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RADIO
MAGAZINE

The Daily News

EVERY
MONDAY

SAN FRANCISCO, MONDAY, APRIL 7, 1924

LIGHT AND POWER BROADCAST

SOLON CLAIMS ADVERTISING IS RUINING RADIO

WASHINGTON, April 14. —

The time has come when national legislatures must step in to check unnatural growth and to stop certain abuses of radio activities, according to Rep. Emmanuel Celler. Few laws concerning the development of radio have been devised, but they are needed now, he said.

Many broadcasting stations have developed paid-for propaganda and advertising in a most deceptive and disguised manner. Some of his examples of this indirect advertising follow:

This is B. L. A. A., broadcasting station of the Jumbo Peanut Co. at Newark, N. J. You will now have the pleasure of listening to the "Walk Up One Flight" Clothing Co.'s orchestra. Their first number will be "You don't wear them out if you don't sit down." Should any of our radio fans desire to communicate with the "Walk Up One Flight" Clothing Co.'s orchestra, they can do so by communicating with B. L. A. A. station.

This is S. P. O. O. F. station of Jamaica, Long Island. You have just heard Mr. B. Fuddled, of the Lone Star Ham Co., in his interesting talk on "Tit-Bits" and "Why Delicious Lone Star Ham should be on every table."

Those of you who relish a good cigar will be delighted to hear that our next number will be a song, "Rings of Smoke," to be rendered by Mr. Jack-A-Napes, general sales manager of the Amalgamated Cigar Stores Co. We ask our radio fans to remember the Amalgamated Cigar Stores Co., because it will have one of its employees perform for us every Monday night. Mr. Jack-A-Napes. S. P. O. O. F. signs off for the night after announcing that at 3:45 tomorrow afternoon every housewife will welcome Mrs. Laura Net, of the Durable Pancake Co., who will give helpful lessons on "How to make flapdoodle out of sawdust."

DON'T

Don't think you can make good connections

In a coffee pot, 'cause it's ground,
Don't think that some ham is knocking,
When your receivers start to pound.

Don't think you must have a bath towel,
When the damped waves roll in.
And don't be so dumb as to think
That cat whiskers come from a kitten's chin.

Don't think that the thing called a tickler,
Has ever made anyone giggle.
Don't think that the detector filament,
Got crooked because of a wiggle.

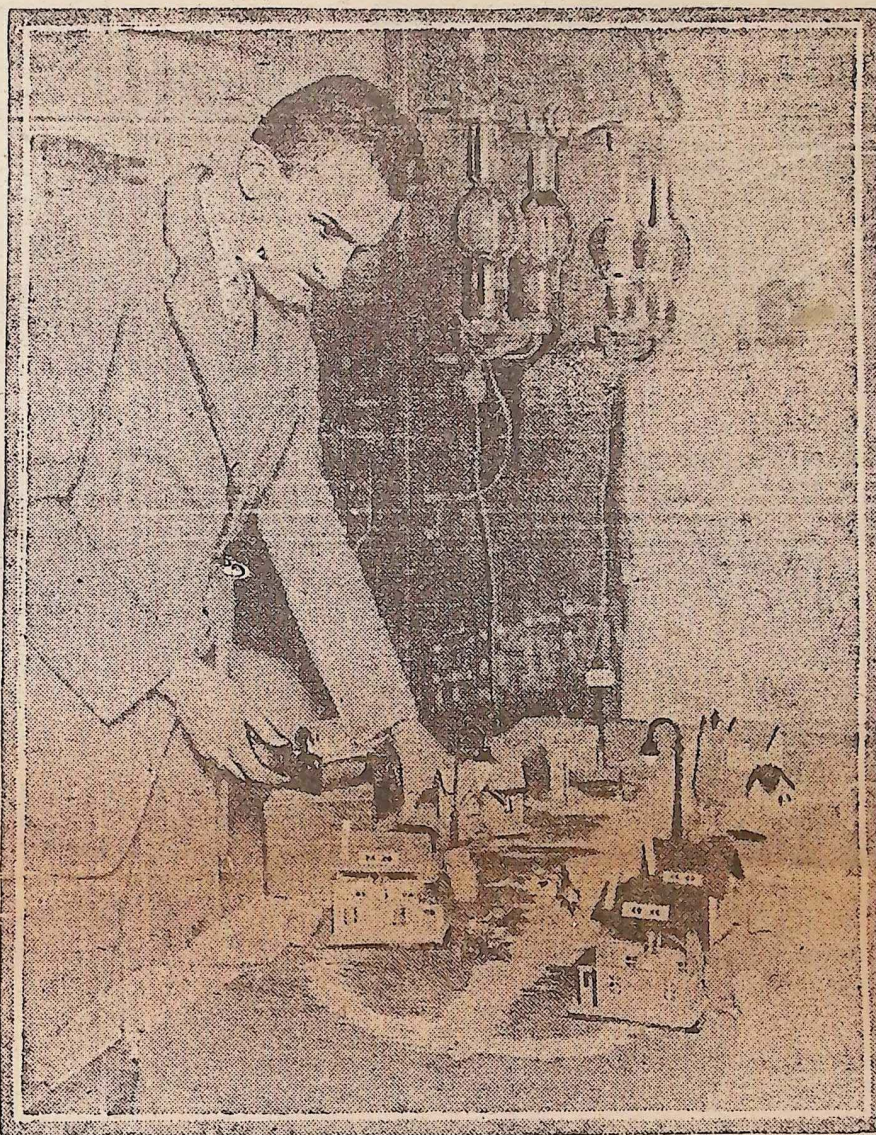
Don't think mother ever could make,
The contraption we call a pancake,
And always remember that soup
Will spill over the edge of a condenser plate.

—By a Radionut.

MUSIC TAX CAMPAIGN ON

American authors, composers and publishers are requested by the National Association of Broadcasters, 1265 Broadway, New York, to communicate with their congressmen to combat the proposed music tax on radio broadcasting.

LATEST AIR DEVELOPMENT



John M. High Jr and his miniature village showing apparatus for lighting street lamps by radio.

SUPER-POWER STATIONS SOON

BY GUY E. TRIP

Chairman Board of Directors, Westinghouse Electric & Mfg. Co.

After about four years of experimentation, radio broadcasting appears to have started upon a definite line of development. Of course, with so new and rapidly changing an art, it is difficult to be certain as to what may happen even in the near future; but granting that no revolutionary inventions are immediately ahead of us, the course that radio is destined to follow seems fairly clear.

Curiously enough, there is a close parallel between the tendencies in both the electrical and the radio fields. We are now practically assured, that electrical development will result in super-power, where a relatively small number of large steam and water power stations will serve large areas of the country in the most economical and satisfactory manner. Similarly with radio, present conditions favor the formation of a super-radio system, where a few powerful stations of the highest type, located in the centers of art, entertainment and education, will form the foundation of our national (or rather of an international) radio service. There is, however, this difference between super-power and super-radio. With super-power the duplication of services in any community is unnecessary and involves inefficiency, so that super-power must be monopolistic in character. With radio, however, it is most desirable

that every community is reached by several distinct and different services because matters of taste and interest cannot be standardized. A monopoly in the radio broadcasting field would, therefore, be contrary to public interest.

Radio is no longer a fad, but a fact. As an industry it has doffed its swaddling clothes over night, as it were. In the short space of three years over 3000 manufacturers of radio supplies have risen throughout the country. Over a quarter of a million people directly or indirectly are connected with the production, distribution and sale of radio products. A library of over 250 books has been written on the subject, and more than thirty radio magazines are now published. It is estimated that over \$150,000,000 was spent by the people of the United States for radio products last year, that \$300,000,000 will be spent this year, and there are signs that radio soon will become a half billion dollar industry.

No other art has made such an immediate appeal to human imagination. Probably 10,000,000 people in this country alone now search the air for musical and other programs sent broadcast by radio, and it is likely that within a few years radio may have audience of 50,000,000 people. A step now, however, in the wrong direction may retard the development of radio for many years to come, and it is our duty, therefore, to examine the position in the light of our knowledge of and experience

with parallel problems of development and distribution.

Super-power would unify the power resources of the country into a vast connected stream, the stream to be tapped at suitable points and the power distributed to millions of homes and industrial plants. Super-radio would create a chain of super stations, connected by radio or by wire, links, which would radiate to every home in the United States a program of entertainment, education and news. Thus, let us say, six giant high-power broadcasting stations, each linked up with the points where the programs originate and also linked up with one another, in accordance with some general plan as later outlined, would be the distributing sources of complete and well balanced programs available to every home in the United States.

Just as there can be no thought of restricting free speech, so there can be no thought that the erection of a chain of super-power broadcasting stations would give any one interest a monopoly of broadcasting. In the great reaches of the air there is room limited only by the available wave lengths for every industry and every interest which is willing and able to contribute this public service. The basic problem is this: Radio has created a great and growing industry, dependent for its existence and development upon the giving of a public service. Without broad-

(Concluded on Page 7, Column 5)

N. Y. INVENTOR OPERATES A MODEL TOWN

BY DONALD H. SHORT

NEW YORK, Apr. 14. — The year is 1954.

Imagine yourself transplanted to this scene, 30 years hence. It's getting dark, so you press a little button on the wall and a faint light glows in the bulbs in the chandelier. As you turn the little dial beneath the button, the light grows brighter until it attains the required brilliancy with the light "tuned in" for the evening. Your electric heater is plugged in on the light switch, deriving its power from the same source.

Outside, a big rubber-tired electric bus whizzes by, with its aerial but a few inches from the roof. Across the street two workmen are unloading an electric motor. One of the men turns a switch at the side and the shaft of the motor begins slowly to rotate. A rope is fastened to the revolving shaft and, as the men guide it, the big motor moves down the planks under its own power.

You call a friend by telephone and, instead of asking you his number, the operator inquires his wave length and tunes you up to it.

How often you have read such stories, problematical, dreamy and seemingly impossible, depicting a kind of Utopia of Science? Most of them are impossible, with no more foundation than the author's fertile imagination, which is creating things, generally, without even a knowledge of the basic principles of his ideas.

Is Electric Age at Hand?

The little fiction story above, however, is not only possible but, to a certain extent, probable, if the work which John M. High Jr is now doing is continued and perfected. High has succeeded in a number of very interesting experiments with the transmission of light, heat and power by radio, and he believes that in the future methods can be so perfected that entire towns may derive their electrical energy from a centrally located broadcasting station.

High has set up a miniature village—street lamps and all—which he actually lights by radio. The writer went up to High's house in Riverdale, N. Y., on a very cold and stormy night, accompanied by two photographers. After going into the house to get warmed up and to meet John High, who, by the way, is a mighty interesting man, we accompanied "Jack," as everyone called him, to the little laboratory where he has set up his miniature village. There he quickly threw on the switches, using 500 watts of transmitting power, and the bulbs in the little street lamps lit up. We looked on in amazement for a moment, until High said:

"Pick one up." We proceeded to do so, and much to our amazement the light remained as brilliant as before, until it was moved a little too far from the table and went out.

