

Daily News

SAN FRANCISCO, MONDAY, June 23, 1924

NAVY PLANS BIG EXHIBIT AT P. R.

STAR DISPLAY IS TO BE PUT ON BY UNCLE SAM

The United States navy will be a leading exhibitor at the Pacific Radio Exposition in the Civic Auditorium, Aug. 16 to 21 inclusive.

This was announced today by A. S. Lindstrom, chairman of the executive committee of the Pa-cific Radio Trade Ass'n, in charge of the show, following receipt of a communication from Rear Admiral E. Simpson, com-mandant of the 12th naval dis-

Admiral Simpson notified Lindstrom that the navy's exhib-it will comprise one 500-watt U. S. navy tube transmitting set, one 100-watt set and one com-plete shore station with radio compass equipment, including receiver. The exhibit will be in charge of a corps of uniformed radio operators and is expected to attract wide attention. Some of the apparatus has never before been given a public demon-

Among other things the exhibit will show how ships may be guided by radio through the

thickest fogs.
Lindstrom also announced that space at the show has been sold out, and that there is a long list of additional applicants. He stated that plans for the affair are rapidly nearing comple-tion and that the event will be the largest radio exposition ever held in the world.

Assisting Lindstrom are: P. L. Jensen, H. W. Dickow, C. C. Langevin and F. J. Cram.

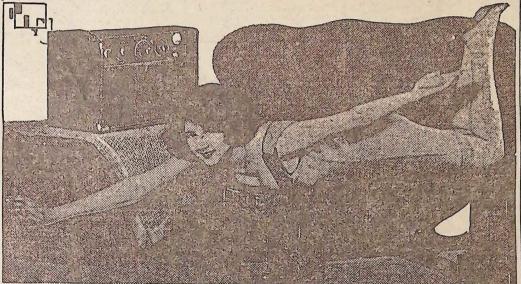
London Engineers Discard 'B' Battery

LONDON, June 23 .- By the use of a four-element tube, one with two grids, two radio engineers here have succeeded in ob-

taining good reception without the use of a "B" battery.

The investigators are George V. Dowding and Keith D. Rodgers. Their idea is the use of an extra grid close to the fila-ment so that the electrons will be thrown at the plate with the same force as "B" battery pow-er on a three-element tube pulls

LET'S SWIMMING TUNE FOR



When no one is around to scoff, and you long to show your talents at the beaches this summer, tune in for a radio swimming lesson. Several such have already been given throughout the country. Miss Ruth Dace of Chicago, shown here, believes in them to the point of assuming the realistic, but for the water.

FANS PAY BIG SUM TO R.C.A.

Gross income of the Radio Corp. of America rose from \$4,000,000 in 1921 to more than \$26,000,-

000 in 1923.

During 1923, it is estimated, the radio business went above the \$250,000,000 mark in total sales. Conservative estimates for 1924 put the total sales figure at \$400,000,000. And this is only an "in-fant industry."

Ninety-seven per cent of the 300,000 Boy Scouts in America are interested in radio, says E. S. Martin, secretary of the edi-

Station WOR, Newark, N. J.,

Boy Scouts Fans

torial board of the Boy Scouts of America.

FOR EARLY RISERS

is beginning a daily series of morning exercises. Every morn-ing at 7 early risers may tune in on a few setting-up exercises.

OAKDALE LAD IS LOCATED BY WIRELESS

Once again Radio has scored. This time by coming to the aid of authorities-and right in California, too.

Through the use of the ether patrol, Pat Willard, 13 years old, son of O. C. Willard of Oakdale, has been located.

Police found themselves without a clue when the boy disappeared with his father's automobile. A futile search was made for the lad in the vicinity of his home.

Then authorities thought of

radio.

A message describing the missing boy was broadcast by Clayborn Schonhoff of Oakdale. The following morning word came from Roseburg, Ore., to the worried parents of the lad that he had been found there.

The boy had embarked on a journey to seek adventure, it was revealed.

His father, thankful for the good agency of radio, went to Oregon to get his son.

Catch Birds' Songs Over Ether Waves

Reports from England point to the adoption of radio as a means for catching the voices of song birds at their native haunts.

Recently British broadcast listeners were treated to just such entertainment when the manager of a station took the microphone into the woods, concealed it as motion picture operators do their cameras, and transmitted the music of the woods to the cities.

Adoption of this plan is suggested to American broadcasters by the American Radio Relay

World's Largest

What may be the world's largest radio transmitting plant is being built at Hillmorton, near Rugby, England. Sixteen masts, 820 feet high, will carry the antenna on a site of 960 acres. The plant is expected to effect communication with India and Australia,

PIERCES AIR LIKE BULLET By NEA Service LONDON, June 23.—All pres-

ent radio methods may have to be readjusted if the directional radio beam invented by Signor Marconi, the Italian radio engineer, comes into use.

This is the belief of electrical engineers who have seen the marvelous results of experi-ments conducted here with the Marconi beam.

Marconi beam.

In a recent test, signals were successfully flashed between Cornwall, England, and Sydney, Australia. The voice was distinctly heard when transmitted along the beam, yet it was not broadcast, except along the straight line of the beam.

By this method, they point out, the transmitted voice would be semi-secret, confined to most of

semi-secret, confined to most of the stations within the line of the beam.

At the same time the low wave lengths, which will be the basis of the new system, will enable stations to transmit during daylight without being annoyed to a great extent by static.

Outdoor aerials will be almost unnecessary, radio apparatus will become standardized to the transmission and reception of fading will be eliminated, spark interference subdued, and broad-casting in general will be revolutionized.

Some of the engineers foresee a nation-wide, if not a world-wide, system of relaying broadcast programs by the beam system. The signals will be carried on wave lengths of about 15 or 20 meters, on extremely high frequencies.

They will be shot out direct to another broadcast station, which may in turn beam-broadcast to a third, or may transmit the program it receives as the stations do now, by the circular broadcast system.

Thus, with practically all present difficulties overcome, every part of the earth may be covered by radio through this system.

Shippers are asking restoration of the 450-meter wave-length for marine radio com-

S. F. Blind Man Builds Set, Erects Antennae

The outside world is to be the normal person. Once they brought to the home of the learn to feel for the controls

COPPER FIRMS

THANKRADIO

The copper industry in the United States offers its thanks to radio. On the basis of an estimated

the basis of an estimated total of 2,500,000 receiv-ing sets in the country, radio apparatus has con-sumed 5,000,000 pounds of

copper, says a report by the Copper and Brass Re-

search Ass'n, New York.
In five years copper used is expected to total about 5,000,000 pounds annually.

Radio for Police

Now the Detroit police have

three automobiles equipped with receiving apparatus, so that they may be in constant touch with

headquarters. Detroit has its own police broadcasting station, KOP.

CHILDREN ENTERTAIN

Children will take part in ra-

dio broadcasting hereafter from WDAF, Kansas City. They will present a half-hour program every Tuesday.

Radio is throwing open the door of a world of entertainment to the sightless!

Deprived of the pleasure movies may bring, attending concerts and theaters only at great inconvenience, and acquiring knowledge only by laborious efforts, the blind now enjoy some of the same advantages as their more fortunate fellows. Lectures on current topics, radio plays, educational programs. talks by prominent citizens, and the best in music are available merely by the turn of a wrist.

the blind is more acute than that of normal persons, is well known. The blind can operate radio sets with as much ease as list attributed to radio.

and become familiar with the mechanism, they often have an advantage in tuning in on stations, according to radio experts.

Blind folk, however, are not satisfied with receiving radio entertainment alone. Several members of the San Francisco Association for the Blind are

constructing their own sets.
Anthony Cunha, 1239 Polk-st, is one of those who has built a crystal set. Cunha secured a piece of bakelite, and by the addition of binding posts, coils and a detector, constructed a successful set. Not satisfied with building his own radio, he has put up an antenna by himself. It is 50 feet high and 200 feet terely by the turn of a wrist. long. He now plans to contrat the sense of hearing of struct a tube set.

Marcels Will Suffer Now, Flappers Taking Up Radio Powder, paint, wavy locks and lucked eyebrows may conceal articles on display. "A few days later they cannot be brain of a mechanical articles on display.

plucked eyebrows may conceal mechanical the brain of a genius, in the opinion of Con-rad Richter, San Francisco pio-neer radio dealer.

Interest in marcel waves now is being replaced by interest in ether waves, he declares.

