TREAT SICK WITH RADIO

CKAC, LA PRESSE, HEARD IN LONDON

Anniversary Program Picked Up by Londoner—Cablegram Tells of Feat

MONTREAL, CAN.—Many reports had reached Station CKAC, La Presse plant here, that the station had been heard on both coasts, in far Japan, Alaska, Denmark and in the Bay of Biscay, France; but only recently has an English amateur picked up the only French and English station in the world. For the occasion of its anniversary, CKAC had a specially high class program. This had been announced in England. Following its broadcasting a cablegram was received from W. K. Stephenson, manager director of the General Radio Co. Ltd. of London, which stated that reception had been good although much interference had been experienced.

PROMINENT PHYSICIANS STUDY WONDER OF AGE

Ailments Send Out Distinct Frequencies—Medico-Physicists Cure by Transmitting Opposing Wave into Body

By J. E. Newman

CHICAGO—Of all the wonders of the world which man, during the ages, has discovered and applied, of all the mysteries which have been revealed to those who have thought and sought, none is greater than Radio—the energy wave which is all and in all.

That a radio set, designed for the purpose, may be used not only to heal the sick but to learn what ails them, to diagnose and treat, that the mysterious impulses of radiant energy which emanate from everything may be measured and controlled so that man may live virtually without pain; that the cosmic radiation may be harnessed as a means to assure future generations suresons from disease and attendant sorrow, was emphasized recently in Chicago by eminent physicians of all schools during the toward annual convention of the American Association for Medical Physics Research.

Skeptic Change Views

The organization numbers nearly 2,000 members, citizens of almost every nation under the sun. Among the delegates were men and women who said they had long been skeptical as to the use of radio principles as diagnostic and curative agents but who were now enthusiastic proponents. Among the delegates were men known as having accomplished what were termed wonderful cures by means of a few electric tubes and the energy eternal and supreme which is borne by the ether.

Most of the discussion of the convention related (Turn to page 5)

Radio Pilot in Lifeboat
New English Contrivance

Marconi Company Shows Novel Means of Rescue at Sea

LONDON, ENGLAND—A new type of radio installation for lifeboats was exhibited by the Marconi Company at the recent Shipbuilding Exhibition at Olympia. The set is so compact as to be capable of being placed between the after thwarts of a lifeboat. The receiver eliminates the principle of a direction finder so that the lifeboat may inform rescuers of its position and then guide them toward her. The aerial consists of a simple wire supported by rings made of the range of communication, with a wave length of 600 meters, in fifty miles.

Railway Traffic Officers Hear WCX on Fast Train

DETROIT.—While members of the American Association of Passenger Traffic Officers were speeding between Chicago and Montreal recently, C. W. Williams did some experimenting with Radio. While the train was traveling at high speed, he suddenly picked up WCX in Detroit Free Press.

Many anyone would like to be a great, strong stone wall, if Peggy Wool, above, were to be the "Clipping" Win.

Max Wood, who is appearing in the play by that name recently appended over Station WDAF, Chicago, at the children of the poor, Chicago, heavy on the children of the poor, Chicago, heavy on the children of the poor, Chicago, heavy on the children of the poor, Chicago, heavy on the children of the poor, Chicago, heavy on the children of the poor, Chicago, heavy on the children of the poor, Chicago, heavy on the children of the poor, Chicago, heavy on the children of the poor, Chicago, heavy on the children of the poor, Chicago, heavy on the children of the poor, Chicago, heavy on the children of

www.americanradiohistory.com
IMMIGRANTS SHOW INTEREST IN RADIO

RECENT ARRIVALS TALK OF PURCHASE OF DEVICES

Examination of Aliens at Ports Reveals Knowledge of Parts and Their Use

SPECIAL REWARD OFFER

Coupon Number 21

This Special Reward Coupon approach to Radio Digest until further notice. Whose radio reception is limited to the extent that necessary, retransmit, or, in some cases, apparatus can be required. See apparatus list and rules of offer below.

Save Me—I Am Valuable

Recent examination of immigrants at ports along the Atlantic Coast, especially at New York City, showed that, a very small proportion were found to be interested in the operation or the purchase of receiving sets. Even those who were least interested, who had obtained their native country, who have the benefit of a light bulb or a bulb, a familiar and telling experience, among the men examined knowledge as to the buying or leasing of apparatus. Not only to the immigrant but to the naturalized who has been a person the other offer of Radio Digest is of essential and peculiar value. It is evidenced by the consideration for the number of inquiries and the demand for parts.

Would you kindly remember that changes, caused by the alteration of parts as they are made, must be made in the apparatus, appear in the lists as they are published. These changes are notified so that you obtain from the latest issue of Radio Digest.

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New Apparatus on the Market...

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Radio Illustrated, a Page of Pictures...

Looking Ahead

King Milpex Reigns Supreme—At least you would think so were you to read the host of letters now pouring into the office of the Digest, and testifying to the great success various reader-builders have attained. King Milpex III, the ultimate in development by the Mystery Man, appears this week. Watch for his article next week.

King Milpex III

You Can Learn Code Easily—if you want to take the pains to do it properly. R. H. Allston will soon tell you how to go about learning almost any set of code symbols so that you can "talk" on your friend, the code amateur, and find out what he is talking about.

What Is an Inductance, and Why?—Both the variable and fixed inductance, best described as "some kind of coil of some kind of wire," will be discussed and explained in his clear and impressive manner by Marvin W. Thompson in the next issue.

Adding a Variometer to a Single Tube Reflex helped one Radio Man reader so much that the Digest constructed his altered circuit as Hook-Up Diagram R.D.-102. Try this out on your "Eli" or any other self to take the load off his throat.

What's Good or Bad About Your Audio Frequency Transformers? H. J. Marx will tell you next week. He will show just how to proceed to test the A. F. step-ups for their voltage amplification.

Distance Consistently Using Combined Tickled and Tuned Plate—That's what Newell N. Jones of Grinnell, Iowa, claims, see his hook-up on the "Xinks" page of the next Digest.

WALNUT Variable Condenser

Vernier or Plain

Every day Walnut Variable Condensers are selling in larger and larger numbers. Special construction prevents the plates from getting out of alignment and short circuiting. They are held in slotted studs which permits of condensers being readily cleaned without fear of bending plates.

Catalog of full line on request. We also make Walnut inductance Switch, Variable Grid Resistance, Tube Sockets and Variable Dial Adjusters.

WALNUT ELECTRIC MFG. CO.

Address...

Dy.

WALNUT ELECTRIC MFG. CO.

Dept. 465

135 West Van Buren St.

CHICAGO, ILL.
GUEST BOOK RECORD FOR WNAC VISITORS

OSTON, MASS.—An innovation at WNAC, The Shepard Stores, in a capacity of the broadcasting studio is the WNAC guest register, a large leather bound book, in which all studio visitors are requested to sign. This is to be kept as a permanent record of all the artists who are broadcast through WNAC, as well as all visitors to the studio.

“NIFTY” MAKES A NIFTY GRID LEAK

The apparatus to be installed at the first station will be a five kilowatt transmitter which will send out successive signals of a distinct type every five seconds, separated directionally by thirty degrees. That is, along the station as a center and the exact North bearing as zero or 90 degrees, a significant code signal such as the telephone is transmitted.

This signal would only be audible at maximum strength for each dash on the line directly north or south of the station. By rotating clockwise, the station would follow the signal by transmitting every five seconds another distinct signal of two dots; each successive signal indicating an angular distance of thirty degrees. An aviator, equipped with a standard radio receiver, picking up the station, would watch for the initial signal and, on picking up the station, start counting his wind. He would count the succession of signals, and from the position of each signal he would be able to determine the exact bearing of the transmitter.

That was the reasoning behind the decision of the telephone company to equip all their stations. The first station to be equipped will be the Boston station, and it will be possible for fliers to travel from one to the other in the same area with increased safety.

World Air Night Flying

With the installation of the Air Service and Signal Corps experts expect pilots will be able to fly at high altitudes safely for distances up to 500 miles. It will be possible for fliers to travel from San Francisco to Los Angeles by night with increased safety.

The advantages of the secret code is that the station is not visible to the other pilot, and the pilot can use the signals as a guide in navigating.

Seeking Michigan Dead Spots

DETROIT.—G. L. Whalen, of Bay City, Mich., is making extensive investigation in the vicinity of Alpena, Mich., to find} the so-called “blind spots” or places where radio communication does not penetrate. The pilot interested CAT has equipped a car with a special set. He is going to try out his equipment on the problem of attempting to tune his car as he drives his car by Bay City and Alpena.

FORESIGHT WEATHER MONTHS IN ADVANCE

OCEAN SHIPS TO TELL CONDITIONS AT SEA

DAILY FORECAST MAPS SOON TO BE PREPARED; OFFICIALS SANCTION

By Birchen McMilian

LOS ANGELES.—The next great step in the use of wireless telegraphic service by ocean ships is the addition of a weather service, according to plans announced to the shipping industry by the U.S. Weather Bureau.

The idea of including a weather service on ocean ships is not new, but it has been delayed by the lack of a system that would provide a continuous service throughout the world. The U.S. Weather Bureau has been working on this problem for several years and has developed a system that is now being tested on some ocean ships.

The new service will consist of a network of weather stations located at strategic points around the world. These stations will transmit weather information to the ships in the form of wireless telegrams. The ships will then be able to receive this information and use it to plan their routes and avoid bad weather conditions.

The service is expected to be operational within the next few months, and it is hoped that it will be a boon to ocean shipping.

THE ANTENNA BROTHERS

A Little Varnish Remover

Spir L. and Lew P.
TINY MOVIE VAMP IS RADIOPHAN

"Aren't you going to stay and listen to my Radio?" asks Baby Peggy of the Universal- Jewel company of motion picture producers. She has won just renown by her representa-
tion of livid in child plays, including in their body of their own, they were a

good dog. She is a little vamp and never fails to
give pleasure to young folks and old.

