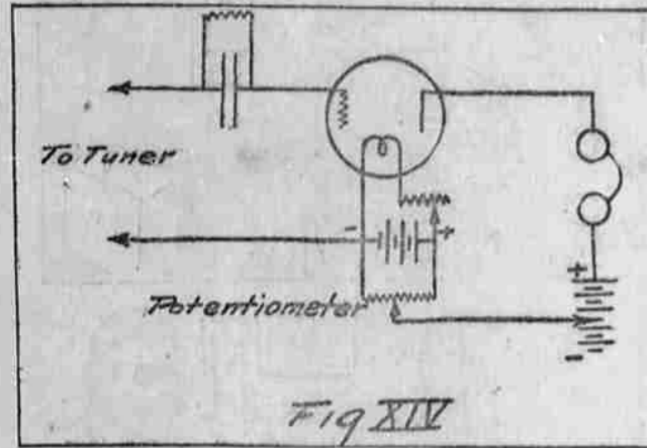


RADIO

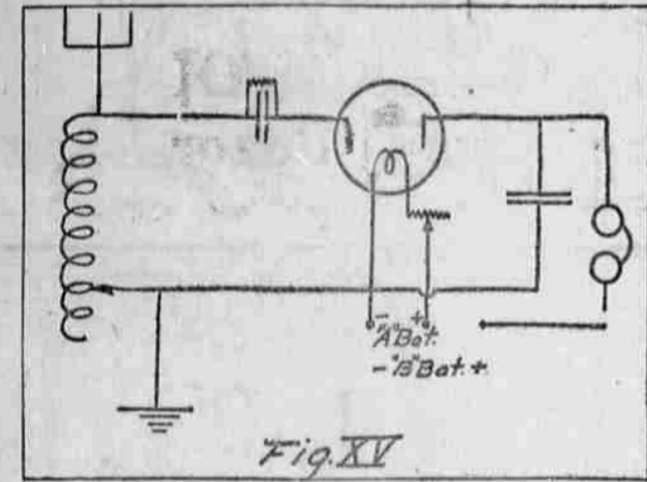
CHANGE POTENTIAL TO OBTAIN SIGNALS

Way in Which This May Be Done With Three-Electrode Vacuum Tube.

For every filament current there is a definite plate potential that will give the strongest signals. When using fairly hard tubes—high vacuum—bring out taps from the individual cells of the plate of "B" battery will give variations that are fine enough. For very soft, gaseous tubes, low



vacuum, a finer regulation of "B" battery potential is required and is most easily obtained by means of an "A" battery potentiometer. Fig. 14 shows how an "A" battery potentiometer is connected in the circuit of a three-electrode vacuum tube to give fine variations in the plate circuit potential. The resistance of an "A" battery potentiometer should be between 200 and 500 ohms. By moving the slider on the "A" battery potentiometer a variation of plate voltage equal to the "A" battery, or about six volts, can be secured. If the tube contains gas, too high a plate voltage will cause the tube to "black-out"—that is, the gas is ionized and becomes a conductor, al-



losing an excessive current to flow to the plate circuit which will destroy the elements. In using a vacuum tube circuit for the first time, always check the circuit to see that "A" and "B" batteries are connected to their respective terminals on the socket. The markings on the socket are plain and cannot be mistaken. Interchanging the plate fil-

ament leads in connecting a socket will be disastrous to the life of the filament. Note that the filament rheostat is set to place the maximum amount of resistance in series with the filament. After inserting the tube see that it is properly seated and that the four pins protruding from the tube base make good contact with their respective contacts in the tube socket. If, after listening in with a vacuum tube used as a detector with a tuned filament current and plate potential, no signals are heard, go over the circuit carefully and inspect all connections, contacts, polarity of both the "A" and "B" batteries, and take a look at the grid condenser and leak. A three-electrode vacuum tube can be substituted for the crystal as a detector in the simple radio receiving set described in this column a short time ago. Using a vacuum tube in place of a crystal detector will give a much louder signal, and a detector that when once adjusted will stay ad-

justed. The material which will be required to do this is as follows: One standard vacuum socket. One 610-ohm filament rheostat. One grid condenser and leak combined. Three binding posts. A source of filament current and a source of plate potential. Reconnect the set as shown in Fig. 15 when used with a three-electrode tube as a detector. This set, too, can be very conveniently mounted on an 8 by 10-inch base, mounting the tube socket with the filament rheostat beside it. In a great many of the usual receiving circuits used the so-called de-

tor tube functions not only as a detector, but as an amplifier and as an oscillator, as will be explained later. There will also be printed a table of symbols used in drawing diagrams and thus the different parts and materials used in these diagrams will be readily understood by those who are unfamiliar with these terms.

tor tube functions not only as a detector, but as an amplifier and as an oscillator, as will be explained later. There will also be printed a table of symbols used in drawing diagrams and thus the different parts and materials used in these diagrams will be readily understood by those who are unfamiliar with these terms.

tor tube functions not only as a detector, but as an amplifier and as an oscillator, as will be explained later. There will also be printed a table of symbols used in drawing diagrams and thus the different parts and materials used in these diagrams will be readily understood by those who are unfamiliar with these terms.

