

# RADIO

## CIRCUIT WITH GRID LEAK RESISTANCE

### Takes Place of "C" Battery—How Impedance of Flow Is Determined.

Fig. 13 shows a set of curves for a three-electrode vacuum tube circuit containing a grid leak resistance as shown in Fig. 11 instead of a "C" battery with the same symmetrical alternating difference of potential applied to the grid circuit.

There being no "C" battery potential applied to the grid, the grid in Fig. 11 is normally at zero potential with respect to the filament. As the positive half of the first cycle of the alternating difference of potential is impressed upon the grid circuit—see Fig. 13—the grid is made positive

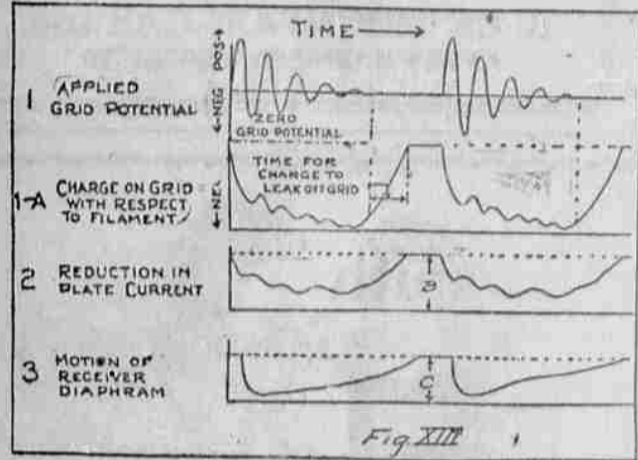


Fig. 13

with respect to the filament. Being positive with respect to the filament, causes a certain number of electrons, which are negative charges, to be attracted and caused to give up their negative charges to the grid. During the next or negative half of the cycle of the applied grid potential, the grid is made negative with respect to the filament but does not lose the electrons again. Thus a negative charge is built up on a grid during the positive portion of each cycle, the cumulative effect of which is to produce a decrease of the plate current, during the period that the alternating difference of potential called a wave train is applied to the grid.

After the alternating difference of potential applied to the grid has ceased, the grid does not immediately lose its negative charge. The grid leak forms a high resistance path for the negative charge of the grid to leak off down to the filament slowly. If the used leak were used, the grid

transposing this equation the impedance is equal to the applied voltage divided by the current. The impedance of a vacuum tube plate circuit, internally between the filament and the plate, when the grid is at zero potential, is an important constant of a vacuum tube and is called the internal plate impedance.

The internal grid impedance of a vacuum tube used in a radio set as a detector determines the impedance of the telephone that will give best results when connected in the plate circuit of that particular tube. It is then not only the resistance of a pair of telephones, but also the inductance and the distributed capacity of the winding that cause the maximum current to flow in the telephone for a given change in grid potential. The internal plate impedance of a vacuum tube varies only slightly with different plate voltages. It is more an inherent characteristic of the tube which is determined by the design.

### NEW RADIO FILTER & MARVEL

Complete Device That Separates Telephone and Telegraph Messages.

Although there has been talk and written about the possibilities of being employed by the telephone lines, and by advanced radio workers for the separation of telephone and telegraph messages, the scientific American, it remained for the French Electric Company, to demonstrate how the filter permits of transmitting telegraph and telephone messages simultaneously on the same wire, and by separating these messages at the receiving end, by a device of the American Electric Company of Electrical Engineers.

The present electrical filter is the invention of Dr. G. A. Campbell, a prominent physicist, and makes it possible to separate the various frequencies at which the individual telegraph and telephone messages are carried. The electrical circuit of the filter is a radio receiving set in general, except that the filter which separates the telegraph and telephone messages from the combined stream of the telegraph and telephone messages is a novel device.

Some relief from the "radio" message in communication can be obtained with the aid of the filter. This is a device which separates the telegraph and telephone messages from the combined stream of the telegraph and telephone messages. The filter works in the same way as a radio receiver, but instead of receiving the telegraph and telephone messages from the combined stream of the telegraph and telephone messages, it separates them from the combined stream of the telegraph and telephone messages.

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# Churches

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

**Church of Our Lady of the Valley**—Fourth and O Streets. First Mass at 7 o'clock. Communion Sunday for the Young Men's Holy Name Society. Second Mass at 9 o'clock. A concert sermon on the "Gospel of the Day" will be preached at both Masses. Evening devotions at 7:30 o'clock. Rosary, question box and benediction of Blessed Sacrament. A cordial welcome is extended to all.—A. F. Lohmeyer, pastor.