STATIONS TO HERALD NAVY'S BRAVE AGTS

PLANTS ALL OVER COUNTRY TO CELEBRATE OCT. 27

Ships' Bands in Every Port to Acclaim, with League, Glories of Sea Force.

WASHINGTON.—Twelve or more

broadcasters in as many cities will spread tidings and entertainment pertaining to

Navy Day on the evening of October 27,

according to officials of the United States

Navy League.

The second annual celebration of Navy Day will be aided throughout the country

by officers of the navy and officials of the

Navy League, assisted by the Marine

bands, and by ships' bands in practically

every port. Eighteen broadcasters have

been invited to participate and so far, all

have indicated that they would cooperate for

at least an hour when special and en-

tertainment will be furnished by the

Navy personnel.

Stations Adding Celebration

Stations WJZ, WABC, WQXR, W热心, WJZ, WOR, WOR1, WOR2, WOR3,

Radio corporations, Denver, Colo.; WMC,

Commercial Appeal, Memphis, Tenn.;

WRV, Washington Radio corporation,

Washington, D. C., and WGN, St.

Louis, Mo.) Post Dispatch, have signified their

willingness to cooperate.

Other stations which have been invited to participate are WOR, Springfield, Mass.;

WJZ, New York; WOR, Schenectady, N.

Yr; KDKA, Pittsburgh, Pa.; WJZ, At-

lanta, Ga.; WLAC, Raleigh, N. C.; WPAF,

Dallas, Tex.; KDKA, St. Louis; KFI

Los Angeles; KXW, Chicago; WPAW,

Miami, Fla., and WJAC, New Orleans.

To Amuse Isolated Cribmen

ORIG.

Radio concerts will soon vary the routine of moonlight

hours, which are distant

intakes located from two to four miles off

shore. Corporation Counsel Bush recen-

tly approved contracts for immediate

installation of the sets.

The Ideal Radio Instrument

for the Home—
The New Grebe Broadcast

Receiver

This Receiver is contained in a beautiful walnut

cabinet that has compartments for all necessary

batteries. The 20-ft. silk-covered wire is the only

antenna required.

Write for "Grebe Radio in the Well-Appointed Home."

A. H. GREBE & Co., Inc., Richard Hill, N. Y.

For Phonographs or HORNs

of people are listening in every night to

this season's wonderful concerts and pro-

grams—music and voices made real and

clear through the reproducing perfection

of Morrison Loud Speaker. All harshness and

vibration are eliminated—even with extreme

amplification. True tone and full volume

are guaranteed. Soft, mellow tones or loud

notes at your pleasure by the turn of a

dial. There is nothing to get out of order.

Whole families can now enjoy an evening's concert
together—can ask their friends in for dancing. For

you can attach Morrison Loud Speaker to the tone

arm of your phonograph and have the best sound

box possible. Or use Morrison Loud Speaker with a

Horn—in either case it takes but a moment's
time to attach.

We guarantee satisfaction—or your money back.

Nickel Plated Model—$10.00

complete with 5 ft. cord

If your dealer cannot supply you, order from us
direct.

DEALERS

MORRISON LOUD SPEAKER is being

merchandised with astounding success by

some of the best known jobbers and dealers

in the country. Why? Because the Morri-

son is as good as we say it is, because we aid

our jobbers and dealers with helpful mer-

chandise methods at all times. There is busi-

ness in your territory. Write or wire for our

proposition.

Morrison Laboratories, Inc.

343 Jefferson Avenue, East, Detroit, Mich.
TREAT SICK WITH RADIO
(Continued from page 1)
So successful has the work in Radio therapeutics been that many manufacturers have come into the making of satisfactory devices. While many different styles exist, generally all operate on a similar principle, and are in the form of a "Radio Doctor," grounded, and attached to a present of special design, show promise both the nature and location of disease. These reactions are

RADIO DIAGNOSES ILLS AND CURES

AN EVENING AT HOME WITH THE LISTENER IN
(SEE INSTRUCTIONS FOR USE BELOW)

Instructions for Use—All the hours above are given in Central Standard Time. If your city uses Eastern Time, remember to add one hour to each of the periods stated; if your city uses Mountain Time, subtract one hour; if your city uses Pacific Time, subtract two hours. This table includes only the evening broadcasts, and on Sunday, the late afternoon program.
PHILADELPHIA COPS TO TOTE AIRPHONES

CARRY DEVICE ON BACKS, CHIEF PROPOSES

Auxiliary Police Force of Radioiphans
Also Suggested by Quaker City Officials

By W. E. JOHNSON

PHILADELPHIA—Police of Philadelphia soon will be walking their beats with tiny Radio sets strapped to their backs, by means of which they can be kept constantly in contact with headquarters, if the plans of Superintendent of Police Miltie carry through.

The superintendent, who has asked for a liberal appropriation out of the next municipal loan for construction of a city broadcasting station, explained today that plans to utilize Radio in a practical and larger way in the drive against crime.

Each Cop to Get Set

"We propose," he said, "to equip each policeman with a small portable set. Not only the patrolmen and traffic men would be so equipped, but all members of the force now assigned to keep moving about the city in automobiles watching for robbers and car thieves.

"The plan contemplates the use of some sort of signals, perhaps a given during the day and a light at night, which would notify police throughout the city to listen in for instructions. A policeman on his beat would obtain information as accurately and as promptly as if he were at his own particular station house. Every policeman in the city would be reached and instructed simultaneously."

Would Have Citizens Aid

"In time we hope to establish an auxiliary police force, composed of Radio enthusiasts, who will volunteer their services. There are 10,000 men in Philadelphia at least 200,000 sets. The police bureau could adopt a code of communication with trustworthy owners who have civic pride enough to cooperate with the force.

"For instance, thieves representing themselves as electricians, gas or telephone inspectors, at times gain entrance to dwellings to commit crimes. At once upon receiving the description of such a criminal, the police could send his description broadcast, asking the auxiliary force as well as the regular policemen to be on the lookout for him."

100 Operator Jobs Open on Ship Board Vessels

Vacation’s End Brings Usual Dearth of Radio Experts

WASHINGTON—Radio operators seeking employment will find few opportunities this winter for real Radio work on board ships of the United States Shipping board which call at every port in the world. The annual "turn-over of" Radio personnel is large, due to several causes. Among them is the fact that many college men spend their summer vacations sailing the "briny deep" as marine Radio operators, and then return to their studies at the close of the season. It is reported that approximately 100 first-class Radio operators will be on government vessels alone during the next few months.

On the 1st of last July, the government increased the pay of all its commercial operators approximately fifteen percent. The monthly rates of pay now in effect range from $12 to $125 a month. A few positions pay a higher salary.

HOOVER LABELS NEW RADIO BILL WINNER

Secretary of Commerce Sees Latest Measure Adopted by Both Houses

WASHINGTON, D. C.—A new radio bill will be introduced in the forthcoming session of Congress. It is probable that the bill will be much simpler than the one passed by the House of Representative last session, which failed of passage during the last session because of the disapproval of the Senate.

Secretary of Commerce Hoover in whose department Radio control is included feels that the department now has experience enough to prepare a much better bill. It is expected that Representatives White of Maine, who handled the bill in the House, will again take charge.

Mr. Hoover, in his report, states that he did not believe there would be any trouble in having the bill passed during the coming session.
TWO WEIGHTY EVENTS IN AIR WORLD

Sees Radio's Greatest Problem as Interference Caused by Re-radiation

Howard Campbell, WWJ Engineer, Says Corrective Measures to End "Bedlam" Must Be Taken If Broadcasting Is to Be Advanced

(by Howard E. Campbell, Chief, Radio Engineer, The Detroit News, WWJ)

What plane is held today in the United States by regenerative detector receiving sets? Why is the use of regenerative detector receiving sets prohibited by law in England?

It is estimated that three-fourths of all vacuum tube receiving sets in use today in the United States operate on the regenerative detector principle. There are more of these sets in operation than there are crystal detector sets. Why? Because at a relatively small expense the old crystal detector set can be rebuilt or replaced by a single-tube outfit which will enable the Radio amateur to hear stations from ten to twenty times as far distant. Because the idea of making a single tube perform the double duty of detector or rectifier and amplifier appealed almost universally to the shrewd American pub-

clic.

With the advent of vacuum tube Radio telegraph transmitting sets, code signals were sent in "CW," which is an abbreviation of "continuous waves" of Radio fre-

quency. Crystal detector sets could not distinguish these modern signals, but a regenerative tube detector can: hence its

popularity with amateur Radio telegraphists.

Cause Interference

These statements answer to a certain extent the first question, but there is an-
other side to the question which is demanding universal attention. Simple a-
these regenerative sets are, they have a characteristic fault. In regeneration they
set an miniature transmitters and send out into space an interference during the entire time they are in operation which is
picked up by other receiving sets within a radius of from two or three city blocks to eighteen or twenty miles, depending on the circuits used in the regenerative re-
ciever interfering and the sensitiveness of the sets picking up the interference. If one set does this, hundreds and thousands of them in a large city generate a veritable bedlam of interference and effect each other and every other type of receiving set, from the cheap crystal outfit to the thousand dollar six to nineteen tube outfits.

This interference is a hundred times more extensive and dangerous to the fu-
ture development of the art than most Radio enthusiasts realize. The average experienced operator of such a set will tell you that he never allows his regenera-
tive tube to oscillate, and therefore does not retransmit or send out interference.

