#### Hundreds of Thousands Now Finish Education by Radio

Universities Keep Step With World Progress by Adding Lecture Courses for Broadcasting.—New York

Announces New Subjects

It has long been recognized that uniing three evenings each week through
versities cannot maintain their position
WOR. In addition, summer lectures It has long been recognized that unisions, where instruction may be gained and information given to those who are unable to attend the regular academic courses. Hundreds of thousands of students to-day are unacquainted with the inside of university classrooms, yet they are members of these universities. By means of extension lectures, by means of correspondence study, the message of the university has been corrected. message of the university has been car- er himself. dent. It has made it possible for a great number of persons who would otherwise be without college training to acquire training which they could Radio is a further extension of the

university, and is only beginning to prove itself as an aid to the diffusion of knowledge That the New York Ulliversity is recognizing the radio as a regular educational method is illustrated its past experiences and constantly by the fact that educational broad-widen its effective sphere in education casting has been definitely placed with as a result of them. the extramural division, whereas, herethat the university considers radio dition to this, the director has contalks as equivalent to college lectures; sulted those in charge of educational they occupy a totally different rela-tion to education. Their essential pur-pose is to offer a card of introduction. As a result of these discussions, and facts. They are primarily designed for more than five or six, has been arknowledge for the sake of knowledge ing developed with the idea of furnishand not for an academic degree. They do not lend themselves to the thorough

knowledge is an adventure. The university believes that there are many American people who await only the inspiration of a trained scholar to open these unexplored areas of knowledge on literature or the drama, while the to enter upon intellectual adventures third lecture may include a business as full of interest as any adventure subject or a social science, such as in the physical world. They await only history or economics. In addition, the this inspiration. If the university can programme is designed to present supply this stimulus through its corps lects of timely interest. of scholars it will have achieved its. During the fall, when the crisp repose for the time being in radio weather makes the outdoor walks of

of instruction must be worked out until they produce a desired end, so radio are planned.
education must develop through a One feature of the programme is the process of evolution to its final place special series of talks coming periodiof this acquaintance study about on Professor Wendell who has fust

New York University was one of the years ago, in 1921, that the first educational talk was given. The university ries is so has experimented with giving the radio January. talks from the class room and from the radio studio mented with long series of lectures, in which printed syllables were used somewhat after the nature of a correspondence course. It is experimenting particularly now with short courses, with planned for the second semester, bethe intent of comparing their reception by the radio audience and their value to such audience as compared with

So far the university has not attempted to use the radio in connection nesday morning, devoted entirely university has given have achieved reccommented favorably upon the lectures ing and Home Economics. in speaking about his own work in educational broadcasting. The British Broadcasting Company began in autumn of 1923 to broadcast educational talks in a limited way. In 1924 Most Satisfactory is Outdoor Type High an important place in the work of British public instruction, and in the ered by American stations through the Broadcasting Company, being

reaus for radio education. versity has gained in broadcasting durto be weaker.

Ing the last four years, and in the light of experience in other countries where the radio is being made to fill a definite

New York University began its broad- the pipes.

BY RUFUS D. SMITH AND FRANCIS casting over WJZ. It has continued using radio for lectures during each resular school year and is now broadcast-

as public servants by merely offering the summer session of 1924. New York University's experienough to be within their walls dur-ing a regular academic period. Par-ticularly is this true in a democracy, some instructors who were excellent in where universities are more definitely the classroom were not suitable for a necessary part of the life and growth of the people. For this reason universities have developed extension divisions, where instruction may be gained speech laboratory developed for the pri-

Series of lectures, numbering five or ried to the home of the inquiring stuniore, have included such subjects as

psychology, geometry, physics, arch-acology, economics, evolution, contempotherwise be without college training orary literature and drama, and various take time to receive during their prise of many, one of the most favorable reactions of the radio audience was to the series of talks on archaeol-

As a ploneer in the field of educational broadcasting New York University expects to continually benefit from

The programme of "air college talks" tofore, it has been merely an adjunct, has been arranged on the basis of reof the public information service of quests and suggestions received from the university This does not indicate thousands of listeners last year. In adsulted those in charge of educational to new realms of knowledge, new dis-the suggestions made in the letters, a coveries and new theories about old programme of lectures in series of not The whole programme is being a balanced group of talks through the entire school year. They will be and methodical consideration that goes designed to cover many subjects of hand in hand with academic work in universal interest, but always attemptthe classroom an dthe laboratory. They ing to provide each week subjects of are incentives to new adventures in different character, so that the entire different character, so that the entire radio audience will find something of Every exploration of a new field of interest in each week's programme.

condensiting interest to many city dwellers, a series on geology, or the stories that rocks the radio may not develop to accord which are seen on daily walks tell to more and more with other means of college education, even to the extent of granting credit for radio instruction. It is not practicable at this time, but the fever for foreign travel is at the height a series of travel talks, together which are seen on daily walks tell to the geologist, is to be given. In the the same way that all new methods; height a series of travel talks, together instruction must be worked out unwith sonic language lectures in Freich

one way in which this can reasonably year. Of such a nature is the series develop is in conjunction with the on vital public problems to be given by prominent men outside the universifiered by correspondence. This is likesty, the first way in which radio by Ralph M. Easley, the chairman of the treatment will be the described of the first way in which radio by Ralph M. Easley, the chairman of the treatment will be the described of the first way in which radio by Ralph M. Easley, the chairman of the treatment will be the described of the first way in which radio to the treatment of the first way in which radio by Ralph M. Easley, the chairman of the treatment of the first way in which radio the treatment of the first way in which radio the first way in which rad lectures will bear definite relation to the American Civic Federation Others other forms of college education. In planned in the series are to be anthe meantime. It has, in a number nounced at a later time. Of the same in all engineering lines, according to of ways, greater significance as a means character is the series on "High Lights" David Sarnoff, Vice President of the of taking the results of long study and in World Affairs." a discussion of correction of Affairs and directly to the scholarly attainment directly to the rent international relations by Procassian of Correction of Affairs. The control of Affairs and the scholarly attainment directly to the rent international relations by Procassian of Correction of Affairs. The control of Affairs and the control of taking the results of long study and in World Affairs," a discussion of cor-, Radio Corporation of America Mr do so, are given the opportunity by pared by Professor Hodges, together men training for radio engineering considered in accomplished fact. The wanted form of the month's affairs. Among the to know, and which they may by reason, regular series is that to be given by for the future, is his opinion. turned from a year in the Mediterran-ean. He will tell how the modern his-nof said in part in the Said in part inspiring indeed To the power of exposition now inherent in sound broadcasting would be added the powfirst American universities to attempt torian goes to the home of foreign pro- noff said, in part badcasting. It was five ples to obtain an accurate idea of their; "It is true that the building of a

> In addition to such talks, the College of Dentistry in the university has practical engineering and precise managreed to provide two dental nealth ufacture. We also know that electrimonth, beginning Dec. 27. Other features of the programme

A new development is to be undertaken within the next two months when the university will provide women's hour at 11 o'clock each Wedwith a regular correspondence course, problems of the home which are of in-This appears to be a natural avenue terest to women. Talks on home buditil they reach an audit of development. The talks which the geting, historical styles of decoration, tory to the human ear furniture design, dress design, foods ognition in this and other countries, and other topics will be discussed by C Stobart, the educational director experts from the Department of Fine of the British Broadcasting Company, Arts and the Department of Homemak-

#### ON AERIALS

Above House or Trees.

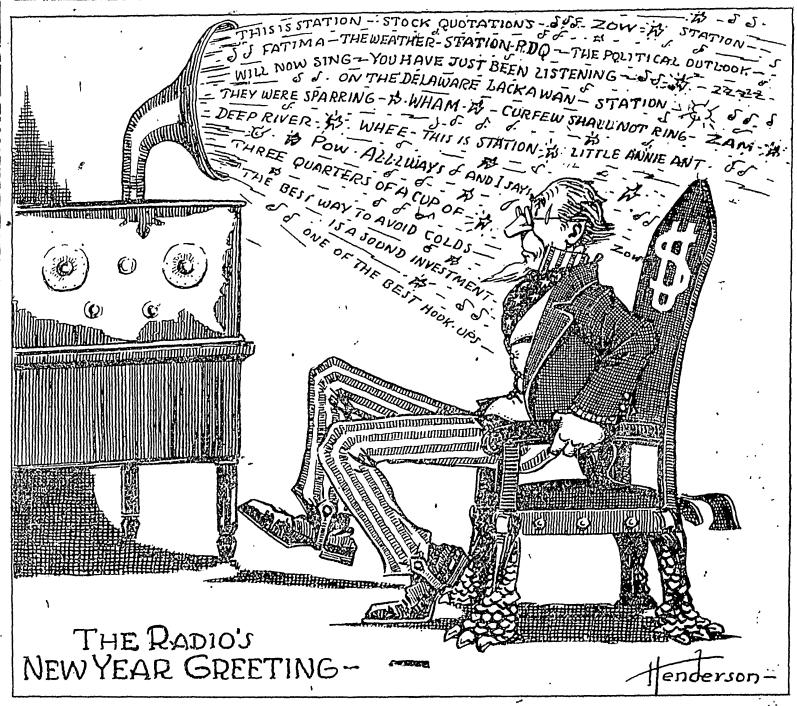
An aerial about 80 feet long swung outside the house, clear of trees, buildings or other obstructions, will in the appointed to definitely develop a radio appointed to definitely develop a radio majority of cases give the best results noted the absorption of wave energy by mineral deposits in the earth. But the for open circuit in a condenser. If the this seem that the educational majority of cases give the best results noted the absorption of wave energy by mineral deposits in the earth. But the for open circuit in a condenser. If fact remains that our understanding the capacity is high, such as one mineral deposits in the earth. structions is reduced, signals will become weaker. If an aerial is strung co-operation of private universities inside the house the results will be some-somewhat before the British stations. What interior to what they would be However, under a centralized scheme of with the same aerial outside If the the length is cut down and the wire wound around the walls of the room instead of under State control, has advanced its stringing it full length, the results will be still less. If a loop is used, the amount of energy picked up by it will be States European nations followed suit less than that picked up by a wire and now maintain State-directed bu- wound around the room, because the aus for radio education.