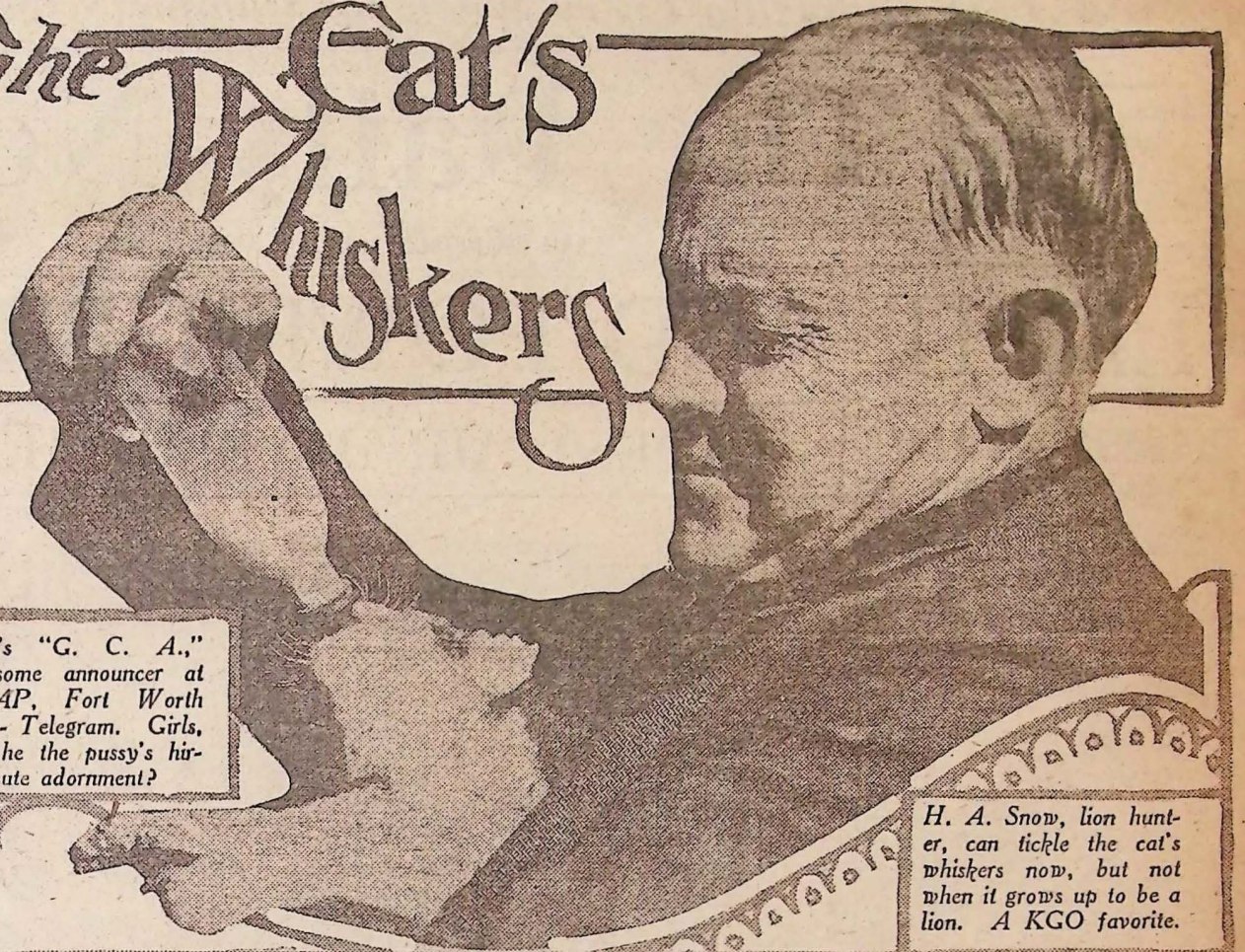
The operation was repeated several times and a thorough examination made of the little lamp post, but no trick device could be discerned. There was nothing, in fact, except the bulb itself, the little iron post and a small coil of thin wire which was fastened to the back of the post. This fastening of the coil was merely for demonstration, High explained, for the wire could be wound around the base of the post and thus be out of the way. This would be the

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The Cat's Whiskers



Here's "G. C. A.," handsome announcer at WBAP, Fort Worth Star - Telegram. Girls, isn't he the pussy's hirsute adornment?



H. A. Snow, lion hunter, can tickle the cat's whiskers now, but not when it grows up to be a lion. A KGO favorite.



This is General Electric Co.'s KGO plant, one of the few broadcasting stations housed in a special building. It cost \$175,000. It's the feline's mustache, isn't it?



Her "daily dozen" with radio music's aid keeps Miss Marie Flynn's figure as fine as a cat's whisker.



Ada Morgan O'Brien is the "c.w." as program director at KPO, Hale Bros. Inc.

BOY INVENTOR MAKES SET ON COLLAR BUTTON

To increase and enlarge radio receiving sets is the goal of many radio fans, but Edward Ball, a Providence (R. I.) boy, won't be contented until he has constructed a stickpin radio set. He has already perfected several diminutive crystal radio sets in a fiber cube one-eighth of an inch thick.

Another young Providence radio engineer, Albert Blomquist, is a radio enthusiast who will not be satisfied until he has built a receiver in a pea.

These young builders of tiny radios declare it is very simple to construct them, if one has patience and small fingers. Parts needed include a small piece of fiber compound, two tiny gold-plated screws and a bit of crystal.

From the fiber is cut a cube one-eighth of an inch thick. A hole is bored through the center of the cube. One screw is inserted so that the tip reaches about half way through the cube; that is, one-sixteenth of an inch. The speck of crystal is then inserted into the hole from the other side. After this, the other screw is put in the open end so that it touches the crystal. The ground and one phone plug is attached to one screw head, and the aerial and the other phone plug to the second screw. The set is finished.

In another set, a bit of crystal fastened to a collar button, from which four fine gold wires extend. To two of the wires are attached the ground and aerial, and the others are for the phone plugs.

HAZELTINE IN PATENT FIGHT

A campaign to arrest the unauthorized use of the Neutrodyne trademark and to inform the public how to discriminate between genuine Neutrodyne receivers and imitations is being waged by the Hazeltine Corporation, "sole owner of the Neutrodyne patents and trademarks."

New "Network"

A new "network" of large broadcasting stations is being contemplated for Europe, America and the Far East. The first has already been completed at Saigon, French Indo-China. It can communicate direct with Bordeaux, a distance of 6000 miles, with the Himalayas in between.

Danish Plan Fails

A plan for voluntary subscriptions from fans, dealers and manufacturers for the support of a broadcasting station in Denmark has failed because of lack of sufficient contributions. The plan is interesting to American fans and broadcasters, due to efforts being made here to solve the same problem.

Up All Night

WHB, Kansas City, again stayed up all night, for the second time. The occasion was the second annual all night international program, when broadcasting was continued from 7 in the evening until 8:35 the next morning.

Successes Heard

Station WOR has an interesting weekly series, called "Half Hours With Men of Achievement," in which famous men broadcast talks about themselves and their work. The series is sent out every Wednesday evening.

Tungsten Filaments

Tungsten filaments used in electric light bulbs and radio vacuum tubes are coils of almost invisible wire only one-thousandth of an inch thick, wound on a core of steel or brass only four one-thousandths of an inch through.

Heard Outside

Station WGY in Schenectady is looking beyond the borders of the United States and Canada for records. It reports having been heard in Lisbon, Scotland, South Africa and other distant points, recently.

RADIO MAY GUIDE PLANES

NEA Service

DAYTON, O., Apr. 14.—High above the clouds, out of sight of land, yet bound for a definite destination, airplane pilots in the future may thus be guided by radio.

The promise is made through observation of recent tests conducted here with radio beacons and other instruments by which aviators were enabled to fly across country without a landmark to guide them.

Not long ago Lieut. E. H. Barksdale and Instrument Engineer Bradley Jones flew from McCook Field here, direct to Mitchell Field, New York, a distance of 575 miles, in less than four hours and did not see land three-fourths of the way!

Two important mechanical instruments figured in this feat.

But more recently another flight was made over Dayton high above the clouds, and a system of radio signaling was responsible for the pilot's guidance.

Combination of both methods of airplane guidance above sight of land may be the outcome of further tests with both sets of instruments.

On Long Flight

The purely mechanical instruments used in the Dayton-New York flight consisted of an "earth induction compass" and an "inclinometer."

The earth induction compass is a small cylindrical affair with propeller, which is attached to the rear of the plane to remove it from magnetic influence and which controls an indicator on the instrument board in front.

The inclinometer is "the eyes of the airplane," telling the position of the ship in straight flight, the course it takes in a bank and the fore and aft inclination of the plane.

Before he goes up, the flyer's course is predetermined, the distance to destination is carefully figured, and the degrees necessary to keep the pilot on his course painstakingly calculated. All the pilot has to do is keep the compass needle at zero and watch the indicator showing the



Flight above clouds made possible by the earth induction compass, left, and the inclinometer, right.

number of miles he has traveled. When the required distance is covered, the aviator noses the ship downward and lands where he had planned.

Worked Accurately

"We passed through all sorts of clouds and over all kinds of territory," said Jones in explaining how the instruments operated on his last voyage. "We flew 400 miles with never a sight of land."

"As our instruments told us we were getting near New York, we watched them closely and by signaling, we both agreed at the proper time that it was time to dive down and take a look."

"As the plane nosed downward we began to recognize landmarks and knew that our instruments had been set correctly and that we had read them right. Closer inspection of our surroundings showed us that we had dived down right over

Mitchell Field, our ultimate destination."

Signal Device

The radio beacon is another step in the same direction.

By use of this instrument, the aviator receives definite signals by which he can tell whether he is running true to his course. The letters A and T were repeated over and over in the recent test flight.

As long as the aviator flew over the correct course both letters were equally loud. But as soon as he swerved off, one letter became louder than the other and by this difference he knew which way to turn to get back.

The receiving set he used was of the ordinary airplane variety. The signaling device was developed by the Bureau of Standards in co-operation with the Signal Corps and the Army Air Service.

FAN GETS DX ON CRYSTAL

This is the story of an inventor who has been compelled to go into business.

He is Harry Grant jr and lives in Burlingame.

Some years ago when the radio bug first started buzzing around these parts, Grant got interested in the subject.

He bought a small set, rigged it up and thought it marvelous that he could hear programs broadcast by San Francisco newspapers.

His wife became interested and the two had many discussions—some heated—as they tinkered over the set.

Grant tinkered away until he had made a set or two.

He then became interested in crystals, especially as he could not get any distance with those he was able to purchase.

One day a friend of his, who is rather famous in San Francisco but whose identity Grant guards jealously, dropped in from a far port, Grant sometimes will hint it's in South America, with some odd ore he had found.

