

Local and Personal

Visiting in California— Mrs. L. Judy, of East Main street, is making an extended visit to relatives and friends in her old home town of Wheatland, Calif.

Try the wet wash and rough dry. 76 Alida. Phone 180.

Motor to Grants Pass— Mrs. C. A. Cotter, accompanied by Albert and Raymond Cotter, and Mrs. C. M. Bomar, also her father, H. M. Gray, motored over to Grants Pass Sunday and spent the day with the Frank Wesson family, who are leaving this week for Seaside, Or.

Dew Drop Inn for lunches and meals, sandwiches and salads. 2221f

Returns Home— Mrs. J. R. Lilly has returned from Sacramento, where she was called by the illness of her sister, Mrs. Clot-felter.

Bring your soap slips to Detrick's and get a free bar. "We sell for less." 2241f

Leave to Visit Cousin— Albert and Raymond Cotter left yesterday morning for a visit with their cousin, Roy Gray, at Morley, Calif.

Say! Go see those baby and children's garments. Needlecraft Shop. 225-1f

C. E. Business Meeting — There will be a business meeting tomorrow evening of the Christian Endeavor society at the Presbyterian church, and written reports will be given by the officers. Do not forget to earn your four bits by that time.

Your dollar goes further at Detrick's than any place in town. You owe it to yourself to trade where you can get the most for the money. Detrick's Groceries. "We sell for less." 2241f

No Panic in Montana— Montana day is to be observed in Grants Pass Sunday and quite a number of former citizens of that state have made plans to attend the gathering. It is said that one of the former "Stub Toe" citizens, who now lives in Jackson county, is responsible for the statement that the financial panic of the fall of 1907, was never heard of in Montana, except as far as it affected other states. He will probably attend the meeting, so turn out and see him.

Have your clothes cleaned and pressed and get tickets on the Ford, at Paulserud's. 2331f

Here from Weed— Mrs. Caldwell, of Weed, Calif., was in the city meeting friends yesterday afternoon.

It's time to order your suit for Ford Day. Tickets with every purchase at Paulserud's. 2331f

Trinity Guild to Meet — There will be a special meeting of the members of the Trinity Guild this evening at 6 o'clock at the parish house.

Cliff Payne makes ladders. 2241f

We are not giving any band concerts or free baby carriages. Just the biggest dollar's worth in town. A trial will convince. Detrick's Groceries, in the heart of the city. 2241f

Editor Vacates — Harry B. Averill, publisher of the Cascade Miner, at Cle Elum, Wash., passed through Ashland Wednesday on his way to spend a vacation in California.

Draw the lucky number at Paulserud's and win a new suit of clothes. 2331f

Insurance—274-J—Yeo. 2161f

Visiting Grandparents— Miss Nondis DeLap is visiting her paternal grandparents at Klamath Falls.

If you eat at the Nelda Cafe you will get a chance to win the Ford car. If one of our tickets is the winner, will board the holder free for one month. 236-6

WHAT REDUCES MILK AND FLESH MORE THAN FLIES? Double Strength SHOOFLY just in from Philadelphia. It's the best Fly Repellent on the market today for the spraying of your cows. Fencing, Mowers, Rakes and Binders and their repairs. All kinds of Sewing Machines. Peil's Corner

RADIO

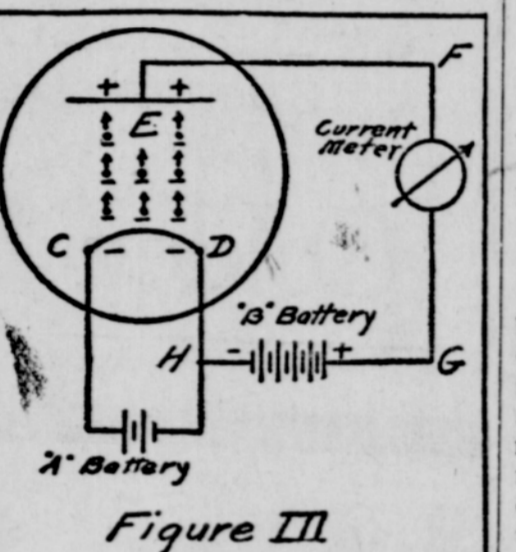
VACUUM TUBE USED AS RADIO DETECTOR

How This Device Depends on Emission and Control of Electrons for Its Operation.