With the experience that the unismaller pick-up, the signals are going systy has called in broadcasting dur-

USE FOR WORN-OUT BATTERY. unlikely that the recognition of th edu- burn in coal furnaces. In addition to tively short distances. We find, in denser is open and should be replaced cational value of the radio will dimin- burning rapidly, it acts as a cleaner other cases, that to cover distance in a with a new one that has been tested ish in importance Rather, it is like- for the flue, as the burning chemicals given direction one wave length must in the haste of production a defective ly that new possibilities for radio educa- in the battery form a composition of be used, and to even an equal distance condenser shows up occasionally tion will become apparent.

| gases which reacts upon the soot in in another direction a different wave of the production and the condenser shows up occasionally tion will become apparent.

## SHORT CIRCUITS



# RADIO ENGINEERS

Field by No Means Exhausted.

Says Corporation Head

have every assurance of much work

re-! In a recent address to the students

life and political movements. This se-, transmitting or broadcasting station scheduled to begin the first of and the construction of a radio recciving ret have become matters of cal energy generated at a given frequency can be radiated in the form of electrical waves which travel in every direction. We know, too, some of the laws that govern the effective detection and utilization of such electrical signals, and we have developed methods of emplifying these signals Simple Operation Baffles Many People till they reach an audibility satisfac-

> over the carth and through the air we know little. In this field we encounter further scientific investigation is quired before the problems will be

moist lind thin dry land. We have was tested by itself.

noted the absorption of wave energy by The same holds true when testing over the theories formulated by Faraof radio itself.

the possibilities of short-wave trans- will be a nission—that is transmission with rection wave lengths of '00 metres or less But be O K, but if you do not get the dehere again we are faced with puzzling flection, it is open, phenomena. We flud, in some inOn smaller con phenomena. We find, in some in-stances, that reception is good at a point 2000 miles from the transmitter and very poor at a distance of 200 of telephones and when the two wires dinary ranges with low-power short- condenser you will hear a slight click wave transmission, but often are un- and when reversed there will be an-A worn-out dry battery is good to able to communicate over compara- other click. No click means the conlength is required. A wave length denser is short circuited,

which gives excellent results in longpiways give the same results in transmission after oark
"The great technical problems of

redio communication are static, inter-ference and facing. We have discov-ered many pulltatives for these ills but no cures," continued Mr Sarnoff
"Beyond the highly selective methods
of reception alread adopted, one of the greatest hours of solving the prob-lem of interference, that jumble of lem of interference, that jumble of transmission between signals from dif-Short wave lengths promise to open up not only new paths for wave propaand Brondeasting Achievements, gotton but a large number of useful useful the Remains to Be Learned that almost all the long-wave trans-

transmission would open up, especial-ly in the realm of higher education, is

the broadcasting of sight. phonograph industry, as well as the 8 30 p.m. the playlet, "Romeo ar explication of some of its principles to other industriel purposes, opens an thur Guenther will be heard in almost limities field to the electrical and vocal selections, and at 8:30 p. m., engineer

'In fact, from whatever angle radio given.

#### CONDENSER TESTS

Although Extremely Easy. The majority of people do not know

"But of the laws that govern the how to test a condenser for open cirbewildering haze of theory Much as simple to test for the open circuit re- too

we know that with the same given concenses should always be disconnectly award of property and the transmitting station we can cover greater distance over salt water than we can over land; we can in general cover greater distance over will be furnished by the Arcadia Baliroom Orehestra. Saturdio frequency transformer and the coil of wire will show a continuity test, which flat land than over billy country, over means a short circuit if the condenser moist land than dry land. We have was tested by itself.

WEAR-THE DITLET CD.—485

of the physical phenomena involved crofared or more, it may be tested with has made comparatively little advance a battery and voltmeter connected in series and the two terminals touched day and Maxwell. The field for ex-ploration there is as wide as the art When this is done, there will be a slight deflection of the voltmeter and "We are just beginning to glimpse then when the wires are reversed, there will be a deflection in the opposite di-This shows the condenser

We are able to cover extraor- are touched to the terminals of the If you get a loud citch, the con-

# RADIO PROGRAMMES

WJAR presents to-night at 7:20 the Sunday evening concert Capitol Theatre, at 9 15 p m. concert of the water Kent hour, featuring Louise Ho-Stires soprano, and at 10 15 p m., a lattle by Donald B MacM Han, Arctic exfirent stations, lies in the further explorer To-morrow at 7.45 p in plano dies with the plorer to-morrow at 7.45 p in plano dies will be given by Julia Fiske and Classic to the plane to Gladys F. A Smith, and at 10 p. m., the grand opera "Rigoletto," will be heard. Tuesday at 7 50 p m. a historical talk will be given by Herbert Gould Beede, under the auspices of the Rhode Is-David Sarnoff Tells Students of oceanic telegraph stations in the world beautiful and Society of Sons of the American David Sarnoff, Tells Students of St. Lawrence University.

St. Lawrence University.

Radio to-da. (first one of the broading all engineering lines, according to David Sarnoff, Vice President of the Radio Corrections of American Mark 1978.

Radio Corrections of American Mark 1978.

David Script of Sons of the American Revolution, and at 8.30 p.m. a recital by Edith Woodhead Marshall, soprano, and Ernest Page, baritone Wednesday, in addition to the regular numbers, the Honoliulu Four will be heard at 7 p.m., forth in the way of additional radio scripts of Sons of the American Revolution, and at 8.30 p.m. a recital by Edith Woodhead Marshall, soprano, and Ernest Page, baritone Wednesday, in addition to the regular numbers, the Honoliulu Four will be heard at 7 p.m., forth in the way of additional radio scripts of Sons of the American Revolution, and at 8.30 p.m. a recital by Edith Woodhead Marshall, soprano, and Ernest Page, baritone Wednesday, in addition to the regular numbers, the Honoliulu Four will be heard at 7 p.m., forth in the way of additional radio scripts of Sons of the American Revolution, and at 8.30 p.m. a recital by Edith Woodhead Marshall, soprano, and Ernest Page, baritone Wednesday, in addition to the regular programmes. Friday at 8 p.m., forth in the way of additional radio scripts of the woodhead Marshall, soprano, and Ernest Page, baritone Wednesday, in addition to the regular programmes. Friday at 8 p.m., forth in the way of additional radio scripts of the woodhead Marshall, soprano, and Ernest Page, baritone with English Society of Sons of the American Revolution, and at 8.30 p.m. a recital by Edith Woodhead Marshall, soprano, and Ernest Page, baritone with English Society of Sons of the American Revolution, and at 8.30 p.m. a recital by Edith Woodhead Marshall, soprano, and Ernest Page, baritone with English Society of Sons of the American Programmes and English Society of Sons of the American Programmes and English Society of Sons of the American Programmes and English Society of Sons of broadcast, and at 9.05 p. m., Eddie Casey and his orchestra will be heard.

> m., services of Temple Israel, Boston; a vista which such a period of radio programme by the Boston Square and clini at 6.30 p. m. and services of the Mathewson Street M E Church at 7:30 sound p m To-morrow the regular school sound p m To-morrow the regular school sound p m Tuesday at 7:30 To-morrow the regular schedule or of demonstration made possible by p m, a short talk will be given by Mrs. the broadcasting of sight. "The application of radio to the Federation of Women's Clubs, and at 8 30 p. m. the playlet, "Romeo and Juliette" Wednesday at 4 35 p. m., Ar-Thursday the regular pro-s will be broadcast, and Friday

"In fact, from whatever angle ratio grammes will be broadcast, and results viewed, the great opportunities are at 4.15 p. m. solos will be given by before, not behind. It has created a Jack Riley. Saturday at 8 p. m. a concurrence of the wilderness." Boston, and at 9 p. m., dance music will be broadcast.