Grant, in his experimenting, tried this ore as crystals and was amazed at the results he obtained.

He doubted his own judgment and sent crystals to some fellow "radioites," or whatever you call those chaps who have quit golf.

They reported they got stations they had been unable to hear before.

Of course Grant was pleased. He not only had discovered a crystal which apparently would do things others would not, but he knew where to get the ore, for his friend by this time, had returned to South—well to the place.

The radio fans apparently pass news as quickly as convicts in prison, for it was not very long before Grant lost considerable sleep because of night visits from folks who wanted his crystals.

And that wasn't all.

Every time a fan came for a crystal, he saw Grant tinkering with his set and, after listening in, he usually heard enough to convince him that this particular

set was the one he wanted.

The result was that Grant couldn't keep a set for more than a couple of days before it was sold and he had to build another for himself.

The many requests for the crystals and his sets practically compelled the inventor to get into business.

He poked through his files and dug up some of the letters he had received from enthusiastic buyers of crystals and to these were added the batch which arrived in almost every mail.

For instance, there's one from a Texas fan who got 62 stations, including KGO, 1525 miles away, and 11 stations more than 1000 miles distant.

And here's one from Hamilton, Mont., stating he built a reflex set using a high grade fixed crystal but could not bring in a station. He got hold of one of Grant's crystals and distant stations immediately came in. The Canadian stations, St. Paul, Dallas, Tex., Chicago, Los Angeles and Portland he gets regularly.

And an Alameda fan says he gets KFI, KHJ, KJS, Los Angeles; KGW, Portland, and CFCN, Calgary, on a crystal set using Grant's product.

Grant himself says he has been able to bring in distant stations every night since last September using a straight crystal set, recently with a wave trap, and that during that period static has only interfered with distant reception twice.

Grant's crystals have been given the Certificate of Merit by the Radio News Testing Laboratory.

SUPER-HETRODYNES—
FREED-EISEMANN, FADA
and ATWATER-KENT
Let Us Solve Your Radio Problems.
Buy a Radio That Will Never Get
Out of Date.
A RIGHT SET AT A RIGHT PRICE.
J. H. BRUCE, Radio Man
Call Garfield 4018
LIBERTY ELECTRIC COMPANY
479 Sutter St. San Francisco

CONDITION OF WEATHER CAN'T BE FORECAST

WASHINGTON, Apr. 14.—Several times recently the suggestion has been made that the Weather Bureau of the United States Department of Agriculture undertake to issue forecasts of conditions affecting radio reception. The matter has been given careful consideration, and the conclusion has been reached that it is not advisable for the bureau to engage in such a project at the present time.

It is well known that radio receptions are far better in the winter than in the summer, and at night than by day; also, that, apparently, the weather is one of the factors that influence the receptions.

However, these relations have not been fully worked out, and other factors are involved. The whole matter has recently been the subject of considerable investigation, both in this country and abroad, and it is altogether probable that the time will come when the forecasting of the conditions in question can be undertaken with a reasonable assurance of success.

HELP HINTS

Weak signals in the detector circuit may be caused by the connections of the tickler coil being the reverse of what they should be.

When building a new set it is a good rule to choose the hook-up using the least parts that will give a desired result. Many "Improved Circuits" are circuits in which apparatus has been inserted unnecessarily.

When connection tips on the vacuum tube corrode, weak signals result. Shine up the tips by rubbing gently with a piece of fine emery paper.

Metal roofs on houses will ground the aerials unless they are erected high above the roof. Less than 15 feet between the aerial and the roof will kill your aerial for everything except local signals.

Where a set is noisy, it is often helpful to shunt a .005 mfd fixed condenser across the "A" and "B" batteries. Simply connect the condenser to the negative terminal of the "A" battery and the positive of the "B" battery.

When trying out a receiver for the first time, to prevent burning out more than one tube, try one tube in each of the sockets, one at a time, with all the batteries connected.

A rheostat never needs oiling. Oil will only give a variable resistance that will result in a sizzling or frying noise when it heats up.

Don't paint your coils. If you must cover them with something, get some collodion from your druggist.

If the terminals of the storage battery are coated with vaseline they will not corrode.

STATIONS SEND PROPAGANDA

WASHINGTON, April 14.—Several radio broadcasters are expected to be called before the senate committee investigating the department of justice, to answer charges that "propaganda" against the investigations now going on at the capitol is being carried to thousands of homes through the air.

Recharging
"A" and "B"
Batteries
75c

"A" and "B" Batteries at wholesale prices.
6-volt, 100-amp. hour Batteries, \$14

Day and Night—Phone
Pacific 2144

Gerard Battery &
Electrical Works
Geary at 13th Ave.

THINK OF TOMORROW

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.

Name

Street and number

Send this coupon to The Daily News, 340 9th-st., San Francisco; or just telephone and say, "I want The Daily News."

THIS WEEK'S AIR PROGRAMS

MONDAY, APRIL 14

KFO-Hale Bros., S. F.—423 Meters
NOON—Time signals; Scripture.
1 TO 2 P M—Rudy Seiger's Fairmont hotel orchestra, by wire telephony.

2:30 TO 3:30 P M—Piano solos—Sonata in A major; Grand Polka do Concert, by Kathryn Marie Clark, pupil of Mme. Sidonia Erkely.
Tenor solos—Linger Awhile, A Smile Will Go a Long, Long Way, by Denis Sheerin; Mrs. Sheerin, accompanist.

Piano solos—Impromptu, Hungarian Rhapsody No. 8, by Kathryn Marie Clark.

Tenor solos—Songs of Twenty Years Ago, Ten Thousand Years from Now, by Denis Sheerin.

Program by Jack Falt'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 for children by "Big Brother" of KPO, taken from the "Book of Knowledge." His selections: Little Tiny Hummel; Black Diamond, the little horse that lived in a mine; answers to children's questions.

Saxophone solo—Ray Thomas, 11 years old; pupil of A. A. Thielke.

8 TO 9 P M—Organ recital by Theodore J. Irwin, KPO official organist.

Pieces played in Music Memory Contest were: Monday night, Apr. 7—Andante, Fifth Symphony; La Paloma, Thursday night, Apr. 10—Salut d'Amour; Marche Slav.

March, Le Prophete; overture, Pique Dame—two Music Memory Contest pieces; waltz, Locomotive and Blue (by request); Gavotte, from Mignon; waltz, Gold and Silver; Chanson sans Parole (by request); To a Wild Rose (Woodland Sketches); At an Old Trysting Place; From an Indian Lodge; To a Water Lily; light operatic selection, Matinee (by request).

Tenor solo—The Lost Chord, by Ernst Grosskopf Morison.

9 TO 10 P M—Program by San Francisco Conservatory of Music under direction of Ada Clement.

Lecture—Schubert and Weber, by Ada Clement.

Piano solo—Three Waltzes, by Adrienne Hedger.

Violin and Piano—Sonata, First Movement, by Frances Bonner and Marion Clement.

Song—Hedge Roses, by Rosemary Cunningham.

Piano solo—Impromptu, by Marcus Gordon.

Songs—To Music, Spring Breezes, by Florence Sexton.

Piano solo—Tritation to the Dance, by Herbert Jaffe.

Song—Aria from Der Freischutz, by Charlotte Annabell.

Clarinet Concertina—By Harold Whitman.

Songs—Who Is Silvia? Hark, Hark, the Lark, by Gertrude Annabell Turner.

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

KRE—Berkeley Gazette, U. C. Battery & Electric Co.—275 Meters

8 TO 10 P M—Musical program under direction of the California Music League.

KGO—General Electric Co., Oakland 312 Meters

1:30 P M—New York stock exchange and weather reports.

3 P M—Short musical program; address by M. E. Hurley on the subject of "Part Time Education."

4 TO 5:30 P M—Music by the St. Francis hotel dance orchestra; Henry Halstead, leader.

6:45 TO 7:30 P M—Final stock exchange and weather reports and news items.

8 TO 10 P M—Educational program, "History of Song," Ethel Bumbaugh; Book Review, Wilda Wilson Church; "Agriculture," Prof. F. L. Griffin, U. of C.; "Spain and the Spanish Language," Mrs. Garcia Huibobro, consultant.

KLX—Oakland Tribune—509 Meters

7 TO 7:30 P M—News items, weather forecast, market and financial news.

8 TO 10 P M—Program broadcast by the Radio club, University of California, over private leased wires from the campus through KLX's campus news by A. S. U. C. publicity bureau.

Members of Parthenia cast present piano and instrumental numbers from the 1924 parthenia.

A. S. U. C. band concert.

DISTANT STATIONS

KFOA—Rhodes, Seattle, Wash., 455 Meters

8:30 P M—Rhodes Department Store night; program arranged by the employees. Katherine Marino, soprano; Robert Nichols, tenor, and Warren Henderson will sing several groups of vocal solos; Bathrick's Black and White Male Trio will sing several special trio selections.

KGW—Morning Oregonian, Portland, Ore.—492 Meters

11:30 A M—Weather forecast.

3:30 TO 4 P M—Literary program by Portland Library Ass'n.

7:30 P M—Weather forecast and market reports.

8 P M—Recital by Joseph P. Mulder, tenor.

9:30 P M—Musical program.

KFAE—Washington State College, Pullman, Wash.—330 Meters

7:30 TO 8:30 P M—Economic Effects of War, by Prof. E. E. Dummer, sociologist.

Palouse Council Boy Scouts program—Bugle, international scout call and assembly; Fall in, by Scoutmaster J. C. Cole, formerly of Portland, Ore.; The Oath, Flag Salute, Law, Motto and Slogan; scout songs; scout orchestra music; miscellaneous music; reading; taps.

KFI—Earle C. Anthony, Inc., L. A. 469 Meters

4:45 TO 5:15 P M—Evening Herald news bulletins.

5:15 TO 5:45 P M—Examiner news bulletins.

6 TO 9 P M—Evening Herald concert; Main Supply Stores present Hal Hecox jazz orchestra; Herman E. Abrahamson playing a steel saw with cello bow and hammer.

9 TO 10 P M—Examiner concert.

10 TO 11 P M—Ambassador-Max Fisher's Coconut Grove orchestra.

WBAP—Star Telegram, Fort Worth, Texas—476 Meters

5:30 TO 6:30 P M—Concert by the White Shoe Company Male Quartette.

7:30 TO 8:45 P M—Concert by artists of the Butcher School of Hawaiian Music.

KHJ—Los Angeles Times—395 Meters

12:30 TO 1:15 P M—Program presenting Helen Murray Potter, soprano; Sen. George W. Cartwright, speaker.

2:30 TO 3:30 P M—Program presented through the courtesy of Barker Brothers.

6:45 TO 7:30 P M—Children's program presenting Jane Hughes and the weekly visit of the Sandman and Queen Titania. Bedtime story by Uncle John.

8 TO 10 P M—Program presenting the 160th Infantry band; Frank Braidwood, cowboy baritone; a play by the Pasadena Community Broadcasters, Edward Murphy, director; Dr. Thomas Lutmann.