Readers of the radio column are urged to clip each article and paste it in a file book. The articles printed are continuous and the entire series will be valuable for reference. The greatest advances made in the past few years in the radio art have been due in one way or another to the use of vacuum tubes. In view of this fact a more careful consideration of them will be of interest.

All of these tubes, known by a variety of names, such as radiotron, audion, servotron (trade names of the manufacturer) depend upon the same fundamental principles for their operation. For the sake of simplicity of brevity these will be referred to in this column simply as vacuum tubes. A vacuum tube can be made to function as a detector, as an amplifier, or as an oscillator.

The vacuum tube depends on the emission and control of electrons for its operation. The electron is the smallest subdivision of matter which mankind recognizes and it carries the smallest known charge of negative electricity. For years previous to electron research it had been held by scientists that matter was built up of distinct particles or units which they called atoms and molecules. At first the molecule was assumed to be the smallest quantity of matter that could have a separate existence or take part in chemical action, but more vigorous research pointed to the fact that the molecule is made up of still smaller elements which are termed atoms; that is, a molecule may be composed of several atoms. Then for a time it was assumed that the atom was the very smallest quantity of an element that could exist, but later researches have revealed that atoms may be further subdivided into particles



called electrons. The apparent mass of an electron is about one-eighteenth-hundredth part of that of an atom of hydrogen which is the smallest of the chemical atoms.

According to the electron theory an atom consists of a definite number of electrons grouped around a nucleus having a positive charge and so long as none of the component electrons are driven from the atom, the latter possesses no detectable charge. The positive charge on the nucleus is said to be exactly neutralized by the negative charges on the electrons grouped about it.

Suppose now that by some means an electron can be detached from the atom. Then the atom becomes what is known as a positive ion and it exhibits the properties of a positively charged body, or in other words since an electron which carries a negative charge has been removed from the atom which has equal positive and negative charges, the portion of the atom now remaining has a deficiency of negative charge and acts like any positively charged body.

On the other hand if some force can be brought to bear that will add an electron to a normal atom which is neutral as far as electrical charges are measured, the result will be a negative ion, which will possess all the properties of a negatively charged body. An atom then which has a deficiency of electrons is called a positive ion and one having excess of electrons is called a negative ion.

Since each electron carries a negative charge of electricity an electron represents a certain quantity of electricity. Forcing electrons to move from one point to another causes electricity to flow. The ability of any medium to conduct electricity or allow a current to flow through it depends upon the number of free electrons available as carriers of charges.

It has been known for many years that the space surrounding a piece of heated metal is a conductor of electricity. It has been demonstrated more recently that this is due to the release of electrons and that if an incandescent metal be placed in a bulb exhausted of all gases, pure electrons will be liberated from the incandescent metal.

In a vacuum tube such as we are using at the present time, the piece of metal used to furnish the electrons is called the filament and is usually made of tungsten and sometimes is coated with oxides to increase the electron emission. For convenience the filament of a vacuum tube is heat-

ed by a battery current and it is this heat furnished by the battery current that constitutes the force that disrupts the atoms of the filament and liberates electrons.

Fig. III is a spherical glass bulb from which all the air and gases have been exhausted and having mounted in it a filament G-D which can be heated to incandescence by the "A" battery connected to it, and the metallic plate E. When the filament G-D is heated to incandescence by the "A" battery connected across its terminals electrons are emitted. Connecting the cold plate E to the incandescent filament G-D by means of the circuit E-F-G-H which includes a current meter and a "B" battery, with its negative side connected to the filament lead at H and its positive side connected through the current meter, the plate becomes electrically positive with respect to the filament.

Since like charges repel and unlike charges attract, there will be a movement of electrons from the filament to the positively charged plate, and the current meter will show a deflection which indicates that a current is flowing in the circuit E-F-G-H.

Increasing the "B" battery voltage causes an increase in the current flowing in the circuit E-F-G-H, the plate circuit, until the positive charge on the plate E is so strong that all of the electrons given off by the filament are attracted to it. Assuming that the temperature of the filament is kept constant and that the plate voltage has been increased to the point where all of the electrons given off by the filament are attracted to it, any further increases in the "B" battery voltage will not cause any increase in the current in the plate circuit.

Increasing the temperature of the filament will increase the total number of the electrons emitted.