TIPS FOR FANS

A meeting of representatives of stations within 300 miles of New York and New Jersey was called to prevent radio "jam" in the air. Some of the worst things that come through wires have happened on the ether.

For use across the secondary of a tuner, such as the honey comb coils, use a condenser of twenty-three plates or less. This less capacity used in the secondary circuit, the better will the set work.

If, after wiring up a set, you hear nothing but a steady hum in the receivers, you may be very sure that there is an open circuit somewhere. Trace out the wiring carefully and some little fault will present itself.

The so-called "spaghetti" tubing, if placed over bare wires used in wiring a set, will improve the appearance 100 per cent and reduce the danger of short circuits.

More and more are the radio fans turning to radio-frequency amplification instead of auto-frequency. The chief reason for this lies in the fact that in radio-frequency amplification the incoming signals are amplified before they reach the detector where they are rectified, while in auto-frequency they are amplified after reaching the detector. In the first method signals that are very weak are brought in, whereas in the latter method they would probably not be heard.

And They All Disappear.

The output of the pin factories of Britain amounts to over a million millions of pins a year—a figure which would on ten years cover every town in the world with a layer of pins several inches deep.

READ THE WANT ADS!

SUN DUST IS A "RADIO NET"

Lenion Professor Evolves Novel Theory of the Atmospheric Envelope.

Electrified dust thrown off by the sun forms an atmospheric envelope about the earth about 100 miles which prevents wireless waves from escaping into infinite space, according to Prof. J. A. Fleming, University college, London, whose work in wireless is known all over the world.

The screen made by the dust, he says, acts as a sort of wireless speaking tube and carries waves used for long distance work—which are about ten miles in length—to travel 6,000 and 12,000 miles.

If it were not for that screen, according to the professor's theory, the wireless energy thrown out by the big sending towers would not cling to the earth, but would pass away and be lost.

How Big is an Electron?

One very noteworthy experiment in measuring an electron was performed by an American, Professor Millikan of Chicago. He introduced a minute drop of oil of about 1-10,000th inch in diameter in a chamber between two plates which a electrical charge was subject to control. The drop of oil was strongly illuminated and was viewed with a telescope. By controlling the potential of the plates the oil drop could be made to fall or rise at will. The drop continuously picked up and lost electrons. As it picked up an electron it would move toward the positive plate. By carefully observing the action of the drop of oil, Millikan was able to determine very accurately the charge added to it by its picking up one electron.

Churches

All church notices must be in the hands of the editor by 4 p. m. Friday afternoon.

LATTER DAY SAINTS

Regular services at the Tabernacle, Sunday school commences at 10:30 a. m. Sacramental services at 12:15 o'clock p. m. Mutual Improvement Association, Sunday at 7:30 p. m. Priesthood and Relief Society meeting at 7:30 p. m. Primary association at the tabernacle Tuesday, for children, 4 p. m. Primary association on north side at the little chapel, for children, Thursday at 4 p. m. Religion class at tabernacle Thursday at 2:30 and 4 p. m. Religion class at the chapel on north side at 2:30 and 4 p. m. Tuesday. Regular choir practice at the Tabernacle Thursday at 7 p. m. The public is cordially invited to attend any or all of our services.—David I. Stoddard, Bishop.

First Church of Christ, Scientist.

Corner of First and Washington, Sunday morning service at 11 o'clock. Subject, "God."

Sunday school at 9:45 a. m. Wednesday evening meeting at 8 o'clock. Reading room open to the public every Monday, Wednesday and Saturday from two to four. All are welcome to attend our services.

Zion English Lutheran Church.

905 M avenue. Rev. R. Bopstad, pastor, at 10 a. m., with enrollment of Confirmation Class. Morning Services 11 a. m. Subject of sermon, "Seeking the Lost." Luke 15: 1-10.

Christian Church.

Preaching by the pastor at the morning hour, "Vision and Leadership" will be the subject. Bible School at 9:45. Old Man Summer Stampki is back again. We will need the whole bunch to keep him away Sunday. He is the only fellow in all the town we do not want in our Sunday school.—O. W. Jones, Minister.