To every Radiophon the name of Dr. Lee DeForest is one to conjure with, for the news that he has sold his holdings in the DeForest Radio Telephone and Telegraph Company need not worry the Radio world, for he will remain with the new owners as consulting engineer. In the circle are, from left to right, Dr. DeForest signing the transfer documents J. J. McGinley, of the McGinley Trust, and Mr. DeForest. On the right the picture behind the President is that of one of the retiring group. The man in the suit is Officers T. A. Tweed and J. R. R. Clark of the Galena, holding a group of message sent and received during a recent trip. In all they were 400— a record-breaking number.

He means that he has passed the experimental or amateur stage where the tube "spills" or oscillates violently in his crude attempts at timing and does not send out those disagreeable whining sounds which we all know so well. All Tubes Oscillate

It will, therefore, come as a distressing shock to such enthusiasts to be told by Radio engineers that no tube will re

generate without oscillating, and that unless he makes adequate provision in his circuit to prevent retransmission, his set will send out a constant interfering wave of noticeable intensity even while it is considered wholly adjusted to receive a program from a certain station. This interference is very strong, that is, it covers a very small band of frequencies, but

(Continued on page 5)

THE 1923 RADIO SENSATION

PACIFIC COAST BRANDS:
3010 Hawaii Ave., Los Angeles

ечена амплитуды переменного тока. Она может быть использована для усиления слабых сигналов.

1. Высокая усиление.
2. Минимальная искажения.
3. Низкий стабилизация.
4. Компактность.

Сотовые трансформаторы имеют эти специальные качества. Итак, вы всегда можете быть уверены.

"Build First to Last"
$5.00
At Your Dealer.

COTO-COIL CO. PROVIDENCE

PRICE $27.00

Michigan Radio Corporation

Grand Rapids, Michigan

Never before in the history of Radio has a set of the qual-
ity and performance of the Michigan "Midget" been offered at anything like the price.

No longer is it necessary to buy parts and build your own
set and save money. Michigan "Midget" has done that for
you. It puts a long range, high-grade radio receiving set
within the reach of everybody's pocketbook.

It is extremely selective—easy to adjust—tunes sharply,
receiving all broadcasting wave lengths up to 600 meters.
Works equally as well with dry cell tubes as with standard
six volt tubes. Its light weight (weights only 6 pounds)
makes it ideal for touring, camping, etc.

The cabinet is mahogany finish, made in Grand Rapids,
the world's greatest furniture center.

PRICE $27.00

Also ask about the Michigan "Midget" Two Stage
Amplifier $10.00 and our exclusive line of Coffers,
Vinaquistor, Fanameters, Rheostats, etc. When you
send for circular, give us the name of your favorite
radio dealer.

www.americanradiohistory.com
RE-RADIATION PROBLEM
(Continued from page 9)
given free three to ten sets in an im-
mediate locality, all receiving a program
from one particular station, it is a fore-
genesis conclusion that each set will be
tuned just a bit differently from all the
others. From the result that the entire
band of audible frequencies from this sta-
tion is blanketed, and any super-sensitive
receiving set in that neighborhood is com-
pletely and efiectually barred by inter-
ference resulting from the program.
Furthermore, it is entirely too much to ex-
pect that the transmitting-receiving set
operators will all stick to the program
from one station and work out a band of
interference on that wave length alone.
They will have different tastes, and divide
their attention about equally between all
stations within range which are broadcast-
ing, thus blanketing all of them.
The example of the effect upon a super-
sensitive receiving set is cited, because it
forwards the same dire results unless the
growth of this evil is checked and finally
destroyed. The super-sensitive set will pick
up an amount of inter-
ference today which the average set
would not pick up for a year or two to
come when the number of sets in opera-
tion is double or triple, and providing,
of course, that retransmitting sets are then
used in their present proportion.

Concentration on One Station

With the average set in operation to-
day, a lot of dissatisfaction with the
quality of transmission programs from
distinct stations is due directly to inter-
ference caused to receiving stations from
neighboring transmitting-receiving sets, and
finally a lot of a set's inability to afford
proper periods of inaudibility of pro-
grams from distant stations, which
are generally attributed to the phenomenon
of fading, is in reality caused by transmission
periods of interference as explained above,
when a number of operators are concen-
trating on the particular broadcast.
The idea is not supported by proof and
then there would be no doubt unless gen-
eral surprise that possibly certain sta-
tions locally noted for pronounced fading
may in reality be so near the middle of the
tuning range, and so popular, that they draw
this concentrated fire of Radio re-
cieving Interference. Trouble due to
fading from natural causes is serious
enough at certain times but without
its being increased by artificial means.
The use of the small set, or other indi-
vidual sets to avoid the regenerative
detector single tube or
tube sets where two stages of audio
frequency amplification are employed,
because they are by far the most numerous
of the group, but retransmission is not con-
cluded to them entirely. Freely oscillating
Radio frequency amplifiers, ahead of any
kind of detector with or without audio
frequency amplifiers, create disturbances
of various degree, according to the size
of the antenna or loop system used in
connection with them.

All of the above statements which
are made positively are supported by fact.
The questions raised are of extreme im-
portance to all Radio enthusiasts and
amateurs, and if you, for one, are not
satisfied that they are true, then investi-
gate until you are convinced, and govern
yourself accordingly.

Try Up to Pass

Are we individually going to allow the
radio engineer or manufacturer of equip-
ment to solve this problem for us? They
can only take care of new installation and
new equipment. We must take care of
our own existing equipment, and call an
Immediate halt on this wasteful impos-
hition.

whole structure of Broadcast business over
the heads of those who have a sound founda-
tion for their work.
This clique of conditions, causes and ef-
effects would not be complete without af-
ter solutions to problems, and reme-
edies for abnormalities. This attention is
invited to the opinions of various per-
ceptible radio engineers and designers that
the use of "metronome" or compassing
across the elements of Radio frequency
amplifier and regenerative de-
tector, with an indirect undesirable
"feedback" or regeneration, and resultant
retransmission.

A single stage of transformer coupled
Radio frequency amplifying stage ahead of
the ordinary regenerative detector will
dump out to a great extent the retransmit-
tion of interference, and at the same time
increase sensitivity to a marked degree.

THE BRISTOL COMPANY
WATERBURY, CONN.

Bristol's Single Stage Power
Amplifier
gives additional VOLUME with
any two stage amplifier. No
separate batteries required. It
provides the additional volume
necessary to bring in very distant
stations on the loud speaker.
Write for bulletin and address of
the nearest dealer handling our
instruments.

COLUMBIA ALL-CIRCUIT VARIOMETER

With split spades, providing for all
guitar circuits, or for the post-
future circuits in which a vari-
ometer may be used, this black bakelite
molded, green silic-
ium instrument, is the
set to buy. It is
finished and built

Price $5.50

Use—Is the Test
KELLOGG SWITCHBOARD & SUPPLY COMPANY
CHICAGO

Metalactic Soldering Iron
The all-metal instrument, guaranteed

A solution to the small
soldering problems of the
discriminating assembler.

$550

Unbreakable con-
struction economical op-
eration on any electrical circuit.

From your dealer or write
POST ELECTRIC COMPANY, Manufacturers
36 EAST 42nd STREET Dept. 509 NEW YORK CITY
DE DEVICE GIVES TRUE PIANO TONES

HEIR TO BRITISH THRONE
ARDENT RADIOPHAN

Will Equip Canadian Farm—Has Desire for Broadcast at Buckingham Palace, Too

PRINCE OF WALES' RANCH TO GET SET

TORONTO, CAN.—The "R. P." ranch, the Prince of Wales' ranch near High River, Alberta, is to be equipped with one of the best sets obtainable according to a statement given Radio Digest by the Prince's private secretary in Winnipeg, prior to the Royal party entering for Quebec.

The ranch is twenty-eight miles from High River, the nearest town, and on his recent visit to the ranch the Prince missed the use of a radio set.

"The Prince, his father, King George, and in fact all members of the Royal family are very enthusiastic Radiophiles," said the private secretary. "They have several sets in their many residences throughout the British Isles and the Prince has a high powered one of his own. He follows with great interest all the activities in the Radio world and while on his trip to the ranch expressed regret that the ranch was not equipped with a high powered set.

To What broadcaster too?

"He stated that before he returns on his next visit he will have one installed so that he can keep in touch with the outside world. While in England he is known on three occasions at a broadcasting station to hundreds of Radiophiles all over the British Isles and has already expressed his desire to broadcast just as soon as the station is ready. The station, located at Buckingham palace where King George and other members of the Royal family can broadcast messages from time to time.

A few months ago a large hospital in Scotland was opened to the Prince via Radio. It was his intention to open the hospital personally but at the last minute plans were changed and a Radio broadcast was required to cancel many functions. He was apparently somewhat disappointed in not opening the hospital by Radio as a large set had been installed in the hospital for the use of the patients."

The Remarkable Instrument

According to the Prince's secretary, Radio is growing greatly in popularity in the British Isles. He predicted that this winter would see the new science at its height. All British plants manufacturing equipment are operating day and night to meet the demand. Asked if there is much demand for American made goods the secretary stated that as far as he knew there was a higher demand for the American made goods than those produced by the British manufacturers chiefly because the American made goods were more up-to-date and comparatively cheaper.

To the fact that the British manufacturer was aiming for goods that will live longer and the raw materials were costly with the result that the finished articles were high.

536 METER WAVE ON TEST AT KYW

NEW LENGTH OVERCOMES POOR RECEPTIONS

Station Stronger Than Ever; U. S. Cancels Order to Reduce Power

CHICAGO.—Thousands of Radiophiles all over the United States and Canada were acutely surprised, they reported, when they received recently, more clearly than ever, the program broadcast by Station KYW of this city.

Since May 15, when the wave length of the station was reduced by governmental order from 496 to 414, listeners in had appreciable difficulty in receiving KYW. The sending power of the plant had been restricted so as to reduce considerably the area of its reception.

Buildings Absorb Power

In an investigation by engineers in the employ of KYW, showed that surrounding steel buildings, attaining to the 414-meter wave length, absorbed a great part of the rays. Since men were then taken to correct the condition, a series of tests gradually reduced the amount of sending power.