"It is not unusual for women to come in to buy radio parts for sets to be constructed by husbands or brothers," Richter said, "but it is rarely that a woman comes in to purchase equipment for a set to be constructed by herself.

"The other day two pretty flappers, who looked as if they might be interested in anything but radio, came in and asked for a number of radio parts. They said they wanted to build a set, and had a list of the items they wanted. Technical terms rolled off their tongues as glibly as if they were experts. Shown about the store, they appeared to be equipment."

"A few days later they came back, and reported that their set was successful."

Women heretofore have always expressed a reluctance to shop in a place frequented by male patrons, but it's different now, Richter said.

"Witness the barber shop, the sanctum heretofore patronized exclusively by males, and now invaded by femininity.
"At first, when the bobbed hair

craze was new, women seemed to be timid about invading barber shops. Some may have the same attitude toward radio stores, where the articles sold are supposedly believed to appeal to males only. But timidity is disappearing now, and radio store dealers soon may have to display flowers in shops, employ 'sheikish' salesmen, and polish up the brass and nickel radio

VEEK'S AIR

Monday, June 23

KPO-Hale Bros., San Francisco (423 Meters)

1 TO 2 P M—Rudy Seiger's Fairmont Hotel Orchestra.
2:30 TO 3:30 P M—Lyric soprano solos, The Old Road; Mah Lindy Lou; Sybil Graves.
Trombone duct, Repeat Again; Robert Terrill and George Murton.
Mezzo-soprano solos, The Lass With the Delicate Air; Nina; Marion Graves.

Mezzo-servite Mezzo-servite Delicate Air; Nina, Graves,
Lyric soprano solos, La Scranta;
Aprile; As Through the Streets (from "La Boheme"); Esther Folil.
Trombone solo, At Dawning; Robert Terrill,
Soprano duets, Giorno D'Orrore
Soprano duets, Giorno D'Orrore

Trombone solo, At Deviation, ert Terrill, Soprano duets, Glorno D'Orrore "Semiramide"; Go, Pretty Rose; Marion Graves and Sybil Graves. Soprano solos, A Picture; The False Prophet; Elegic; Esther Polli.

Trombone duet, Robert Terrill and George Murton.

"Semiramide"; Go, Pretty Rose; Marion Graves and Sybil Graves.
Soprano solos, A Picture; The False Prophet; Elegie; Esther Folli.
Trombone duet, Robert Terrill and George Murton.
Soprano duets, Gay Butterfly; La Golondrina (The Swallow); Marion Graves and Sybil Graves; accompanist, Mabel Jones.
4:3 TO 5:30 P M—Rudy Selger's Fairmont Hotel Orchestra.
5:30 TO 6:30 P M—Children's Hour. Stories by Big Brother of KPO, taken from the Book of Knowledge: Boy Scouts of America: The Unknown Hero; The Great Sights of Egypt.
Piano solos, To the Rising Sun: Marchetta; Ruth Larkin, 11-year-old pupil of Mrs. Louis Sacrey.
7 TO 7:30 P M—Children's Fairmont Hotel Orchestra.
8 TO 9 P M—Organ recital by Theodore J. Irwin, official organist, at the Wurlitzer:
Wedding March (from "Feramors"); Prelude, C Sharp Minor; Riylle in D Flat; Air de Ballet; Symphony Pathetic, first movement, selected passages; Toccata in G; Chimes, melody; Serenade; light opera selection, "Blossom Time"; song melody, "I'll Sing Thee Songs of Araby"; Minuet in G. Toccata in G; Chimes, melody; Serenade; light opera selection, "Blossom Time"; song melody, "I'll Sing Thee Songs of Araby"; Minuet in G. To 10 P M—Program under direction of Ruth May Friend; Mary Kelster Kerr, accompanist.
Contraito solos, I Heard You Go By; Cradle Song; Banjo Song; Mabel Nickerson Bailey.
Tenor solos, Finnish Lullaby; The Moon Drops Low; Ma Little Banjo; C. Albert Kulmann, Soprano and contraito duet, By the Waters of Minnetonka; Ruth May Friend, Mabel Nickerson Bailey.
Soprano solos, My Mother Bids Me Bind My Hair; The Sleep That Filts on Baby's Eyes; The Meadow Lark; The Vagrant Wind (by request); Ruth May Friend, Mabel Nickerson Bailey.
Soprano and baritone duet, Night Hymn at Sea.
10 TO 11 P M—E Max Bradfield's Versatile Band, playing in the Palace Hotel Rose Room Bowl.
KGO—General Electric Co., Oakland - (312 Meters)

KGO—General Electric Co., Oakland

(312 Meters)

1:30 P M—New York Stock Exchange and United States weather bureau reports.

3 P M—Short musical program. Speaker furnished through the courtesy of the Parent-Teacher Associations of the San Francisco bay district.

4 TO 5:30 P M—Hotel St. Francis Dance Orchestra, San Francisco.

6:45 P M—Final reading, stock exchange and weather reports, and newsitems.

8 P M—Educational program, with musical numbers by Arion Trio. Courses in agriculture, Spanish, music, economics and literature.

KIX—Oakland Tribune (509 Meters)

7 TO 7:30 P M—News items, United States weather bureau bulletin, market and financial news.

8 TO 10 P M—Educational and musical program broadcast from the University of California over private leased wires through KLX.

DISTANT STATIONS

DISTANT STATIONS

KFI—Earle C. Anthony, Inc., Los Angeles (469 Meters) 5 TO 5:30 P M—Evening Herald news bulletins. 5:30 TO 6 P M—Examiner news bulletins bulletins, 8 TO 9 P M—Evening Herald con-

bulletins,

8 TO 9 P M—Exeming Herald concert.

9 TO 10 P M—Examiner concert.

10 TO 11 P M—Ambassador Cocoanut Grove Orchestra.

KGW—Morning Oregonian, Portland (492 Meters)

11:30 A M—Weather forecast.

3:30 P M—Literary program by Portland Library Ass'n.

7:15 P M—Police reports.

7:15 P M—Baseball scores, weather forecast and market reports.

8 TO 10 P M—Program of old songs by Beaux Arts Society.

WBAP—Fort Worth Star-Telegram, Fort Worth, Tex. (476 Meters)

9:30 TO 10:45 P M—Concert by the octet of old time fiddlers of Mineral Wells, Tex.; Cap Johnson directing.

KFOA—Rhodes Department Store, Seattle (455 Meters)

8:30 P M—Violin recital by Evelyn Heidenstrom and Russell Pohl, artist pupils of Arnold Krauss, concert meister of the Seattle Civic Symphony Orchestra and one of the best known instructors in the northwest. Evangeline Hall, accompanist.

Tuesday, June 24

HPO—Hale Bros., San Francisco

1 TO. 2 P M—Rudy Selger's Fairmont Hotel Orchestra.

2:30 TO 3:30 P M—Organ recital by Theodore J. Irwin:
Fox trot, Go Your Way and I'll Go Mine; Minuet; Pulcinello; selection, popular melodies; musical comedy selection, Wildflower; musical selection, Wildflower; musical selection, old time songs; fox trot, Koltomo.

4:30 TO 5:30 P M—Rudy Seiger's Fairmont Hotel Orchestra.

5:30 TO 6:30 P M—Children's Hour. Stories by Big Brother of KPO, taken from the Book of Knowledge; The Fight With the Dragon; The King's Three Questions; How the Elevators Work.

Plano solos, Etude Viennois (for the

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left hand alone); Minuet Antique; Mildred Shay, pupil of Miss Lorraine Ewing

Ewing. 7 TO 7:30 P M-Rudy Seiger's Fair-

Mildred Shay, pupil of Miss Lorraine Ewing.
7 TO 7:30 P M—Rudy Seiger's Fairmont Hotel Orchestra.
8 TO 10 P M—Program presented by Merrill & Merill, musical merchandise brokers, Oakland:
Piano solos, Waltz, B Flat; Seguidilla; Eva Garcia.
Soprano solo, Elegie; Mrs. Charles Stuart Ayres; Ilute obligato by William Nankervis; Mrs. Philip Ebberhart, accompanist,
Contralto and soprano duets, Passage Birds' Farewell; I Would That My Love; Mrs. Floyd Collar, soprano; Edna Fisher Hall, contralto; Mrs. Philip Ebberhart, accompanist.
Saxophone solos, Where My Caravan Has Rested; And Yet; Charles Davis; Eva Garcia, accompanist; violin obligato by Arthur Garcia.
Soprano solos, Smiling Through; One Sweet Day; Mrs. Floyd Collar; flute obligato by Arthur Garcia; Eva Garcia, accompanist.
Cantilations, Joseph Swan White.
Violin solos, Liebesfreud; Old Refrain; Arthur Garcia; Eva Garcia, accompanist.
Plano solos, Prelude in G Minor; La Jongleuse; Mrs. Philip Ebberhart, Contralto solos, Dawn; Trees; Edna Fisher Hall; Eva Garcia, accompanist.
Flute solos, Valse Bleue; Intermezzo from Cavalleria Rusticana; William Nankervis; Frances Gieloro, accompanist.

roue soios, vaise bleue; Intermezzo from Cavalleria Rusticana; William Nankervis; Frances Gleloro, accompanist.