WDWF will be heard to-day at 4:45 p. m. in the usual Sunday recital.

WSLI will broadcast at 8:30 p. m. on Monday the Franklin Auto Supply hour, and on Tuesday at 7 p. m., se-lections by the Hotel Dreyfus Orchespropagation of electro-magnetic waves over the earth and the transfer of the carth and through the air we cuit, but it is a simple matter to test. Dyer will give her second talk on art; for a short circuit, and it is also about at 8 45 p m. Thomas F. Peirce & Son more Market hour. Thursday the Nar-ragansett Hotel Orchestra's programme "We know that with the same given condenser should always be disconnect. day at 6 30 pm. the Port Arthur Resource at the transmitting states."

WJAR-THE OUTLIEF CO.-485. To-day.

n. Mush at programme by Maj, twird flever and the Capitol Then-

to Fan'ty per thought for the Capitol Theatte Fan'ty per Attacker Kert Hour, presenting per House House House Store, squano p. n. P. old W. MacMilan, exploret, with faction (A) the Exploration." Monday.

a r. Henry co Radio Evchange, A deportment conducted by Mrs. Wood on a lamit or all household interest, A lamest or submitted will be aux-Studio programme.

i. p. in Studio Programme,
i. p. in - Weather report
i. p. in - Pinno ducts, Julia Fiske and Gladys E. A. Smith,
i. p. in - The Colonal Launderhers,
j. p. in - A. & P. Gypsies
j. p. in - Grand opera, "Rigotetto" Tuesday.

p. m. Studio po kropos,
p. m. Weather report
p. m. Al billocoff and his orchestra,
p. m. Historical talk sponsored by
the Rhode beyond Society of Sons of the American Reconston to be given
by Herbert Gon'd Peed, publicet, "The

to The Ving.

to Rectal by Edith Woodhead Marshall, coprano, Ernest Page, barr-

Wednesday,

b. a. m.-Housewives Indio Exchange,
A department conducted by Mrs. Wood
on all matters of household interest.
All questions summitted wil be auswered by radio
b. p. m.-Studio programme.
b. m.-Weather report.

8,30 p, m Programme to Thursday.

11:00 a. m.—Home service radio club for cirls by Miss Kathleen Atkinson.

11:55 a. m.—Time signals.

12:00 p. m.—Shepard Colonial Concert Or-

WEAN-THE SHEPARD STORES-367. To-day. 0:45 n. m.—Service from the Temple Israel,

Monday,
11:55 a. m.—Time signals,
12:00 m—Shepard Colonial concert orchestra,
12:10 p. m.—Weather report,
12:15 p. m.—Continuation of musical pro-

Tuesday.

tra. 12 10 p. m - Weather report. 12:15 p. m - Continuation of musical pro-

i p. an.—Weather report,
p. in. -Dinner dance, "Dok" Elsen-bourg and his Sinfonians,
p. in. -One-minute talk on Cereal
Meal. p. m.- Classical half hour relayed from WNAC. 8.00

8:30 p. m.-Playlet, "Romeo and Juli-Wednesday.

granme.
4:00 p. m.—Musical programme.
4:30 p. m.—Weather report.
4:35 p. m.—Weather report.
4:35 p. m.—Arthur Guenther in plano and vocal selections.
6:30 p. m.—WEAN dinner dance.
8:00 p. m.—Organ recital by Louis Weir.
8:30 p. m.—Playlet. "Miscivilization."
9:00 p. m.—Musical fantastie by Rhodes Orchestra, broadcast from Rhodes-onthe Pawtiket

m. - Home service talk by Miss

tone; Mrs. Irving P. Irons, accompanist.

Silent night.

Friday.

chestra.

12:10 p. m.—Weather report.

12:15 p. m.—Continuation of musical pro

4:00 p. m.—Walsieal programme.
4:30 p. m.—Weather report.
6:30 p. m.—Boston dinner dance, "Do Elsenbourg and his Sinfonians.
8:00 p. m.—WNAC concert programme.

WLSI-LINCOLN STUDIOS, INC-441

To-day)

Silent.

Mondny.

8:30 p. m.—Franklin Auto Supply hour.
10:00 p. m.—Bilimore Hotel Orchestra.
Tuesday.
7:00 p. m.—Hotel Dreyfus orchestra.
Wednesday.
8:00 p. m.—Second talk by Miss Nancy Dyer.
8:15 p. m.—Thomas F. Pierce & Son.
10:00 p. m.—Bilimore Market hour.
Thursday.
17:00 p. m.—Narragansett Hotel Orchestra.
Friday.
6:30 p. m.—Port Arthur Restaurant orchestra.

s:00 p. m.—Radio directory.
0:00 p. m.—Arcadia Ballroom Orchestra.
Saturdny.

WDWF-DUTEE WILCOX FLINT-441

OUT OF TOWN STATIONS

To-Day

KFI-LOS ANGELES-467

1:00 p m.—Services under direction of Los Angeles Church Federation,
 2:00 p m --Third Church of Christ Science

KMTR-HOLLYWOOD-370

KNX-LOS ANGELES-337

m.-First Presbyterlan Church

To-day.

8:00 p. m.—WNAC conce 19:00 p. m.—Dance music.

Silent.

9:00 p m.—Everendy hour. 10:00 p. m.—Auction bridge game, Wednesday, 10:00 n. m.—Housewies Indio Exchange.

p. m — Weather report.
p. m.—Honolulu Four.
p. m.—Honolulu Four.
p. m.—U. S. Army Band under the direction of Capt. W. J. Stannard, relayed from Washington, D. C.
p. m.—Th. Political Situation in Washington To-night, by Frederick William Wile, direct from Washington, D. C.
p. m.—Salon concert.
p. t. P. Vergramme to be appounced.

Thursday,
Studio programme,
1—Weather report
11.—Robert W Powers Hudsonp. m -Weather p. m.-Robert Essex orchestra 10.00 p. m -Gooditch Zippers, under the di-

12:15 p. m—Continuation of musical programme.

4:00 p. m.—Musical programme.

4:15 p. m.—Solos by Jack Riley.

4:30 p. m.—Weather report.

0:30 p. m.—WEAN dinner dance, Jimmy Walsh and his dance orchestra.

7:30 p. m.—Health talk on "Ksytonik,"

7:40 p. m.—'Uncle Red," auspices Providence, Safety Council.

8:00 j. m.—The Harvey Trumpeters.

8:30 p. m.—'Mr." and "Mrs." Radio Skit. 6

10:00 p. m.—Hofman Battery Hawalians and "Dick" Harrington.

Saturday.

11:00 a. m.—Home service radio club for

10.00 p. m.—Goodich Zippers, under the direction of Henry Burr.

10:00 a. m.—Housewick Radio Exchange
A department conducted by Mrz. Wood
on all matters of household interest.
All questions submitted will be answered by radio.

1:05 p. m.—Studio programme.

1:05 p. m.—Wather report.

7:30 p. m.—Wather report.

7:30 p. m.—Musik Tawkalog by Miss Mabel Woolsey.

8:00 p. m.—Synagogue services from Temple Heth-Ell
9:00 p. m.—Health talk, sponsored by the Rhode Island Medical Societ;

9:05 p. m.—Eddic Casey and his harmonica and dipple orchestra.

nica and tipple orchestra.

9.35 p. m.--Charles E. Price, secretarymanager of the Automobile Club of
Rhode Island.

9:45 p. m.--Musical programme.

10:60 p. m.--Whitall's Anglo-Persians.

Saturday.

1.05 pi m.--Al Williams and his Harmony
Roys

Boys. 1.30 p. m.-Weather report.

Boston, 4:00 p. m.-Boston Square and Compass Club. 6:30 p. m.—Organ recital. 7:30 p. m.—Service from Mathewson Street M. F. Church.

gramme,
4 (60 p. m.—Musical programme,
4 (30 p. m.—Weather report,
6 (30 p. m.—WEAN dinner dance,
8 (15 p. m.—Metropolitan Studio,
9 (15 p. m.—Metropolitan Grand Orchestra,

10-00 a. m.—Home service talk by Miss Kathleen Atkinson 11:55 a. m.—Time signals. 12:60 m.—Shepard Colonial concert orches-tra.