**Presbyterian Church**—Who's the boss? Every individual is taking orders from someone. Sometimes in politics, sometimes in society, sometimes in business, but always in personal conduct. Every life has a ruler. Consciously or unconsciously we all bow to some sovereign. What we are depends very largely upon the one to whom we pay allegiance. Let us acknowledge God in our lives and give Him an opportunity tomorrow at Sunday School at 9:45 and worship at 11. Mrs. Hal Bohannan will sing "I Come to Thee" by Carrol, at the morning hour, to which all are invited. Union services in the evening at 7:30 on the lawn.—W. C. Ross, minister.

**First Methodist Church**—The Union meeting in the evening will be held on the lawn of the Presbyterian church at 7:30 instead of 8:00 o'clock. The pastor of the church will be the preacher and Rev. J. W. Gans will conduct the service. An enjoyable song service will precede the sermon. People who are taking a ride in the road of the evening are invited to draw up to the curb and enjoy the service with us for one hour. The Supreme Council of the World will be the sermon topic in the forenoon—Sunday School at the usual hour. The attendance of teachers and pupils is urged.—Claude Cooper, superintendent.

**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 assembly at the tabernacle Tuesday, for children. 4 p. m. Primary assembly 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 L. Stoddard, Bishop.

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

**St. Peter's Episcopal Church**—Corner Fourth street and O Street. July 10th, the Fourth Sunday after Trinity. Services: Holy Communion, 8 a. m.; church school, 9:45 a. m.; prayer and sermon, 11:00 a. m.; evening service, 7:30 p. m. Organ recital.

Buy and sell through Observer Classified Ads.

# "Ruddygore" Is Gilvan Opera Treat

Delightful Gilbert & Sullivan Comic Opera to Be Given at Chautauqua on Closing Night. Company Is Quintet of Brilliant Eastern Artists. Operatic Gems Also Featured.



"Ruddygore" means just what it says—but there isn't half as much blood and thunder in this delightful opera as one might imagine. In fact, it's a typical Gilbert and Sullivan opera, and there are more laughs than crying in it—as you will quickly learn when the Gilvan Light Opera Company comes to Chautauqua. These are five brilliant artists in the Gilvan Company: Martha Cook, soprano; Hazel Hunter, contralto; Tom Storer, baritone; Thornley Jobe, tenor; and Harrison Burch, pianist and accompanist. The Gilvan Company was organized three years ago on the belief that the public craved better things in a musical way. The organization has had remarkable success, and has lived up to its ideal of presenting the best—and only the best—in Chautauqua work. "Ruddygore" will be the evening feature. A miscellaneous program of standard musical numbers will be given in the afternoon. In the evening "Ruddygore" will be preceded by an offering of costume-drama—comedy, tragedy and operatic arrangements for solo, dyets, trios and quartets. A splendid artistic finesse characterizes the ensemble work of the remarkable company.

## Just Thirty Years Ago in the Grande Ronde Valley

(July 8, 1892)

At Union Thursday the trial of Frank Hart, R. J. Harris, James Comstock and W. L. Wells, for participating in the Sparata robbery, was concluded in the supreme court. W. L. Wells was not there. James Comstock gave some very convincing evidence as to the robbery, and was, upon passing guilty to the theft of a saddle, sentenced to three years in the penitentiary. Hart and Harris were each sentenced to the penitentiary for a term of five years. These parties were supposed to be members of the same gang from which two partners were sent up for a term about two weeks ago by the same court on a fifteen year sentence.

Dr. P. McDonald was appointed chief inspector of the health of the Union county court yesterday. C. D. Moore was instantly killed by lightning during a brief thunder shower Sunday evening. The scene of the accident was near Mr. Moore's residence at the foot of the Fourth street hill. An examination of the body disclosed a slight slurring of the neck but not a bone was broken and there were no lacerations. The shoe of the foot was torn to pieces and the ground where he was standing was splattered as if by a kick.

On Wednesday evening of last week the residence of J. W. Newell in the north part of town was struck by lightning. Members of the family were knocked down and a dog was killed.

Apparently the smallest score I had as Mr. Patton, the only one who has it, is out of danger and

## MARIE HAS ENDED VISION OF WORLD'S PROBLEMS

Will Discuss "Working Together for Betterment of Chautauqua."

Norman Allan Burke will bring a most timely, of the world's problems to Chautauqua. Years of personal contact with life and conditions in England, Canada, China, Europe, New Zealand and the United States have qualified him to speak with authority on "Working Together for Betterment of Chautauqua." Burke, who was out in the mountains a few days since, saw a man whom they thought to be Palmer, the murderer of Risen. The man fled immediately upon seeing them.

George, the son of Mr. and Mrs. Charles Halkett, of Elgin, died of influenza here last Friday. "The pillars of the Grande Ronde valley" passed on last week. They were George Woodall, of Sparrowsville, and L. R. Holmes, formerly of Union county, who died at Entrepies.

A. W. Decker, of Kanby, left for Portland about five days ago and since then no trace of him has been found. His family is much worried about his disappearance and many theories are being advanced as to the reason.