But the greatest step forward was that which Station KYW, by authority from Federal Radio Warehouse, A. E. Beam, Federal Radio Supervisor for this district, was enabled to send the wave length to 424 meters or 166 kilocycles. MARINE, an improvement in the broadcast was immediately noted by the listeners in.

The new wave length will be tested during a 16-day period.

Ask your Dealer about HEHEGON

AUDIO TRANSFORMER $3.50

This little valve is the secret of life at Radio Spares companies. It's always advisable to have an Audio Transformer in the A.R. Spares house. If your dealer has one—Buy it. If he doesn't, ask him to order you one. You have the "HEHEGON" for that one particular job you've been working on or want to get over. It's a real hit of convenience, and will not cost you $3.50. Guaranteed! Designed and made by Premier Electric Company.

WD-11

Radiotron WD-11 is famous as the tube that made possible the swift growth of radio in the home, as we know it today. Inexpensive to operate—using but one 14 volt dry cell—going away with the need for storage batteries—it has lowered the cost of radio.

Price

$650

Radio Corporation of America
Sales Office—Dept. 20306: 253 Broadway, New York
District Sales Office: 50 South LaSalle St., Chicago, III. 442 California St., San Francisco, Calif.
The diagram given this time is especially suited for the use of dry cell tubes. In addition, the connections for a lighting arrester are indicated. Most of the users of radios are somewhat at a loss as to the proper connections for this safety device. The grid method of application holds true for all circuits.

The circuit is regenerative because of the vacuum feedback between the plate and antenna. The secondary circuit is especially selective for long distance work because of the variable inductor and variable condenser. In addition to the vacuum tube control, the use of a high-resistance meter not only helps to get the best development of the test but is also beneficial for long distance tuning.

No variable grid leaks are necessary. The plate voltage can be $257$ volts as indicated or more as required for best operation of the tube. The use of the open circuit makes easy plugging in of the tubes.

This Is Worth Knowing

The 43-plate condenser is considered good for short wave work: It is essential for the long wave; battey to eliminate another change whenever it is retained in the circuit when tuning for the broadcasting stations.
Further Details of the Famous Miloplex Hook-Up
Part IV - Introducing King Miloplex III, the Real One
By the Mystery Man

LETEN—Miloplex fans from six to sixty.
Remember, the Billicott saying, "The
inest Thing I ever knew was a single
word that I was told not to say, not
calling on me until I had said it out loud
half a dozen times, and then in my sleep.
Yes, noticing the simplicity of a girl
from Mainstreet.
I'll find a world of something new in
control, even a something that should
interest you as a foundation for fur-
ther experimental work, a circuit generally
known as a single circuit, in reality
three circuit schemes of which the rotor
of the variometer is in parallel with the var-
iable condenser composing the third or oscillating
circuit, though so ingeniously connected to
the circuit.
I have called this circuit a wave trap—
maybe it is—yet several engineers give us
many steps separate opinions as a comic dog has
that each experimenter has always placed
the inductance in a fixed position relative
to the energizing circuit which is to be
controlled.
My use of it is within, or at center of,
the magnetic field, it being quite generally
admitted that the greatest inductance or
transformer value if one so desires to term
it is thus obtained—while in addition,
through being able to rotate this inductance
through the magnetic field, it is variable as
to coupling, affording a flexibility that is
wholly desirable. In total, we main-
tain a separate oscillator which is variable
both as to capacity and to inductive
properties.

Many are going to ask what the ac-
tion of this circuit is. And my answer is—
"Lazily, if I knew I'd be happier as a
dead man in a boiler factory." Pools enter,
you know, where angels don't tread.
Several times I have had the theory
right on the tip of my tongue, when
bang! the Flexy would go pitter-patter into
"stutter" or "heterodyne" effect and
I'd have to swallow my tongue.

However, several are now playing or play-
ing with it (yes, engineers), and I'm going
to have some fun reading their verdicts.
The technical editor of Radio Digest will
delightfully give you his views, following it.
Engineer Forbis is going to tell me his
story. Forbis, you know, is a man of
talent, so I anticipate his view-point
will give the Miloplex another pedes-
gree.

Anyway the fun is on and you are
willing—yes, requested—to tell me
through Radio Digest what you think the
theory is.

The next step in my series will be to
argue the Miloplex and I'm going to say
and get this to you for next week's story,
though a gentleman in Dallas tells me
his amplified circuit one, so mathews he will
beat me to it on circuit three. Go to it,
Doc, but first get in touch with an ear
peepist and have him send me the bill—
I'll rather owe it to him than beat him
out of it.

Don't believe all you see in the papers.
Shaken, didn't I just mail the typewritten
dozen pencils with letters on for those
who say Miloplex is in direct connection
in place of mutual conductance. Plonked
him and he was the second order. Yes, indeed,
even if it went out the window, say, I don't
forget, friend Fann, that your Flexy will
be no better than the parts you use in build-
ing it. I have five good reasons for not
thinking any.

2650 MILES

65 Numbers

Improve Ground Clamp

Equipped with Fahnstock Patent Wire Connectors

Patent Wire Connectors

Easily Attached

No Soldering. For Radio Use Only
At Your Dealers

Fahnstock Electric Co.
Long Island City, N. Y.

TEN-MINUTE ARMOR Features

- 100 In Prizes Offered by Fountain Pencil Co.

Fountain Pencil Co.
Minneapolis, Minn.

This One, This One

HOW TO WIN

1. Cut this coupon from this magazine and mail to Fountain Pencil Co., 708 So. 5th St., Minneapolis, Minn.

2. Enter the 65 Numbers on the coupon.

3. Enter the 100 Numbers in the lower right-hand corner of the coupon.

4. You must enter by October 15, 1923, to be eligible.

5. Prizes are listed in the lower right-hand corner of the coupon.

6. You may win by writing the name Fountain Pencil (using capital F and capital P) on the coupon number below. Five every day writing on it is worth five cents.

7. You must write your name on the coupon number below. Five every day writing on it is worth five cents.

8. You must write your name on the coupon number below. Five every day writing on it is worth five cents.

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STATION WINTER OPENINGS ADD INT

The Week's Headliners on the Air

It's a lovely moonlit Friday night on radio. Tune in for WPAW and the Carolina Boys' Mandolin and Guitar Club, or Hayley's Whispering Jazz Orchestra on WPTO.

On Saturday, if you're very, very lucky, you'll hear Harry De Young's latest hit. If you're not, Elmo Vummer's hit, will tell funny stories at WNYC.

On Sunday, the ladyMargaret DeGraff will play Thursdays at WJY. Martha Caudell, also a bassist, will be heard at WNYC. WNYC's special Thursday program this week will be a Russian ballet.

If you prefer Irish music, you can spend a pleasant evening Friday with WQY. Radio like the music has some ways; you can stare to delight the hearts of grown-up folks. Harold Reith, the boy soprano, will be heard at WQY, and Jeanette Shirley, a six-year-old pianist, will be heard at WYGD. Do not miss Martha Ross' reading of children's plays at WING.

Saturday go to the vaudeville with the five members of the Missouri Theater specialties and then to the rest of the evening dancing to music from KSVW, WQY, and WBYC. On Saturday night, the Hawaiian musical revue will give a grand performance at WJY.

The program is given by the Thursday Night Vagabonds Club Monday night at WQY and Tuesday on favorite classical selection.

Drama Digest: WQY, "The Hottentot.

Saturday, October 16


KDKA, North, Pa. (Eastern 225, 8:15 a.m., FM 990). Children's period. 9:00. "The Family Portrait" by George Sterling, 16 lines. 10:00. "The Jingle Bells" by George Sterling, 16 lines. 11:00. "The Jingle Bells" by George Sterling, 16 lines. 12:00. "The Jingle Bells" by George Sterling, 16 lines.

KDKA, North, Pa. (Eastern 225, 8:15 a.m., FM 990). Children's period. 9:00. "The Family Portrait" by George Sterling, 16 lines. 10:00. "The Jingle Bells" by George Sterling, 16 lines. 11:00. "The Jingle Bells" by George Sterling, 16 lines. 12:00. "The Jingle Bells" by George Sterling, 16 lines.

Wednesday, October 17

CFDC, Calvary, Alta. (Montana Standard, 490). Children's period. 8:00. "The Family Portrait" by George Sterling, 16 lines. 9:00. "The Jingle Bells" by George Sterling, 16 lines. 10:00. "The Jingle Bells" by George Sterling, 16 lines. 11:00. "The Jingle Bells" by George Sterling, 16 lines. 12:00. "The Jingle Bells" by George Sterling, 16 lines.

KDKA, North, Pa. (Eastern 225, 8:15 a.m., FM 990). Children's period. 9:00. "The Family Portrait" by George Sterling, 16 lines. 10:00. "The Jingle Bells" by George Sterling, 16 lines. 11:00. "The Jingle Bells" by George Sterling, 16 lines. 12:00. "The Jingle Bells" by George Sterling, 16 lines.

KDKA, North, Pa. (Eastern 225, 8:15 a.m., FM 990). Children's period. 9:00. "The Family Portrait" by George Sterling, 16 lines. 10:00. "The Jingle Bells" by George Sterling, 16 lines. 11:00. "The Jingle Bells" by George Sterling, 16 lines. 12:00. "The Jingle Bells" by George Sterling, 16 lines.

Thursday, October 18

Mrs. A. J. Peterson (left) takes daily from Monday to Friday, 11:30 a.m. Central time from Station KIV, Mrs. Peterson is responsible for the management of the station and its success. She is a successful businesswoman, and her attempts are always successful.
WEST TO CURRENT WEEK’S PROGRAMS

Friday, October 19

KDKA, E. Pittsburgh Pa. (Eastern, 2:30), 6:15 p.m., "Hoy to the Wind," Harry Bertrand and Marjorie Goss; "Shady Lane," Paul Hensley and Dorothy Myles.

