POSITION AND SIZE OF GRID IMPORTANT

Determine Value of Negative Potential Necessary to Reduce the Plate Current to Zero.

In paing a three-electrode vacuum the in a radio set it is preferable to naintain the grid negative with repect to the filament in order to renuire the minimum amount of energy in the control of the plate circuit.

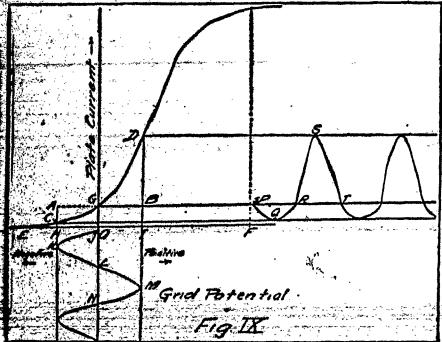
The relative position of the grid with respect to the flament and the

If the 40 voits is maintained on the the current to zero.

It can be seen then that a change of ave volts in grid potential will accomplish the same result that 40 voits will n the plate circuit. The ratio of the voltage change in the plate curand is denoted by the letter "K."

In the tube just discussed the amfactor of the tubes available for amaa function of the dimensions and rela-

An incoming rudio frequency al-



grid determine the value of E. E is the negative potential which must be polica to the grid in order to reduce plate current to zero. The value the positive grid potenthat will cause the maximum or milwration current to flow in the plate freuit is also determined by the relaposition of the grid with respect the filament and plate. If the grid of very line mean, the value of R smeals because the electrons in passing through the small meal of the poid on facir journey from the fila-ment to the plate will negatively bisarge the grid and will be repelled. milariy a small positive charge apto a fine meet will tend to acthe relectr of the electrons. Now in the plate circuit. the same of a year course intent grid, ctrous can pass through the a in the grid without coming in close to the charge on it and a natatively high potential will be rethe stream, or in other words, the

arent flowing in the plate circuit. Referring to Fig. VIII, O-G, is the marent that will flow in the plate cirfull when there is no potential apliked to the grid. Suppose a positive pmental as O.I is applied to the grid. time corresponding plate circuit current will be I-D or B-D, more than it was when the grid had no potential ap-

placed to it.

A negative potential of O-H is now applied to the grid where O-H is equal value to 0-1, but opposite in sign. application of the negative poto the grid will change the plate current to be reduced W. A value H-C or A-C, less than it

cative potential when applied to the not reduce the plate circuit tabe is made use of when the tube absent.

is used as a detector or rectifier of ncho signals. The incoming radio signal is a high

frequency alternating current. Let us abely an alternating difference of pototal whose maximum positive val-He is equal to O-I and whose maximum Remaine value is equal to O.H. to the the three-electrode tube whene characteristic curve is the same as that shows in Fig. VIII. In Fig. II is shown the siternating difference of potential applied to the grid. Chronic the first quarter of a cycle, trom tero at I to a maximum negathe value at K, equal to O-II, the the direct control will vary from O. III Palue at P when no sull posial is applied to a value at Q equal

Parise the next quarter of a cycle the grid potential changes from a mission negative value at K to zero The corresponding values of the circuit current are shown by the tion of the place current curve

the next or third quarter Trois the applied grid potential bereises from zero at L to a maximum positive value at M, equal to L and causes the plate circuit to inper from 13, its value when the ment special is zero, to I-D, an initing the remaining fourth quara cycle as the applied grid polie at M to sero at N, the plate a current sarles from a value S

> ing that his characteristic whown in Fig. Viit and Fig. with a potential of 40 volts the beauth pitte current in farla-

plate and a negative potential of E-O is applied to the grid, it will reduce

Suppose OE represents five volts.

teur use at present is usually between

makes the three-electrode vacuum the

most sensitive detector available. In actual tubes the point "G" on the characteristic curves as shown in Fig.

If then becomes necessary to apply means of a battery in the grid cir- seems, to the various Asiatic peoples. cult, called the "C" battery, to mainthe maximum symmetrical current to

Big Ships' Radio.