10 TO 11 P M—Art Hickman's orchestra from the Biltmore hotel.

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2:30 TO 3:30 P M—Program presented through the courtesy of Barker Brothers.

6:45 TO 7:30 P M—Children's program presenting Jane Hughes and the weekly visit of the Sandman and Queen Titania. Bedtime story by Uncle John.

8 TO 10 P M—Program presenting the 160th Infantry band; Frank Braidwood, cowboy baritone; a play by the Pasadena Community Broadcasters, Edward Murphy, director; Dr. Thomas Lutmann.

10 TO 11 P M—Art Hickman's orchestra from the Biltmore hotel.

KFI—Earle C. Anthony, Inc., L. A. 469 Meters

4:45 TO 5:15 P M—Evening Herald news bulletins.

5:15 TO 5:45 P M—Examiner news bulletins.

6 TO 9 P M—Evening Herald concert; Main Supply Stores present Hal Hecox jazz orchestra; Herman E. Abrahamson playing a steel saw with cello bow and hammer.

9 TO 10 P M—Examiner concert.

10 TO 11 P M—Ambassador-Max Fisher's Coconut Grove orchestra.

WBAP—Star Telegram, Fort Worth, Texas—476 Meters

5:30 TO 6:30 P M—Concert by the White Shoe Company Male Quartette.

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RADIO FROM THE GROUND UP

In Lesson No. 1 we learned that there are magnetic lines of force extending about a wire carrying an electric current. A compass placed near would immediately take a position at right angles to the wire. In Lesson No. 6 we saw that a compass always lies parallel to the magnetic lines. Putting two and two together, then, we may immediately conclude that the magnetic lines about a wire carrying current rotate at right angles to the wire.

Also we have learned that iron is a much better medium for magnetic lines to travel through than air. Hence if we wind our wire carrying the current around a bar of iron we shall find that the magnetic "field" spreading out from the iron is very powerful. The more turns of wire we have and the more current there, the stronger will this field be and the farther it will spread. It is possible to make a magnet many thousands of times more powerful when we use the electric current and a piece of iron than with a mere piece of magnetized steel for the magnet.

Type of Iron Used

With most electro-magnets we do not with the iron core to retain the magnetism when the current has been shut off. For this reason a piece of steel is not used. It is too "hard" and its particles do not return to their ordinary arrangement when the electro-magnet force ceases. "Soft" iron is always

used. The lines in the magnetic field set up by an electro-magnet always travel in a definite direction, according to the direction of the current in the wires. The "right hand rule" is a simple scheme to determine which way the lines or the currents flow. Grasp the wire with your right hand and let your thumb point in the direction of the flow of current from the battery—positive to negative. In other words, your thumb will point toward the negative pole of the battery. Your fingers will then point at right angles to the wire and in the direction of the magnetic field about the wire. You may verify this by placing a compass near the wire and you will observe that its north pole also points in the direction of your fingers.

If you know which way the magnetic field is going you can tell the direction of the electric current in the reverse manner. Each single turn of wire on the magnet has a little field all its own rotating about it in a certain direction. Since these turns of wire are all side by side, their magnetic effects add up to form the total magnetic

force and to cause the strong magnetic field which passes through the magnet. The iron toward which the lines of force are travelling in the core, and the lines leave the core at the north end and enter it again at the south.

The electric doorbell is a familiar example of an electro-magnet put to service. The horseshoe form of magnet is used because of its greater efficiency. The current enters at one side, passes through both coils of the magnet and to a small strip of soft iron called the "armature."

This is pivoted and arranged with a spring to pull it away from the electro-magnet and against a small contact. The current leaves by this contact, as shown by the arrow. But the moment the switch or push-button is closed and the current starts to flow the magnetism set up in the iron core attracts the armature. This pulls the contacts apart and interrupts the current, thus stopping the magnetic attraction. At once the spring pulls the armature back again and the contacts touch once more. Again the current flows, and thus the contact is

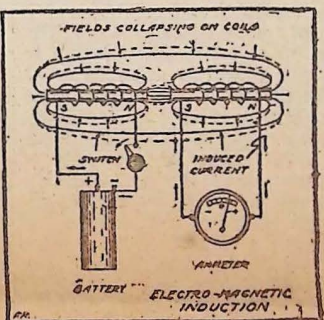
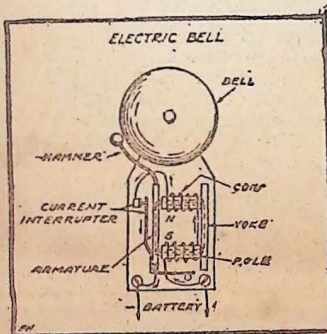
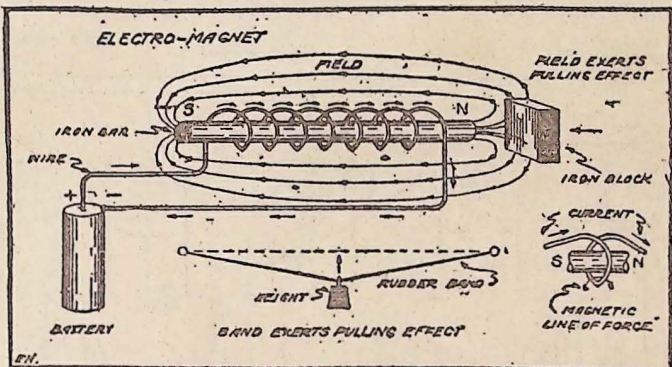
closed and opened every 80 often. Meanwhile, each time the armature was pulled in toward the magnet the little bell tapped the bell.

Induction

If we have two iron cores placed end to end, both having wire wound upon them, we have what is known as a "transformer." Let us connect a sensitive ammeter, called a "galvanometer," across the ends of one winding and then pass current through the other winding. The minute the switch is closed the galvanometer will give a "kick," showing that current was set up in the right hand coil because of the magnetic effect of the other one upon it. However, the instruments immediately return to "zero," showing that no current is now present in the right hand coil.

But when we open the switch to cut off the current, the instrument is again deflected, this time in the opposite direction. Thus we find that current is induced in the right hand coil only when the current in the left coil is changing. In other words, the magnetic field must be spreading out to cause a current in one direction, and falling back again to cause current in the other direction. This is known as "electro magnetic induction."

The next article of this series will be published in next Monday's Daily News Radio Magazine.



LIGHTNING IS ELEMENT OF DANGER NOW

BY ARTHUR COOK

With the approach of summer the lightning hazard asserts itself.

To guard against its striking and destroying your set, and in all probability setting fire to your house, it is necessary to provide a lightning arrester and to take other precautions when erecting your aerial.

The aerial will not attract lightning, but of course it is subject to being struck if it is in the path of a bolt of lightning.

A lightning arrester which will operate a potential of 500 volts or less should be employed.

A grounding switch may be used, but does not obviate the necessity for a lightning arrester, according to federal and state laws.

If more than one lead-in is employed, a corresponding number of such devices must be provided.

The protective ground wire must be of copper, or copper-clad iron, and must be number 14B and S gage.

It should run in a direct line to a piece of water pipe driven at least three feet in the ground. The law governing this states that the water system or steel frames of buildings cannot be used for this purpose.

The ground wire should be connected to the pipe by the use of an approved ground clamp, and the wire must be soldered to the clamp.

Although a grounding switch is not necessary, it is added protection to the set.

Heckling by Radio!

Heckling done by radio! It's possible, but it's a greater nuisance than the heckling in an auditorium. It was tried recently during a Democratic meeting in Kansas City, when the speeches were broadcast. A "heckler" attached an oscillator to an antenna and so "hashed up" the program as to make its reception unintelligible.

THE WEEK'S AIR PROGRAMS CONTINUED

(Concluded From Page 4)

KLX—Oakland Tribune—509 Meters
3 TO 5 P M—Baseball scores.
7 TO 7:30 P M—News items, U. S. weather bureau forecast, market and financial news.

DISTANT STATIONS

KHJ—Los Angeles Times—395 Meters
12:30 TO 1:15 P M—Program presenting Dorothy Bell Robinson, Hawaiian guitar; Edward Murphey, bass soloist.

2:30 TO 3:30 P M—Program presented through the courtesy of Barker Brothers.

6:45 TO 7:30 P M—Children's program presenting Jane Adele Riley, reader, 5 years old; Virginia Eberle, pianist, 10 years old; and Nancy Parent, pianist, 13 years old; pupils of Mrs. Walter M. Reckford; Katherine Girard, soprano, 12 years old; Rita Cummings, soprano, 12 years old.

8 TO 10 P M—Program presenting the choir of St. Luke's Episcopal church; a program of manuscripts arranged by Claire Forbes Crane; Paul Meade Barry, reader.

10 TO 11 P M—Art Hickman's orchestra from the Biltmore hotel.

KJS—Bible Institute, Los Angeles 360 Meters

8 TO 9 P M—Program arranged by courtesy of B. E. Ralph, organist; assisted by Edward Holt, bass soloist.

FRIDAY, APRIL 18

KPO—Hale Bros., S. F.—423 Meters

NOON—Time signals; Scripture.
12:45 P M—Speaker at Commonwealth club luncheon at the Palace hotel—Prof. Monley O. Hudson of the law school of Harvard university and secretariat of the League of Nations, on "Work of the Secretariat of the League of Nations."

1 TO 2 P M—Rudy Seiger's Fairmont hotel orchestra, by wire telephony.

2:30 TO 3:30 P M—Organ recital by Theodore J. Irwin, KPO official organist; special recital of sacred compositions:

Ave Maria; I Know That My Redeemer Liveth (from Messiah); Inflammatus (from Stabat Mater); He Shall Feed His Flock (from Messiah); Cujus Animam (from Stabat Mater); Ave Maria; But the Lord is Mindful of His Own (from St. Paul); He Was Despised (from Messiah); Since by Man Came Death by Man Also Came the Resurrection of the Dead (from Messiah).

4:30 TO 5:30 P M—Rudy Seiger's Fairmont hotel orchestra, by wire telephony.

KLX—Oakland Tribune—509 Meters

3 TO 5 P M—Baseball scores.
7 TO 7:30 P M—News items, weather forecast, market and financial news.

8 TO 10 P M—The KLX Concert Trio—Group No. 1:

Vocal solos—Some Day the Silver Cord Will Break; Ave Maria, April Morn, by Mme. Dorothy Raegan Talbot.

KLX Concert Trio—Group No. 2: Vocal solos—Broken Ring, Rain,

Grand Air (Les Huguenots), by Mme. Dorothy Raegan Talbot.

Violin solo—Selected, by Harriet French.

Cello solos—Selected, by Jozelena Vander Ende.

Vocal solos—Regnava il silenzio (Lucia), by Mme. Dorothy Raegan Talbot.