William Worthington, one of the directors of the Peninsula Studios, Inc., of San Mateo, will follow up his talk of last Tuesday with a talk on "The Motion Picture Camera and Photographing a Motion Picture."

Lyric baritone solos, A Banjo Song, Twilight; Merlyn Morse; Mrs. Philip Ebberhart, accompanist.

Soprano solos, A Spray of Roses; Passing By (by special request, sung to Honolulu); Mrs. John H. Merrill; Mrs. Philip Ebberhart, accompanist.

Fiano solos, Romannee in D; Mighty Like a Rose; Meleta Hutt.

Soprano solos, On Wings of Love; I Cannot Sing the Old Songs; Mrs. Charles Stuart Ayres; Mrs. Philip Ebberhart, accompanist.

Soprano solos, Piggly Wiggle; Eriea; Charles Davis; Eva Garcia, accompanist.

Soprano solos, Love Came Creeping Into My Heart; A Little Song; Mrs. Floyd Collar; Mrs. Philip Ebberhart, accompanist.

Violin solos, Ave Maria; Spanish Dance; Arthur Garcia; Eva Garcia, accompanist.

Cantilations, Joseph Swan White.
Contraito solos, My Desire; Minnetonka; Edna Fisher Hall.

Baritone solos, Requiem; Morning; Merlyn Morse; Mrs. Philip Ebberhart accompanist.

Contraito solos, My Desire; Minnetonia; Edna Fisher Hall.

Baritone solos, Requiem; Morning; Merlyn Morse; Mrs. Philip Ebberhart, accompanist.

Soprano duet, Sing, Sing, Birds on the Wing; Mrs. Charles Stuart Ayres, Mrs. Floyd Collar.

10 TO 11 P M—E. Max Bradfield's Versatile Band, playing in the Palace Hotel Rose Room Bowl.

Hotel Rose Room Bowl.

KGO—General Electric Co., Oakland
(312 Meters)

1:30 P M—New York Stock Exchange and United States weather bureau reports.

4 TO 5:30 P M—Concert orchestra of the Hotel St. Francis, San Francisco.

of the Hotel St. Francis, San Francisco.

6:45 P M—Final reading, stock exchange and weather reports, and news items.

8 TO 10 P M—

Vocal selection, Festival Te Deum in D flat; California Mixed Quartet. Violin solos, Josephine Holub.
Baritone solos (a) El Canto del Presidiario; (b), Ultima Rosa; Edilberto G. Anderson; Leslie Taylor, accompanist.

Vocal selections (a), Hail to the Chief; (b), Scotland Yet; Clan MacDonald Double Male Quartet.
Duets for contralto and tenor (a), The Voyagers; (b), Over the Heather; Ruth Waterman and Carl Anderson. Plano solos (a), Gopak; (b), Shadow Dance; Beatrice L Sherwood. Soprano solos (a), Parla; (b), Kathleen Mavourneen; Laura Broderick,

Soprano solos (a), Parla; (b), Kathleen Mavourneen; Laura Broderick,
Vocal selections (a), The Hundred Pipers; (b), Who'll Be King but Charlie; Clan MacDonald Double Male Quartet.
Violin solos, Josephine Holub, Baritone solos (a), A Granada; (b), Engano; (c) Obstination; Edilberto G. Anderson.
Vocal selection, Blue Danube Waltz, California Mixed Quartet.
Plano solos (a), Clair du Lune; (b), Prelude in C Sharp Minor; Beatrice L Sherwood.
PART TWO
This part of the program will be given over to a rendition of the song cycle "In a I'ersian Garden" (words from the Rubriyat of Omar Khayyam). Music by Liza Lehman. Sung by the Calif,rnia Mixed Quartet, Laura Broderick, soprano; Ruth Waterman, cortralto; Carl Anderson, tenor; Hery L. Perry, bass; Beatrice L Sherwood, accompanist.
Address, "Omar Khayyam," Otto Richt Court Cour

L. Sherwood, accompanist.
Address, "Omar Khayyam," Otto
Riehl.
10 P M TO 1 A M—Hotel St. Francis Dance Orchestra, San Francisco.
KLX—Oakland Tribune (509 Meters)
3 TO 5 P M—Baseball.
7 TO 7:30 P M—News, weather,
market bulletin.

DISTANT STATIONS

DISTANT STATIONS

KHJ—Los Angeles Times, Los Angeles
(395 Meters)
6:45 TO 7:30 P M—Children's program, presenting Prof. Walter Sylvester Hertzog. The weekly visit of the Sandman and Queen Titania. Brefini Biggs, reader, 10 years old. Bedtime story by Uncle John.
8 TO 10 P M—Program presented through the courtesy of the Hellman Commercial Trust and Savings Bank, 10 TO 11 P M—Art Hickman's Dance Orchestra from the Biltmore Hotel.

Hotel.
KGW—Morning Oregonian, Portland
(492 Meters)

11:30 A M—Weather forecast.
3:30 P M—Children's program.
7:15 P M—Police reports.
7:30 P M—Baseball scores, weather

A-1 CRYSTALS GET DISTANCE

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KUO

San Francisco Examiner—
360 Meters
Dally Except Saturday and
Sunday
9:05 A M—We a the r
forecast.
11:00 to 11:30 A M—Market reports

11:00 to 11:30 A M—Market reports.

3:30 P M—F i n a ncial bulletin
6:00 to 6:20 P M—F i n a ncial and garden hint broadcast.
6:40 P M—We a t h or forecast.

Saturday Only
9:05 A M—We a t h e r forecast.

9:05 A M—We at her forecast.

6:00 to 6:20 P M—Fin a neial and garden hint broadcast.

6:40 P M—We at her forecast.

Sunday Only
9:05 A M—We at her forecast.
6:45 P M—We at her forecast.
7:45 P M—We at her forecast.
6:45 P M—We at her forecast.
6:45 P M—Health bulletin.

forecast and market reports.

8 P M—Concert by Sieberling-Lucas Music Co.

KFI—Earle C. Anthony, Inc., Los Angeles (469 Meters)

5 TO 5:30 P M—Evening Herald news bulletins.

6:45 TO 7:30 P M—Examiner 'news bulletins.

6:45 TO 7:30 P M—Vocal concert.

8 TO 9 P M—Ambassador Cocoanut Grove Orchestra.

9 TO 10 P M—Examiner concert.

10 TO 11 P M—Maud Reeves Bernard arranging concert.

WBAP—Fort Worth Star-Telegram, Fort Worth, Tex. (476 Meters)

9:30 TO 10:46 P M—9:2 program by J. C. Rutledge, reproducing the program given at the close of the Volunteer Fire Hall in Fort Worth.

KFSG—Angelus Temple, Los Angeles

(278 Meters)

8 TO 9 P M—Gray Studio program, service; sermon by Aimee Semple McPherson.

9 TO 10 P M—Gray Studio program, furnished by Swaney Jubilee Singers; Margaret Knox McCraw, contraito; Sierra Trio of Pasadena. "Evening Meditation."