The radio equipment of the ships mitter tran been installed with a wave space. - nottimore American. range of between 2,000 and 0,000 meters. A five-kilowatt motor-generator set is used to produce the plate-high tension for four rectifying and four oscillatory tubes, and the low voltage equipped with a radio range-inder, or A distance of 3,400 kilometers has been covered safely by messages sent from the transmitter of the Paris.

Radio for Animal Training. Experiments with the radiophone as when there was no potential ap-an aid in animal training are to be Had to the grid. So it is seen that a made at the Hippodrome. New York city, by George Power, trainer of the elephants, to determine whether it will the saint as much as the same positive be possible for his big pets at some potential increased the plate circuit future date to execute his orders on

> Professor Bell a Radio Fan. Finding the telephone, his own invention, a source of annoyance to him, Alexander Graham Bell had it removed ffrom his home. With the radiophone there is a difference, it seems, for Mr. Bell, now seventy-five years old, is said never to tire of "listening in" and experimenting with the new device. There are few more ar dent enthusiasts, declare his friends.

RADIO DON'TS

Don't expect the circuit to oscillate with equal strength over a great range if you tune the circuit with capacity Keep the ratio of L to alone. C as near constant as possible while tuning.

Don't expect a circuit to oncillate if the natural period of the tickler circuit is equal to the natural period of the grid circuit.

Don't place the tickler or plate variometer tight against the grid coil or a change in the plate circuit will detune the grid

Don't expect high impedance tubes to oscillate freely in a cigcult designed for low impedance

tinhes. Don't discard a regenerative receiver until you have tried

more than some detector tube. Don't forget that a soft gaseous tube is the best detector. and that a hard tube is the best

Don't treat inductance colls. with shellac or any other varnish or compound that will absorb mediature

FASHIONS IN HORSES' TAILS

Ocid Designs That Have Been More of Less Popular at Various Periods of History.

Horses' tails have been subjected to curious changes of fashion. In the time of the Stuarts the English coach horse's tail was worn long and flowing, rent is called the factor of the tube and was cut square. It was adorned with ribbons on gala days, and strapped up in a leather case in winter plification factor would be 40 divided weather; thus a certain harmony was by five or eight. The amplification preserved between the wig of the master and the tall of his horse.

By the time of George II a short wig and 10. The amplification factor is and a pigtall had taken the place of the flowing curls in which the cavative positions of the elements in the liers of Charles I and the rakes of able to longevity than are the rigors Charles II's court delighted.

history does not decide.

into plugtails by cutting all the hair ta."-From the Outlook. from the last two or three inches of the dock. Having thus succeeded in disfiguring the hindquarters of dragoom horses, some individual devised the additional barbarity of cropping

RACE OF LANDSCAPE LOVERS

Japanese, Probably More Than Any Other People, Can See Beauty In Simple Countryside.

beauty. The fundamental principle the best sugar producers. vill and Fig. IX may not fall on such would seem to be a constant applicative sugar proclaim it a valuable artifrom Holy Family Church. changes in grid potential will cause a of simplicity. A Japanese is accus is hardly likely, however, that the symmetrical change in plate current, tomed to place a flower in his room, white man will ever eat fir sugar te starting with zero potential on the not as an ornament, but as a com- any extent, struce the supply is limited, Japanese "that sympathy for every has more orders than it can fill a constant potential to the grid by thing snimute which is natural. It

We are perpetually struck by the or the curve of a finger nail. The of nations. In spite of the density of Paris, and Lafayette is described in a lits population. Japan is not overrecent issue of Radio electricity. On both crowded, and in all the northern porsteamers a fivekhowett tube trans, tion of the country there is ample

Natural Smoke Screen.

current for the heating of the filament rings. When excited by the nearness day?"-Kansas City Star. of these tubes. Both vessels are of an energy the prawn ejects respiratory water in tiny squirts and into 'radio goniometer," which, reduced to this stream the luciferin is forced pinin English, means a radio compass. from countless glands opening into the entered the office of the father of out stream by fine ducts. As the chemicals combine, puffy clouds of lu- and a prominent lawyer. minescent particles float in the sea. This is the "smoke screen" provided