FRISCO TALKS TO HONOLULU

New Radio Station at the Presidio Can Be Heard Half Way Around the Globe.

"Hello, Honolulu." That may sound like fiction, but it is a reality, nevertheless.

The new radio station at the Presidio, San Francisco, with aerial conditions right, can be heard half way around the globe. Officials in charge of construction declare it to be the most powerful vacuum tube transmitter on the Pacific coast.

Located on the highest point in the Presidio, overlooking San Francisco bay, two 150-foot aerial towers to augment its efficiency, the new station will command similar stations in Salt Lake City and Cheyenne.

Radiophones on German Trains.

Wireless telephone instruments will be installed on a number of important German express trains, and receiving instruments will be placed in hotels and embassies, according to an announcement made recently. Experiments conducted in a moving freight car have shown that the wireless system works well, the men engaged in the testing of the instruments being able to hold conversations with friends in Berlin. The tests were made under the observation of engineers, military attaches and the diplomatic representatives of the United States and Sweden.

Handling Vacuum Tubes.

When you handle the vacuum tubes of your receiver great care should be exercised that they are not knocked about or that the elements are broken. These little lamps are the heart and soul of the set. A good way to operate these tubes is to keep the glow just a little below the critical point.

ADVICE FOR AMATEURS.

The voltages applied to the plate circuits of amplifying tubes are not extremely critical and one voltage control will suffice. The detector tube, however, is often very critical and an efficient potentiometer will work wonders in controlling it. Apparatus used for the reception of broadcasting is exactly the same as that used for the reception of code signals. The transmitting equipment, however, is different.

The use of a single wire for reception is advantageous because it lessens the amount of objectional interference in the way of static. It is equally as good as a multiple wire system for reception.

Defective "B" batteries will often cause roaring in the telephone receivers. The electron often talked about is the smallest known quantity of negative electrical energy. In motion it makes up the electric current.

A "soft" vacuum tube is used as a detector tube and a "hard" vacuum tube as an amplifier. The terms "hard" and "soft" refer to degree of evacuation.

Radio waves travel at the same speed as light, namely 186,000 miles per second.

A wavemeter is an instrument used for checking up the wave lengths of sending and receiving stations. Gas pipe or water pipe systems may be used for grounds, the latter being more advisable. Lightning protection secured by grounding the antenna when not in use is essential and is required by the underwriters.



Calumet is made under such exacting conditions — packed in such a scientific manner, that its leavening strength and purity never vary. It retains its original strength for months after leaving the factories.

When you tip the can to get the last spoonful, you know your baking will turn out all right — the last spoonful is the same as the first. This uniform quality of

CALUMET BAKING POWDER

is cause for its big demand. Housewives know they can depend upon the results obtained — that climatic conditions or temperature cannot deteriorate its positive leavening power.

When you buy baking powder remember these facts — that a uniform leavener means bakings that do not vary in quality — that Calumet is uniform.

A pound can of Calumet contains full 16 oz. Some baking powders come in 12 ounce instead of 16 ounce cans. Be sure you get a lb. when you want it.

Pacific Power and Light company making preparations for launching largest construction project ever undertaken in Hood River valley.

This Is Kodak Time

Kodak pictures everywhere this is the time of year when snapshot possibilities are greatest. We are ready with all the photographic goods you need — Kodaks, films and accessories. We have a fresh supply of genuine

EASTMAN FILMS For All Kodaks

For the best results in developing, printing and enlarging, bring us your films. We give prompt service.

McNair Bros. The Rexall Store

Why Worry About What to Eat?

WHEN YOU CAN GET ALL KINDS OF MEATS — FRUIT VEGETABLES PICKLES AND LUNCH GOODS AT THE

PLAZA MARKET 61 NORTH MAIN STREET

WE SELL THE BEST WE SELL FOR LESS

The Road to All That's Best

is the road of industry and thrift—a sunlit path where honest men step steadily ahead. On it there is plenty of light and love and happiness for those who plan and work and save. This bank is the financial home for that kind of people. Why not join them?

The Citizens Bank of Ashland Ashland, Oregon

BUSINESS AND PROFESSIONAL

One cent the word each time.