10 TO 10:30 P M—Organ recital by Reid Brignall.

Wednesday, June 25

Wednesday, June 25

KPO—Hale Bros., San Francisco (423 Meters)

1 TO 2 P M—Rudy Seiger's Fairmont Hotel Orchestra.

2:30 TO 3:30 P M—Program by the Trio Artistique:
Trio for violin, cello and piano, Hungarian Dance No. 2; Oriental; Trio Artistique: Festo G. Aspere, violin; Arthur Landesen, cello; Miss Leanore Ewald, piano.
Cello solos, Ballade; Elegie; Arthur Landersen; Miss Leanore Ewald at the piano.
Piano solos, Second Mazurka; Indian Lament; Miss Leanore Ewald at the piano.
Piano solos, Second Mazurka; Indian Lament; Miss Leanore Ewald.
Violin solos, One Hour of Love; Pale Moon; Festo G. Aspere; Miss Leanore Ewald at the piano.
Trios for violin, cello and piano, Scherzo; Celebre Menuet; Trio Artistique.
Jack Fait's Entella Cafe Orchestra.
4:30 TO 5:30 P M—Rudy Seiger's Fairmont Hotel Orchestra.
5:30 TO 6:30 P M—Children's Hour. Stories by Big Brother of KPO, taken from the Book of Knowledge: Ships and Sailors of Our Navy; Answers to Questions; Hunters of the Wild.
Piano solos, Hide and Seek; Vena Willy, 11-year-old pupil of Mrs. Louis Sacrey.
Spirit of Chivalry, Jane Smith, 10-year-old pupil of Mrs. Louis

Willy, 11-year-old pupil of Mrs. Louis Sacrey.
Spirit of Chivalry, Jane Smith, 10year-old pupil of Mrs. Louis Sacrey.
7 TO 7:30 P M—Rudy Seiger's Fairmont Hotel Orchestra.
8 TO 11 P M—Talk, "Your Boy and
Mine and the Smith-Hughes Act," by
William T. Elzinga. E. Max Bradfield's Versatile Band, playing in the
Palace Hotel Rose Room Bowl. Intermission numbers arranged by the
Morrison Music Co

KGO—General Electric Co., Oakland (312 Meters)

1:30 P M—New York Stock Exchange and United States weather bureau reports.
3 P M—Short musical program. Address, "Creative Expression," by Wilda Wilson Church.
4 TO 5:30 P M—Concert Orchestra of the Hotel St. Francis, San Francisco.

6:45 P M—Final reading, stock ex-change and weather reports, and news

KLX—Oakland Tribune (509 Meters)
3 TO 5 P M—Baseball.
7 TO 7:30 P M—News, weather,
market bulletin.
8 TO 10:20 P M—Studio program,
with music from the American Thea-

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RADIO SPECIALS!!

Scientific Headset, 3000 ohms; fully guaranteed; world's greatest phone value; our price. \$2.75

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Brandes Superior Headset (matched) tone); list price \$6; our price. \$4.10

Brandes Superior Headset (matched) tone); list price \$6; our price. \$5.85

Burgess "B" Battery, 45 volts; No. 2306; list price \$5; our price. \$3.40

Eveready "B" Battery, 45 volts; No. 767; list price \$5; our price. \$3.40

Eveready "B" Battery, 45 volts; No. 767; list price \$5; our price. \$3.40

Eveready "B" Battery, 45 volts; No. 766; list price \$2.56 our price. \$3.80

Fada 5-Tube Neutrodyne Receiver Knockdown Paris Complete (genuine)—list price \$66; our price. \$49.75

Shamrock Variometer (double duty); list price \$3.50; our price. \$2.95

Shamrock Vario-Coupler; list price \$3.50; our price. \$1.00

ohms; our price \$1.00

Manhattan (Genuine Bakelite) Variometer; list price \$4.60; our price. \$2.85

32-Plate Vernier Condenser; list price \$4.60; our price. \$2.85

\$2.8-Plate Vernier Condenser; list price \$4.00; our price. \$2.85

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ter, broadcast over privato leased wires through KLX.

Studio program arranged by the Wiley B. Allen Co. of Oakland:

Vocal duets (a), Venetian Boat Song; (b), Absent; Mrs. Chester Miller and Frances Barrett Jones.

Piano solos (a), Nocturne; (b), Buttery Etude, G Flat; Gladys Ivanelle Wilson.

Soprano solos (a), Gavotte (from "Mignon"); (b), Habanera (from "Garmen"); Helene Strauss; Theodore Aydelotte, accompanist.

Cello solos (a), Arioso; (b) Chanson D'Amour; Margaret A. Vogel; Doris King, accompanist.

Vocal duets (a), The Fishers; (b) Come Sing to Me; Frances Barrett Jones and C. A. Jones.

Elwell, accompanist.

Violin solos (a), In an Old Fashioned Town; (b), Eleanore; (c), Kashiniri Song; Robert Romani; Luquear E. Elwell, accompanist.

Violin solos (a), Andante Cantabile; (b), Valse Bluette; Eleanor Parke Webber; Helen Y. Crawford, accompanist.

Tenor solos (a), Where My Caravan Has Rested; (b), By the Side of the Road; G. A. Jones.

Cello solos (a), Bouree; (b), Nocturne; Margaret A. Vogel; Doris King, accompanist.

Overture by American Theater Orchestra, Owen Sweeten director, broadcast direct from the theater through KLX over private leased wires.

Soprano solos (a), Ma Li'l Batteau; (b), My Jean; Helene Strauss; Theodore Aydelotte, accompanist.

Vocal duets (a), Starlight Love; (b), My Boat Is Walting for Thee; Mrs. Chester A. Miller and Frances B. Jones.

Piano solo, Scherzo n B Flat Minor, Gladys Ivanelle Wilson.

dore Aydelotte, accompanist.
Vocal duets (a), Starlight Love;
(b), My Boat Is Waiting for Thee;
Mrs. Chester A. Miller and Frances
B. Jones,
Plano solo, Scherzo in B Flat Minor,
Gladys Ivanelle Wilson.
Bass solos (a), Volga Boat Song;
(b), The Horn; Robert Romani; Miss
Luquear E. Elwell, accompanist.
Violin solos (a), Viennese Popular
Song (old refrain); (b), From the
Cane Brake; Eleanor Parke Webber;
Helen Young Crawford, accompanist.
Vocal duets (a), Home to Our
Mountains; (b), Gypsy Love Song;
Frances Barrett Jones and G. A.
Jones.
Organ recital broadcast from American Theater over private leased wires
through KLX. Clement Barker, organist.

DISTANT STATIONS

KHJ-Los Angeles Times, Los Angeles (395 Meters)

8 TO 10 P M-Program presented through the courtesy of Ray F. Chesley, Ford dealer at Bell, Cal. Dr. Mars Baumgardt.

10 TO 11 P M-Art Hickman's Dance Orchestra from the Biltmore Hotel

Hotel,

KGW—Morning Oregonian, Portland
(492 Meters)

11:30 A M—Weather forecast,
3:30 P M—Talk by Jeanette P.

Cramer, home economics editor of the

Cramer, nome coordinates of the coordinates of the

contraito, and Lucille Cummus, pianist.

10 P M—Dance music by George Olsen's Metropolitan Orchestra of the Hotel Portland. Intermission solos by Consuelo Allee, mezzo-soprano.

HFI—Earle C. Anthony, Inc., Los Angeles (469 Meters)

5 TO 5:30 P M—Evening Herald news bulletins.

5:30 TO 6 P M—Examiner news builetins.

6:45 TO 7:30 P M—Nick Harris Detective Stories and concert.

8 TO 9 P M—Evening Herald concert.

8 TO 9 P M—Evening Herald concert.
9 TO 10 P M—Examiner concert.
10 TO 11 P M—Hollywoodland Orchestra.
11 TO 12 P M—Ambassador Cocoanut Grove Orchestra.
WBAP—Fort Worth Star-Telegram, Fort Worth, Tex. (476 Meters)
9:30 TO 10:45 P M—Concert of dance music.
KFOA—Rhodes Department Store, Seattle (455 Meters)
8:30 P M—Dance music by Premier five-piece orchestra under direction

8:30 P M—Dance music by Premier five-piece orchestra under direction of L. Nist.

Thursday, June 26

KPO-Hale Bros., San Francisco (423 Meters)

1 TO 2 P M—Rudy Seiger's Fair-mont Hotel Orchestra. 2:30 TO 3:30 P M—Program under the management of Emil Barth. 4:30 TO 5:30 P M—Rudy Seiger's Fairmont Hotel Orchestra.