4:00 p. m. Organ recital. 4:20 p. m. Weather repor 6:30 p. m. - Dinner dance

7:30 p. m.-"What's a Good Motion Pic-ture to See and Why," Mrs. George C. Harrison, chairman Pederation of Wo-

11:55 a. m.—Time signals. 12:00 m.—Shepard Colonial concert orchestra, 12:10 p. m.-Weather report, 12:15 p. m.-Continuation of musical pro-

9:30 p. m.—Lella Castherg's half hour "Your Mind and How to Use It." 10:00 p. m.—Concert orchestra. 11:00 p. m—Concert orchestra. hostra, pro-Pawtuket Thursday,

1:00 p 11 55 n m.—Time signals, 12 90 n m.—Shepard Colonial Concert Or-chestra. 5:00 p. m.—Musical programme. 7:30 p. m.—Half hour of cinema chit-chat. 9:50 p. m.—First Unitarian Church services.

# 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. Figures following stations denote wave length.

The hours are based on Eastern Standard Time.

6:00—Sacred musis, WSB, 428,
Playlet, WEAF, 492,
Organ, WOO, 508.
6:30—Orchestra, WAC, 430,
Concert, WCAE, 461.
6:50—Vespers, WRC, 460.
7:00—Carilions, WJZ, 454.
Orchestra, WCAU, 278,
Bible class, WFAA, 476.
Orchestra, WCAU, 278,
Bible class, WFAA, 476.
Orchestra, WMCA, 341.
Church, WICC, 285.
Vespers, KGO, 361.
7:05—Barltone, WOR, 403.
7:15—Church, WFI, 304.
Church, WIF, 508.
Concert, WHAP, 431.
7:20—Music, WJZ, 454.
Clurch, WCCO, 416.
Capitol Theatre Family, WT 545; WEAF, 492; WRG,
WCAE, 461; WWJ, 352.
7:25—Cellist, WOR, 405.
7:30—Special, KNX, 337.
Chat, WMCA, 331.
Chat, WMCA, 331.
Church, WIZ, 454.
Church, WNAC, 480.
Organ, WJZ, 454.
7:45—Orchestra, WCAU, 278.
Bible readings, WHAP, 47.
Church, WHAR, 275.
Church, WGR, 310.
Concert, WOR, 405.
7:50—Church, WMAK, 205.
Address, WLWL, 384.
Quartet, WJZ, 454.
Sermon, WSAI, 326.
Music, WMCA, 341.
Church, WRAA, 476.
Music, WMCA, 374.
8:35—Organ, WJA, 431.
8:35—Organ, WJA, 431.
8:35—Organ, WJA, 431.
8:35—Organ, WHAP, 431.
8:35—Orchestra, WHAP, 394; WHAP, 461; WHAR, 365; WGR, 318; WW,
461; WTAM, 389; WWJ,
Orchestra, WPG, 361.
Special, KFI, 467.
Church, WSB, 316.
Church, WSB, 316.
Church, WSB, 316.
Church, WSB, 316.
Church, WSB, 428. LOCAL STATIONS 10:45-Church, WEAN, 367, 4:00-Concept, WEAN, 367, 4:45-Recital, WDWF, 441. 4:35-Recital, WDWF, 441, 6:30-Organ, WEAN, 367, 7:20-Concert, WJAR, 435, 7:30-Church, WEAN, 367, 9:15-Concert, WJAR, 485, 10:15-Lècture, WJAR, 485, OUT-OF-TOWN STATIONS OUT-OF-TOWN STATIONS

8:00—Children's hour, WJZ, 454,
9:30—Sunday school, WLW, 422,
Bible chas, WCAE, 461,
10:25—Church, WMAK, 365,
Church, WAAM, 263,
Church, WMCA, 341,
10:45—Church, WMCA, 341,
10:45—Church, WGR, 319,
Church, WOO, 508
Church, WOO, 508
Church, WOO, 508
Church, WOO, 508
Church, WAG, 319,
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3:55-Vespers, WJZ, 454.
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12:10 p. m.—Weather report.
4:00 p. m.—Organ recital by John Fitzpatrick.
4:30 p. m.—Weather report.
6:30 p. m.—Dinner dance from WNAC.
7:00 p. m.—One minute talk on cereal meal. 10:00 p. m. First Presbyterian Church serv ROA-DENVER 322

1:00 p. m.—Service of First Baptist Church.
8:30 p. m.—Organ recital from First Baptist Church, Oliver W. Gushea.
9:45 p. m.—Service of First Baptist Church. 11:55 a. m.—Time eignais. 12:00 p. m.—Shepard Colonial Concert Or

WAAM-NEWARK-263

WABC-NEW YORK-316 m.-Church service. WBBM-CHICAGO-226 00 n. m.—Orchestra 9:00 p. m.—Orchestra. 9:00 p. m.—'In the Dardanelles and at Constantinople.'

10:00 p. m.—Salon orchestra. 11:00 a. m.—The Nutty Club. WCAE-PITTSBURGH-161 9:30 a. m.—Bible class.
11:00 a. m.—Service from Rodef Shalom
Synagogue.
3:00 p. m.—Organ recital, by Casper P.
Koch.
4:00 p. m.—Address by Dr. S. Parkes Oadman.
5:20 p. m.—Salon concert.

man.
5:30 p. m.—Salon concert.
6:30 p. m.—Orchestra.
7:20 p. m.—Concert by the Capitol Theatral
Family,
9:15 p. m.—Atwater Kent hour.
10:15 p. m.—Trio. WCAU-PHILADELIHIA-278
a. m.—Services from First Unitarian WCAU

11:00 a. m.—Services 1...

5:00 p. m.—Brass quartet.

5:15 p. m.—Church services.

5:25 p. m.—'The Two Greatest Things' (Mark), talk by Rev. John W. Stockwell.

Pecital, continued.

Dead-Centre."

well.

5:35 pf m.—Recital, continued.

5:45 p. m.—'Getting Off Dead-Centre.'

7:00 p. m.—Concert orchestra.

8:30 p. m.—Tenor.

10:00 p. m.—Orchestra.

WCCO-ST., PAUL-416

11:50 p. m.—Westminster Presbyterian
Church, Minneapolls.

5:10 p. m.—House of Hope Presbyterian
Church Church.

7:20 p. m.—Second Church of Christ, Scientist, Minneapolis, 9:15 p. m.—Atwater-Kent hour.

10:15 p. m.—Atwater-Kent hour.

11:00 p. m.—Organ recital by Hugo Philler-Goodwin.

WEAF-NEW YORK-192

2:00 p. m.—Interdenominational church services,
3:00 p. m.—Young People's Conference direct from the Marble Collegiate Church. Address by Dr. Daniel A. Poling,
"Fight the False."
4:00 p. m.—Men's Conference in the Bedford Branch, Y. M. O. A., Brooklyn, Address by Dr. S. Parkes Cadman, Address by Dr. S. Parkes Cadman, The Old and the New."
5:30 p. m.—Walsel, Saumell, planist, 6:00 p. m.—Wusical programme by Mail Edward Bowes and the Capitol Theattree Family. tre Family.

9:15 p. m.—Atwater-Kent hour: Louise.

Homer, contralto, and Louise Homer.

Stires, soprano, with orchestra.

10:15 p. m.—Donald R MacMillan, explorer. WEMC-BERRIEN SPRINGS-316

tist.
5:45 p. m.--San Francisco Symphony Orchestra, direction of Alfred Hertz.
9:30 p. m.--Special.
9:45 p. m.--Music appreciation chat.
10:00 p. m.--Organ recital, Alex Reilly a 2:00 m.—Chapel services. 9:15 p. m.—Lighthouse cho 10:00 p. m.—Organ recital, Ale the console. 11:00 p. m.—Classic hour. 12:00 p. m.—Dunce orchestra. 1:00 a. m.—Orchestra. WFAA—DALLAS—4763:30 p. m.—Farmers' hour; address, mudd7:00 p. m.—Bible class.
8:30 p. m.—Service First Baptist Church
8:30 p. m.—J. H. Bohannon, tenor; Weldon
Maloney, planist.
12:00 p. m.—Orchestra. KGO-OAKLAND-361 2:00 p. m.—First Congregational Church service, San Francisco.
7:00 p. m.—Vesper service, Grace Cathedral, San Francisco.
9:30 p. m.—Symphony Orchestra.
10:35 p. m.—First Congregational Church service, San Francisco.
12:00 p. m.—Symphony orchestra.

WFI-PHILADELPHIA-394
4:30 p. m.—Meeting from the Central
Branch of the Y. M. C. A.
7:15 p. m.—Service from the Arch Street
Presbyterian Church.
9:15 p. m.—Atwater-Kent hour.
10:15 p. m.—Donald B. McMillan, explorer.

WGRS\_NEW YORK—316 p. m.—"The Little Church Around the Corner." 4:00 n 9:30 p. m.—Oldtime minstrel show.
10:30 p. m.—Symphony orchestra.