KLX Concert Trio—Group No. 3:

Orchestra music—The Original Serenaders, by Ernie Spatheco, banjo and manager; A. Soulagre, saxophone; D. Stubbe, piano; E. White, saxophone and clarinet; E. Rossi, drums.

KGO—General Electric Co., Oakland 312 Meters

1:30 P M—New York stock exchange and weather reports.

3 P M—Short musical program; readings by Mrs. Robert d'Erlach.

4 TO 5:30 P M—Music by the St. Francis hotel dance orchestra; Henry Halstead, leader.

6:45 P M—Final stock exchange reports; weather and financial news items.

DISTANT STATIONS

KFI—Earle C. Anthony, Inc., L. A. 469 Meters

4:45 TO 5:15 P M—Evening Herald news bulletins.

5:15 TO 5:45 P M—Examiner news bulletins.

6:45 TO 7:30 P M—Vocal and instrumental concert.

8 TO 9 P M—Evening Herald concert. All-star program by Guy Price, dramatic editor Evening Herald, presenting noted artists of stage and screen.

9 TO 10 P M—Examiner concert.

10 TO 11 P M—Vocal and instrumental concert arranged by Harry Porter.

11 TO 12 MIDNIGHT—Ambassador-Max Fisher's Coconut Grove Orchestra.

KGW—Morning Oregonian, Portland, Ore.—492 Meters

11:15 A M—Market basket.

11:30 A M—Weather forecast.

12:30 P M—Program by Peck Holton's Orchestra of Christensen's Hall.

3:30 TO 4 P M—Lecture by Esther B. Cooley, clothing expert of Extension Service, Oregon Agricultural College.

7:30 P M—Weather forecast and market reports.

8 TO 8:30 P M—Lecture provided by Extension Division.

10:30 P M—Hoot Owls.

KFAE—Washington State College, Pullman, Wash.—330 Meters

7:30 TO 8:30 P M—Agricultural engineering talk.

The Growth of International Interdependence; Prof. F. R. Yoder, sociologist.

KUO

KUO—S. F. Examiner (360 meters).

Daily except Saturday and Sunday.

9:05 TO 9:20 A M—Weather forecast and news bulletin.

11:00 TO 11:30 A M—Market report.

2:30 TO 2:45 P M—Sporting news.

3:00 TO 3:05 P M—Financial bulletin.

5:45 TO 6:30 P M—Sporting news and financial report.

6:40 P M—Weather forecast.

Friday, add to daily schedule:

5:30 TO 5:45 P M—Health bulletin.

Saturday only:

9:05 TO 9:20 A M—Weather forecast and news bulletin.

2:30 TO 2:45 P M—Sporting news.

5:45 TO 6:30 P M—Sporting news and financial report.

6:40 P M—Weather forecast.

Sunday only:

9:05 A M and 6:40 P M—Weather forecast.

SATURDAY, APRIL 19

KPO—Hale Bros., S. F.—423 Meters

12 M—Time signals, Scripture.

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

2:30 TO 3:30 P M—The San Francisco Junior Musical Club presents the following program:

Second Mazurka.....Vivian Shaw

Nocturne.....Virginia Weaver

Idyllo.....Marion Henderson

Piano duet—Titania.....

.....Evelyn and Julia Dodd Merrell

Maiden's Wish.....Margaret Lagen

Liebestraume, Spring Song.....Dorothy Scholtz

Album Leaves, Crescendo.....

.....Evelyn and Julia Dodd Merrell

Witches' Dance, Prelude.....

.....Evelyn and Julia Dodd Merrell

Field's Versatile band playing in the Palace Rose Room Bowl.

8 TO 12 P M—Dance music by Art

Weldner and his popular dance

orchestra. During the intermissions

of this orchestra the KPO Trio will

sing popular songs. This trio—

Ennie Berman, Jimmie Raymond

and Harry Hume—is a regular fea-

ture at KPO every Saturday.

KGO—General Electric Co., Oakland 312 Meters

12:30 P M—New York Stock Ex-

change and weather reports.

4 TO 5:30 P M—Music by the St.

Francis Hotel Dance Orchestra;

Henry Halstead, leader.

8 TO 10 P M—The Piper, a drama

is three acts, by Josephine Preston

Peabody. Presented by KGO Players

under direction of Wilda Wilson

Church.

CAST

The Piper.....Dan Totheroh

Veronika, the wife of Kurt..... Mary Harper

Barbara, daughter of Jacobus... Rose Brown

Wife of Hans, the butcher..... Etta W. Coleman

Wife of Axel, the smith..... Violet Willard

Wife of Martin, the watch..... Ruby Cole

Old Ursula..... Vera Morse

Strolling Players

Michael, the sword-eater..... Harold Minger

Cheat-the-Devil..... E. J. A. Watts

Men of Hamelin

Jacobus, the burgomaster..... Conrad Kahn

Kurt, the syndic..... J. Spencer Riley

Peter, the cobbler..... Albert Allen

Hans, the butcher..... Page Mourse

Axel, the smith..... Howard Irwin

Martin, the watch..... Conrad Kahn

Peter, the sacristan..... William Winters

Anselm, a young priest..... Perry M. Riley

Old Claus, a miser..... Page Mourse

Town Crier..... William Smith

Children

Jan..... Una Elyse Raffety

Hansel..... Elizabeth Edmundson

Ilse..... Elizabeth Edmundson

Trude..... Helen Bacon

Rudi..... Mabel Platt

Scene: Hamelin on the Weser; time, 1284 A. D.

Instrumental selection—Trio in C Minor, Allegro Appassionato; Arion Trio.

Act 1—Instrumental selection—Ave Maria; Arion Trio.

Act 2—Instrumental selection—Medley of Old Songs, Arion arrangement; Arion Trio.

Act 3—Instrumental selections—Largo from the New World Symphony, Songs My Mother Taught Me; Arion Trio.

10 P M TO 1 A M—Music by the St. Francis hotel dance orchestra;

Henry Halstead, leader.

KLX—Oakland Tribune—509 Meters

3 TO 5 P M—Baseball scores.

7 TO 7:30 P M—News items, weather report.

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5:15 TO 5:45 P M—Examiner news bulletins.

6:45 TO 7:30 P M—Instrumental program.

8 TO 9 P M—Vocal and instrumental concert.

9 TO 10 P M—Examiner concert.

10 TO 11 P M—Vocal and instrumental concert.

11 TO 12 P M—Ambassador-Max Fisher's Coconut Grove Orchestra.

KHJ—Los Angeles Times—395 Meters

12:30 TO 1:15 P M—Program presenting Florayne Thompson, soprano.

1:45 P M—Special program presenting Dr. Mayer Winkler, rabbi of Sinai congregation.

2:30 TO 3:30 P M—Program presented through the courtesy of Barker Brothers.

6:45 TO 7 P M—Children's program presenting Billy Anderson, 4 years old; Jack Cullen, 13 years old, and Richard Cullen, 11 years old, violinists. Mary Katherine Link, pianist, 8 years old, pupil of Margaret Hauber.

8 TO 10 P M—Program presented through the courtesy of the Glendale Realty Board. E. Morgan Isaacs, speaker. Pizzicato Quartette.

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

KGW—Morning Oregonian, Portland, Ore.—492 Meters

11:30 A M—Weather forecast.

3:30 TO 4 P M—Bedtime story by Aunt Nell.

10 TO 12 P M—Weather forecast.

Dance music by George Olsen's Orchestra by direct telephone from the Portland Hotel.

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

5:30 TO 6:30 P M—Review of the interdenominational Sunday school lesson and Radio Bible Class by Mrs. W. F. Barnum. Those writing in will be enrolled and sent a certificate of membership.

SUNDAY, APRIL 20

KPO—Hale Bros., S. F.—423 Meters

11 TO 12 M—Organ prelude; Theo. J. Irwin.

Prayer—Rev. W. C. Sherman, secretary Mt. Hermon California Bible Extension.

Sermon—Easter Questions Divinely Answered.

Solos—Etta Wilson, soprano and Norman Semon, baritone.

Male Quartette—College of the Pacific.

8:30 TO 10 P M—Rudy Seiger's Fairmont Hotel Orchestra.

KGO—General Electric Co., Oakland 312 Meters

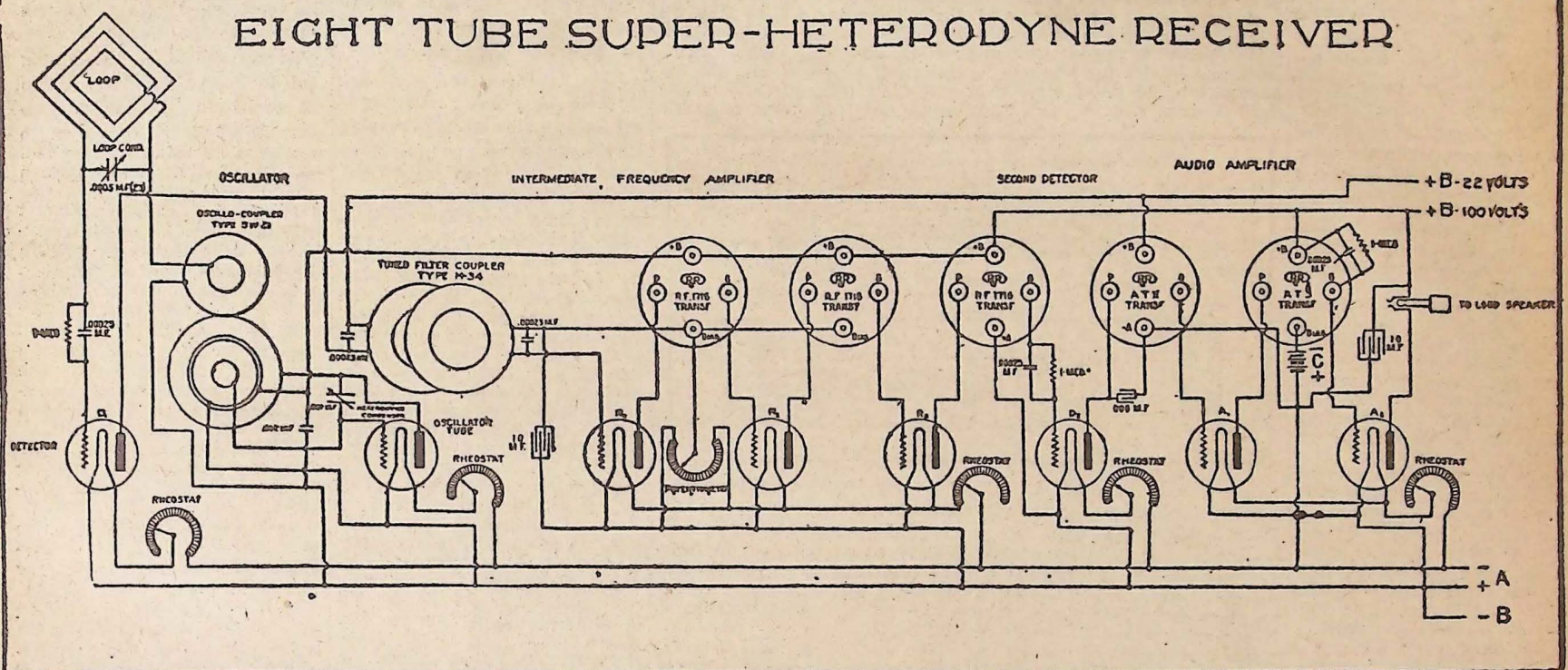
3:30 TO 4:30 P M—KGO Little Symphony Orchestra.