FOR EXCHANGE FOR TRADE—160 acre unincumbered ranch on Pacific highway and county road, near Hill; small house and outbuildings; good stock or chicken ranch with plenty of wood and tillable land. Will trade for unincumbered Ashland acreage; prefer no house, but would consider acreage with small house. Eleanor Greer, 199 Granite St. 2311f

LOST—Shell rimmed bow glasses in black case stamped "Carter, Jeweler, Laramie, Wyo." Lost in park or along canyon road Decoration day. Return to Tidings office. Suitable reward. 2331f

LOST—On highway east of town, a pair of glasses in case. Return to Johnson's Jewelry Store. 235-2

WANTED—Man with light truck wishes to do hauling. Phone 484-R. or call 383 1/2 East Main. 232-6

HELP WANTED THE WEED LUMBER COMPANY. Weed, Calif., are now in full operation for the season of 1922, and are employing common labor as well as experienced hands in their mills, sash, door and box factories at Weed, California. The employment is steady, living conditions excellent, with good chances for advancement for deserving employees. All interested communicate directly with Employment Department, Weed Lumber Company, Weed, Calif. 224-1f

WANTED—To rent 5-room bungalow; will lease if suitable. Phone 3 Golden Rule Store. 235-9

WANTED—Good clean rags. Apply Tidings.

CHILDREN CARED FOR—By the hour, day or evening. Thelma Beeson, phone 353-Y or call 167 Hargadine St. 235-2

YOUR CAR WASHED—From \$2 up. Lithia Garage, Geo. Kleine. 2351f

INTERURBAN AUTOCAR CO. (Effective January 1, 1922) Daily (Except Sunday) LV. MEDFORD LV. ASHLAND 7:00 a. m. 7:00 a. m. 8:00 a. m. 8:00 a. m. 9:00 a. m. 9:00 a. m. 10:00 a. m. 10:00 a. m. 11:00 a. m. 11:00 a. m. 12:00 noon 12:00 noon 1:00 p. m. 1:00 p. m. 2:00 p. m. 2:00 p. m. 3:00 p. m. 3:00 p. m. 4:00 p. m. 4:00 p. m. 5:00 p. m. 5:00 p. m. 6:00 p. m. 6:00 p. m. 7:00 p. m. 7:00 p. m. 8:30 p. m. Sat. only 8:30 p. m. 9:30 p. m. 9:30 p. m. 10:30 p. m. Sat. only 10:30 p. m. Sunday Schedule Leave Medford for Ashland and Ashland for Medford every hour on the hour from 9 a. m. to 5 p. m.; then 6:30 p. m. and 9:30 p. m. Ashland waiting room—East Side Pharmacy. ASHLAND-ROSEBURG STAGE Daily (Except Sunday) LV. ASHLAND LV. ROSEBURG 12 noon 8:30 a. m. Travel by stage; shortest route by 20 miles; one of Oregon's most scenic trips. Fare—Ashland-Roseburg, \$4.60; Medford-Roseburg, \$4.15; Grants Pass-Roseburg, \$3.00. MEDFORD-GRANTS PASS Daily and Sunday LV. MEDFORD LV. GRANTS PASS 10:00 a. m. 10:00 a. m. 1:00 p. m. 1:00 p. m. 4:30 p. m. 4:45 p. m. Grants Pass waiting room—The Bonbonniere, phone 160. Office and waiting room—No. 5 S. Front St., Nash Hotel building.

Leave Medford for Ashland and Ashland for Medford every hour on the hour from 9 a. m. to 5 p. m.; then 6:30 p. m. and 9:30 p. m. Ashland waiting room—East Side Pharmacy.

ASHLAND-ROSEBURG STAGE Daily (Except Sunday) LV. ASHLAND LV. ROSEBURG 12 noon 8:30 a. m. Travel by stage; shortest route by 20 miles; one of Oregon's most scenic trips. Fare—Ashland-Roseburg, \$4.60; Medford-Roseburg, \$4.15; Grants Pass-Roseburg, \$3.00.

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Billings Agency REAL ESTATE & INSURANCE Established 1888 Phone 211 41 E. Main St.

FOR SALE—Household furniture. Also Harley-Davidson motorcycle. Inquire 75 Bush St., or phone 416-R.

FOR SALE—Seven grade Jersey heifers from 7 to 16 months. Price \$150. Mrs. H. W. Andrews, 122 Church St. 234-3*

FOR SALE—Baby chick a few weeks old, thoroughbred Black Minorcas and R. I. Reds. Price 30 to 50 cents. 122 Church St. 234-3*