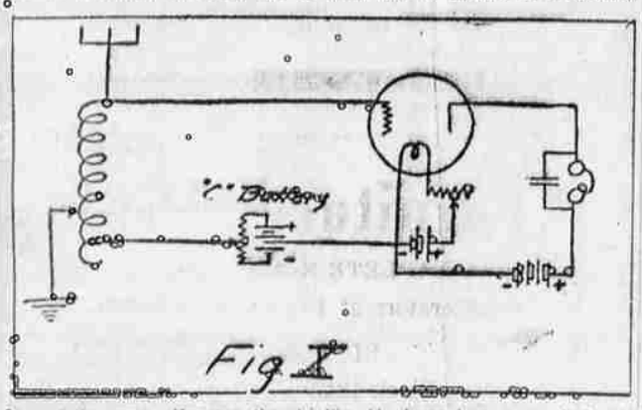
RADIO

MORE ABOUT VACUUM TUBE AS A DETECTOR

How a "Three-Electrode" Is Connected in a Simple Radio Receiving Circuit.

Obviously working the tube at a point on the upper bend of knee of the characteristic curve would produce the same symmetrical changes in the plate circuit by symmetrical changes in the grid potential as it will if the tube is worked at the lower end of



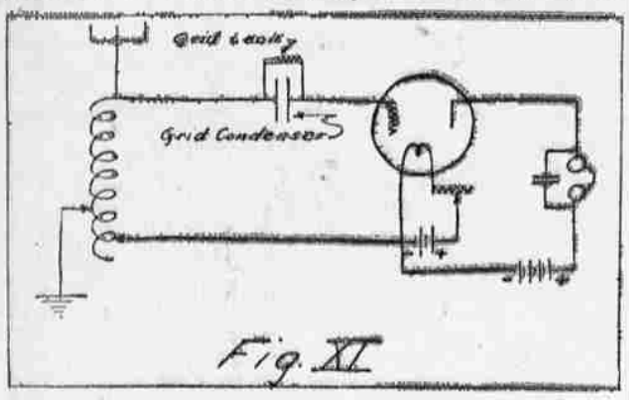
flow of the curve. However, the alternating current applied to the grid would now produce a large decrease and a small increase of the plate current, the reverse of that shown in Fig. 8. The objection to working the tube on the upper bend of knee of the curve is that when no potential is applied to the grid a relatively large plate circuit current and the tube would not function as a detector.

Fig. 10 shows how a three-electrode vacuum tube is connected in a simple radio receiving circuit. The "B" battery furnishing the necessary plate potential is connected with its positive side through the phones to the plate. The filament is heated to the required temperature by the battery "A." The incoming radio frequency alternating current is applied to the grid and the negative side of the filament through the "C" battery. By connecting the negative side of the filament to the midpoint of the "C" battery a positive potential can be applied to the grid by moving the slider on the "C" battery potentiometer up, or the grid can be made negative with respect to the filament by moving the slider on the "C" battery potentiometer down.

In practice a "C" battery is not used to force a three-electrode vacuum tube to function as a detector.

Fig. 11 shows how a so-called grid condenser and a grid leak resistance are used in connection with a three-element vacuum tube so that it will function as a detector in a radio receiving circuit.

The grid condenser is connected in series with the grid of the tube and shunted by the grid leak resistance.



current would flow in the plate circuit and rapidly exhaust the "B" battery.

Should the tube, by means of the potential applied to the grid, be made to operate at a point on the characteristic curve midway between the upper and lower bends—that is, on the straight part of the curve, symmetrical variations in the grid potential would cause symmetrical change in the

The grid condenser will allow alternating current to flow to the grid but will not allow any charge that might collect on the grid to flow through it to the filament. The only way a charge that might collect on the grid could flow to the filament would be through the high resistance of about 500,000 to 2,000,000 ohms and would allow the charge on the grid to leak off slowly.

USING ELECTRIC LIGHT WIRE

Experts Tell the Safe Way to Employ This System for Radio Receiving.

Since the announcement that the bureau of standards of the department of commerce had perfected a method of employing electric light wires in place of aerials, considerable experimenting has been done by various amateurs, some of whom have had good luck while others succeeded only in blowing a large number of fuses.

Engineers of an eastern electric light company have offered the following suggestions to amateurs:

"The most successful results have been obtained so far only with medium bulb size lamps with covers the lights, but the more recent ones are very good and efficient.

"Wire to be used should be such as is used in house wiring, that is, rubber insulated.

"Third—A fuse not heavier than 10 amperes should be used in order to keep ahead of the antenna connections.