5:30 TO 6:30 P M—Children's Hour.
Stories by Big Brother of KPO, taken from the Book of Knowledge: Jack's Fresh Air Supply; Two Years Before the Mast; The Stove in the Road.
6:30 TO 7 P M—Program by Zucarello's Orchestra.
7 TO 7:30 P M—Rudy Seiger's Fairmont Hotel Orchestra.
8 TO 9 P M—Organ recital by Theodore J. Irwin, official organist, at the Wurlitzer:
March (from "Suite Algerlenne"); overture from "Nuteracker Suite"; waitz, "L'enfant Prodigue"; Symphony in G Minor, Andante; Plzzicato; operatic selection, "Il Trovatore"; Chimes, melody; Rubinesque; Will o'the Wisp; light opera selection, "Naughty Marietta"; Shine Away Your Blues.
9 TO 10 P M—Program under the management of Lelah Gordon Saling; Reading, "Fascinating San Francisco," Geneveve Schaffer.
Duet, La Cideremla Mano; Lelah Saling, dramatic soprano; Charles Sparks, baritone; Maybelle Sherburne West, accompanist.
Plano solo, Hark, Hark the Lark; Maybell Sherburne West,
Solo, Ernani, Involami; Lelah Gordon Saling, dramatic soprano.
Group of harp selections, Marie Hughes Macquarrie.
Solo, Grand la Flame de L'amour; Leo Charles Sparks, baritone.
Reading, "An Apartment for Rent"; "Katie Did"; Geneveve Schaffer.
Duet, Calm as the Night; Lelah Saling, dramatic soprano; Leo Charles Sparks, baritone; Maybelle Sherburne West, accompanist.
Piano solo, Etude in F Minor; Maybelle Sherburne West, accompanist.
Piano solo, Etude in F Minor; Maybelle Sherburne West, accompanist.
Piano solo, Etude in F Minor; Maybelle Sherburne West, accompanist.
Piano solo, Grand the Filame de L'amour; Lelah Gordon Saling, dramatic soprano; Leo Charles Sparks, baritone; Maybelle Sherburne West, accompanist.
Piano solo, Etude in F Minor; Maybelle Sherburne West, accompanist.
Piano solo, Etude in F Minor; Maybelle Sherburne West, accompanist.
Piano solo, Etude in F Minor; Maybelle Sherburne West, accompanist.
Piano solo, Etude in F Minor; Maybelle Sherburne West, accompanist.
Piano solo, Etude in F Minor; Maybelle Sherburne West, accompanist.
Piano solo, Etude in F Minor; Maybelle Sher

KHJ—Los Angeles Times, Los Angeles (395 Meters)

8 TO 10 P M—Program presented through the courtesy of the Pacific Palisades, arranged by William H. Carter.

10 TO 11 P M—Art Hickman's Dance Orchestra from the Biltmore Hotel.

Dance Orchestra from the Biltmore Hotel.

KGW—Morning Oregonian, Portland (492 Meters)

11:30 A M—Weather forecast, 3:30 P M—Children's program, 7:15 P M—Police reports, 7:30 P M—Baseball scores, weather forecast and market reports, 8:15 P M—Studio program of dance music by George Olsen's Metropolitan Orchestra of Hotel Portland, Herman Kenin, director.

Kenin, director.

10 P M—Dance music by George
Olsen's Metropolitan Orchestra of the
(Conctuded on Page 3, Column 1)

The Englowing

Repeater Radio Phones



This low price gives you phones with the new magnetic principle of construction that assures an absolutely true vibration of diaphram with no distortion of sound.

On sale in the Radio Section, third floor

KANSAS STATE TO BROADCAST FARM COURSES

NEA Service Radio Editor

MANHATTAN, Kas., June 23. -The Kansas State Agricultural College is planning another step in the education of the

step in the education of the rural public by radio.
Forty courses, covering the fields of agriculture, general science, engineering and home economics, will be broadcast from the new 500-watt station to be erected soon on the campus

be erected soon on the campus. Heretofore, the faculty of this institution had been conducting institution had been conducting a radio extension course for farmers and others, through station KFKB, at Milford, Kas., 32 miles away. The lectures delivered in the auditorium of the college here were relayed to the studio of KFKB by direct line and broadcast out of there.

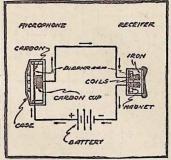
Now broadcasting will be direct and will cover the most comprehensive course of study

comprehensive course of study ever transmitted by radio. In addition, enrollment of students will be made and graduating diplomas issued to those taking the courses and passing examinations.

The new courses are expected to start next fall. Contract for the new station will be let at once, say the officials in charge, so that it may be ready for the opening of the radio semester.

FROM GROUNI THE

broken succession of waves or "peaks," all of the same height. This is true only when the broadcasting station is radiating waves without transmitting microphone (or telephone transmitter) and the telephone results of the same without transmitting microphone (or telephone transmitter) and the telephone results of the same without transmitter and the telephone results of the same without transmitter and the telephone results of the same height. music or speech at the same time. A "code" station, using vacuum tubes for transmitting, radiates a steady wave like the unmodulated wave shown in an accompanying sketch. When the operator's key is pressed down, a few hundred thousand waves are sent forth, but when he raises the key and interrupts the oscillations of the transmit-ter the waves cease abruptly. The wave sent from a broad-casting station is not so uniform, however, because it is



music or of the voice.

mitter) and the telephone re-ceiver. The microphone conceiver. The microphone consists of a carbon cup in the face of which there are a number of little cavities containing grains of carbon. A thin disc or diaphragm of carbon is placed very close to the cup, but not quite touching it. The inter-vening space is partly filled by the carbon grains. When sound waves strike the diaphragm it vibrates in unison with them, sometimes pressing close against the carbon grains and then loosening them again. This varies the resistance of the en-tire circuit and causes the current from battery to fluctuate-

Perhaps you have come to changed in accordance with the in the microphone. Thus, it is receiving end the scheme is rethink of a radio wave as an unlike or of the voice to change the intensity or frequency circuits and the tunto change the intensity or strength of the current. Similarly, it is the function of the radio microphone to change the intensity or strength of the radio waves.

The vibrations of the voice, and hence those of the current flowing through the microphone, are very much slower than the radio waves, which are oscillating perhaps at 750,000 every second. The frequencies which our ears can hear lie beneath about ears can hear lie beneath about 10,000 per second, and anything higher is termed "radio frequency." Lower frequencies are known as "audible" or "audio" frequencies. Thus, the low frequency is superimposed upon the high frequency, the unmodulated wave and the modulator wave combing to produce a modulated wave. modulated wave.

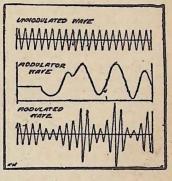
rent from battery to fluctuate—
first being strong and then weak.

The receiver consists of two steel magnets wound with many hundred turns of fine wire. Just a fraction of an inch from the magnet an iron disc or diaphragm is mounted. The changes in the strength of the current cause the disc to vibrate and its vibrations are a faithful copy of those of the disc

versed. First come the radio frequency circuits and the tun-

ing devices, such as variable condensers and switches.

Next is the detector, which may be a crystal, as described in a recent lesson. Then comes the telephone receiver or the loud speaker, just as it does in the case of the simple telephone circuit. In place of the ordinary electric current which connects receiver and transmitter in the case of the landline telephone we must generate radio fre-quency currents, modulate them by our microphone and modulator and erect aerials for radiating and receiving the electromagnetic waves.



WEEK'S AIR PROGRAMS, CONTINU

(Concluded From Page 2) Hotel Portland. Intermission solos by Eulah Mitchell Carroll, pianist. KFI—Earle C. Anthony, Inc., Los Angeles (469 Meters) 5 TO 5:30 P M—Evening Herald news bulletins. 5:30 TO 6 P M—Examiner news bulletins.

bulletins, 6:45 TO 7:30 P M—Y. M. C. A. con-

bulletins.
6:45 TO 7:30 P M—Y. M. C. A. concert and lecture.
8 TO 9 P M—Ambassador Hotel
Concert Orchestra.
9 TO 10 P M—Examiner concert.
10 TO 11 P M—Harry Porter, baritone, and others.
WBAP—Fort Worth Star-Telegram,
Fort Worth, Tex. (476 Meters)
9:30 TO 10:45 P M—Concert by a group of Fort Worth artists.
KFSG—Angelus Temple, Los Angeles
(223 Meters)
8 TO 9 P M—Great baptismal service, "Scenes of River Jordan re-enacted." Sermon by Aimee Semple McPherson.
9 TO 10 P M—Gray Studio program, Jennie M. Durkee, ukuelele, guitar and banjo solos; Angelus Temple Choir, under direction of Gladwyn N. Nichols, Male quartet. "A Song of David."

Friday, June 27

KPO-Hale Bros., San Francisco (423 Meters)

KPO—Hale Bros., San Francisco
(423 Meters)

12:45 P M—Talk broadcast from
the Commonwealth Club luncheon at
the Palace Hotel.