WGBS, Charlotte, N.C. (Central, 590), 7:00 p.m., "The Real Person," Jack Schaefer.

WJZ, Philadelphia Pa. (Eastern, 610), 7:30 p.m., "Chalk and Cheese," Charles A. Waterman, Clifton Young, Robert Young.

WABC, New York (Eastern, 780), 8:00 p.m., "The Real Person," Jack Schaefer.

WFSB, Bristol, Conn. (Eastern, 1180), 8:00 p.m., "The Real Person," Jack Schaefer.

WOR, New York (Eastern, 780), 9:00 p.m., "The Real Person," Jack Schaefer.


WARC, Columbus, Ohio (Eastern, 1180), 9:00 p.m., "The Real Person," Jack Schaefer.


Saturday, October 20

CFOS, Okaloosa, Ala. (Mountain Standard, 440), 1:00 p.m., "Faygo," Fred C. Newell.

KOUR, Fort Worth, Texas (Central, 610), 1:00 p.m., "Faygo," Fred C. Newell.

KDKA, E. Pittsburgh Pa. (Eastern, 610), 1:00 p.m., "Faygo," Fred C. Newell.

WGBS, Charlotte, N.C. (Central, 590), 1:00 p.m., "Faygo," Fred C. Newell.

WOR, New York (Eastern, 780), 1:00 p.m., "Faygo," Fred C. Newell.

WTAF, Philadelphia Pa. (Eastern, 1180), 1:00 p.m., "Faygo," Fred C. Newell.

WGY, Schenectady, N.Y. (Eastern, 1180), 1:00 p.m., "Faygo," Fred C. Newell.

WOR, Philadelphia Pa. (Eastern, 610), 1:00 p.m., "Faygo," Fred C. Newell.

WOR, Buffalo, N.Y. (Eastern, 590), 1:00 p.m., "Faygo," Fred C. Newell.

WGY, Schenectady, N.Y. (Eastern, 1180), 1:00 p.m., "Faygo," Fred C. Newell.

WOR, Philadelphia Pa. (Eastern, 610), 1:00 p.m., "Faygo," Fred C. Newell.

Wednesday, October 17


WGBS, Charlotte, N.C. (Central, 590), 7:00 p.m., "The Real Person," Jack Schaefer.


WABC, New York (Eastern, 780), 8:00 p.m., "The Real Person," Jack Schaefer.

WFSB, Bristol, Conn. (Eastern, 1180), 8:00 p.m., "The Real Person," Jack Schaefer.

WOR, New York (Eastern, 780), 9:00 p.m., "The Real Person," Jack Schaefer.


WARC, Columbus, Ohio (Eastern, 1180), 9:00 p.m., "The Real Person," Jack Schaefer.


Sunday, October 21

WFL, Galveston, Texas (Eastern, 440), 12:00 noon, "Palm Beach Express," Bob Hope.

WQAM, Miami, Fla. (Eastern, 590), 12:00 noon, "Palm Beach Express," Bob Hope.

WABC, New York (Eastern, 780), 1:00 p.m., "Palm Beach Express," Bob Hope.

WAVH, Columbus, Ohio (Eastern, 780), 1:00 p.m., "Palm Beach Express," Bob Hope.

WABC, New York (Eastern, 1180), 1:00 p.m., "Palm Beach Express," Bob Hope.

WAVH, Columbus, Ohio (Eastern, 1180), 1:00 p.m., "Palm Beach Express," Bob Hope.

WFL, Galveston, Texas (Eastern, 440), 12:00 noon, "Palm Beach Express," Bob Hope.

WQAM, Miami, Fla. (Eastern, 590), 12:00 noon, "Palm Beach Express," Bob Hope.

WABC, New York (Eastern, 780), 1:00 p.m., "Palm Beach Express," Bob Hope.

WAVH, Columbus, Ohio (Eastern, 780), 1:00 p.m., "Palm Beach Express," Bob Hope.

WAVH, Columbus, Ohio (1180), 1:00 p.m., "Palm Beach Express," Bob Hope.

Monday, October 22

WDRD, Chicago, Ill. (Central, 610), 1:00 p.m., "Ode to Joy," Erich Vehling.

WWVA, Wheeling, W. Va. (Eastern, 780), 1:00 p.m., "Ode to Joy," Erich Vehling.

WRR, New York (Eastern, 780), 1:00 p.m., "Ode to Joy," Erich Vehling.

WAVH, Columbus, Ohio (Eastern, 780), 1:00 p.m., "Ode to Joy," Erich Vehling.

WAVH, Columbus, Ohio (1180), 1:00 p.m., "Ode to Joy," Erich Vehling.

WFL, Galveston, Texas (Eastern, 440), 12:00 noon, "Palm Beach Express," Bob Hope.

WQAM, Miami, Fla. (Eastern, 590), 12:00 noon, "Palm Beach Express," Bob Hope.

WABC, New York (Eastern, 780), 1:00 p.m., "Palm Beach Express," Bob Hope.

WAVH, Columbus, Ohio (Eastern, 780), 1:00 p.m., "Palm Beach Express," Bob Hope.

WAVH, Columbus, Ohio (1180), 1:00 p.m., "Palm Beach Express," Bob Hope.
WEST TO CURRENT WEEK'S PROGRAMS

We promote our American Radio network.

Best Wishes to all our friends.

October 20, 1923

www.americanradiohistory.com
Single Control Circuit Requires but Few Parts

The accompanying circuit is recommended for every one who is looking for a simple, compact, and efficient receiver. The diagram is self-explanatory. As proof of its efficiency, a set was made up on our Student's Day, and was sent by WJAZ, Chicago, 70 miles away heard with 1½ volts on the plate and .5 volt on the filament. With 3 volts on the plate and 1.1 volt on the filament, signals came in as loud as local stations on a crystal set. In both cases an aerial 69 feet long and with an average height of 17 feet was used, the base pointing toward Chicago. E. C. Mephorn, Milwaukee, Wis.

Reminding Phone Receivers

A telephone receiver might be one of the receipts of the receiving set often develop troubles or shows no signs of life. This cannot be heard by putting your ear in the receiver. If the problem is a phone receiver, and if the problem of the receiver is to remain in good condition, it is advisable either to lighten the load of the phone by adding a thin paper width between the receiver and the case. The load is the case. When the case is removed, if the diaphragm is not held up by the action of the phone-piece, it is evident that the problem of the receiver is in some way or other, but some of the components may be identified. This must be done by using a low-resistance source of excitation, which will allow passage through an alternating current source or by accidentally dropping the receiver. In both cases, the only remedy is to have the receiver re-magnetized. For this operation, it will be necessary to take the receiver to someone skilled in this practice, as long as the removal of the magnets causes for considerable care on account of the machine as well as with the magnetic field. -Peter J. M. Christ, Schenectady, N. Y.

You Don't Need Tubes to get out of town. If you don't have your crystal set write MEDEA RADIO Mfg Co., Inc., 900 N. 4th St., Chicago, Ill. I-23. We will supply you with a high-grade 6-B battery. Write for terms.

GAMBLING?

YOU ARE IF YOUR RADIO TUBES ARE UNPROTECTED

Your Vacuum Tubes are the most delicate parts of your Radio Set. They are easily blown out—you have probably already had this exasperating experience. It is apt to happen at any time. "B" Battery wires accidentally crossed for only an instant with the filament leads or sudden excess current from the "A" Battery will destroy your receiver immediately.

You can prevent this and save yourself money and inconvenience and relieve your mind at a trifling cost.

RADECO SAFETY FUSES

on all your tubes. Applied in a instant to one of the filament terminals. Will fit any standard tube going in any standard socket. Price 50 cents each, sent postpaid and fully guaranteed. Do not delay. Order now. Special type of tube used. DEPARTMENT 4

RADIO EQUIPMENT COMPANY

Manufacturers and Distributors of Standard Radio Equipment

630 WASHINGTON STREET
New England's Oldest Exclusive Radio House

DEPARTMENT 5

FLEWELLING ANSWERS TO QUERIES

By E. T. Flewelling

(EDITOR'S NOTE—This department is written by Mr. Flewelling, the chief engineer of the Flewelling Super Circuit. From the questions and hints sent in each week care of Radio Digest, the author has selected one or two most informative for all readers to use in this column.

Controlling the Whistle

TJ. S. M., N. Y.: What is the cause of the whistle on my receiver? The usual cause is an open circuit, such as a dirty or worn contact, an新建的 or corroded terminal, and a number of other things. The whistle can be controlled by using a smaller value of condenser, by using a smaller value of inductance, or by using a smaller value of resistance. The whistle will be eliminated when the transistor is working in the right way.

Short Aerial Rigs Locals

If your local station comes in too loudly and drops out, a simple aerial will help. When tuning in a station, you may want to move your aerial so that you will not interfere with other stations in the neighborhood. If you cannot hear any of the stations that you want to hear, you may want to move your aerial so that you will not interfere with other stations in the neighborhood.

TREAT SICK WITH RADIO

(Continued from page 3)

There are few who are not aware of the power of the radio in the treatment of physical ailments. From the standpoint of the practitioner, the use of radio waves is a valuable aid in the treatment of a wide variety of conditions. The use of radio waves in the treatment of many diseases is a well-known fact. The use of radio waves in the treatment of many diseases is a well-known fact. The use of radio waves in the treatment of many diseases is a well-known fact.

ROCKY MOUNTAIN PRODUCE

ANY STYLE OF RADIO CRYSTALS AVAILABLE

NEW K-D SPRING LOOP AERIAL

List Price $1.00

Distributors

BUS, AERIAL, M Jenny WIRE

Rocky Mountain Products Co.