0:45 n. m.—Service from the Westminster Presbyterian Church, 7:45 p. m.—Service from the Central Pres

than that carried on in the United

Continued on Page Seven

## Inited States Navy Maintains Radio Guard Over Ocean Lanes

#### Peace-Time Activities Afford Personnel Sufficient Sea stationed during the dangerous spring and summer months in areas where Service in Hunting Icebergs, Derelicts and Assisting Ships in Trouble

Reaching all corners of the seven Resching and powerful naval radio broadcastris Navy Department has which the question of safety of life at olred the made possible the economirai navigation of ships the world over. Along the approaches of American nasts naval radio compass stations coasts have of the fog-offer safe-guides into port for the fog-bound or storm-swept mariner. This write of maritime security is carried ended to navigators of sea airways.

on throughout each day and night of the year and, keeping pace with the ment of aviation, has been extender to have of keeping the ocean travellanes safe, simplified of late years by the widespread use of radio, is a foint one in which ships, both merchant and naval. contribute a large share. The radio sea net gathers in for the Hydrographic Office messages of rendered temporarily unserviceable by huricanes, of buoys dragged by ice or storm from their charted anchorage, of stome Holl their chartest alleriorage, of navigational landmarks demolished. These messages are rebroadcast immediately by the Hydrographic Office in wamings to that part of the ocean highway concerned. In addition, storm wamings and weather observations for mariners and sea aviators are sent out in co-operation with the Weather Bureau at Washington, and a daily time signal' from the Naval Observatory is transmitted to navigators, so dependent on exact time in order to determine accurately their position at sea.

Merchant ressels and men of war al-most half-way round the world from the sending stations are receiving these safety-at-sea directions. A merchant ressel, for instance, southeast of Cape of Good Hope, Africa, reported hearing hydrographic messages sent out from Washington. The American warship Scorpion at Constantinople reports re-cept of navigational warnings and signals from Washington.

time signals from washington.
Out on the broad ocean mariners are
constantly kept informed of floating
obstructions dangerous to the safety of
their ships. A storm sweeps the main and wreckage occurs. Wreckage derelicts floating in transoceanic lanes of travel, either in a partly submerged or swash condition, are the constant dread of mariners, especially at night.
Once reported to the Hydrographic office the location of these menacing obstructions is made known by radio. In addition, until drifting derelicts are removed, they are plotted on monthly pliot charts issued to mariners by the Hydrographic office, so that future drifts of such menaces may be predicted by mariners themselves. An unusual menace to mariners was

let loose upon the Atlantic, July 12 of this year. Thirty-seven steel cylindrical pontoons, measuring about 20 feet in length and five feet in diameter, were lost from a barge which broke adrift from the tug Susan A. Moran off Fry-ing Pan Shoals. North Carolina, in the path of coastwise shipping. The news was relayed to the Hydrographic office by radio from the tug to the branch hydrographic office at Norfolk, Va., and was immediately broadcast from Washington to Atlantic mariners.

A sheaf of messages over an inch and a half in depth (and these messages witten on onionskin paper) concerning graphic office. These include reports received from merchant masters stating the location of one or more of these oons and subsequent broadcasts of the Hydrographic office. The coast guard closely following these broad-casts, has been able to track down and destroy by gunfire 14 of these rolling, ontoons. That they are paricularly hard to remove from the path on fire. of shipping is revealed by the fact that the coast guard cutter Mojave was combetween Europe and America, the radio

pelled to expend 11 rounds of sixpounder ammunition before its pontoon target sank. Invariably, as the through powerful navai radio sheaf of messages grows, the reports state that the "large, cylindrical objects" are becoming coated with rust and marine growth. Gradually the remaining pontoons have scattered to the north and east under the influence of the Gulf Stream. The pontoon sunk by the Mojave on Aug. 25 was 500 miles north and east of the spot where it had gone adrift.

A 10-day search by United States naval ships for a bulky dangerous target raft which had to be temporarily get raft which had to be temporarily by the sea patrol ships, the Hydro-abandoned off Eleuthera Island, the Bahamas, during the hurricane of Sept. ern limits of ice fields, has, in agree-18 was ended by a report from a mer-18 was ended by a report from a mer-chant ship of the raft's position. This raft, measuring about 150 feet in length and 15 feet in width, with a deep draft, showed but intermittently above the surface of the waters and was a matter of concern to the Navy Hydrographic Office messages of was a matter of concern to the Navy elicis, of icebergs. of lighthouses Department as well as to mariners travelling the much used route to the lantic track agreement, brought about eastward of the Bahamas.

The mine sweeper Rail, which had been towing the raft to Guantanamo Bay for use in target practice by the scouting fleet, reported the raft's posiscouting fleet, reported the raft's posi-tion as she put into San Salvador to tain as to his exact position because of damage wrought by the hurricane. Six similar conditions encountered. At this days later the raft was first sighted by point, upon his request by radio, naval a merchant ship, the steamship Oradell, and the commander of the scouting fleet at Guantanamo Bay sent a light cruiser and a division of destroyers to search in the area reported.

After two days march in this area the raft was not located. On the following day, however, a complete description of the submerged raft, its location and its probable direction of drift was radioed to the Hydrographic Office by the Canadian Forester and rebroadcasted from Washington. Washington. As a result the Rail reached the position, took the cumberome tow in charge and ended the 10day period of worry by sending the simple message: "Rail at Eleuthra Island for Guantanamo with target raft in tow. on its way relieved.

Many derelicts have drifted across the Atlantic ocean: others have drifted aimlessly at the beck of the wind and current. The longest duration of derelict drift on record in the Hydrographic Office is that of the American schooner Fannie E. Wolston, abandoned off the coast of Virginia in October, 1891, Carried by the Gulf stream and westerly winds, the abandoned ship drifted eastward to the 40th meridian, then was set southward and again castward for months, finally was swept up again by the Gulf stream and was last seen in October, 1894, a few hundred miles to the northeastward of the position where she had been abandoned three years before. The track of this derelict in her aimless wanderings, as recorded in the Hydrographic Office, totalled some 8995

The most notable drift in recent years was that of the British \ four-masted lumber-laden schooner Governor Parr, which was abandoned cally dismasted on Oct. 2, 1923, to the southward of Newfoundland and driftd eastward in the path of transatlantic shipping. On Jan. 2, 1924, thr Coast Guard cutter Tampa picked her up to the eastward of the Grand Banks and attempted to tow her to port, but after a day or two of heavy weather was obliged to abandon her. After this the derelict schooner drifted eastward again and in October, 1924, appeared between The coast the Canary Islands and the African toese broad-coast, having drifted in that time almost half-way around the Atlantic ocean and having been sighted a number of times and once boarded and set

#### reports from the ice patrol during the months of March, April, May and June have greatly increased surety. These reports, sent each day on a carefully guarded wave length, are broadcast faithfully by ice patrol ships maintained by international agreement and they can best note the southern movements of icebergs from the Arctic re-gion. In addition, the ice patrol re-

Much of Station's Popularity ports are rebroadcast twice daily by the Hydrographic office.
On May 13 of this year the ica Depends Upon Him

One of the most difficult and exact-

ng of lobs in the entertainment field

understand, therefore, why some ama-

tion of one little talk, which will be

contain human interest experiences

must teem with life, must awaker

your sympathies, must have no unnecessary words, and must roll along

power or strength to it. I am wonde

poem read aloud.
"In other words, from my own ob-

servation it would seem that the mes-

"The talk must be interesting, must

transmitted in about 12 minutes

patrol ships had a busy day reporting the exact position of five bergs and two "growlers," the limiting areas for 14 bergs and six growlers and the limiting area of a large field of bergs and "grolers." "Growlers" are detached pieces of bergs, showing above water only a 'whaleback' part of their submerged size. The date of withdrawal of the ice patrol this year, June 30, is broadcast to the transatiantic world, and is ac-

complished only after a certainty that s that of the radio broadcast the steamship lanes will be free of ice.
In addition to the protection afforded nouncer, particularly when his station requires that he do a considerable amount of the speaking and reading of articles, in addition to regular announcements. He must posses a clear. ment with 24 transoceanic steamship companies, laid out safe tracks for English, a ready wit and perfect enun-ciation And his material wist be of vital interest 'Otherwise radio steamships to travel both eastbound and westbound across the Atlantic. By plotting the ice patrol reports daily the Hydrographic office recommends which tracks should be used in order to provide lanes free of ice. The north Atby the Titanic disaster, has been effectively in operation during the last 14

As the open sea navigator approaches fix his position These radio compass stations, maintained by the navy for the purpose primarily of enemy tracking in war, are used as aids to navigation in peace time and are operated by naval personnel in order that this personnel, through constant practice, will be efficient and ready in an emergency for their real job in time of war. Mariners of all nations recognize the accuracy of these operators, as is testified by the 206,000 bearings furnished vessels during the year ending June 30, 1926, by United States radio compass stations.

Not only have the radio compass in tow." The shipping world in the stations been able to serve ships with north Atlantic was notified and went bearings to fix their position, but they have also actually guided ships into warned port, and, unsolicited, have others of their dangerous position.