"Fourth—An ordinary separable detachable plug, i. e., one with two blades connecting the two separate wires at the plug—is used. Only one wire is cut from this plug, the other being screw is unbroken. This flexible cord wire should be long enough to reach from a handy electric light socket to the table where the instrument is located, and should terminate in the fuse mentioned above. In case an externally connected condenser is used, the circuit should be broken in the fuse to the condenser and from the condenser to the aerial or binding post of the receiving set.

"In cases where the condenser is built into the instrument the connection from the fuse is run directly to the aerial binding post. All other connections should be exactly the same as for conventional overhead receiving.

"Screw the attachment plug into the electric light socket and tune as usual. In case no signals are received reverse the blades in the attachment plug by simply pulling the attachment plug apart and turning the lower half half-way around.

"Caution—Under no consideration should the connection from the electric light socket be brought directly into contact with the ground connection. Fuses will be blown in the house circuit and the whole house left without light. Operators should also be careful about making contact themselves bodily with the electric light wire and ground at the same time, in order to avoid shock."

SHORT FLASHES

The first national radio compass station on the Great Lakes was recently installed. Other stations will shortly be in service when the "graveyard" of the lakes will have lost its terrors.

It is claimed that John Hayes Hammond, Jr. and Dr. E. L. Chaffee have invented an apparatus that locates storms by circles. The system is based on principle of producing characteristic waves to which only specially equipped receivers are responsive.

Secretary Hoover's force of weather cops may take the form of special government detecting stations where aerial compasses could be employed so as to detect the direction from which interruptions come. By a series of relays, the government station nearest the violating amateur could be notified and the source of trouble stopped.

Now the fans in England are having a hard time with the air. According to a report from England there are only 5,000 authorized amateur operators in the United Kingdom. The London Daily Mail states that the reason for the air's quiet growth is the fact that "hampering and senseless restrictions in this country prevent senseless amateurs from getting practice. The old days of the army and navy air forces are afraid of the amateurs and use their influence in having the postoffice authorities impose impossible and vexatious conditions that limit the field

DOLLAR ON LONG TRIP

CHEHALIS, Wash., July 15.—Her first dollar, spent 27 years ago, recently returned to the hands of Mrs. Torrence Hagerman of this city. When she was eight years of age Mrs. Hagerman received a silver dollar from her father. She placed her initials on the coin and spent it with a merchant at Lancaster, Mo., where she was then living. The dollar turned up again when Mrs. Hagerman received it in change from a merchant in Montesano, Wash.

READ THE WANT ADS!

Feature Musical "Episodes"

Patton Brothers Bring to Chautauqua a Program of Sparkling Originality

A program of musical "episodes" is coming to Chautauqua and will be given by the Patton Brothers, three young men from the West Coast, who are particularly gifted along musical lines. The episodes are called the "Colonial," "Popular," "Chinese," "Sacred," "Russian" and "Patriotic," and all are given in full costume. It is a different program, sparkling in originality, and all the episodes are written in musical form. The Patton Brothers have already established themselves in the hearts of western audiences on account of the unique features of their program; the separate talents of each of the three young men; the eccentricity of their work, and the musical background that lies beyond their efforts. It is a highclass program which will delight music lovers who like a dash of the original in their entertainment.

NEW MANIFOLD ON FORD IS A BIG SUCCESS

Los Angeles Men Climb Boiling in Hour and 29 Peak Auto Road Without Minutes.

(Colorado Springs Herald.)

Coming all the way from Los Angeles, Calif., to demonstrate that they had the real thing in their Utility Manifold, designed especially for Ford cars, but adaptable to all makes of engines, George W. Cottle and V. C. Young, of the Utility Manifold Co., put it across yesterday when they climbed Pikes ePak in a Ford car equipped with one of their devices. The story of the climb, which was made in low gear, the saving of oil, gas, and small amount of water on the best told in an affidavit sworn to after the trip by A. B. Crosby, mechanic in Vollmer Brothers garage, the local Ford agents. Mr. Crosby says:

"On June 28, 1922, Cottle Brothers brought into the shop a Ford touring car with regular equipment. Out of this car I personally took the oil line, I then accompanied V. C. Young in said car to the top of Pikes Peak, the car being equipped with the Utility Manifold in place of the regular oiling system. The trip was made without stop in one hour 29 minutes (1:29) from the toll gate to the top of the Peak. There was no overheating of the engine, no boiling of the water and no other application of either oil or water during the trip. After returning to the shop I found that on the trip to the Peak and return the car had consumed not over one pint of oil, one-half gallon of water and three gallons of gasoline, and the engine was in as good condition as when we started."