1 TO 2 P M—Rudy Seiger's Fairmont Hotel Orchestra.
2:30 TO 3:30 P M—Organ recital
by Theodore J. Irwin, official organist, at the Wurlitzer:
March; light opera selection,
"Chimes of Normandy"; Polonaise A
Major; operatic selection, "Oberon";
song melody, A Little Kiss, a Little
Love; Rondo; old time songs; Manda
lay,
4:30 TO 5:30 P M—Rudy Seiger's
Fairmont Hotel Orchestra.
KGO—General Electric Co., Oakland
(312 Meters)
1:30 P M—New York Stock Exchange and United States weather
bureau reports.
3 P M—Short musical program.
4 TO 5:30 P M—Concert Orchestra
of the Hotel St. Francis, San Francisco.
6:45 P M—Final reading, stock ex-

cisco.
6:45 P M—Final reading, stock ex-change and weather reports, and news

change and weather reports, and news items.

RIX—Oakland Tribune (509 Meters)
3 TO 5 P M—Baseball.
7 TO 7:30 P M—News, weather, market bulletin.
8 TO 10:20 P M—Studio program and music broadcast from the American Theater over private leased wires.

Studio program arranged by Johnson's Californians, composed of Al Hopkins, saxophone; Milke Davis, saxophone; Walter Tibbey, plano; Allen Jones, drums; Billy Moran, ban-jo, and Ned Johnson, violin. Assisted by Bob Valleau, Letty Collins, Anita Putzman, Caroline Gilman, Henry C. Lassen, Anita Weichart and C. W. Collingwood. Accompanists, Mrs. Buclah Thorpe, Mies Marie Maytorena and Miss Linda Wilson.

Instrumental numbers (a), After a While (featured by National Broadcasters' Ass'n); (b), Rose; (c), Rock a Bye Baby Blues; Johnson's Californians.

Bass solos (a), Mifanwy; (b), Sittin'

Bass solos (a), Mifanwy; (b), Sittin' Thinkin'; (c), Recessional; Henry C. Lassen. Recitations and variations, Bob

Valleau.
Contralto solos (a), Dawn; (b),
Waters of Minetonka; (c), I Passed
by Your Window; Anita Putzman

Kapci.
Request program of old melodies.
Johnson's Californians: (a), Bits of
Memory: Beautiful Lady, Merry
Widow Waltz, My Hero; (b), Jaz numbers of yesterday: East Side,
West Side, Sweet Rosic O'Grady, In

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Wonderful, guaranteed receiving set!
Complete, including phone, lead-in,
aerial, etc. Nothing more to buy.
No tubes or batteries needed.
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office.

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the Good Old Summertime; (c), Remembrances of the south: Swanee River, Massa's in the Cold, Cold Groun', Dixle, Old Black Joe, Old Kentucky Home; (d), Songs of 1918: Tipperary, Good-bye Broadway, Hello France, Long Way to Berlin, Over There, Long, Long Trail; (e), saxophone special: Roses of Pleardy; (f), Songs of 1914: Before You Go (featured by the National Broadcasters' Ass'n), Mandalay, Soprano solos (a), One Fine Day (from "Madame Butterfly"); (b), Duna; Caroline Gliman. Music by the American Theater Orchestra, Owen Sweeten, director; broadcast through KLX over private leased wires, followed by vocal numbers by C. W. Collingwood, tenor, broadcast from the KLX studio.

Racitations and variations, Bob Valleau.
Contralto solo, My Heart at Thy Sweet Voice; Letty Collins.
Instrumental numbers (a), Zoe; (b), I Don't Want You to Cry Over Me; Johnson's Californians.
Piano solo, selected; Anita Weichart. Contraito solo, Aria from "Sampson et Delilah," Letty Collins.
Organ recital broadcast from American Theater over private leased wires through KLX. Clement Barker, organist.
Popular dance selections, Johnson's Californians.

Popular dance selections, Johnson's Californians.

DISTANT STATIONS KHJ—Los Angeles Times, Los Angeles (395 Meters)

(395 Meters)

8 TO 10 P M—Program presented through the courtesy of C. S. De Lano, instructor of stringed instruments,
10 TO 11 P M—Art Hickman's Dance Orchestra from the Biltmore Hotel.

Dance Orchestra from the Bittmore Hotel.

KGW—Morning Oregonian, Portland (492 Meters)

11:30 A M—Weather forecast.

3:30 P M—Lecture provided by home economics extension service, Oregon Agricultural College.

7:15 P M—Police reports.

7:30 P M—Baseball scores, weather ferecast and market reports.

10:30 P M—Hoot Owls.

KFI—Earle C. Anthony, Inc., Los Angeles (469 Meters)

5 TO 5:30 P M—Evening Herald news bulletins.

6:30 TO 6 P M—Examiner news bulletins.

bulletins. 6:45 TO 7:30 P M—Varied musical program. 8 TO 9 P M-Evening Herald con-

8 TO 9 P M—Evening Herald concert.
9 TO 10 P M—Examiner concert.
10 TO 11 P M—Myra Belle Vickers' artist students.
11 TO 12 P M—Ambassador Cocoanut Grove Orchestra.
WBAP—Fort Worth Star-Telegram, Fort Worth, Tex. (476 Meters)
9:30 TO 10:45 P M—Old time fid-

9:30 TO 10:45 P M—Old time fiddle concert presented by J. W. Rains, KFOA—Rhodes Department Store, Seattle (455 Meters)
8:30 P M—Y. M. C. A. program of several groups of male quartet numbers, solo and instrument music.
A constructive talk concerning work

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Air line distance in miles at a glance between the principal cities of the United States and Canada. 961 distances, time schedule and principal broadcasting stations. Also map of United States and Canada. Bound in leatherette,

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R. F. D. Box or Street and No..... TownState

of the Y. M. C. A. by one of the leaders of the work in Seattle.

KFSG—Angelus Temple, Los Angeles (278 Meters)

8 TO 9 P M—Crusaders meeting.

National address by Judge Carlos S.

Hardy, justice superior court; Ada Lantz, soprano; Temple Sliver Band.

Evangelistic address by Aimee Semple McPherson.

9 TO 10 P M—Gray Studio program, courtesy Maude Reeves-Barnard and pipuls. Angelus Temple Sliver Band, under direction of Gladwyn Nichols.

Good-night psalm,

Saturday, June 28

KPO—Hale Bros., San Francisco

(423 Meters)

1 TO 2 P M—Rudy Seiger's Fairmont Hotel Orchestra.
2:30 TO 3:30 P M—Program under the management of Mme. Madge de Witt. Miss Isabell Nordlund, mezzosoprano; R. F. Bradley, tenor; Miss Norma Jones, soprano; Miss Maxine Cox, pianist and accompanist:
Soprano solos, Lungi Dai Caro Bene; Carry Me Back to Old Virginia; Isabell Nordlund.
Tenor solos, Lolita; Carme; R. F. Bradley,
Fiano solos, Praeludun; Arabesque; Maxine Cox.
Soprano solos, The Brown Eyes of My Dushka; Oh. Sleep, Why Dost Thou Leave Me; Norma Jones.
Mattinata; A Brown Bird Singing; Madge de Witt.
3:30 TO 5:30 P M—Tea dansant.
E. Max Bradfield's Versatile Band, playing in Palace Hotel Rose Room Bowl.
8 P M TO 12 M—Dance music by Art Weidner's Orchestra, playing at

Bowl. 8 PM TO 12 M—Dance music by Art Weldner's Orchestra, playing at the Fairmont Hotel. KPO Trio during intermissions.

KGO—General Electric Co., Oakland (312 Meters)

12 NOON—New York Stock Exchange and United States weather bureau reports.

4 TO 5:30 P M—Concert Orchestra of the Hotel St. Francis, San Francisco.

8 TO 10 P M—Program furnished

cisco.

§ TO 10 P M—Program furnished through the courtesy of City of Paris Dry Goods Co, of San Francisco: Instrumental selections (a), To a Wild Rose; (b), Al'um Leaf; Lipschultz's String Quartet.

Vocal selections (a) Marcheta's Sister; (b), The World Loves a Lover; played and sung by the composer.

Address, Edward S. Rainey, secretary to Mayor James Rolph of San

\$18.00

Francisco.
Violin solos (a), Ave Maria; (b),
Spanish Dance; George Lipschultz.
Vocal selections (a), Somebody's
Smile; (b), The Song You Were Singing; played and sung by the com-

Simic, (v), series of the composer.