DISTANT STATIONS

KFI—Earle C. Anthony, Inc., L. A. 469 Meters

HERE IS SUCCESSFUL SUPER-HETRODYNE SET

EIGHT TUBE SUPER-HETERODYNE RECEIVER



BY LESTER HUTTER

Undoubtedly you have heard that well-known parrot phrase, "The superheterodyne is the Rolls-Royce of radio," but did you ever ask why? Few know why the superheterodyne is the best, therefore I think it best that I first tell why the superheterodyne is so sensitive.

To begin with it might be said that radio frequency amplification will build up the weak signals of distant stations so that they will be strong enough to actuate the grid of the detector tube. Radio frequency amplification increases the receiving range greatly, while audio amplification, as we all know will amplify the already detected currents.

But what are radio frequencies and what are audio frequencies? It is generally considered that frequencies in excess of 20,000 cycles per second are inaudible and consequently are called radio frequencies. Audio currents range from twenty vibrations per second to 20,000, and as the name implies are audible to the human ear.

In radio frequency the wave length is not generally designated directly in vibrations or "cycles," as they are usually termed, but in meters. The lower the wave length, the higher the frequency, and vice versa.

Radio frequency amplification is basically the same as audio amplification, but since the for-

mer is of greater frequency than the latter it has been considered that if a stage of radio frequency amplification magnifies the incoming impulse eight or ten times per stage the maximum was being obtained from it.

In audio frequencies (which are of considerably lower frequency) it has been possible to obtain an amplification as great as forty times per stage. Perhaps you wonder why radio frequency amplification is not nearly so efficient, then, as audio amplification. But as I have explained before, the losses are considerably greater at high frequencies and the tendencies for self oscillation considerably more frequent.

Self oscillation either audible or superaudible has been the bugbear of radio frequency amplification. Various schemes have been projected to overcome this tendency, some examples of which are the phusi-former, the superplodyne, the neutrodyne, the superdyne and the various sets employing the potentiometer or biasing method.

In the writer's opinion as well as in practice, it has been found that none of the above types of receivers amplify more than ten times per radio frequency stage on wavelengths of 200 to 600 meters.

Let us see why the superheterodyne is so sensitive despite the fact that it has three stages of radio frequency amplification

of the untuned type, as in the set in question. In the superheterodyne, as its name implies, there is a heterodyne or oscillator, which really is a frequency changer.

This changes the frequency so that it may pass the filter coupler, which in this instance is tuned to about 9000 meters, and which in turn is amplified by the three stages of radio frequency amplification which employs long wave transformers and is impressed upon the grid of the detector tube. It is then amplified in the usual way by two stages of audio amplification.

It will easily be seen that since the amplified wave length is very much greater than the actual wave length received, and since the greater the wave length the lower the frequency, that the superheterodyne is an exceptionally sensitive and powerful amplifying system, because the losses are not nearly so great as those to be found in the usual short wave radio frequency amplifier.

Oscillation in the superheterodyne is entirely controlled by a potentiometer which varies the bias from either positive to negative and consequently keeps the radio frequency tubes just on the verge of oscillation. So much for the general theory of the superheterodyne type of receiver.

Mr. Victor Greiff, electrical engineer of the Radio Receptor

Co., Inc., of New York, has designed one of the few workable superheterodyne receivers in which the writer has been able to place confidence. Mr. Greiff suggests the use of the following materials, designed to his specifications:

Three radio frequency transformers, 5000 to 25,000 meters, type RF-1716.

One audio transformer for first stage, type ATX.

One audio transformer for second stage, type AT3.

Two 1 mfd. by-pass condensers, type C-1000.

One tuned filter coupler, type H-34.

One oscillo coupler, type SW-21.

One panel 8x36.

One terminal panel 8½x1½.

One .001 mfd. variable condenser of high quality (gear preferred).

One .0005 mfd. 23 plate condenser, straight line or vernier.

One loop.

Eight sockets (best obtainable).

Three rheostats for single tube (10 ohm).

Two rheostats for second and third.

One potentiometer (400 ohms).

Three grid condensers and leaks.

Two .00025 fixed condensers.

One .002 fixed condenser.

One .006 fixed condenser.

One 4½ volt "C" battery.

Eight UV-210A or C-301A tubes.

One two-circuit jack (after first stage).

One single circuit jack.

One switch for filaments (C, H, or similar).

One 120 ampere hour "A" battery.

One 120 volt "B" battery (storage preferred).

Two plugs.

Headsets.

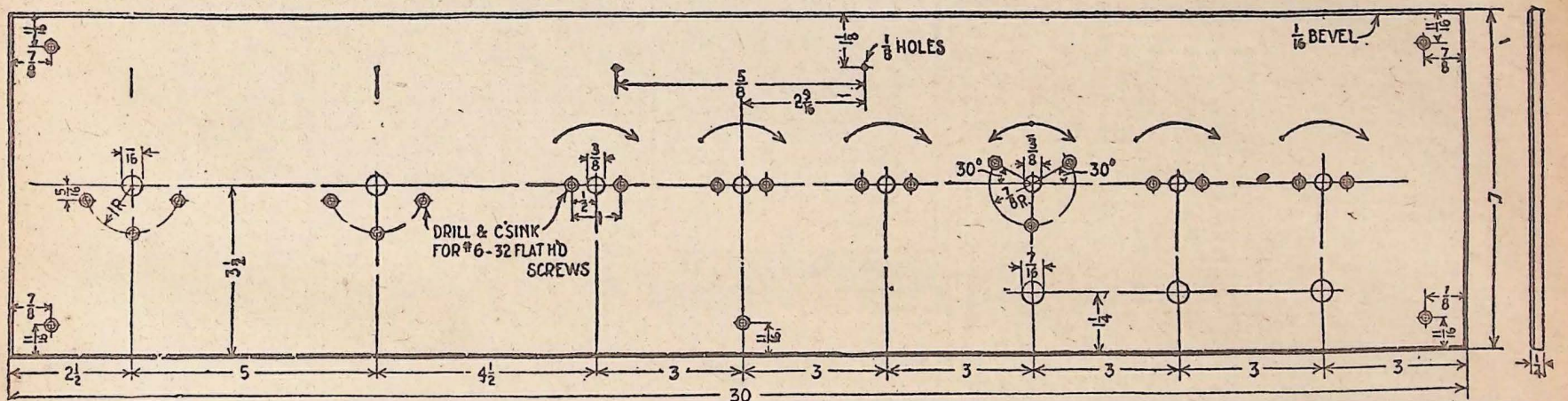
Loud speaker.

Of course, you may use other parts, but the results will be proportionate to the grade used, and since the parts specified were used in several superheterodynes, all of which gave excellent results, it is desirable that you follow the specifications as closely as possible.

After you have obtained the various parts it would be best to drill the panel and mount the parts. In this the panel layout shown in Fig. 1 should be your guide.

Perhaps the next step would be to mount the apparatus carefully on the baseboard following a general outline of the receiver pictured herewith. This is about all one can comfortably handle in one's spare time over a week, so we will hold over the wiring set, operating instructions and trouble shooting kinks until the succeeding issue.

To secure these parts, drill your panel and mount the parts as shown, if properly done will be doing plenty for any one not a master of multitude construction.



The Super 7

A 7-Tube Super-Heterodyne of Greater Possibilities

This week's reports from users of sets made from our parts include reception from New York City, Newark, Ottawa, Quebec, Montreal, Atlanta, Schenectady, Pittsburg, Troy, Chicago, Kansas City, Memphis and Fort Worth.

ALL LOUD AND CLEAR

Calgary, Edmonton, Seattle, Portland, Los Angeles and other LOCAL stations almost as loud as San Francisco and Oakland.

PARTS FOR THE SUPER 7..... \$100-110 including engraved panel and cabinet.

HOWARD'S

712 Market Street Garfield 4548

San Francisco

AUSTRALIA IS HEARD BY JAP AMATEUR HERE

LOS ANGELES, Apr. 14.—Little did the Australian bushmen who used the boomerang with a wicked twist of the hand that brought it back to their feet realize that the time would not be far off when the new settlers on their continent could sit before a queerly constructed electrical instrument and with the simple pressure of one finger send an impulse across to the west coast of America.

Their interest stimulated by listening to signals from amateur stations in this country, radio fans in Australia are now constructing low power transmitting sets for the purpose of establishing communication in both directions between the continents. They have made a good start toward realizing their ambition.

The development of radio communication among amateur fans has kept pace with commercial radio on the continent and several of the native experimenters have attracted the attention of radio experts in this country. The Australian amateur is noted particularly for exceptional skill in transmission on low power.

Check Proves It

For many months American amateurs have been heard in Australia, and their signals have been regular and clear. Now comes a definite verification of a report that E. H. Cox of Elsternwick, Australian operator of amateur station 3BD, has been heard in the United States. Cox's signals were received by a Japanese amateur, Y. Ito, operator of 6ACW.

This feat, reported more than a month ago, has just been verified following an investigation by K. P. Frederick, editor of The Radio Journal, a radio magazine published in this city. This magazine organized the transpacific radio tests with the co-operation of Australian radio men and the American Radio Relay League.

The offer of the A. R. R. L. headquarters to donate a genuine Australian boomerang to the first American amateur to establish two-way contact with Australia still holds good, and amateurs on the Pacific coast are anxiously awaiting the time when it will be announced that a U. S. amateur has sent out an impulse through the ether that will swing back like the boomerang of old.

Radio waves can be photographed by means of what is called a "cathode ray oscillograph."

Test all connections regularly for looseness or breaks.

FARMERS HAVE RADIO SCHOOL

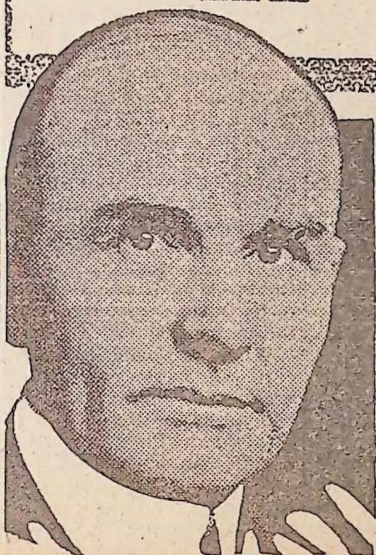
Kansas State Agricultural College



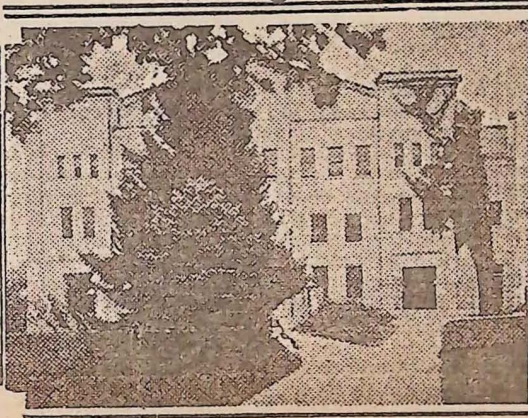
Radio
Course Certificate

This Certificate is granted to _____ day of _____ 19____ in consideration of _____ having satisfactorily completed the work and passed the required examination in the First Regular College Course to be given by Radio.