"photoblephron," has a dimmer system told him that they wanted him to help Sawyer street. Funeral from St. in an inside chamber that burns conthem select a name for their cub. tinuously. When the fish wishes to shut off the light, he causes a black she said earnestly. "No men are to pigmented curtain to slide down over be admitted at any time. We have no the light cell opening like an eyelid, use for men," she added with emphasis. This irregular conductivity of the stage while the trainer bimself is The High Organ preserves its luminescence even when removed and is and Lone Association?" used by ashermen of the islands of Banda, shout 800 miles southeast of the Philippines as bait for night fishing.—Indianapolis News.

> Spiders Mostly Deaf and Dumb. Whether insects can hear is a dis- heavy business losses. sects because some species not only -London Opinion. make musical sounds but also are

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great lovers of music. However, no ruth can be accredited to those old romantic stories in which the hero. confined in a dungeon, charmed spiders

weather by observing their behavior. Recent experiments show that spiders are not ordy dear, but most of them are dumb, only a few being able to make sounds. Much has been written about the sense of hearing in insects, but critics still contend that it Holy Cross Church. March 24. has never been demonstrated beyond a doubt that any insect can really hear.

Live Longer in the South, The climate of the sunny South, a newspaper article says, is more favor-church March 24. of the North. In 1920, according to The brilliant idea occurred to Lord government records, nine people in ternating current applied to the grid Caclogan, a cavairy officer of that Memphis, Tenn, had attained the age of a three-electrode vacuum tube is period, to reduce the talls of his dra of 100 years or more, while Boston not only rectified but the variation in goon horses to a short dock. Possibly had only one centenarian. Other Lake avenue. Holy Cross Church the plate is multiplied by "K," the this was done with the view of saving cities of North and South had sim- March 24. plate and the size of the mesh of the amplification factor of the tutie. This his soldiers the trouble of cleaning Harly contrasting records. "In Mexthose long tails and avoiding the ico," the article continues, "there are nuisance of the splashes uniforms and more than one thousand living cenaccountements must have received tenarians, and that amazingly large from such hair streamers. Or it may ratio of one in every seventeen thoube that the debased taste of the age sand, perhaps not exceeded by any street. Funeral March 21, Blessed made him think the appearance of his other country on the globe, probably Sacrament Church. regiment was really improved by is due to the mild highland climate bobbed tails. That is a question which and the easy going habits of the great generality of the people, with their

Sugar Traca.

It has been suggested that in all probability the bears were the first to locate and patronize trees that furnish terial. The Indians were also in the St. Boniface Church. secret that a rare kind of sugar might be had for the gathering from the Douglas fir in the dry belt of British Columbia and eastern part of the state of Washington.

it is with reluctance that the Japa varies. That it develops at all seems from St Bridget's Church. nese people close their houses against to be the result of atmospheric condithe landscape which is for them a tions. Firs growing on the northern perpetually renewed spectacle of and eastern slopes have proved to be

panion. Buddhism has expited in the and every Douglas fir in the dry beif

Preferred the Cash.

Youngsters that come in contact with at drawing first makes a house or a sometimes bitter experience. One day chester street, runoral recommendation of the little-Us panese draws a tree a prosperous-looking old gentleman Andrew & Church March 24th. Japaness is one of the least migrant eyed Johnny with a friendly interest "Young man, you look like a bright,

pressed. "Say, mister," he retorted. "I've had

that line pulled on me before. What a method of lighting that gives the ap- I get through will you pat me on the

Well-Named Club for Girls.

"Well, young tadies," said the legal gentleman in an affable tone, "what can I do for you today?"

"It is for the building of character," Monica's church March 24.

Etiquette.

Mr. Tomkyn-Brown was very short in his manner to everybody tonight! Mrs. Tomkyn-Yes, but we must for give him, as I hear he's just had some

Jefferson Transformers

Pretty Soft for Tige.

thusiastic over moloring, as they are

of course," says a Detroit motorcar

manufacturer, whit about the dogs?