In the Old Days. There was a time there lived a horse girl who didn't care for a saddle. She would die or nothing.

# INDIAN TREATY BOWL IS FOUND

(By Associated Press)

VANCOUVER, B. C., July 8.—(An Indian treaty bowl, weighing 600 pounds, and said to be the largest in existence, was found at Nimath, 109 miles north of here. The bowl, which is said to be more than 100 years old, is 15 feet long, and according to archeologists, was made by Indians using stone tools and axes. The bowl, which was the center of an interesting Indian ceremony, was called by the aborigines "The Mother of the Five Tribes." These tribes would meet to discuss hunting laws and tribal boundaries, and on such occasions the bowl was filled with some kind of liquor. At the conclusion of the ceremony of the respective tribes, they would take a malleable metal, and filling it with the liquor, would take it back to their respective homes. If the terms agreed on by the tribes were approved by those present, the liquor was accepted, but if the conditions objected to any of the terms the liquor was returned and the vessel was laid under the neck of the bull, thus constituting an ultimatum. The bowl was found by a party engaged in removing a totem pole attached to the side of an old house. The bowl will be placed in the Vancouver museum.

# DETROIT MAY BE SELECTED

(By Associated Press)

DETROIT, July 8.—Detroit has been suggested as the site of the international conference of motor boat racing, proposed by Morton Smart, of London, and T. F. Wynn Weston, of Southampton, secretary of the Royal Motor Yacht Club, as a means of promoting interest in boat racing, it is announced by J. Lee Barrett, secretary of the newly organized Yachting Association of America. Members of the association believe that by holding the meeting during the Gold Cup races, September 1-4, the welcome of the world's problems to Chautauqua. Years of personal contact with life and conditions in England, Canada, China, Europe, New Zealand and the United States have qualified him to speak with authority on "Working Together for Betterment of Chautauqua." Burke, who was out in the mountains a few days since, saw a man whom they thought to be Palmer, the murderer of Risen. The man fled immediately upon seeing them.

The only limitation previously prescribed for the Gold Cup contest was that the entries must not measure more than 40 feet. This year, entrants are limited to a maximum engine size of 65 cubic inches, minimum hull length 35 feet, and a beam of five feet.

When the British yachtsmen first conceived the idea of the international conference, they wrote to various yachting clubs, requesting in the preliminary international domain of yachting. Although, which went out of circulation during the war, and called attention to the falling of an interest in yachting in Europe, stating that it is the first year the British have not had an entry in the Monday races, and also commenting on the fact that this year even Sir Mackenzie of Detroit, in honor of the Harmsworth, owing to the dearth of racing craft in the world, was suggested as the "Farmsworth" by made a restricted class, instead of no limitation being placed on the size of the motor plant, and the hull maximum length being set at 40 feet.

# SLIM INCOME FOR ARTISTS

(By Associated Press)

LONDON, July 8.—An income of \$100 in four years from the painting of pictures has been confessed by C. R. W. Newison, an artist known both in England and the United States. Making an explanation, a representative of the London Morning Post heard some hard things about art from Mr. Newison, both in this country and America. Across the water the study of art is most discouraging, worse than in England, Mr. Newison declared. "With three or four million art students—I am never any good at American painting—and no good artists, it is no wonder the American people only has the gilt-edged cheap massies, and second-hand junk from European auction rooms. America is naturally only interested in the dead and the antique, so she ought to well close her art schools."

# FORD WANTS TO LEASE RAILROAD

(By Associated Press)

DETROIT, July 8.—Henry Ford has offered to lease the part of the Louisville & Nashville railroad extending between Banner Park and Corbin, Ky., and from Corbin to Cincinnati, and operate it with the present force of railway employees. "In order that coal may be moved to Detroit." It became known Mr. Ford made the offer to the president of the Louisville & Nashville after the rail road company had informed that it was unable to turn \$500,000 cash of coal produced in Detroit industries because of labor troubles. The Banner Park branch is the last vestige of the railroad. Mr. Ford's offer included the taking over of the railroad's equipment and the branch under the proposed lease.

# Famous Comedy "Cappy Ricks" Coming

Disposition of Peter B. Kyne's Delightful Saturday Evening Post Stories, to Be Presented at Chautauqua on the Fifth Night by the Percival Vivian Players



"Cappy Ricks" will have a feature attraction on the fifth night at the Chautauqua this year. The delightful American comedy, derived from Peter B. Kyne's famous Saturday Evening Post stories, will be presented by the Percival Vivian Players. The comedy is a story of a wealthy man who is forced to live in a small town and is a hilarious and hilarious story. The comedy is a story of a wealthy man who is forced to live in a small town and is a hilarious and hilarious story. The comedy is a story of a wealthy man who is forced to live in a small town and is a hilarious and hilarious story.