4-C Church St, New York

10,000 Western Electric 5 Watt "E" Tubes, Type CW-931 or VT-2 Tubes

WITH A HIGHER AMPLIFYING FACTOR

Almost a third of these 10,000 Western Electric VT-2 Tubes have been sold! A brand new genuine Western Electric VT-2 Tube for 25c. You can purchase the most musical set that you can think of from the way orders are piling in. Remember there only was 10,000, so you'd better hurry if you want your tubes.

THE PROFESSIONAL'S CHOICE

All merchandise GUARANTEED to be of the highest quality, shipped to you PROMPTLY by the largest Radio Store in America.

DEPARTMENT 6

All merchandise GUARANTEED to be of the highest quality, shipped to you PROMPTLY by the largest Radio Store in America.

The largest Radio Store in America.

328 S. State St.
Dept. RD-120
Chicago, Ill.
Simple Explanation of Radio for Everybody
Chapter III, Part II—Receiver Essentials and Rectification

By M. W. Thompson

The following article is the fourth of a series for Radio beginners, written by Mervin W. Thompson, who knows in advance, approaching his subject, and his ability as a radio engineer. Mr. Thompson is now an associate editor of the staff of Radio Digest. A preliminary outline of his chapters is as follows:

Chapter IV—Inductances—Fixed and Variable.
Chapter V—Condensers—Fixed and Variable.
Chapter VI—Vacuum Tubes.
Chapter VII—Antennas and Grounds.
Chapter VIII—Regeneration.
Chapter IX—The Radio Amplifier.
Chapter X—Local Spiders.

In this first half of this chapter it was brought out that a vacuum tube contained (1) a filament of tungsten wire, (2) a grid of fine wire surrounding the filament and (3) a plate of thin sheet metal surrounding the grid; so, to proceed:

The Electronic Stream

When the filament of our tube is connected to a battery it heats up to a red glow or brilliance, depending on the type of tube and the power of the filament and the voltage across it. This heating causes the filament to give off electrons, or small particles with negative charges. These electrons seek a surface which is positive in relation to the filament and that surface is provided by the plate. The plate is connected to the positive pole of the battery and the negative side of that battery is connected to one side of the filament. Thus, we have electrons streaming across the gap between filament and plate, tending to stabilize the field of negative electrons which make up the plate, and a battery which is customarily removing them from the plate and sending them back into the filament. This action will continue as long as the circuit is unbroken, the filament is hot and the battery functions.

Figure 14—The characteristic curve of a tube used as a detector with incoming oscillations on the grid at the bottom and negative grid current at the top.

Space Charge

This brings us to the term "space charge." The number of electrons which can be in motion from the filament to the plate at any given instant has a limit. This number is increased, either by raising the temperature of the filament or by increasing the voltage of the battery connected to the plate, until a point is reached where continued increase of these factors does not increase the current. This is known as the space charge in the plate circuit. We now have a fixed quantity of current or maximum space charge of the tube. This matter of space charge plays an important part in the tube's action.

The grid is between the filament and plate and acts as a control over the number of electrons that go across. If the grid is made positive in relation to the filament, two things occur. The electrons are attracted away from the filament in greater quantities, and (2) most of them, because of momentum, pass the grid and travel to the plate. While (2) a few of them adhere to the grid, tending to neutralize its positive charge. If, on the other hand, the grid is made negative, it repels the negative electrons, tends to push them back onto the filament, and less electrons get through to the plate. Thus, when the grid is positive, more current flows across the space and in the plate circuit; when the grid is negative, there is current for the filament only.

The Characteristic Curve

If we connect the tube to incoming alternating current, we may insert a part of the field telephone receivers in the plate circuit, as in Figure 14. Then, if we vary the voltage applied to the plate, we get characteristic curve of a tube, let us say a 1 v. plate circuit. We see that when the plate is given 60 volts, the 1.1-milliamperes is cut to about 0.95 milliamperes. You see the amount of current that will flow in a plate circuit on this curve is changed and varied. The vertical division of current in the curve shows current in the plate circuit, the line between the grid voltage and plate is the amount of current in the plate circuit, the line through the voltage and the grid and the grid is on the ordinate line, the grid voltage is indicated over it. In this case, the ordinate line shows the grid voltages at which the tube operates. Notice that the grid does affect the resistive, and in the case of the tube, the plate voltage and current. The plate curve is the method of operation of the tube, and the grid voltage determines the plate current and plate voltage. If the grid voltage is raised, the plate current and plate voltage increase.

The "Lower End"

If the grid is at 0, our drawing a vertical line to the curve brings us to point A. The current and voltage condenser are as shown by the curve. If the grid is 2 volts negative, the curve indicates that the grid will draw 0.75 milliamperes and operate on the point B. To function as a detector, or any circuit, the grid must be made negative.

Your pilot over the RADIO WAVES

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Reliable Audio and Radio Frequency Amplifying Transformers

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The "Radio" type reduces static to a minimum and are made in four types of all necessary sizes. Price $1.35.

Manufactured by The Reliable Parts Mfg. Co., 213 Prospect Avenue, Cleveland, Ohio.

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Consisting of 4 choke coil and grid connections

1 filament 150 ohms variable condenser
2 high plate condensers
4 grid condensers
5 choke coil and grid connections
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400 mil. variable condenser
400 mil. variable condenser
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150 mil. variable condenser
150 mil. variable condenser
150 mil. variable condenser
$12.45

Dietzen Vernier Condenser

14 Plate $2.65 46 Plate $3.45
24 Plate $2.95 46 Plate $3.45

Dietzen Midget Tube

125 Volt, Operates on one cell 6D, either with or without B battery and A battery in each tube.
45 Volts B battery
50 Volts B battery
110 Volt, A battery
$1.00

Cockaday Circuit, Complete

Consisting of

1 filament 150 ohms variable condenser
21 grid condensers
10.5 plate condensers
0.95 plate condensers
$10.85

Flewelling Circuit, Complete

Consisting of

1.500 variable condenser
400 mil. variable condenser
400 mil. variable condenser
400 mil. variable condenser
150 mil. variable condenser
150 mil. variable condenser
150 mil. variable condenser
150 mil. variable condenser
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Initials and Address.

October 20, 1928

RADIO DIGEST—Illustrated
Broadcast Music Does No Harm
Artists Gain Popularity through the Phonograph

Music teachers and newspaper writers were almost unanimous when the first talking machines came out. They dreamed that music education would be the doom of "fast music" would decrease. However, some of these critics were wrong. The phonograph did not kill music, and furnished music to be recorded and used by all those who purchased records. They found that success between the music of the phonograph and the music of their music
out the nation to all owners of phonographs.

Thus many people were puzzled by the "canned music," as the leader dabbed it. As for the "canned music," is not Santa and his band more popular every year?

Today there is a new alleged enemy of "fast music" as The Radio, undoubtedly the greatest scientific marvel of all time, is making many musicians and music lovers in their beds. Is there any reason for their apprehensions? No one can say for certain; opinions differ widely.

Many people have learned that Radio will do "fast music" no more harm than "canned music" has done to John Philip Sousa and others.

Education on the Air
Many Schools and Colleges Have Radio in Their Courses

Radio has been more or less dependent on education for its success. Perhaps in the not too distant future education will be dependent on Radio to a very large extent. At present it is difficult to think seriously about either of these subjects entirely apart from the other. So far as the schools, colleges and universities are concerned, they may be credited to the curricula of many schools and colleges as they open their doors for the fall term. Radio is so very popular, for those who simply wish to know information. This includes the sports teams, the receiving sets, to the technical faculty for those who are interested in Radio research, designing, operating, and experimental work. Radio is being used more and more as an accessory in educational work, and in many programs a noticeable improvement is being made in broadcasting material of educational value.

There are many subjects which lead themselves readily to Radio broadcasting, and it is not too much to expect that in the near future many of our educational institutions will use Radio lecture courses as a supplement to their regular work in the classroom.

Farm Radio News Covers Country
Local Reports to Be Furnished by Radio from Arlington

Agriculture is one of the most consistently broadcast by radio telegraph as well as by Radio telephone direct from the Department of Agriculture through the Arlington Radio Bureau. The new service is designed to speed up the dispatching of market news and is the result of cooperation with the National Department to establish remote control stations for the Department.

The broadcasting of market news from the four long wave, high-powered Radio telegraph stations of the Nation is possible owing to the use of radio telegraph operators virtually anywhere in the United States. The operators are equipped with portable r.f. instruments and field telephone sets.

The use of Radio and wire telegraph the Department of Agriculture has established the most complete and efficient market news service to farmers and other interested persons. This service is being used through the world. Farmers in practically any section of the country can now receive schedules of agricultural prices and movements at the leading market centers the same day, and in many cases within a few hours after the news develops. Trained reporters in the markets collect the information and file it for immediate dissemination by telegraph and Radio.

---

Condensed

By DIELECTRIC

If you recall how familiar static made itself with listeners in the month of August, you will appreciate the difficulties of making radio reception possible in England while listening for broadcasting from this country.

Since soil for heat waves, which have caused static, is shallow in this part of Europe, the reception was at times adequate to put on a loud speaker. It seems likely that we shall have others across the water making our broadcasts in fairly good volume.

What are the actual conditions existing in respect to Radio patents, etc., no one knows at the present time. The reports of the members of the Federal Trade Commission, their report being completed and now in preparation for submission to Congress when it meets in December, we purchasers of Radio sets and apparatus may soon check our surmises with what have been found to be facts. Every man who is looking into new hook-ups, some of which entitle the purchase of units in addition to those on hand, he is himself subjected to unfair treatment on the part of the big Radio interests. We shall see!