The feature of the Utility Manifold is that it utilizes gas and oil which otherwise would go to waste to properly lubricating the top rings and valves. The claim of the manufacturers is that the device seals the crank case and prevents the motor from leaking oil through the gaskets. Testimonials are shown by the concern here for the Pack hill climbs to the effect that manifolds in use in California have effected a saving of 30 per cent in gasoline and 50 per cent in oil.

(W. A. Bean, of 1002 Third street, La Grande, is local distributor and is giving a demonstration of this new manifold in front of the Foley Hotel.) —Ads. 7 11-2t

ELK HERDS NEED WINTER FORAGE

The estimated number of elk remaining in two large groups in the United States at the present time is not over 42,000 according to the Biological survey of the United States Department of Agriculture. To insure the permanence of these splendid game animals, which are among the largest and finest of all deer, the cooperation and coordination of federal, state, and all other interested agencies is needed.

The elk of the Yellowstone park region constitute the only really large herds of big game remaining in the United States, and although these number about 25,000, they are the remnant of the great herds which formerly ranged from Maine to California. The northern group, which ranges within the Yellowstone National park in summer and migrates northward, suffered greatly from the adverse conditions of the winter of 1919-20.

The elk in the southern group are scattered in summer at high elevations in the southern part of Yellowstone park, and in the mountains of the Teton, Bridger, Wyoming, and Washakie National forests. With the first heavy snowfall they descend to lower levels, where their winter range has become more and more restricted by the coming of settlers. Thousands of elk congregate in the path of their former migration in the vicinity of the winter refuge maintained by the Biological Survey at Jackson, Wyoming. A winter feeding ground at this point attracts many elk, and it has been found necessary to furnish a supply of hay for them. Feeding is not recommended, however, where natural winter forage in sufficient quantity is available.

The other principal herds remaining on their native ranges are the Roosevelt elk, confined to the Olympic mountains in northwest Washington, and smaller isolated groups, mainly near the Pacific coast, which include the valley elk in a small area at the lower end of the San Joaquin valley, California. If an elk is estimated to be worth $75, the value of the present herds in the United States would be approximately $4,000,000, which is a substantial national asset.

Within the past 14 years several thousand head of elk have been transferred from the Yellowstone park region to localities in many states for restocking purposes. In Arizona, where conditions are suitable, these transplanted herds are thriving. In other districts it has been demonstrated that it is unwise to introduce elk on restricted areas near farming communities as more or less injury to crops occurs and claims for damages are to be expected.

The high mortality among elk in recent years has been due partly to weather conditions, such as period-ical summer droughts followed by

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 10:00 a. m. Sacramental services at 12:15 o'clock p. m. Mutual Improvement Association Sunday at 7:30 p. m. Priesthood and Relief Society meetings at 7:30 p. m. Primary associations at the tabernacle Tuesday, for children, 4 p. m. Primary associations on north side at the little chapel, for children, Thursday 4 p. m. Religion class at tabernacle Thursday at 8 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 8 p. m. The public is cordially invited to attend any of our services. Pastor J. Stoddard, Bishop.

First Church of Christ, Scientist.—Corner of First and Washington. Sunday morning service at 11 o'clock. 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.

The First Methodist Episcopal Church—"Is Christianity Practicable?" Does permanent prosperity follow in the wake of unbelief, intellectual confusion or moral integrity, self-control, inspiration and faith? What answers have these and other fundamental principles of the Christian religion to human situations? This subject will be presented in practical form in the morning service Sunday. The attendance last Sunday was very gratifying; we are going to exceed it next Sunday or larger next Sunday. An extra special invitation is extended to strangers. We will unite with other churches in a joint meeting at St. Peter's church in the evening. Rev. J. W. Gunn will be the speaker. Bible school at the usual hour. Teachers please be in your places. I will appreciate the attendance of the members of your classes. —C. H. Quigley, minister.

Presbyterian Church.—Owing to the absence of the minister at the annual meeting of Synod this week the regular services of the day will be omitted excepting Sunday school, which will be held as usual tomorrow at 9:45 a. m. Plan to join with them at that hour and then attend divine worship at one of the other churches in the morning or the union service in the evening.—W. C. Ross, minister.

Christian Church. — Bible school meets at 9:45. Preaching at 11:00. We urge the attendance of both these services upon every member in town. Help keep old man "Summer Slumber" on the blink. No evening service. —O. W. Jones, minister.

