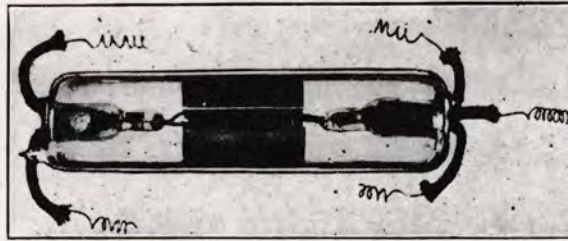


"There is Only One Oscilaudion—The Roome"

Double Filament**SUPER SENSITIVE  
OSCILAUDION**\$5.25 Post Paid**DETECTOR  
AMPLIFIER  
OSCILLATOR****DETECTOR  
AMPLIFIER  
OSCILLATOR****HARRY V. ROOME**940 West Twentieth St.  
LOS ANGELES, CAL.

The Oscilaudion is a hot cathode apparatus relying for its basis of operation on a Pure Electron Discharge. Potential changes between the grid and hot cathode (filament) cause similar and greater variations in the electron flow from the hot cathode (filament) to the cold anode (plate). The Oscilaudion is a super sensitive electron relay (repeater) or amplifier. The Oscilaudion differs from the Audion and other types of hot cathode apparatus employing a gaseous medium in a condition of molecular activity. As the Oscilaudion contains no gas, all Oscilaudions show uniformity in sensitivity, and performance, and the erratic action, critical adjustment, and non-uniform performance experienced in gaseous devices are conspicuously absent in the Oscilaudion. A spiral copper grid completely surrounds two tungsten filaments in the Oscilaudion, and an aluminum plate surrounds the grid, thus taking maximum advantage of the electron flow in all directions. The Oscilaudion filaments have exceptionally long life, due to their straight line construction.

The Oscilaudion, in the few months it has been on the market, has already been adopted by the radio laboratories at Harvard University, Cornell University, University of Nebraska, University of Iowa, University of Toronto (Canada), etc., etc. College professors in all parts of the country endorse the Oscilaudion very highly. Advanced experimenters and professional operators have also placed their seals of approval on the Oscilaudion. An experimenter in Boston, Mass., a college man, and member of the Institute of Radio Engineers, sent in a repeat order for forty four Oscilaudions, to resell to his friends after testing out two sample bulbs. Another experimenter in San Diego, Cal., tested out two sample Oscilaudions and was so well pleased that he ordered three dozen more to resell to experimenters in San Diego. Many operators of the U. S. Signal Corps are now using the Oscilaudion in preference to another bulb which has been on the market several years. Indeed, practically all of the Oscilaudion users previously used another make of bulb before adopting the Oscilaudion. Certainly a device which has received such instant and universal recognition from college professors, advanced experimenters and professional operators, is worthy of the consideration of every wireless experimenter.

The results obtained with the Oscilaudion are as gratifying as the letters of commendation. The Oscilaudion has established a new world's long distance receiving record of 10,300 miles (from a 60 K. W. station). Signals from a 30 K. W. station have been copied a distance of 5,800 miles in broad daylight, and 600 meter spark signals have been copied a distance of 5,200 miles at night. All these results were obtained with a **Single Oscilaudion** in connection with an antenna having a fundamental of less than 500 meters. Experimenters who may be skeptical concerning the results obtained should remember that the radio laboratories of the leading Universities would not be using the Oscilaudion, and the Roome Designers could not command the respect and confidence of college professors if the facts were not as represented.

**Warning:** The success of the Oscilaudion has caused competitors to imitate its appearance in an effort to fool experimenters. Some of the imitations have but one filament. The remarkable sensitiveness of the Oscilaudion is not due to its appearance, but to the experience, skill and knowledge of its designers.

**Guarantee:** Every Oscilaudion is guaranteed super sensitive as detector, amplifier and oscillator, and is further guaranteed to reach the user in perfect condition. Every Oscilaudion is sold with the understanding that if the user is not pleased after five days' trial, purchase price will be refunded. Any defective, damaged or unsatisfactory Oscilaudion will be replaced without question. This guarantee does not cover an Oscilaudion burned out from any cause.