Kansas State Agricultural College
Manhattan, Kansas



W. A. Jardine, president of the school and the Kansas State Agricultural College auditorium, from which lectures are broadcast.



NEA Service

STATE COLLEGE, Kas., Apr. 14.—Farmers throughout the United States and Canada are going to college—by radio!

Not just sitting down evenings and listening in on agricultural talks from authorities speaking at irregular intervals through all sorts of broadcasting stations. But actually participating in set courses, five nights a week, with prospects of being graduated after taking examinations.

One of the principal institutions broadcasting such courses for farmers is the Kansas State Agricultural College here. More than 1000 farmers have actually enrolled in its "school of the air"—filled out an enrollment card and sent it in. Inestimable thousands more, says Sam Pickard, in charge of the school, are "attending" without having been enrolled.

The college broadcasts its courses through station KFKB at Milford, 32 miles from here. The lectures, delivered at a microphone in the college auditorium, are sent by line to the Milford station for broadcasting.

Subjects Taught

The lecturers are college professors and experts in their fields. No tuition is charged, no fees are taken for enrollment and examination at the end of the course is optional. The lectures, given from 7 to 8 each evening, except Saturday and Sunday, include:

Monday: Poultry.
Tuesday: Live Stock.
Wednesday: Crops, Trucks, Soils.
Thursday: Agricultural Economics and Engineering.
Friday: Home Economics.
The man back of this radio-agricultural college is W. A.

Jardine, president of the college. He pointed out that of the millions of persons living in the country, only 150,000 are enrolled in agricultural colleges. He saw what a wonderful opportunity radio afforded farmers and the colleges. So he started the radio course.

Diploma Given

"The unlimited possibilities of radio in its new mission," he believes, "will make it a real necessity in the economic, spiritual and intellectual life of the communities."

At the end of the course, each student gets a "diploma" certifying to the subjects to which he had listened in and which he had passed satisfactorily after examination.

The school is only less than two months old, yet scores of applications are coming in regularly.

ROME REACHES NAVY STATION IN WASHINGTON

WASHINGTON, Apr. 14.—The Navy Communication Service has been in daily touch with the San Paola radio station at Rome. This circuit, closed as unreliable some time ago, was recently reopened with "IDO," San Paola, a new radio transmitting station in Italy, which operates on a wave length of 10,750 meters. The messages come to Washington on a loop receiver in the navy building over a distance of about 4500 miles, but go out from station "NSS" at Annapolis on 17,145 meters.

Super-Stations Are Predicted

(Concluded From Page 1)

casting, every receiving set in the country would be a useless piece of mechanism. We therefore must find a way first to organize this public service along the most economical and efficient lines, and next, to support and direct it in the interest of the public.

What is the situation with regard to broadcasting now? Roughly, 530 broadcasting stations throughout the country broadcast more or less regular programs in the air. There is a duplication of facilities that involves the waste of millions of dollars annually. Haphazard distribution has resulted in a duplication of entertainment and news for some parts of the country and insufficient programs for other parts of the United States. Notwithstanding the multitude of stations that already have arisen, no truly national service is feasible under present conditions. For station competes with station for "star attractions," and no definite system exists for the interchange between one station and another.

The first broadcasting stations were small, scattered and unrelated, and each merely served the communities in its immediate neighborhood. Next came larger and, more powerful stations, serving greater areas, but still without any co-ordination of their activities. More recently limited co-operating systems have been developed. These enabled automatic and simultaneous relaying or broadcasting of the same program from a number of stations. These systems, worked out by the larger electrical manufacturing companies and the Radio Corporation of America, have functioned with great success and to the satisfaction of the general public. It is by this method that programs originating in one city have been broadcast at the same time from more than one station and a wide area served.

Aerial Must Be Taut

While the antenna is loose and sways in the wind you cannot expect to get good reception. The best way to keep it taut and yet prevent it from snapping is to hold it to the masts by a pulley and heavy weight arrangement.

Private Broadcasting

A proposal is being made in Norway for broadcasting by private companies under government control. All companies offering half of its capital shares for public subscription will be considered for a concession.

RADIO SPECIALS

Manhattan Headsets, 3000 ohms; regularly sells at \$7. **\$3.10**
Sale Price.....
Scientific Headsets, 3000 ohms; weighs 8 oz.; world's **\$2.95**
greatest phone.....
Manhattan Loud Speaker for Phonograph or **\$5.00**
Horn
Fixed Crystal Sets, **\$1.50**
specially priced at....
Radio Craft Fixed **75c**
Crystal Detector
I. S. COHEN'S SONS
1015 MARKET ST., Near 6th
Mail Orders Promptly Filled

FOR SALE

RADIO SET

Almost new, 3-tube Wilson & McGuire set; cost over \$100; will sacrifice for cash.

554 Hill St.

LIGHT AND POWER BROADCAST

(Concluded From Page 1)

probable method of installing the receiving coil if the plan should ever be used on a large scale. Several of the miniature poles had coils around the base in this way.

In addition to the lamp post, High had lights in the little houses, which he could light or turn off by tuning in and out with a condenser connected to the transmitting apparatus. Each of the lights has a little coil with a different number of turns of wire on it which gives it a wave length responding to a different frequency. In this way the lights can be turned on and off by turning the dial of the condenser.

High explained that he transmits the power on three different frequencies, for the reason that this gives a more intense field and concentrates the power of his sending station. For lighting his miniature village, the frequencies are 50,000 cycles for the first, 60,000 cycles for the second and 80,000 cycles for the third. The power used for transmitting during our visit was 500 watts.

High said that, on previous occasions, he has operated as many as six 14-volt lamps, but that the best bulbs for use in

the little houses are those that take from three to eight volts. He has successfully operated the lights in the entire village at a distance of about 20 feet from the transmitting station and says that no trouble should be experienced in getting the distance up to about 200 feet, provided enough power is used.

Use for Artificial Lightning

The problem of finding a means of furnishing enough power to light an entire village might seem a perplexing one, but High believes that the power can be obtained economically enough to make its use practical through the use of artificial lightning, which was so successfully produced only a few months ago. High related how, in the laboratories of the General Electric Co. of Schenectady, N. Y., the engineers had taken a little aluminum frame motor and placed it near the transmitting apparatus, and that the motor shaft began moving slowly. They also experimented with the operation of miniature electric trains by radio.

High was connected with the radio research laboratories of the General Electric Co. for some time and, while he was not directly connected with the famous wireless wizard, he

knew and worked with Charles P. Steinmetz on several occasions. High did a great deal of experimenting while at Schenectady, and is continuing the work for himself at his home in Riverdale.

His laboratory is very complete. He has 30 or 40 tubes which he uses in the sets which he is continually building and experimenting with. He is particularly fond of the super-heterodyne receiver and has built and sold a number of these.

One which he had partly constructed was tuned up while we were there and, despite the terrible atmospheric conditions which prevailed that night, brought in Pittsburg and Chicago with clarity, volume and ease. High did not try for any further distance.

The Story of the Inventor

John High Jr started in the radio game when he was eight years old, has never lost his interest in it and is still going strong. He was one of the first to establish two-way conversation by radio, and assisted in the test of 1917 when the Duncan sisters broadcasted from the laboratory of McGowan at Ossining, N. Y.

High has the amateur call of

2GR, and his big thousand watt transmitting station is known from coast to coast among the "hams." This station is remarkable for a private outfit, for it has as much power as WJZ. The transmitter employs four big 250-watt transmitting tubes and is very similar to those used by the big broadcasting stations.

High is continuing his experiments with the transmission of power by radio, and there is workable plan may be the result, every probability that some

New York is to get the 1000-watt broadcasting apparatus now at Rio Janerio for the Brazilian Centennial Exposition.

Announcement

We Have Opened at 418 Castro Street

A Radio Store

where we will handle a staple line of Radio Supplies, including the Atwater-Kent Radiodyne Wonder Set Sold on Terms.

Come in any afternoon or evening and hear the concert.

Webb and Gross

418 Castro Street
Opposite Castro Theater

IS MENTAL TELEPATHY NEXT IN RADIO?

By the Radio Editor

Every radio experimenter has been confronted with that troublesome phenomenon, known as body capacity, that takes place when one's hand touches an improperly shielded regenerative set. At times, when the position of the hand is brought closer to or further away from the dials, it aids in bringing in stations. At others it has the opposite effect.

The writer has conducted a number of experiments to find a means of measuring this effect, and while meeting with more or less success, has come to the conclusion that the human body radiates waves of energy not unlike a broadcasting station. On these waves, I am sure, are superimposed our thoughts. At least that would account for the many examples of telepathy, such as those recently conducted from station WJAZ, Chicago.

It is my firm conviction, too, that it is possible to measure the energy being radiated; and the chances are that the first inventor on the market with such a device will find himself hurried into the lap of fortune.

Might Indicate Health

An instrument of this sort would be invaluable in many ways to the medical fraternity in particular. It would apprise one, months in advance, of an approaching breakdown in energy, a state that all doctors know is fraught with danger. It is at that period that man finds himself most susceptible to disease.

It is no longer considered wonderful that we have scales on which we record a rise or fall in

our weight. It may have been when the discovery was made that the pull of gravity exercised by the earth on each person could be measured mechanically. But no longer is it so. And it does not take much of an imagination to see "radial energy" meters placed alongside of the weighing machines now discernible in all public places.

A friend jocularly suggested, in a discussion as to feasibility of working out the idea, that if it proved successful it would ruin whatever chance a lazy man had of being hired, were officials of the various companies to subject all applicants to a reading.

Determine Compatibility

Another suggested that with such a meter one could easily ascertain whether he was "in tune" with some one else.

Well, we certainly have to tune our sets to get broadcasting stations, but the body cannot be adjusted with a series of dials to juggle inductances, capacitances or electro-motive force, to agree with that of someone else.

Still another suggested that that is exactly what's done when a subordinate obeys the orders of a superior. That, however, is rather far-fetched.

I do not claim for the instrument anything of value except as to its worth as an induct to the physician. I do not believe that it would be of any use in determining one's true affinity. It is a tough job for any man, learned or unlearned, to eliminate romance in a girl's heart by using cold-blooded scientific measuring devices.