Instrumental selections (a), Scheherazade; (b), Serenade; Lipschultz's String Quartet.

Address, "My Impressions of America," Mohammed Barada, the Moroccan prince.

Piano solos, Baron Keyes.

Vocal selections (in French), Jacqueline Morrin, the French comedienne (courtesy California Theater).

Vocal selections, City of Paris Male Quartet,
Instrumental selections, Lipschultz's String Quartet.

Vocal selections, Jacqueline Morrin.

Violin solos, George Lipschultz,
Vocal selections, Baron Keyes.

Vocal selections, City of Paris Male Quartet.

Vocal selections, City of Paris Male Quartet.

10 P M TO 1 A M—Hotel St. Francis Dance Orchestra, San Francisco.

KLX—Oakland Tribune (509 Meters)

3 TO 5 P M—Baseball.

7 TO 7:30 P M—News, weather, market bulletin.

KRE—Berkeley Gazette, Berkeley

(278 Meters)

8 P M TO 12 M—Claremont Hotel Dance Orchestra.

DISTANT STATIONS KHJ—Los Angeles Times, Los Angeles (395 Meters)

(395 Meters)

8 TO 10 P M—Program presented through the courtesy of Barker Bros., arranged by Claire Forbes Crane.

10 TO 11 P M—Art Hickman's Dance Orchestra from the Biltmore Hotel.

KGW—Morning Oregonian, Portland (492 Meters)

11:30 A M—Weather forecast.
and story by Aunt Nell.

3 P M—Children's program.

10 P M—Police reports, baseball scores, weather forecast and dance music by George Olsen's Metropolitan Orchestra of Hotel Portland (two hours).

ours).

KFI—Earle C. Anthony, Inc., Los
Angeles (469 Meters)

5 TO 5:30 P M—Evening Herald

bulletins, 0 TO 6 P M-Examiner news

5:30 TO 6 P M—Examiner news bulletins. 6:45 TO 7:30 P M—Vocal concert. 8 TO 9 P M—Harry James, monolo-gist, arranging Glendale concert. 9 TO 10 P M—Examiner concert. 10 TO 11 P M—Popular song con-

cert.
11 TO 12 P M—Ambassador Cocoa nut Grove Orchestra.

Rechargeable "B" Storage Battery. We are pleased to announce that we are the sole distributors for the

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This battery comes in a neat, com-

pact case with hinged lid. Binding posts at back of case for connecting the sets. Can be transported on

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San Francisco, Cal.

WBAP—Fort Worth Star-Telegram, Fort Worth, Tex. (476 Meters) 7 TO 7:40 P M—Review of the in-terdenomination Sunday school lesson and radio bible class by Mrs. W. F. Barnum, leader of the Barnum Bible Class of the First Methodist Church.

Sunday, June 29

KPO-Hale Bros., San Francisco (423 Meters)

11 TO 12 A M.—Organ prelude, Theo. J. Irwin. Prayers and sermon, Dr. Lewis J. Sawyer, pastor Hamilton Square Baptist church, "Doers of the Impossible." Soloist, Mrs. C. G. Fries,

soprano, 8:30 TO 10 P M—Rudy Seiger's Fairmont Hotel orchestra. KLX—Qakland Tribune (509 Meters)

Fairmont Hotel orchestra.

KIX—Oakland Tribune (609 Meters)
9:30 TO 10 P M—Talk on popular subject by Rev. John Snape, pastor of the First Baptist Church of Oakland; sacred songs by members of the choir, First Baptist Church of Oakland; Sacred songs by members of the choir, First Baptist Church of Cakland (312 Meters)

11 A M TO 12 NOON—Non-sectarian church services; sermon and prayers, Rev. Frank M. Silsley, pastor of First Presbyterian Church, Oakland; Walter B. Kennedy, organist.
3:30 TO 4:30 P M—KGO Little Symphony Orchestra:
Waltz, On the Beautiful Hudson; overture, Night in Granada; Menuetto; Scherzo No. 1; Gavotte.
Baritone solos, The Open Road; The Gypsy Trali; D. H. Gross, Plano solos, Polonaise in A Major; Butterfly; Beatrice Sherwood.
Baritone solos, Lord God of Abraham (from "Elijah"); Save Me O God; D. H. Gross.
Plano solos, Humoresque; Rondo; Beatrice Sherwood.
KGO Little Symphony: Descriptive plece, By the Swanee River; Scotch Poem; march, The Princess; Old Song Series (No. 9), Doan Ye Cry, Ma Honey.
7:30 P M—Non-sectarian church services, Rev. Frank M. Silsley, First Presbyterian Church, Oakland.

Radio Girdle for Ships

Radio direction finders are being placed around the British Isles so that ships near any part of these shores will be able to get their bearings with ease.

SPECIAL-

Tuesday, June 24, 1924.

221/2-volt \$1.60 Guaranteed Tubes \$3.00 —No. 201A

Electric Soldering \$2.35

ALSO OTHER SPECIALS. We Save You 15% Off List.

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S. F. FANS FIGH

MODERN HOME HAS RADIO IN EVERY ROOM

Problems of keeping the maid contented, putting the children to sleep, keeping the housewife happy, and affording entertainment for oneself, are solved by the newest application of radio.

The home of O. H. Caldwell, editor of Electrical Merchandising, at Bronxville, N. Y., is equipped with a wiring system that distributes radio programs to each room in the house.

The children in their upstairs nursery have bedtime stories delivered right to their beds. The housewife does her kitchen work to the tune of radio music; and the maid of all work finds her room as lively as a jazz ball-

The various house circuits are controlled by a group switch, which short circuits the lines not to be operated. The plug which feeds the house circuit can be plugged into the radio set directly for operating head phones only, or can also be phones only, or can also be plugged into a jack on the amplifier, when it is desirable to build up volume for the loud speakers in the various rooms.

All the circuits are in series, with short-circuiting jacks, except a pair feeding the various bedrooms, which is a pair in the 10-wire cable for the various house intercommunicating tele-

phones. The "radio outlets," as improved, consist of standard jacks mounted in single-hole switch faceplates, made for use with switches.

The secret of letting the family "go to sleep by radio" is a clock switch, of the type used on electric cookers, which is inon electric cookers, which is in-serted in the A battery circuit, and opens that circuit after the lapse of any predetermined time, from 10 minutes to two

Want Chilean Radio

German financiers have put in a bid for 11 radio stations in Chile at a cost of \$1,385,000. British Marconi type stations are now in use there and there has been public demand. has been public demand for a

LET'S SWAP

These "Swap" advertisements will be published free of cost until further notice in the Mon-day Radio Magazine of The Daily News. The article to be traded must be radio equipment. Keep the wording concise.

TO SWAP—One new De Forrest tube and pair of Baldwin phones type "B." for a. 23 or 43 plate con-denser, and one vario-coupler 150-600 wave meters. Phone Market 690.

O SWAP—A dandy crystal set, complete with headphones; almost new; in fine condition; gets all local stations. Phone Market 1412.
O SWAP—One-loop aerial and a C-300 detector tube for radio apparatus. 415 Miguel-st. Phone Mission 3611, after 6:30 p m.

TO SWAP-6-volt amplifying tube for get headphones; value \$3 to \$5. P. S. Jones, 1410 Milvia-st, Berkeley. Phone Berkeley 2274J.

TO SWAP—Two dandy crystal sets, in exchange for phonograph attachment or other parts. H. J. Pratt, 441 Fourth-av. Phone Bayview 7663.

O SWAP—Columbia variometer, new, for phonograph loud speaker attachment or something of equal value. C. H. Gereke, 1000 Ash-bury-st, apt. 3.

O SWAP—Remier variometer for two 23-plate condensers. H. E. Geay, 2911 Shattuck-av, Berkeley.

TO SWAP—Two \$4 Feri variometers and a 1250-turn honeycomb for a complete variocoupler and 23-plate variable condenser. John Kriel, phone Valencia 2680.

TO SWAP—Four tubes, 199 or 201. for a good radio set. Joe Kabb, 154 East-st.

TO SWAP—Tungar 2½-amp, charger, brand new, for magnavox and pay difference for Tungar 5-amp, charg-cr. Martyn, Valencia 1717.

TO SWAP-Three W. D. 12 tubes for 3 U. V. 201 tubes.—Joe Kabb, 154 East-st.