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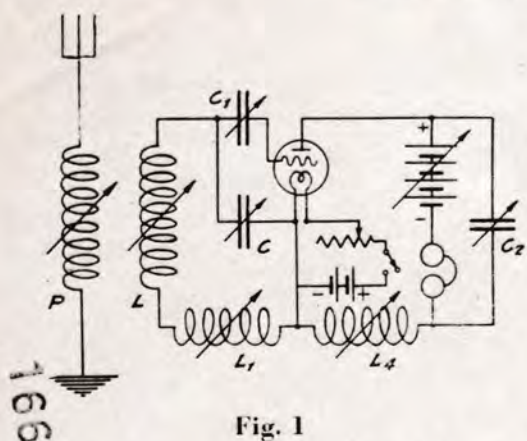


Fig. 1

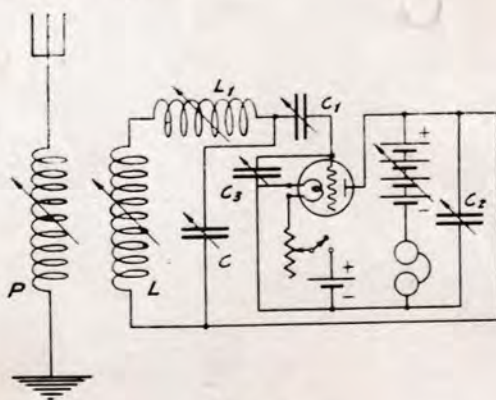


Fig. 2

## Instructions for Using the Oscilaudion

Carefully examine the Oscilaudion. If the grid should be jarred to one side (caused by a shock in shipment) jar the tube on the opposite side against the palm of the hand. The Oscilaudion should be mounted in a vertical position. Four binding posts placed at the corners of a rectangle, two inches by five inches, makes a simple method of mounting the Oscilaudion. Many experimenters use "U" shaped clips bent from strips of bronze or brass. It is also possible to use a screw socket tubular bulb holder for the Oscilaudion. The brown covered wires of the Oscilaudion are the filament connections, the red covered wire is the plate connection, and the green covered wire is the grid connection.

**Filament "A" Battery.** A six-volt 40 ampere hour storage battery is recommended, but dry cells can be used if necessary. A ten ohm rheostat should be used in series with the filament battery, and care should be taken to cut in all the resistance of the rheostat before lighting the filament. Only one filament is used at a time. Each filament will give approximately 1,000 hours of life at the normal current rating of .86 ampere. It is never necessary to burn filament at excessive brilliancy when the Oscilaudion is used in a properly designed Armstrong circuit. An improperly designed circuit is the cause of short filament life and poor results, and often explains the necessity of using an excessive value of "B" battery potential. As a detector the Oscilaudion filament consumes about  $3\frac{1}{2}$  watts, and as an oscillator about 4 watts. For the best results the connection to the hot cathode (filament) must be made at the negative terminal of the lighting battery as shown above.

**High Voltage "B" Battery.** Any battery having a potential of 40-55 volts may be used. Ten or twelve large three-cell flashlight batteries, such as Eveready No. 712 or No. 752, are recommended. Each three-cell battery must test above 3.5 volts. Potentiometer control will quickly run down flashlight cells. A multiple point switch should be used to vary the "B" battery voltage, and every other switch contact should be left blank to avoid short circuits when the switch lever is rotated. Single cell regulation is not necessary. The thermionic current of an Oscilaudion is about 100 micro-amperes. The positive (carbon) terminal of the "B" battery must lead toward the cold anode (plate), and the negative (zinc) terminal of the "B" battery must lead toward the hot cathode (filament). Notice that the negative terminal of the "B" battery leads to the negative terminal of the filament battery. Care should be taken not to allow the filament connections to come in contact with the terminals of the high voltage battery, as the filament would be burned out from such carelessness.