Presbyterian Church.

What makes America great? Another anniversary of the birth of this nation will be celebrated next Tuesday. We have a great nation. What are you doing to make it better? Let us show the other Americans what the real America is. Let us be an active force for Christianity. Tomorrow morning in the Sunday school and the morning worship the minister will have something to say along this line. The quartette will have special music. Let us make the day a holy holiday by our attendance upon divine services. In the evening the union services will be held in the South Methodist church with the Rev. A. J. Starmer preaching. Come with others.—W. C. Ross, minister.

St. Peter's Episcopal Church.

Corner Fourth and O streets. July 2nd is the 3rd Sunday after Trinity. We shall have the usual morning services; Early Communion, 8 a. m.; church school, 9:45; Holy Communion and sermon, 11:00. In the evening we join in the union service at the Methodist Church South at 8 p. m., at which Mr. Sifton will have charge and the pastor, Mr. Starmer, will preach. All are invited. Let us keep up Sunday duty as well as we can during the summer.—Jos. W. Gunn, rector.

POPPY FARMS ARE DECREASED

OSAKA, Japan July 1.—The farms under poppy in Mishima district, on the island of Shikoku, which is the center of opium production in Japan have this year been decreased by about 50 per cent, as compared with the area cultivated last year owing it is said to a revision of the law regarding the sale of opium. When the imports of opium for medicinal use were stopped during the war, the government in-

gave every possible encouragement to the growing of poppy in Mishima district, the soil of which is said to be especially suited to the cultivation of the plant and for the past six years the opium industry in this locality has been very prosperous. During last year 500 ctn of seed were under poppy culture, and 2,000 workers engaged in the cultivation of the plant and 600 kwon of opium was produced. This year the beginning of this year has been taking a turn for the worse. SMOKED FOR 82 YEARS. WALSWORTH, Eng.—Henry Smith, 61, all active at 102, has smoked since he was 20, has worked since he was 10, but never has drunk intoxicating

Celebrate

We carry a complete line of Flags in all sizes. Ranging from 1c to \$4.98.

Bunting in Red White and Blue—13c per yard.

Cap Guns in single shot and Repeaters. 20, 25 and 28c.

Also caps for either style.

ANDREW'S VARIETY STORE

For Shoes That Are Different Try

The Bootery

A Paradise for Tired Feet
Grover Smith, Mgr.

STANDARD LAUNDRY CO

DRY CLEANING
REWEAVING
ALTERATIONS

YOUR SUIT will look better, give you longest service when you send it here for cleaning.

Try our specialized service.

Phone MAIN 56

Commencement Day to the graduates a day long to be remembered. Connect these memories to your friendship by giving—

GIFTS THAT LAST

We carry a full and complete line of high grade Jewelry and Diamonds suitable for graduation gifts. See our selection before buying.

J. H. PEARE & SON

Established 1890.

SPECIAL

PRICES on Tires, Tubes, Gabriel Snubbers, Bumpers, Spot Lights and Tire Chains. Over stocked and must move them—We want your repair business on any make of car. Our Guarantee is what you need on your repair work—Home of the Chevrolet and Nash.

BLUE MOUNTAIN GARAGE

AVERY HARRISON, PROPRIETOR

Practical Gifts

To delight the homewife or bring real pleasure to the skilled mechanic, no other selection for a Christmas gift is likely to be so satisfactory as a really useful tool or piece of cutlery selected from the old reliable Keen Kutter line which we sell. More than 50 years of conscientious endeavor to make only the best is behind each article which bears the Keen Kutter trademark. Our stock at this time affords many attractive items suitable for Christmas giving.

Oregon Hardware and Implement Co.

Turn the Corner and Save a Dollar

Shop early Monday morning and avoid the rush. We will have everything you need for that 4th of July picnic.

We close all day Tuesday, July 4th.

J. G. HOLM

GROCER
Quality and Service
CALL MAIN 43

THE REASON FOR OUR SUBSTANTIAL GROWTH IS OUR SUBSTANTIAL SERVICE

The Birthday of Independence

July 4, 1922 will be the 146th Anniversary of the signing of the Declaration of Independence. The wisdom of this act, the character and strength that it gave this country has well been proven.

The same argument of a firm vow made for the purpose of protection for the future, applies to the individual. The success of it may be seen in every day life in those whom, years ago, made their Declaration to save and protect their future.

An account here leads to financial independence and strengthens your credit. We will be closed Tuesday, July 4th.

UNITED STATES NATIONAL BANK

LA GRANDE, ORE.