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Radio Indi-Gest

WALLA WALLA NEWS BULLETIN

WALLA WALLA (By Indi-Gest Broadcaster), September 29. - Wild nights of terror and riot scenes have been common here since Chief Announcer Brandon went off the air. The devastating effect of the day during the recent disturbance was caused by a mistaken identity. Less Stebbings, famous for his incisive debating ability, arrived on the small boat and was taken for the Mystery Man who invented the so-called Milopolex now sweeping the country from coast to coast. The Weekly Indi-Gest. Linda claims he is not the inventor, but the Milopolex creator. He was, it is said, the Milopolex, when it works, works very much like the famous and genuine, degenerative set. Linda claims he can make the Milopolex look like the genuine Hypodermic with only a taumahal-abundant modifications of his own hook-up. The invention was made to go on the market alone, so Announcer Bray had to call out the troops to protect his territory. As a climax, the natives have formed a flaming antenna and threaten to call the legislature into special session to impeach Bray and his political hangmen--who have not been hung yet.

A-B-C Lessons for Indigent Beginners
Chapter XVI: Sweet Ohm
BY GEORGE

R for Rhostat, that makes tubes bright and dim, So do not try to mess with me, Whatever comes in.

Lots of Room. Send her in

Dear Indi: Don't care much for your "Rink Dept" but want to ask about your work for my new "Fet-Perez" circuit. Any.

Boys Love Radio

Mother makes her shut for silence, As he holds the ear-organ tight; "Waterworks" don't work in a home, That's what we love, boys.

We can't use the fun of sitting Just as quiet as can be, Turning, turning some old door-knob--

Hearing music "likely get?"

But it sometimes works out doubly

For the little boy's harm;

And we stay up three hours longer, So we're trying not to fail.

Marked "Personal"

Editor Radio Indi-Gest, Turkey Creek, Wisconsin.

Radio Indi-Gest

One of the oldest living and most respected citizens of this community, having been active in many public affairs since 1917, is using a new hearing aid. The device is known as the Davenport instrument. The Davenport instrument permits the wearer to hear and communicate but is not a hearing aid in the usual sense. It is a new and revolutionary device and is known as the "Davenport Hearing Aid." The Davenport instrument is a silent instrument that does not make any noise. It is a silent instrument that is used in the hearing aid. The Davenport instrument is a silent instrument that is used in the hearing aid.

The Davenport instrument is a silent instrument that does not make any noise. It is a silent instrument that is used in the hearing aid.

We next day the smart slick who floss Tazele in the garden house and lady who get her a new gold broach. Just the thing the Davenport instrument is a silent instrument that does not make any noise. It is a silent instrument that is used in the hearing aid. It is a silent instrument that is used in the hearing aid.

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How to Build a Push-Pull Power Amplifier Set
Transformers Can Be Made At Home

By H. J. Marx

Every fan at some time or other gets into trouble with a flywheel. The reason for this is that the flywheel is an essential part of the amplifier and if it is not made or repaired correctly, it will not work properly. The flywheel is a wheel that rotates at a constant speed and is used to store energy. It is made of metal and is attached to the amplifier by a shaft. The flywheel is driven by the amplifier and is used to amplify the output signal. The speed of the flywheel is controlled by the amplifier and is used to modulate the output signal.

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TRIPLE HONEYCOMB COIL CIRCUIT

The coils fit into three coil mounts on the outside of the panel. The three magnetic fields are connected in series, the secondary of one being fed by the current of the other two. The conductor for each coil is connected to an ordinary transformer, and the resulting coil current is added to the primary circuit. The whole circuit is connected to the usual 6 battery positive terminal. In addition, the cathode of the transformer is connected to the cathode of the secondary of the transformer, to rectify the secondary circuit. This amplifier circuit can be used in conjunction with any detector having one or two stages of audio frequency amplification, as desired.

Review of Books


Amateur Radio Call Book. A complete list of authorized call signs and names, Technical and Training Stations of the United States, American Land Stations, Army and Naval Land Stations of the U. S. High Powered Transoceanic Stations and their Schedules. Also how to make out and fill out reports for books not accepted. Send money orders or checks. Price, $1.50. Radio Digest, 123 W. Madison St., Chicago, Ill.

If you want louder signals, use a longer aerial, more tubes, higher plate voltage, more sensitive auditors, and more careful tinker and receiver adjustment.

Do you know why the Mu-Rad sells, Mr. Dealer? Simply because he knows the Mu-Rad is the most sensitive and efficient receiver on the market. He also knows that Radio Digest recommends the Mu-Rad—in our Book Review section. For instance, in our last Book Review, we stated: "The Mu-Rad is the most sensitive and efficient receiver on the market." That's profitable business!

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Key Locates Troubles in Receivers

Work of Many Engineers Benefits All Amateurs

TROUBLE-shooter's key for locating troubles and defects in Radio, made especially for you, is now being offered at no cost for the benefit of Radiophiles. It is the combined work of several engineers.

WORKSHOP KINKS?

THERE are many little kinks worked out at home that would add to the efficiency of the worker if only he knew about them. There are new parts, new methods of developing parts and various unique ways of operating sets that are discovered every day. Radio Digest is very much interested in obtaining such material. So, we have in full detail, including step-by-step instructions, the rejected copy may be returned. The work must be outline original, not copied.

RADIO KINKS DEPARTMENT
Radio Digest
123 W. Madison St., Chicago

who have worked out the various problems and boiled down the information for handy use.

Opposite the various letters of the key are placed different troubles encountered by the Radiophiles; opposite the line diagrams showing how difficulty combinations of numbers will be found which tell where the trouble lies. In short, the trouble is given from a number of causes, the different numbers and the difficulty of each individual test are a trouble. If one cause given is not the trouble, the test will be different, each detail. Items given should be followed until the source of the trouble is found. This key is invaluable to those who cannot read a diagram and do not know the different Radio construction symbols. It will also assist the beginner.

TRROUBLE SHOOTER KEY

(A) No signals, no noise. Weak signals, no noise.
(B) No signals in detector circuit. No noise. 1, 3, 4, 12, 13, 20, 32, 41.
(C) Signal in detector stage. 1, 2, 4, 6, 7, 12, 17, 20, 22, 24, 35.
(D) Weak signals, cracking, scratchling or popping sounds in the detector circuit. No noise. 1, 3, 7, 14, 18.
(E) Noise affected by tuning. 3, 5, 14, 17.
(F) Noise not affected by tuning. 11, 12, 15, 20, 22, 25, 31, 38, 41.
(G) Squeaking, scraping, scratchling or popping sounds in amplifier circuit, but no detector. Turn diodes of detector. Tune for maximum. 1, 3, 12, 13, 14, 17, 18. 20, 22, 25, 31, 38, 41.
(H) Nonsense, hiss, squeal, whistle and grunts in amplifier. 5, 16, 20, 23, 41.
(I) Hissing or buzzing sounds. 5, 16, 23, 24, 41.
(J) Unsteadiness or wavering sounds. 9, 16, 18. 25, 41.

APPENDIX

1—Tic-tac coil connections reversed. No regeneration. Reversal coil leads.
2—Battery run down.
3—Tubes not making proper contact with their terminals. Tighten.
4—Polarity of battery reversed.
5—Transformer connections reversed.
6—Grid condenser shorted.
7—Aerial or ground disconnected.
8—Cot loss and vibrating, causing unsteady signals by varying audibility between coils.

9—New capacity in antenna regeneration is difficult to control at extreme points. Check where II or plate condensers are used in the antenna and see if any are out of date. Place fixed condenser of 950 mfd. in parallel. 11—Claw causes leaks in the aerial, etc., making signals unsteady.
12—Transformer connections to aerial or ground.
13—Fingered rheostat and unsteady filament current.
14—Wiring, windings broken or burned out.
15—Storage battery capable of delivering current to detector tube but not to another tube. There is no plate condenser in the plate circuit to reduce voltage in detector current filament circuit.
16—Adjust all controls and check plate and storage battery connections. 17—Lighting amplifier tubes, after adjusting, have the filament cut out of adjustment when operated on an alternating current. Always switch in detector with amplifier lights on, if using same battery.

18—Primary of transformer reversed.
19—Too much voltage on detector.
20—Too much grid leak resistance.
21—Excessive detector filament voltage.
22—Grounding plate. Plate leads have polarity and been connected. Close together.
23—Cause of bowing in antenna in excess of two are difficult to assign. A good practice is to place two fixed condensers of 250 capacity across the secondary of last transformer.
24—Transformers too close together.
25—Tubing oscillation interfering with cause of poor connections to antenna or ground. This is often a difficult trouble to locate.

26—Fixed grid condenser grid of detector tube paralized. This may result in a hoot of any pitch at intervals of ten to twenty per second. Remedy, decrease filament voltage, loosen grid coupling, or decrease plate inefficiency and lower the grid condenser resistance.
27—Increase in transformer, causing shorted plates or layers. In case the noise may be heard with primacy of transformer, telephones and battery in series. Remedy, place transformer in oven and dry out at moderately high temperature and impregnate with paraffin.
28—Fixed grid coil interchanged with B battery shorted to negative side of filament circuit. This produces a terrific knocking.
29—Fixed condenser shorted.

(Continued on page 20)

DEALER PROMPT SHIPMENTS

FADA

Full line of 2, 3, 4 and 5 tube Fada Neutrodyme Receivers in stock.

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Langebro and Kaufman

Vario couplers

Vario couplers

Radio and Mechanical Trading Corp.

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Genuine Nathaniel Baldwin Head Phones $7.95

Type C. Cica Diaphragm, new stock.

A limited number only.

Before ordering, please check our list of bargains on all new, standard and high grade headphones for radio sets.