"Radio broadcasts not only your spoken word, but your personality as well. Suppose you ask someone to The steamship Canada, conveyor ship well. for the Argentine world flight, while entered a poem and then you read aloud route to Cross Sound, Alaska, reported a similar poem to him, giving proper herself in distress in a fog. July 8, 1925, emphasis where needed I think you at an unknown distance of Cape Spen- will find that the poem as you read

The ship's commander notified the naval radio compass station at Soapstone Point, situated on Yakobi Island, the radio as read by a professional seven miles across the entrance to Cross Sound from Cape Spencer, that his power or strength to it. I am monday Sound from Cape Spencer, that his power or strength to it, I am wonder-standard compass had been smashed ing whether you will not find that it by heavy seas and that his ship's log, is fully 10 times as effective as the by which he measured distance trav-elled, had been washed away. He had power, but no directing apparatus. The personnel at the radio's compass sta-sage as received over the radio was tion commenced sending bearings at fully 50 times as effective for popular 8.48 a.m. Placing his faith in the material as reading it. This probably station personnel, Capt. Tine of the explains why an advertiser is willing. Canada accepted 13 directional bear- to pay \$500 an hour to broadcast a face functional bear- to pay \$500 and the part of the pay \$500 and the part of the pay \$500 and the part of the part ings furnished him, and at 5:10 p. m | programme where the major part of it passed Cape Spencer and entered Cross will be in the nature of entertainment Sound. At 5:18 p. m he sent his appreciation by radio: "I thank you very kindly for your good work in guiding portunity ever created by man to us inside. My compass was broken, so broadcast personality and atmosphere. I depended entirely on your guidance. We write a radio talk usually as a ready you have done a fine job." sult of an inspiration. That is the The radio compass operator on watch

from midnight to 4 a. m at Tatoosh Island, on the southern entrance to the Straits of Juan de Fuca, Puget Sound, discovered at 3:16 a. m. from his plotted bearings on a foreign steamer that; the ship was in grave danger of ground. discovered at 3:16 a. m. from his plotted bearings on a foreign steamer that the ship was in grave danger of grounding. He sent a radio warning: "Why don't you back off shore? Chart here shows you dangerously close to north side of strait." Five minutes later, the manner that you can make them of personal integers. side of strait." Five minutes later, the steamer sent to Tatoosh: "We just stopped our engines" Two minutes thereafter the ship sent an SOS saying she was grounded. An hour elapsed, then the ship advised Tatoosh that she was affoat and no damage done. Undoubtedly, the warning sent by Tatoosh the later that there is so much material on the air that is probably

had averted a marine disaster. ordinarily flashes its warning from the western shore of the Bahamas to shipwestern shore of the Bahamas to ship-masters making the "hole-in-the-wall" passage through the Florida Straits. Upon receipt of the news that this light would not be available until re-paired, the Hydrographic Office sent out a broadcast warning (so that mariners proceeding along the inside route would be advised that they would not have this navigational aid to assist

During the latter part of the summer of 1926 a gas and whistle buoy at Matanilla Shoal, which lighted and sounded its warning at the northern tip of the Bahamas. was blown away from its position, with its heavy anchor and chain attached. This news was broadcast by the Hydrographic Office. The buoy was carried into deeper water and about the middle of September was recovered, 300 miles southeast of its original position, by the lighthouse tender Cypress, with a saving to the Government of \$7500.

REDUCING INTERFERENCE. Interference can be reduced greatly by substituting a counterpolse for the usual water-pipe ground connection. This is done by running a wire around the room over the moulding, about 50 feet, and connecting the end to the ground terminal of the set.

better than the talk you are giving. or at least more entertaining, that with a slight motion of the dial you are gone and probably forgotten. The sustaining of interest is best likened to running a quarter of a mile—the dis-**EXACTING WORK** tance is just short enough so you have to run at almost full speed the entire way. So you must sustain interest in your talk from the very beginning to the end—the slightest lapse and you lose the listener -he shuffles the dial

in which you have been properly in spired, you may be thoroughly posted and you may develop it in the right sequence, but will the public be in-terested? How can you sustain their interest? In my talks I endeavor to break the talk at definite points and introduce something of a poetic na He Tuned Out,-Letters from ture, something which has a humor ous slant to it, or something concern-ing a real human interest experience.
"With regard to transmission I find that it is desirable to read the talk aloud ahead of time and listen to your

voice as you read, to see that you are speaking distinctly, slow enough, and that you are carefully enunciating each eliminated. A counterpoise can conmust read it with the right emphasis. nouncements. He must posses a clear; must read with the light engine missions strong voice, an excellent command of putting enough of your personality into English, a ready wit and perfect enumof vital interest 'Otherwise' radio audience wil promptly tune hm out and his station lose in popularity not breathe too hard. The micro-Sidney W. Asha head of the work of the station lose in popularity and his station lose in popularity and his station lose in popularity and breathe too hard. The microyou are reading. Then you must learn Sidney W. Ashe, head of the Welfare phone is so sensitive that everything Department of the General Electric is sent out. It is well to hold your Department of the General Electric Department of the General Electric Department of the General Electric Dapart up as you read, for if you look announcer and speaker, recently, in an address before the Kiwanis Club of direction of your voice will know you address before the Kiwanis Club of direction of your voice will know you direction of your voice will know you

teners in four distant countries, EngIII you talk at an even pitch, not land, Scotland. South Wales and South fluctuating your voice between too
Africa. The letters were commending great a range, the man in the control room can control it to the best ad tion
"Can you imagine," said he, "the feeling of responsibility that comes dver tradio speaker in the preparation of tradio speaker in the preparation of tradio speaker in the preparation of the feeling of the feelin a Hallowe'en talk broadcast by his staa radio speaker in the preparation of a talk when he knows that if the weather conditions are ideal and if practicing aloud that bothers you, and his talk is sent out on short wave which will not read easily, discard. Remember that every word that can be held. transmission as well as the regular transmission, his voice will be heard climinated, strengthens it just so much, for each word requires just so much time to transmit, and if it does not over an area equal to nearly one-third the earth's surface? You can readily help the talk, discard it. Brevity is the soul of wit-particularly wth a tadio audience. tours like myself find it necessary to devote fully 200 hours to the prepara-

"Radio talks should not be too long-between 10 and 12 minutes is ample Where a talk is in two parts, and music

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is used before and after the talk, and as a background to part of the talk, it may extend to a maximum time of 18 minutes including the intermission and interludes."

TEST FOR STORAGE BATTERY. A hydrometer syringe is best for test The rubber hose is placed in the bat tery solution, the rubber bulb com-pressed and when it returns to normal mough battery solution is drawn into the glass tube to float the hydrometer the latter is graduated from 1000 to 1300. About 1175 is discharged and 1280 to 1300 fully charged. It is a good plan to not let the gravity of the solution get below 1200.

AN ASSET TO THE RECEIVER. A counterpoise is one way to help eliminate electrical interference caused by street car lines, X-ray machines, etc. Most of this type of interference comes via the ground; the counterpoise acts as a ground and is usually used as such on transmitters where all possible sources of interference must be wire, each the same length as the acrial and placed, if possible, about nine feet above the ground directly over the aerial.

SHOCK ABSORBERS. receiving sets are among the most secent deveslopments of radio engineers It is claimed that the use of these cushions will climinate vibrations, aid materially in undisturbed tuning, address before the Kiwanis Club of direction of your voice will know you springfield. Mass. He prefaced his remarks by exhibiting four letters reding. Keep your mouth in a prove reception and reduce to a minimum microphone noises. They insulate the set and prevent fine furniture from talk direct at it.

"If you talk at an even pitch, not becoming scratched. They are quickly tentalled and shally installed and shall in the shall shall be shal and casily installed and no fastening i required.

> DRILLING HOLES IN PANEL When drilling a hole in a bakelite o hard rubber panel, first provide a start Without such a punch mark the drill will "walk" all over the panel no matter how carefully the drill is

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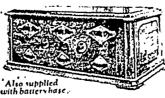
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thank them for their kind wishes and gifts of gold at Christmastide.

We wish them the utmost in health, happiness and prosperity during the year 1927 and many years to follow

THE EMPLOYEES GEO. L. CLAFLIN COMPANY, .Providence and Attleboro

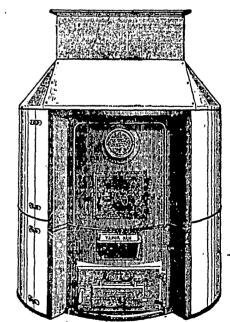
#### THE CLEAN SLATE FOR 1927 What Will You Write Upon It?