Dors seem to have simply gone crasy

about riding in an automobile. They

will ride on the running board, cling

to the fenders or take any easy seat.

inside the car or outside. I have two

dogs of my own, and know any num-

ber of drivers who also have dogs, but

I have yet to see a dog that won't

drop everything, even a fight with

the family bus

"If the people are so genuinely en-

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DEATHS

Born--Mary Born, 48 years, with sweet music and prognosticated died March 21st, this city. Funeral March 24, St. Michael's church.

> Cason-Phoebe Cason, aged 60, of 235 River st., died March 21

Finein-Mrs. Eleanor A. Finein, died March 21, at St. Mary's Hospital. Immaculate Conception

Galvin-Mrs. Susan M. Galvin, aged 65, died March 22d, at 4,015

Boyle-James A. Boyle, died March 19, at 363 South Goodman

Ritz-Mrs. Frances Ritz. 442 The next step was to turn bobtails custom of an after-lunch nap or sies Maple street, March 17. Funeral from Hely Family Church March

> Young-Enos Young, aged 61 sugar, the animals breaking down years, died at 278 Averill Avenue great branches to obtain the sweet ma March 19. Funeral March 21 from

Fox-Patrick died at his home Charles E. Ashton Anthony L. Mark March 17, at 1115 St. Paul St. In spile bile fairly severe climate. The augar output from this source aged 63 years Funeral Mar. 20th.

Badhorn - Mrs. Elizabath Badhorn died March 17, at 712 on which Japanese taste is based Certain qualities possessed by this Jay St., Funeral March 20th.

> Byrne-Mrs. Anna Byrne died March 17, at 82 Baldwin St. Funeral March 20, from Corpus Christi Church.

tain the grid at such a point on the Japanese tastes for a countryside the public become most worldly wise Baug, aged 53 characteristic curve that symmetrical seen under snow or under moonlight Johnny shined shoes and knew the years, died March 20, at 89 Manchanges in grid potential will cause The French child who tries his hand ways of the world from intimate, and chester street. Funeral from St.

> Forristal-Marie A. Forristal, intelligent young fellow, he remarked died at 51 Cayuga street, March Johnny looked up at him unim 19. St. Boniface church March

I want to know before we go and King-Mrs. Anna M. King, died The aniseus, a deep-sea prawn, has further, is this a cash shine or when at 619 Dewey avenue, March 20. penrance of a multitude of smoke head and tell me l'il be governor some Funeral March 23 at Holy Rosary Church.

> Marriott - Richard Marriott. A group of high school girls recently died March 19, at General Hos of their number, a well-known man pital. Funeral from Holy Apostles' church March 23.

McCann-James McCann.aged The species of luminous fish, called Thereupon the elected spokesman 38 years, died March 21, at 32

> Kerwin-Mary Hugh Kerwin, "Then why not call it the Building aged 52 years, died at 1212 Main street east, March 20. Funeral March 24, from Corpus Christi

> > Jay Turned to Sorrow.

A letter which had been brought bu the postman was thinner than the puted question. Early writers say this Mr. Tomkyn—My dear, a real gen bulky ones which a struggling young sense would seem to be highly devel- tieman does not give vent to that sort author usually received, and he tore it oped in spiders and certain other in- of thing till he gets home to his wife open eagerly and read: "Your recent favor stating that you inclose manuscript of story, with stamps for return if not suitable, has been received. Your contribution is accepted."

"At last !" excisioned the young auther joyfully. But his been seemed to sink as his eyes caught the following: "P. S.—You neglected to inclose the manuscript."-Montreal Gazette.

16,500,000 Books Printed. Basing conclusions on what is considered reliable data, an English M brarian estimates that since the in-

vention of printing in Europe in the Fifteenth century the output of the world's book presses has amounted to about 16,500,000 works, of which some 4,400,000 have been printed since 1900. The librarian believes that perhaps 20, 000 of all the books printed still pos-Bess value.

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