TO SWAP—\$100 Columbia Grafo-nola, will trade for a radio st. Give good description.—Emile Price, 202 Maple-av, South San Francisco, Cal.

I'HREE-COIL SET

BY ISRAEL KLEIN

NEA Service Radio Editor For a brief range of perception, greater selectivity in tuning and simplicity of construction, try the three-coil regenerative set.

It is just a simple threecircuit tuner that doesn't bother your neighbors and is one of the simplest sets to put up. At the same time, with two stages of audio amplification added, it should bring in stations from 500 to 1000 miles, or even more, on a loud speaker.

The receiver consists of the following parts: One three-coil mounting

One 75-turn honeycomb

coil for the primary. One 75-turn coil for the

secondary.

One 50-turn coil for the tick-| fied unit is planned.

One variable condenser, .001 mfd, 43 plates.
One 23-plate variable condens-

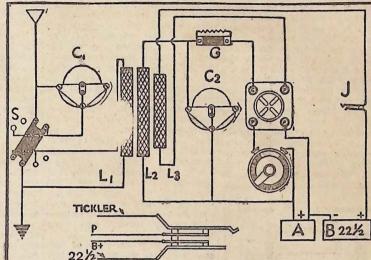
er, .0005 mfd.

One series-parallel switch and points.

One vacuum tube socket. One 6-ohm rheostat.

One grid condenser and leak. One single circuit jack.

A double circuit jack is neces-



Hook-up diagram of the three-coll receiver with detailed diagram showing connections to closed circuit jack for audio amplifier.

The 43-plate condenser is connected in the aerial circuit and is controlled by the series-par-allel switch. The other conallel switch. denser is shunted across the secondary coil.

Otherwise the hook-up is as simple as any other regenerative circuit.

For low wave lengths-as low as the combination of 75-75-50 coils can reach—the switch is sary if the addition of an ampli- set to connect the condenser in ler controls the regeneration.

series with the primary coil. For the broadcasting wave lengths the condenser is con-

nected in parallel with the coil.

Tubes for the circuit may be either of the storage battery or

dry battery variety.
Tuning is accomplished chiefly with the two condensers. The variable distance between the primary and secondary coils controls the antenna coupling, while the movement of the tick-

WIZARD?



Mark Kingt of Kenosha, Wis., is hailed as a radio wizard for his invention and "magnetic theory" of radio.

Radio Directs Truck

Station WOC, Davenport, Ia. guiding a radio equipped uck to the Pacific coast. truck to the Pacific coast. Weather and road conditions will precede the truck on its will precede the truck on its way, while concerts received through a loud speaker will entertain crowds at the tourist camps. camps.

French Farmers Fall
France is going to have a broadcasting station for farmers only. It is to be broadcast from the south of France, spreading farm news especially and relaying the concerts of Paris and farm news especially and relaying the concerts of Paris and able. London broadcasters.

'Ham' Has Own Theory, Builds Set, Proves It

BY NEA SERVICE

KENOSHA, Wis., June 23 .-Out of the world of radio amateurs comes one rather obscure 'ham" with a theory of his own, an invention of hope and a claim of highest expectations. The amateur-Mark Kindt of

this city.

The theory—that radio, a form of magnetism in itself, travels across space through the aid of the earth's magnetism.

The invention—a four-tube receiver for which Kindt claims remarkable results and advantages.

claim (made by his friends mostly)—that he is well on the way to become another Charles P. Steinmetz, another radio wizard.

Long at It Kindt with Anthony Winther have been working on radio for the last four years. In a little shack on the west side of the city, he is working on his new set. He has already applied for patents on it.

According to Kindt the re-ceiver can dispense with antenna or ground for a receivon a loop, and from coast to outside serial

"Radio has been supposed to

travel through a medium called

that the necessary properties of such an imaginary medium make it ridiculous," explains Kindt. "For instance, ether is supposed have 100,000 times the rigidity of the hardest known tool steel and at the same time must permit material objects to pass through it without resistance."

So Kindt scouts that idea and has evolved the theory of magnetism for radio. He has come to this conclusion after years of testing. Just as the magnet affects the compass, he believes, iron or steel affects radio waves.

"It is a known fact in electrical science," Kindt goes on to explain, "that a current passing through a wire sets up a magnetic field surrounding that wire. The magnetic theory says that the rapidly oscillating magnetism spreading from the magnetism spreading from the transmitting aerial produces in the earth's magnetism distortions exactly corresponding in form to the currents sent into the aerial by the transmitting apparatus. These distortions radiate into space at the speed of light.

"Fading" Explained

"It is also generally known that when a magnetic field is caused to vary around a conductor, an electrical current is set up in that conductor. Therefore, says the new theory, when these magnetic distortions pass through your receiving aerial, they set up in your aerial minute currents exactly corresponding to those sent into the

transmitting aerial.

"This at once explains such phenomena as 'fading,' 'dead spots' and particularly does it explain why an efficient aerial gives results thousands of times in excess of those obtained with small loops.

"The more of the earth's mag netism that you intercept with your aerial, the stronger the signal becomes, and the longer the distance you receive.

No Radio for Beach

Bathers at Bournemouth beach, England, must enjoy themselves without radio, for the town council will not have the aerials mar the beauty of the resort. And there is a won-derful broadcasting station near-

DX PROTEST CUT IN SCHEDULE FOR SUMMER

In protest against the recent ruling of the American Radio Relay League, which cuts down the time allowed to amateur radio operators for transmitting, the San Francisco Radio club voted at its meeting Thursday night to send a telegram and letter to A. R. R. L. headquarters.

The change in hours, which would be 8 to 10:30 instead of 7 to 10:30, was ordered by the A. R. R. L. as a result of the daylight saving law in effect in the east during summer months.

Plans are being made by the S. F. R. C. to occupy a booth at the San Francisco Radio Show, which will be held in August at the Exposition auditorium.

Members of the San Francisco Radio club are looking forward to their vacations in Yosemite valley this year. The first departures are scheduled to start at the end of this week, June 28.

Many of the members are planning to take along receiving apparatus, so that they may keep in touch with the San Francisco headquarters. 6RY, which is operated by Julius Brunton Co., 1380 Bush-st, is also the official transmitting station of

the S. F. R. C.

6CLS, otherwise J. I. Steventon, has a regular ham station. ton, has a regular ham station. He uses two 5-watters, with 550 volts on the plate. The rectifiers are bridge type, and have just been put in lately, giving him 2½ to 3 amps. 6CLS has been doing some pretty fair DX lately, owing to the new rectifiers. A few days ago in the afternoon 6ELS worked Los afternoon, 6FLS worked Los Angelos on fones. His C.W. signals have been heard over 2000 miles away. All the stations that he works report him pure D.C.

The receiver is a low loss tuner, one built especially for amateur work. It receives sig nals from 95 to 370 meters. 6CLS is a regular all-around am-

ateur station.

6AWR is coming on the air soon with 5 watts straight Hartly circuit, with 550 on the plate, C. W. and fone.

ANSWERS

Questions addressed to this department will be answered by L. E. Day of the Day Radio laboratory, 693 Mission-st. No hookups will be printed.

H. Gubini, 5414 California-st,

(1) Wish suggestions on set made from inclosed diagram. (2) In what way would different variable con-densers affect it? (3) Can you sug-gest a better hookup? (1) The hookup inclosed is of

the regenerative type, but is a single circuit and would not be very selective. If you use this set, a very short aerial will increase selectivity. (2) The use of a large condenser would tend to stiffen the circuit and sharpen of wire from coil "B." (3) The ultra-audion, or three-circuit regenerative or Harkness reflex, should give better results than

hookup inclosed. E. Mollerus, 1437 Galvez-av,

Have radiola senior set with two-stage amplifier; aerial, two wires 45 feet long. Am unable to get anything but local stations.

This is the closed season for

long distance reception and you will be unable to hear long distance every night. However, there will be some nights when stations will come in. You will be unable to get distant stations when local stations are on, as your set is of the single cir-cuit type. Suggest you go over your aerial and ground connections and make sure that they are good. Test both "A" and "B" batteries.

Sixty-five engineers were used to keep a land line open during a recent radio program broadcast through WEAF from a distant studio.

FOR

There is only one way to be certain of getting the best of the news of the radio world as it occurs daily. That is by having The Daily News sent to your home each afternoon. If you are not a regular subscriber, mail this coupon to the Circulation Department and receive The Daily News. The price is only 50c a month.

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