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> Priced from \$149.00 Up VERY EASY TERMS

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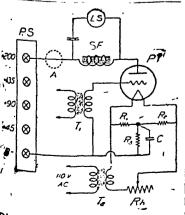
# Many Progressive Fans Seek Elimination of Grid Battery

# Radio Engineer Tells How Operation May Be Effected With Little Trouble, Results Satisfactory. The navigator along the coast is further protected by radio. After the great hurricane of September, which did so much damage to the Florida coast, the Great Isaac Light was found to be extinguished. This lighthouse to be extinguished. This lighthouse to be extinguished. Bell Transformer Used

the desire to do away with the batteries, especially those of relatively high voltage required to bias the power tube in the last stage of the audio

tube in the last stage of the audio amplifier. If the plate supply outfit is capable of providing an over-all voltage equal to the normal plate voltage of the tube plus the required gridblas voltage, this may readily be accomplished, provided a separate source of power is at hand for heating the flament of the power tube.

The circuits and equipment for doing this are indicated schematically in the figure. PS represents the terminal panel of a typical plate supply unit. PT is the power tube in question, for which Ti is the customary input trans-



The ordinary beli-ringing transformer, 72, connected to the A. C. house flash light cells which, since they supmains, may be employed to heat the flament of the tube, using a suitable volts, which may conveniently and economically be supplied by small-sized nomically by small-sized nomically be supplied by small-sized nomically be supplied by small-sized nomically by sma

BY HORATIO W. LAMSON.

After the radio fan has banished the voltage. In this way no storage battery is required for the power tube. which makes it possible to add a stage of power amplification directly to a latter by the base of the power amplification directly to a

are connected two resistances in series. R1 and R2. These may be from 30 to 50 ohms each. Their exact value within this range is immaterial, but it over-all is essential that they be closely equal to each other so that their centre point is "equally distant" from the tube filament terminals. Between this cenates source point and the B terminal of the plate supply a third resistance, R3, is connected. This is known as the "blasting resistance" and it should be distanted in the plate supply a third resistance. R3 is connected. This is known as the "blasting resistance" and it should be distanted in the plate supply a third resistance. R3 is connected. This is known as the "blasting resistance" and it should be distanted in the plate supply a third resistance. R3 is connected. This is known as the "blasting resistance" and it should be distanted in the plate supply a third resistance. R3 is connected. This is known as the "blasting resistance" and it should be distanted in the plate supply a third resistance. R3 is connected. This is known as the "blasting resistance" and it should be distanted in the plate supply a third resistance. R3 is connected. This is known as the "blasting resistance" and it should be distanted in the plate supply a third resistance. R3 is connected. This is known as the "blasting resistance" and it should be distanted in the plate supply a third resistance. R3 is connected. This is known as the "blasting resistance" and it should be distanted in the plate supply a third resistance. of 1 MF capacity. (Note—R1 and R2 may be a 200-ohm potentiometer).

tube is obliged to pass through the resistance R3, and that the location of the grid return is such that the grid will be biased negatively with respect to the centre of the filament. by a voltage very closely equal to the IR drop of the plate current through the resistance R3. In other words, the tube is blased by its own plate current. This is advantageous in that any change in plate voltage is compensated by a proportional variation in grid blas, thus maintaining, automatically, the correct relation between the two.

The by-pass condenser, C, is desirable to reduce the A. C. coupling between the grid and plate circuits of the tube, due to the resistance R3, which is common to both circuits.

The value of the blasing resistance depends, of course, upon the tube used and the voltage available at the plate supply terminals. By inserting a mitemmenter at A the blas may be com-

Diagram of Lamson Scheme to

Eliminate Grid Battery

former. SF is a speaker filter in the plate circuit of the tube to keep the direct current from passing through the loud speaker LS This filter may consist, perhaps, of a 30 henry choke used in conjunction with a 2 MF condenser, or it may be replaced by an output transformer which will serve the same purpose.

The ordinary hell-ringing transfor-

inator he becomes seized, perhaps with radio set employing only dry-cell tubes. Directly across the filament terminals

> Examination of the figure will show that the plate emission current of the tube is obliged to pass through the resistance R3, and that the location of

STEINITE LABORATORIES, 127 Radio Bidg., ATCHISON, KANSAS

#### PICK OF FALL RIVER LEAGUE Right of Admission Reserved Steinite interference INTERFERENCE

GREATEST DOLLAR Value In Radio Today No Radio Outilt Complete without it Select the stations you want; tune in loud and clear;

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Especially necessary for 1 and 2 dial conditions the average set fails to bring in the desired stations properly. Operates on any set—attach to serial wire and to set—no changes—no extra tubes or batteries. OVER 400,000 SOLD.

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Try entirely at my risk the wonderful improvement this inexpensive little device will make in reception of your set. Clears up reception wonderfully, increases volume, and partially absorbs static. No tools needed—install in a momenta time. Follow simple in atructions. Money back if not delighted, \$1 Passpaie who early with a studies of the state of the

The New Steinite 7-Tube Radio uses no batteries of any kind-only \$125. Loud Speaker Built in. Complete with tubes \$160-nothing to buy. Operates from light socket le an hour. Write for describe literature before buying an expensive flattery Bet. Steinite Long Distance Crystal Set \$6: 6-Tube Battery Set. Acrial Fluidinator \$1; Noise Fluidinator \$1. Noise Fluidinator \$25c ench. 5 for \$1; Crystals 50c. 3 for \$1.

no batteries, no tubes, no expense. The Per-fection of Simplicity. Loud, clear reception.

material on the air that is probably

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Admission 50c, Boys 25c Grandstand 25c Preliminary 12:45 PICK OF R. 4. LEAGUE

# RADIO PROGRAMMES

6 30 1

WHAD MII WAUKEE 275

WHAP-NEW YORK—431
735 p. m.—Concert of sacred music
735 p. m.—Selections from the Bible and
85 p. m.—Selections from the Bible and
85 p. m.—Selections from the Bible and
85 p. m.—Organ
855 p. m.—Organ
855 p. m.—Organ
855 p. m.—Organ
857 p. m.—Organ
857 p. m.—Organ
858 p. m.—Organ
858 p. m.—Organ
858 p. m.—Organ
859 p. m.—Organ
859 p. m.—Organ
859 p. m.—Organ
850 p. m.—Organ

WMC 1-NEW YORK-341
12:15 p. m.—Christian Science services.
1:2:15 p. m.—Cilcomechasers'
1:3:0 p. m.—Concert.
2:00 p. m.—Music
3:30 p. m.—Chinatown Rescue Society services.
5:00 p. m.—Soloists.
6:00 p. m.—Soloists.
6:00 p. m.—Concert
7:00 p. m.—Broadway chat.
8:00 p. m.—String chsemble.
8:00 p. m.—String chsemble.
8:00 p. m.—Music WHAR-ATLANTIC CITY-275
1848 a.m.—Service Chelsea Baptist Church.
145 p. m.—Recital
145 p. m.—Service by Rev Harold Gar145 p. m.—Service. Che sea Baptist Church.
150 p. m.—An hour with the classics. 9 00 p. m.—Moment musicale. 10:00 p. m.—Orchestra

WHAS LOUISVILLE—309
11:00 a. m.—Service of the Fourth Avenue
presbyterian Church
5:00 p.m.—Chora (vensorz service from
Christ Church Cathedral.

WICC-BRIDGEPORT-285
19:30 a. m.-Park Street Congregational
Church service
200 p. m.-Studio programme.
1:00 p. m.-Forum from the United Congregational Church WIP-PHILADELPHLA-503 m.- "Getting Together," lecture by

4.00 p. m.—Getting Together, Tecture by A. E. Roberts.
1.15 p. m.—Service from Holy Trinity Church
1.10:00 p. m.—Symphony orchestra. WJZ-NEW YORK-454

a. m.—Children's hour 100 a. m.—Park Avennue Baptist Church 11:00 a, m.—Park Avenue Baptist Churc's serice.
3:25 p. m.—Vener service
1:00 p. m.—Onreh "artillon
20 p. m.—To be announced.
1:00 p. m.—Organ recital.
1:00 p. m.—Male quartet.
1:00 p. m.—Concert orchestra
1:00 p. m.—Concert orchestra
1:00 p. m.—Sediteranean cruise. "Madier.
1:00 p. m.—Godfrey Ludlow, violinist.

WLIT-PHILADELPHIA-384 m-Concert orchestra.

WLWL-NEW YORK-384 5:00 p. m.-Sermon Paulist choir. WLW-CINCINNATI-400

9:30 a. m.—Service from the Seventh Pres-byterian Church.
2:30 p. m.—Organ recital
1:50 p. m.—Services of the First Preshy-terian Church, Walnut Hills

8.35 p m -"Getting Acquainted with Beet hoven." 8:50 p. m.-String orchestra.

WMC 1-NEW YORK-341

WOC-DAVENPORT-484.

2 00 p. m.—Old folks nusical programme.
7.39 p. m.—Church service, First Methodist
Episcopal Church
9 15 p. m.—Atwater Kent hout,

WOO-PHILADELPHIA-508

a. m -Services from Bethany byterian Church.