But to get back to measurements of body capacity. We all are aware that turning the dials will negative the effect. That, if at "50" the dial is subject to the influence of the hand and

arm and at "51" it is not, then the actual capacity, if capacity alone it is, could be found through mathematics. For instance, if a dial registers 90 degrees and it is attached to a condenser of known capacity, the capacity per degree can ordinarily be computed by mere division.

But there is something more than capacity, which, after all, is an element that pertains to everything on the earth, since there is no perfect solid. An ordinary metal rule passed over a regenerative set on the top of a broom was found to have far greater capacity than the writer's body, yet it affected the music being broadcast only a little.

Occasionally one will hear a slight crackling sound when a cat's back is rubbed with the palm of a hand. We say that its fur is charged with electricity. Is it? Do we ever stop to realize that it may be the radiations from our own body making a perfect contact with those of the cat, the joining of the positive with the negative and thus completing the "circuit"?

A comb run through the hair of some persons will do the same thing, while in others there is no response. In this case it is apparent that the comb acts as a conductor for the force emanating from the body, just as a spark appears when a positive wire is touched with a negative one.

We have in our bodies a "perfectly balanced set." The stomach acts as a source of power to the heart, which is the generator. The brain functions as both the receiving and sending station. The phrase "piercing glance," it seems to me, is the common way of expressing the power of a searching gaze. But

if there is any soundness to the theory of radiation of human energy, it will easily explain why some persons have eyes that bore a hole through one while others seem to affect us not at all.

Mind Readers?

Then again, there are folks who seemingly have the ability to read what is transpiring in the minds of others. This could be explained by the mind reader possessing the faculty of attuning his or her self with the thought transmission waves of another.

There are many other ways in which mankind can be likened to radio sets. Some persons are more energetic than others. It is because their generators are furnishing more power? All of us are acquainted with persons whose energies, compared to their frail bodies, surprise us. On the other hand, others, more generously proportioned, have so little that they are in an almost constant state of lethargy.

Assuming that every person is at least a transmitting station, it is a fact that all of us have at some time or other been attracted or repelled by the first glance or handshake of another. Personally, I have gotten an absolute shock on shaking hands on several occasions. Others have experienced the same thing. It is because we happen to be in tune with these particular persons.

When a sound is made our ears catch the vibrations engendered. The audibility depends on the strength of the vibrations and we unconsciously attune ourselves when we approach nearer to the source of the sound, for instance, when we incline our ears for a whisper.

If this be true—and no one can contradict it—why, then, is it not possible to attune our-

selves for radiations of another's energy as well as his voice? Our wave length range is tremendous.

The definition Noah Webster gives for the word "intuition" is known to all of us. It is supposed to be an especial attribute of the gentler sex. We say "I had an intuition there was something wrong." It is dismissed with that.

We never say that we got a message that there was something wrong. But that, in all probability, is exactly what happened. We attuned ourselves to the thought waves of another or had become susceptible to radiation.

tions of emanations of fear from Nor has there been any explanation of the mysterious faculty of what is known as "muscle reading." Certain individuals have developed this to a remarkable degree. For example, if one hides an article in a room, no matter how carefully or cleverly it is done, the reader, by mere physical contact, such as holding the wrist lightly, will be led infallibly to the article by the person who did it.

These persons are doubtless honest in saying they do not understand this strange power themselves. They frequently deny that it has anything to do with muscle reading, and they are able only to say that some strange power has communicated the necessary information to them.

There is a possibility that these mysteries can be explained by the radiation hypothesis. At least it provides an interesting source of study for the person with scientific propensities, and it is not improbable that some day the facetious question "What's your wave length?" will have a real significance.

Lonely Man Invites Proposals On Air

"Maybe she'll phone, maybe she'll write me, maybe she'll radio!"

At least the radio fan who sent the first proposal to go by radio over station WLW, Cincinnati, O., has hopes of dispensing with lonely bachelorhood, and getting himself a cozy nest and wife, if some fair radio fan hears his plea over the wild radio waves, as follows:

"Friends, I have at times heard WLW broadcasting the news that boys and men were lost. I myself am lost in the depths of loneliness.

"To make it short, I want to get married, and would like to hear from a girl 25 years of age who will be willing to work for

a while to help get a home. Any girl who is interested can write. I will listen for this letter to be announced Saturday."

Dan Cupid has laid many traps for unwary lovers, and now the busy little rogue will utilize the radio waves.

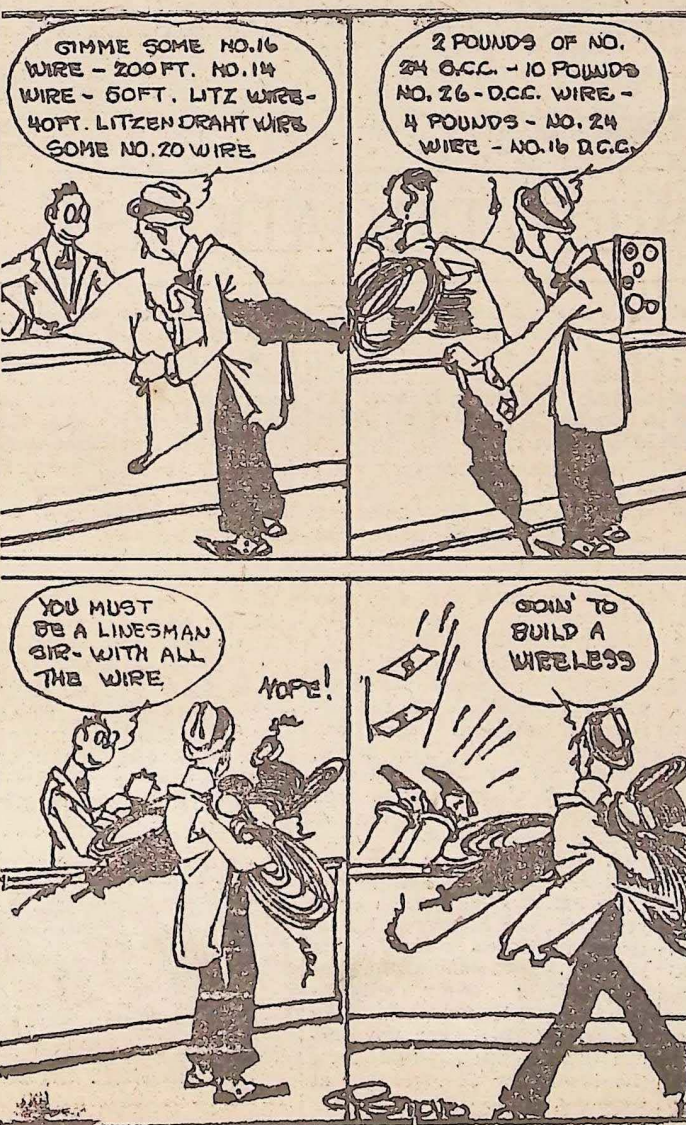
VEFS' RADIO

WASHINGTON, D. C., April 14.—Veterans in government hospitals soon may be able to lie abed and listen to the latest jazz over the radio.

The veterans' bureau plans to wire all of the nine new hospitals now under construction so that every man can be cut in on a radio receiving set.

BUGS

By Roy Grove



ANSWERS

A. Roszer asks:

How can I get volume out of my 3-tube Eria reflex set? I suggest tracing your hookup more carefully and then testing for an open circuit in the transformer. Your trouble sounds like a short-circuit, possibly in condenser. Test your tubes, also.

Edward Lacey, 3435 21st-st., asks: Can I put a loud speaker on a crystal set? Yes; use a two-stage audio-frequency amplifier.

William Cummings, 537 Harrison-st., asks: I am not getting best results from my Eria reflex. How can I trace the trouble? (Diagram enclosed.) I suggest you follow the hookup furnished by the Eria Company. Build your set again more carefully. The diagram you submit is wrong. Also test your condenser, tubes, and transformer.

WDAF Reaches Out

Along with other powerful broadcasting stations that find pleasure in reports of fans from foreign lands, WDAF, Kansas City, claims consideration. Recently its program was heard as far south as Los Andes, Chile, 4500 miles away.

Senator Dill Hits At Tax On Air Music

WASHINGTON, Apr. 14.—That radio stations serve as public utilities, and as such should not be subject to a tax on popular music which would prohibit fans from hearing the latest in the musical world, is the opinion of Sen. C. C. Dill of Washington, whose bill in Congress urges amendment to the present copyright law.

"I believe the present law is ambiguous in the first place,"

Sen. Dill declared. "It should never be construed to apply to radio broadcasting. I have no desire to interfere with the ownership and control of copyrights within the intent and meaning of the fundamental purposes of the copyright act. However, I believe that in broadcasting, where the music is not exploited commercially but is offered to the public gratis, a music tax should not be imposed."

LET'S SWAP

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

TO SWAP—Audiotron double filament detector tubes, brand new, for radio material. What have you?—Emile Price, 302 Maple-av, South San Francisco.

TO SWAP—Brand new UV201 tube for WD11-12. Also Willard rechargeable "A" battery, type CTR125 for WD11-12 tubes, 2 volts. For something of equal value.—M. Finnegan, 120 Eugenia-av, San Francisco.

TO SWAP—Crystal base Westinghouse "B" battery, 23 volt, charged once, and a true-tone horn for a transformer or something of value.—Tom S. Vorst, 557 Capp-st, San Francisco.

MICHIGAN HAS LATEST STATION

KFGZ, "the radio lighthouse" at Emmanuel college, Berrien Springs, Mich., began regular broadcasting last Monday night with a program including violin, cello, piano and vocal selections. The new station ranks with the 10 most powerful stations in America, having an official wave length of 294 meters. The initial cost and installation of the apparatus is estimated by the managers at \$20,000.

Station WOC, Davenport, Ia., has found its broadcasting of police reports successful.

PRISONERS AT ATLANTA PLAY

Entertainment behind the great walls of the Atlanta federal prison will soon become a feature of WSB's broadcasting station at Atlanta. "Honor concerts" by inmates of the penitentiary, appearing at the studio, attracted national attention two years ago. In order to present talent denied the privilege of temporary liberty, the prison officials have agreed to the installation of a relay line at the institution.

Eilvase, Germany has a transoceanic transmitting station with an umbrella aerial 325 feet high and 3000 feet in diameter.

A-1 Crystals

Get Distance KGW, KFI, KHJ, CFCN and others on Crystal Set with A-1 CRYSTAL! Approved, Radio News Testing Laboratories. Sent Postpaid for Fifty Cents California Radio Minerals Harry Grant, Jr. 904 OAK GROVE AVE., BURLINGAME, CAL.

RADIO BOOKS

Engineering, Industrial, Technical and Scientific Books TECHNICAL BOOK COMPANY Mills Building, San Francisco Phone Garfield 10 Representing D. Van Nostrand Co., John Wiley & Sons, Inc.; J. B. Lippincott Co., Longmans, Green & Co.