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ERLFA REFLEX CRYSTAL

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COCKADYK 3 TUBE $31.50 $35.00

COCKADYK 1 TUBE $15.00 $16.50

3 TUBE BEST OF PARTS $45.00 $50.00

ADDED $13.00 to each for Cabinet

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Telephone Magneto Box

Battery Container

Why all this talk about mewing up the LEDs from the A and B batteries, etc.? Take a hint from the old fashioned telephone magneto battery box. Attach a small action switch protruding from the box, upon which you mount the lamp. An action switch connects the local or microphone battery to the arc when the plate is turned on. Put a short upright on your radio set, with a similar hook on which to hang the headlamp, and all the hanging and bending will be avoided. The arc of the telephone will dispans the hook lever, which should be provided with a movable switching and contact point. To these connect the negative binding post on set. When the arc takes the headlamp off the hook, the arc will automatically switch in the A or B batteries, and when you hang it up it will open the circuit on both. Very simple isn't it? Again, it makes an arrangement which is very convenient. You can pick up the phone momentary if there is anything doing; if not, keep up, then doing away with connecting and disconnecting the battery wires.

J. F. Robinson, Jacksonville, Fl.

FADA

Full line of 2, 3, 4 and 5 tube Fada Neutrodyme Receivers in stock.

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123 W. Madison St., Chicago

AT LAST

The Genuine Reinarz

Covers all broadcasting wave lengths now used

Each coil bears a facsimile of John L. Reinarz's signature

Made under John L. Reinarz's specifications by the Eugene T. Torney Laboratories, Inc., exclusively

TRIGGER OF NEW YORK RADIO

18 EAST THIRTY-FIRST STREET, NEW YORK CITY

Telephone Magneto Box

Battery Container

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J. F. Robinson, Jacksonville, Fl.
**New Apparatus on the Market**

This transformer itself consists essentially of a core of especially chosen silicon steel sheet with a carefully built winding, assembled integrally with the core and supplied with conveniently located terminal screws.

It has a comparatively low ratio of transformation, approximately 3 to 1, is designed to serve admirably for use with any of the vacuum tubes in common use.

While, for the last four years transformers played a big part in Radio in all of its phases, it is only within the last two years that its superiority for voice and music amplification has been fully considered. For amplification of this kind of Radio signals as exemplified by broadcast Radio telephony it is essential that the amplifying transformer which is to serve satisfactorily must amplify all tones in the same degree without the introduction of foreign sounds. It must amplify the voice or music of the speaker without the loss of smoothness and roundness; it must do this without adding to these sounds the least.

The Federal Amplifying Transformer accomplishes this very efficiently. It makes possible a vacuum tube amplifier which will enable you to hear the long distance broadcast sound with the same softness and clearness as you hear the nearby station. It makes possible the vacuum tube amplifier which will reproduce music as loudly and with the same purity as if you were in the broadcasting studio.

**Impedance of primary (sec. to grid).............. 9,000 ohms**

**Impedance of primary (sec. to plate)............. 2,500 ohms**

**Impedance of secondary (primary close)........ 45,000 ohms**

**Impedance of secondary (primary close)........... 23,000 ohms**

This transformer, manufactured by the Federal Telephone and Telegraph Company of Buffalo, N. Y., is known as Type F6.

**TUNER**

The development of Radio has led to the use of a potentiometer as well as a control in vacuum tube circuits. Both of these units are necessary for the successful operation of some vacuum tube detector and for Radio bespeak condensers. It has given a new meaning to close control and the tuning of the most desirable circuits known.

**Price $5.00**

Our new free booklet will improve your knowledge of tuning. Send 25 cent stamps for our pamphlet.

**NEW TYPE Variable Resistance Leak**

This device is specially built for use as a tuning instrument. Its construction is such that it will withstand unusual usage. Absolutely no sparking. Absolutely no service marks. It can be mounted any way in the usual methods. It will enable you to get stations you have never heard before.

Complete with either J-4855 or 100 Freshman Condenser Without Condenser $3.50

All slender, beautiful and elegantly finished, and you will be supplied with additional knobs.

**Radio Bargains for THIS WEEK**

**ONLY THE KNOB SHOWS ON THE PANEL**

This device is especially built for use as a tuning instrument. Its construction is such that it will withstand unusual usage. Absolutely no sparking. Absolutely no service marks. It can be mounted any way in the usual methods. It will enable you to get stations you have never heard before.

Complete with either J-4855 or 100 Freshman Condenser Without Condenser $3.00

All slender, beautiful and elegantly finished, and you will be supplied with additional knobs.

**Radio Bargains for THIS WEEK**

**VOLTS* YOKE METER**

This device is especially built for use as a tuning instrument. Its construction is such that it will withstand unusual usage. Absolutely no sparking. Absolutely no service marks. It can be mounted any way in the usual methods. It will enable you to get stations you have never heard before.

Complete with either J-4855 or 100 Freshman Condenser Without Condenser $3.50

All slender, beautiful and elegantly finished, and you will be supplied with additional knobs.

**Radio Bargains for THIS WEEK**

**Carter’s “Hold-Tite” JACKS**

Self-adjusting lock nut eliminating space washers.

**Marvel-Capacity-Switch**

No contact of plug always assured.

**Battery Markings**

The markings on the primary side of both Radio and audio frequency transformers are usually 0, 1, 2, 3, 4, 5, 6, or a molded form of the cover which is in accordance with the plate code of the B battery. The secondary leads are marked A, C, A, which are connected to the grid of the amplifying tube and P, connected to the negative filament of the amplifying tube.

**Carter’s “Hold-Tite” JACKS**

Self-adjusting lock nut eliminating space washers.

**Phosphor-Brass Springs—Low Resistance**

Insulation, Westinghouse foundation, including a complete drillboard and terminals.

**Contact Points Pure Silver**

Ask your dealer. Catalog of other new Carter Improved Radio Products on request.

**Variety Resistance Leak**

The B.T. Universal Vernier Tuner

The only dial-mounted switch to the market.

**Radio Bargains for THIS WEEK**

**List Price $1.25**

Attractive designs for doctors and ladies. With the new improved models, your directly from Marvel-Switch Co.

**Marvel-Switch Co.**

26 West 5th Street, New York
Questions and Answers

Two Voltmeter Hook-Up (4212) E1, Kansas City, Mo.

Will you please advise best hook-up for a volt-ohm meter for a variable transformer? A Two-Entrv voltmeter; 1 25-plat voltmeter; 2 15-plat voltmeter; and condenser; J Howard Rhead, 11UV.

in the ground series and 25 plate voltmeter prices, the proper capability: what is the correct number of turns for the primary, secondary and third for the transformer? Two Entra voltmeter; 1 25-plat voltmeter; and condenser; J Howard Rhead, 11UV.

Three-wire telephone systems, 3 plate voltmeter for them? The turns will average 2½ inches in diameter, I could, of course, find this out by exper-

C.W. Transformer (4110) LIR, Newton, Conn.

I am trying to build a C.W. trans-
mformer. I have wound the primary and sec-
ondary 25 and number 18 d.c. magnet wire. I also cut some strips to build the core from black sheet iron for the core. How much should I wind on the winding for zero, the first and second, and the secondary and tertiary? I would like to get about 750 volts from the secondary, I intend to use a radio 5-watt tube. The current is 1½ watt, 60 cycle.

A.-The primary should have 400 turns of number 14 wire; for the high voltage secondary use 1200 turns of number 12; for filament secondary use 50 turns of number 14 wire. This will give me approximately 500 volts and 110 volt secondarys. The 110 volt secondary can be cut down for use on the filament by means of a rheostat.

Ornusse Inverse Duplex (4116) W1, Chicago, Ill.

I have a 2½ tube Grimes Inverse Duplex and have had wonderful results with it. With the exception that whenever I get a distant station the set begins to fry very badly. This is most pronounced at night; it cannot be heard when a local station is on. It is not exact.

A.-The action indicates either a poor connection, incorrect tuning or a leaky condenser, in all probability the last. This often caused by too much molten plastic. A review of all connections with the above details in mind will undoubtedly reveal the source of disturbance.

Changes take place in radio circuits or anything alike to poles carrying wires of any sort.

Bodlect Capacity on Distance (4211) AB, Syracuse, N.Y.

I have a standard three circuit receiver. I receive local stations loudly and clearly and free from body capacity effects but when listening to out of town stations, the instance, Walty, only sixty miles dis-
tance, the body capacity effects are extremely troublesome. The slightest move-
ment of the hand or body disturbs the whole grid squeals and howls. The panel is shielded. Will you kindly explain the causes of and remedies for this trouble?

A.—Properly shielded panel should be done in the elimination of body capacity because the lines of force extending beyond the coils of circuit would be grounded through the shielding. We could suggest no better method. It may be that your difficulty is due to the cabinets or the type of panel but as far as I can see it is impossible to give us any descriptive data we are unable to assist you more definitely.

Latest Radio Sensation Has Become Indispensable PRIMARY AND SECONDARY CONDENSER No Tape No Trouble

Only $4 Only $4

VERNI-TUNER

Saves Space - Labor - Money

HANDSOME APPEARANCE

FINEST WORKMANSHIP

MORE SATISFACTION

THAN ANY OTHER COUPLER

For the set with 1 3½ volt D.C. battery. Touches, Radio Service and Sales, St. Louis, Mo.

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ROBE ELECTRIC MFG. CO.

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One of our quarter-million

enthusiastic boosters writes

"I have just built a four circuit tuner, a duplicate of Mr. Lawrence Cockaday's receiver. I am getting unexpected results, distance with volume, and free from the noises that ordinary tuners create. I am using 'All-American' Transformers, Type R-13, ratio ten to one, in the first stage, and Type R-21, ratio five to one in the second with results which I find I cannot get by using other transformers."

The "All-American" are the largest selling transformers in the world.

Any dealer can supply you.

Rauland Mfg. Company

Pioneers in the Industry

200 N. Jefferson St., Chicago

Special! We shall be glad to send you a sample of each transformer on receipt of two cents to cover postage.

ALL-AMERICAN TRANSFORMERS

All transformers, all sizes, are made by Rauland Mfg. Company.

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