2.30 p. m.—Sunday school, 6 00 p. m.—Organ recital, Clarence K. Bawden at the console

WOR-NEWARK-405,
4 30 p. m.—Studio programme,
6 00 p. m.—Studio resemble
7 25 p. m.—C. Feland Gannon, baritone,
7 25 p. m.—Michael Lambertl, 'cellist,
7 45 p. m.—Concert.

WPG-ATLANTIC CITY-209.

5:15 p. m.—Organ recital

4:15 p. m.—Community recital,

5:30 p. m.—Concert orchestra.

9:00 p. m.—Last-minute news flashes.

9:15 p. m.—Concert orchestra.

10:90 p. m.—Musicale in the high school auditorium.

WRC-WASHINGTON-469.

11:00 a m-Churth services
4:00 p m.-Services from Wa

CAMBRIDE TO SERVER THE STATE OF THE STATE OF

Furthering the policy of the Grebe Co. to give the UTMOST in service—THE A. H. GREBE CORP. ARE

SENDING AN EXPERT FACTORY ENGINEER TO

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sultation or advice. FURTHER HE WILL INSPECT

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services please notify us as soon as possible. This

innovation of direct factory to consumer contact will

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ference will be refunded to the customer. If im-

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VALUES TO THIS EXTENT.

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Console Model With Two

Built-In Speakers

SPECIAL NOTICE TO

GREBE OWNERS AND

PROSPECTIVE OWNERS

WRNY-NEW YORK-374, m.-St Mathew's Lutheran Church 100 a. m.—St. Mathew's Lutheran Churc services
1 15 p. m.—John W. Nichols, tenor.
4 45 p. m.—John W. Nichols, tenor.
5 60 p. m.—Twilight hour WMAK-BUFFALO-266 m.-First Presbyterian Church 8.00 p m - Chelsea Methodist Church ser ices. Lockport, 13:00 p. m.—Musical programme, 7:50 p. m.—Musical programme, 7:50 p. m.—First Church of Christ, Scientist 10:20 p. m.—Concert:

WSAI—CINCINNATI—326.

11 (a) p. m. Services from the Avondale Methodist Church

3 45 p. m.—Chime concert.

4 00 p. m. Address by Dr. S. Parkes Cad-8 00 p m - Sermonette 9.15 p. m.: Atwater kent hour,

6.45 p. m.-Vesper concert 7:29 p. m.-Musical programme from Capitol Theatre 9 15 p. m.-Atwater Kent hour,

WSB-ATLANTA-428,

11:30 a m Sunday school,

11:54 a. rg.-First Presbyterian Church
service

4:30 p m Symphony Orchestra

6:00 p m Cascade Avenue Baptist Church

choir

D m - Wesley Memorial Method's
Church service. WTAG-WORCESTER-545

4 00 p m - Men's conference from Bedford Branch, 1 M C A, Brooklyn 7 20 p m -- Capitol Theatre family con

WTAM—CLEVELAND—389.

11 CO a m—Church services.

1-70 p m—Musicale

4-30 p m—Amusement guide.

6-00 p m—Orchestra

7-00 p m—Church services

2-15-7p m—Atwater Kent hour.

10-15 p m—Orchestra

WWJ-DEFROIT-352. 10 45 a in Church services river .... Beth-El 3-30 p in — Detroit Symphony Orchestra Total Theatre Family. m .- Capitol Theatre Family. m .- Atwater Kent hour

A Bath for the Crystal. Crystals can be resensitized by place ing them in an alum solution which has been dissolved in water. The crystal should be placed in the solution for 17 or 20 minutes and then removed. What empletely dry, it is again ready for use

Wear Gloves to Wind Colls. Because the perspiration on most per he wound with gloves. If any appreciable amount soaks into the insulagreater than if the wire were kept clear and dry.

# OFFICIAL DESIGNS **DIRECTION FINDER**

to Operate

F W Dunmore of the Bureau of Standards is credited with effecting the each direction-finder coil is grounded development of a portable radio direction to the shield when in use A small development of a portable radio direcion finder which will function over a wide band of frequencies and is com-paratively simple in operation Mr paratively simple in operation Mr Dunmere was moved to work out such an apparatus by the steady increase of serves as an auxiliary antenna for the serves as an auxiliary antenna for the serves of serves as an auxiliary antenna for the purpose of sharpening the point of minimum signal.

Leading the serves as an auxiliary antenna for the purpose of sharpening the point of minimum signal.

Cone noises

Lin Mr. Dunmore's finder a shielding sluminum box contains all the receiver.

aluminum box contains all the receiving apparatus, including batteries, with the exception of the directionfinder coil which is supported on bakelite shaft extending through the

uning and a single balancing control are used. The receiving set is a super-heterodyne which employs a standard Signal Corps amplifier and reduces the controls to a single one by mounting the main tuning condenser and the nut, forming thus a rubber washer, heterodyne generator tuning condenser. After tightening the nut, apply one on the same shaft The latter condenmore coating of cement over the nut ser has connected in parallel with it and shaft end Do not tighten the nut Device is Portable and Easy smaller capacity operated by means of possible to cut through the first coata cam which may be slipped on the shaft carrying the two tuning conden-

The wide wave range is made pos-

sible by a set of seven interchangeable
Burenu of Standards Man Produces, plug-in direction-finder coils, each with a corresponding heterodyne generator coll and a cam for operating the auxlliary tuning condenser Another aucondenser is connected in with the main tuning con-Its function is to compensate for the detuning effect produced at the higher frequencies when the balancing condenser is operated. The centre of telescoping brass rod extending vertically through the centre of each direction-finder coil, connected to the movable plates of the balancing condenser

Daub of Rubber Cement Around Needle Shaft Stops Trouble. Apply a small daub of rubber cement

box and rotated by means of a hand-around the needle shall of the cone wheel under the box, says the New speaker it it has developed a buzz or around the needle shaft of the cone York Times.

The direction finder is of the simple fairly weak volume. Use the kind of rotating-coil type. Automatic features coment that remains semi-flexible after are provided so that only a single drying thoroughly, and place it at the

point of connection of the needle shaft with the cone tip. On the front side back off the small nut on the shaft end enough to allow the cement to coat it surface, and dry before tightening the ing. Glue will work satisfactorily for the volume usually required for best reproduction with cone speakers, but rubber cement is superior when low volume is desired.

CHOICE OF A NEW TUBE

When buying a new tube for the set remember that it must be of a certain type to fit the sockets. Find out the arrent consumption, and ascertain i it will simplify radio frequency signals as well as audio frequency. In the event of the tube being paralyzed, second if it can be reactivated.

# DEALERS! ATTENTION

Radiotrons, Tungars and

# EVEREADY

Radlo Batteries-Flashlights Prompt Delivery-Fresh Stocks Union Electric Supply Co. The Oldest and Largest Music House in New England Recommends the Greatest Names in

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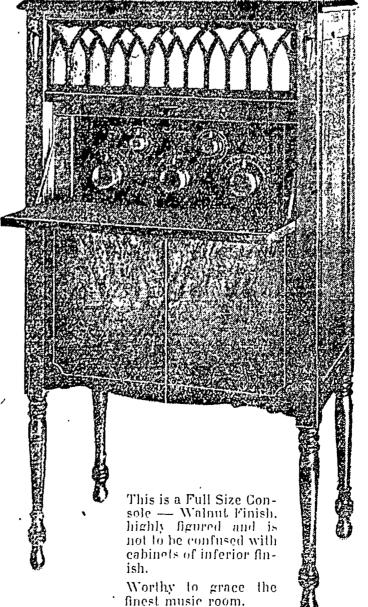
#### In Luxurious Homes

Where only the finest musical instruments are welcome; irrespective of cost you will find the Freed-Eisemann. Where cultured people discriminate between mere noise and true tone the choice is Freed-Eisemann.

#### The Freed-Eisemann

was selected by the U.S. N. for the President's yacht, the Mayflower. Despite the many fine European radios exhibited, it was a Freed-Eisemann which won the gold medal at the International Radio Show in Florence, Italy.

When you can get a magnificent Freed-Eisemann and fluest equipment for a price like this don't take chances with hn "Orphan" radio whose manufacturer has gone out of business so that parts have become obsolete and there is no one to guarantee satisfactory results.



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To completely equip this \$34.00 Extra

- 5 Cunningham CX301A Tubes 1 Westinghouse Rubber Case 100-Am-
- pere Storage Batteriy 2 45-Volt Beacon "B" Batteries 1 41/2-Volt Beacon "C" Battery 1 Antenna Outfit

These Accessories Are Tested and Approved by the Fleetwood Labor-atories of New York City

Besides All This-Installed in Your Home, Free in city limits. ..

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Note that we do not give bootleg tubes or other cheap equipment. Westinghouse and Cunningham are included in our offer.

#### To completely electrify this set

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