First Baptist Church. — Sunday school 10 a. m. G. B. Hogan, superintendent. Sermon 11 a. m. Subject "Heavenly Glory." The union meeting will be at the Episcopal church Sunday evening. Rev. Gunn will preach the sermon. We want to help the M. E. South in their revival all in our power. Let us pray for a true revival.—A. R. Sitton, pastor.

St. Peter's Episcopal Church, corner Fourth street and O avenue.—July 16 is the Fifth Sunday after Trinity. Our morning services will be as usual; Holy communion, 8:00 a. m.; church school, 9:45; morning prayer and sermon, 11:00. The special feature of the day with us will be the union service in the evening at 8 o'clock. We hope all members of our choir will be in their places. An offertory solo will be sung by Miss Schilke. The Rev. Mr. Sitton will assist in the service and the Rector will preach. All are cordially invited.—Jos. W. Gunn, Rector.

The big tabernacle over on the North Side is complete and the seats and finishing touches are being put on today. The tabernacle seats about 1,000 people. The structure is 84 feet long by 56 feet wide and about 9000 feet of lumber is used in putting it up. A long, elevated choir platform and speakers' rostrum is at one end of the building. The tabernacle is on the lot adjoining the M. E. Church, South, on Fir and O streets. Jerry Jeter and his wife are the evangelists secured by Rev. Starmer to conduct the revival campaign in the tabernacle. The first service will be held Sunday morning at 11 o'clock, with Jerry Jeter as the speaker and in the afternoon at 2:30 Mrs. Jeter will have a Bible hour. Mr. Jeter will speak at the 7:45 hour. The Jeter's cartoon, made of wood, paint in oil, play the trombone, sing and sing. All are invited and the singers of the entire city are invited to sit on the platform.

MEMORIAL IS TO BE BUILT

HONOLULU, T. H., July 15.—The community memorial to the late Prince Jonah Kuhio Kalanianaole, last titular representative of Hawaiian monarchy and Hawaii's first congress for twenty years, will take the form of an auditorium here. It has been decided by representatives of the various Hawaiian societies sponsoring the project.

The auditorium will be the meeting place for the Hawaiian societies and also will be used for other community interests.

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WHO ARE YOU?

NINETY-NINE chances out of a hundred you are the man whose second finger on the right hand is expert in pressing electric buttons.

An electric button is a pretty small thing. By it we make elevators rise and fall for us, we give orders, we summon employes, we start big machinery whirring, we turn the light on and off, we could go on indefinitely. But remember, it is not the half-inch button that does all this.

There is the tremendous power behind the button; the huge dams and water turbines (in case of water power) or the enormous boilers, turbines, engines and generators, (in steam plants); the wires of high tension transmission lines, and the innumerable smaller wires stretching like a web from your very bedside out over the whole country.

1,400,000 people have invested their earnings in the securities of the electric light and power industry. Besides these foresighted citizens there are the investments of insurance companies and the loans made by banks.

They make possible "the button" that your finger presses morning, noon and night. Thirty-five million others enjoy the same instantaneous service.

There are still 14,000,000 homes in the United States remaining to be wired. 14,000,000 unwired homes mean that millions of people are without the benefit of electric light and power in their residences.

Gradually most of these residents will demand electric service, and the electrical industry with the support of the public, will find the means to extend this service to their prospective patrons, so they, too, will be able to press that half-inch button.

Eastern Oregon Light & Power Company

STANDARD LAUNDRY CO.
EXACT
Phone MAIN 56
You'll send your clothing to us for DRY CLEANING
Expert work, care, promptness assure your satisfaction; we protect the morale of your garments.

Fisherman

Are you ready for the big contest? We have just what you need to make the right catch.

Fly Books	35c to $8c
Fish Reels	95c to $1.85
Fish Lines	75c to $1.15
Leaders	10¢ to 25c
Bamboo Poles	25c
Steel Rods	$2.35 to $4.59

ANDREWS' VARIETY STORE

Let's Remodel and Repair the Home

It may be a new roof, or some convenient built-in feature, like a breakfast alcove, that will make the home more attractive and the work easier.

Possibly a glittering, "dance alluring," hard wood floor is just the thing right now!

An addition to the bed room or a sleeping porch might eliminate any embarrassment for you and the unexpected guest.

These are merely a few suggestions toward the improvement of your home—improvements that add so much to the value of your property and to your individual enjoyment.

Call at this office. You will obtain many valuable ideas either for repair work, remodeling or new buildings.

The Grande Ronde Lumber Co.
Exclusive Representative of the National Builders Bureau