire sets officher is winding up, and now he lets it go.' And I didn't get wet, either. as fast as we can. Instead of the blind having to seek out entertainment in the custody of a friendly guide—a problem in

"Yes, ineed, radio is a wonderful boo to the blind, and I look forward to still itself that the average unsighted personal to contend with—we aim to brit cater achievements. Somehow I think that an artificial sense of sight could be stimulated in people who have lost the sight of their eyes. For instance, if fre-quencies of vibration equal to those of the rest of the world to the home of the blind person. But don't forget that the blind are doing as much for themselves as sighted people are doing for them. All that we need do is point the way and they will work their problems out in their light vibration could be trained upon the optic nerve and some sort of lens intro-duced. Of course, I don't know much about such things and am only suggesting. But in the meantime while developments are coming to pass, let the bline be thankful that radio is at hand—and, also, let them use it."

Indeed, the blind have begun using

radio and are adopting it more and more as their own every day. They have become pronounced radio fans. They are all ears for what is on the air and clamor for an opportunity to listen in.

"One of the best features about radio,' says Mr. Holmes of the Matilda Ziegle Magazine, "is the current events feature which is being broadcast by some of the leading stations. Blind folks are especially keen after news. They enjoy con-certs to be sure, but an opportunity to learn what is going on in the world is something they crave. News is something all live people must have—it is the clixir of mental life, and unless a blind person is fortunate enough to have some one read the news of the day to him, or has an opportunity to read books printed espe cially for him which various public libra-ries are now supplying, he quickly loses his interest in life. And with that gone, there goes a human being. Our task is to catch them before that happens, and there is

witness the happiness that comes into the life of the blind person who has achieved. "However, blind folks are not given such to complaint. Indeed, one of the paradoxes of this life is that they are really a cheerful lot. As in all other phases of life, Nature applies her compensating laws. What she takes away in one direction, she restores in another. and I think radio is one of the blind people's compensating gains. That is, they

nothing finer in all this world than to

and thus are kept in touch with the af- casting station to do good. At present, far as I know, there is nothing on the air between 0 and 10 o'clock in the morning. What an appropriate time that would be to broadcast for the blind a digest of the news from a newspaper! There are, in the confines of Greater New York alone about 3500 blind folks, and if some station would thus broadcast the news can't you visualize 3500 pair of earphones interpreting the news for the blind? That would indeed be a service from both the better citizen and humanitrom both the better citizen and humani-tarian standpoints, and if I am any judge it certainly would not be long before good results of that service would mani-fest themselves not only throughout the blind but to the rest of the civilized world. In fact, there is no reason why a service of this kind should not become national, with a broadcasting station in every good-sized centre of population furnishing blind and otherwise infirm people a digest of the day's news. They can't read the newspapers anyway and rather than hurt the sale of news via the printed word such a service should become a supplement to the present means of news dissemination. It is not such an awful lot to ask from our sighted brothers and sisters, for heaven knows that blind people are obliged to sacrifice enough when they are denied the blessings of sight."

The present ratio of blind to sighted Jeople in the United States is approximately one to every 1000 population, according to the United States census figures, which give the number of blind peo-ple throughout the country as 75,000. And many of these, owing to their helpless-ness, are obliged to live in institutions. The majority, of course, live with relatives, but in many cases it has become a pronounced burden upon the sighted members of the household to furnish sufficient entertainment to keep the blind folks' spirit up. What a blessing, therefore, radio can really become not only

Vagrant Waves of Interest to Fans

to the blind themselves but to the ones with whom they live!
"To show what blind folks can get out

of radio and to show how Nature com-

pensates for the loss of a particular sense," continued Mr. Holmes, there are

many blind people capable of delineating

characted according to the voices they hear via radio and describing in detail how a person looks. They do it every day out in our shop. We furnish blind girls with work, and it would surprise the

average radio fan to hear them discuss

the programmes of the previous night. They know every announcer by his voice.

or any of the artists whom they have once heard. Hearing them once stamps personalities in their memories, and some

of the best musical criticisms I have

ever heard have come from these blind folks. To show the esteem in which they

regard radio, more than one girl has worked overtime in order to get some

"The benefits of radio to the blind ar

already very marked, and we are doing everything possible to help blind folks get started in the art. To that end, we

published a wiring diagram in the Ma issue of our magazine, raising the char

acters and lines of the diagram so the

could decipher its meaning by their finger tips. It is a very simple diagram of a crystal set, to be sure, but up to

date more than 50 sets have been made by blind people from it, and we are receiv

ing letters by the score asking for mor radio information. More radio seems to be the continual cry, and more radio we

work seems to be developing itself into one of the best things we can do for our

more to the blind than the casual think-

the rest of the world to the home of the

Thereupon Mr. Holmes showed the writer what the blind had already done,

as outlined by them in letters from all over the country, which were typewritten by the blind themselves on typewriters.

Some had even gone so far as to make tube sets! How they mastered the in-intricacies of wiring diagrams, how they

soldered their joints and found their ter-

like, is a little difficult to see, but they have done it, and the glory of the achieve-

ninal leads, battery connections and the

And who knows but what some blind man some day will make a contribution

to the radio art? As tinkers, blind folks

are very deep, and a new way of doing this or that, or some new principle may be developed by them. Ideas spring from the inward out and some of them might prove to be new plants that will take

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A. D., China had a monopoly of paper-

making, using the leaves of the mulberry

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