**Circuits.** The diagrams above are two of the celebrated Armstrong circuits. Fig. 2 is the circuit used by the experimenter who established a new world's long distance receiving record of 10,300 miles with a **Single Oscilaudion**. Both Fig. 1 and Fig. 2 are suitable for receiving damped or undamped waves, and for radio frequency amplification or oscillation. Experiments indicate that Fig. 1 is the more sensitive, but the equipment of Fig. 2 is less expensive for the longer wave lengths. Notice that similar notation is used in both circuits. Both circuits may have the same corresponding values of inductance and capacity for the same wave length. In the circuit of Fig. 1 the inductance of the plate circuit [L-4] may be approximately equal to the total inductance of the grid circuit [L and L-1] for all wave lengths.

C may have a maximum value of .0006 M. F. C-1 is seldom used at values of capacity exceeding .0001 M. F. Sometimes a fixed condenser of .0001 M. F. capacity is used for C-1. C-2 may have a maximum value of capacity of .001 M. F. to .00125 M. F. The C-3 variable condenser of Fig. 2 is sometimes omitted, but when it is included it is never used at values of capacity exceeding .0005 M. F. For 200 meter wave lengths the total inductance of the grid circuit may be approximately 300 micro-henrys, for 600 meters 1,000 micro-henrys, and for 10,000 meters the grid circuit may have a total inductance of approximately 60,000 micro-henrys. The amount of loading inductance required for the antenna circuit is dependent on the capacity and inductance of the particular antenna. All oscillating and amplifying circuits will work with an exceedingly small co-efficient of coupling between the antenna and grid circuits, good results being obtained with a co-efficient of .05. All oscillating and amplifying circuits work best when the receivers have a total resistance of 2,000 ohms or more. All inductances should be tested for open circuits, and all condensers tested for short circuits. A single poor connection or short circuit will destroy the efficiency of the entire set.

**References.** For diagrams and a complete discussion of the various Armstrong, Ultraudion, Heterodyne, Audio Frequency Amplification, Wireless Telegraph and Telephone Transmitting, General Electric, and various other circuits see: "Proceedings of the Institute of Radio Engineers," Vol. 3, Part 3, page 215 et seq; Vol. 3, Part 3, page 249 et seq; Vol. 3, Part 4, page 372; Vol. 4, Part 3, page 265 et seq; Armstrong Patent No. 1,113,149; Ultraudion Patent No. 1,170,881; "Experimental Wireless Stations" [1916 Edition] by Philip E. Edelman, St. Paul, Minn. "Applications of the Audion" to be reprinted in full in the Amateur Wireless Magazine, "QST," in the August, 1916, issue; "Electrical Experimenter" for January, 1916, pages 488-489; August, 1916, pages 250-255.

For a simple formula for amateur inductance calculations see "Popular Electricity" for December, 1912, page 848; "Formulas and Tables for the Calculation of Mutual and Self Inductance" [Revised] of the Bulletin of the Bureau of Standards.

For a clear explanation of the various points covering the theory of wireless telegraphy and telephony see the works of Fleming, Zenneck, Pierce, Erskine-Murray and the "Manual for Naval Electricians."

For a discussion of the theory of Hot Cathode Apparatus see "Proceedings of the Institute of Radio Engineers," Vol. 3, Part 3, page 261 et seq; articles by Dushman and Langmuir in Vol. 18 [1915] of "General Electric Review"; "Proceedings of the Royal Society of London," Vol. 38, page 219 et seq; Vol. 47, page 118 et seq; Vol. 74, page 476 et seq; "High Vacuum, Hot Cathode Apparatus" by Prof. Hund, [Vol. 10, Number 6, of the Bulletin of the University of Southern California, Los Angeles, Calif.]

**Experimenters are urged to consult the eminent authorities cited above.**

**Note.** Harry V. Roome does not handle switches, rheostats, batteries, etc. These may be purchased from any electric store or from the mail order houses stocking electric supplies.