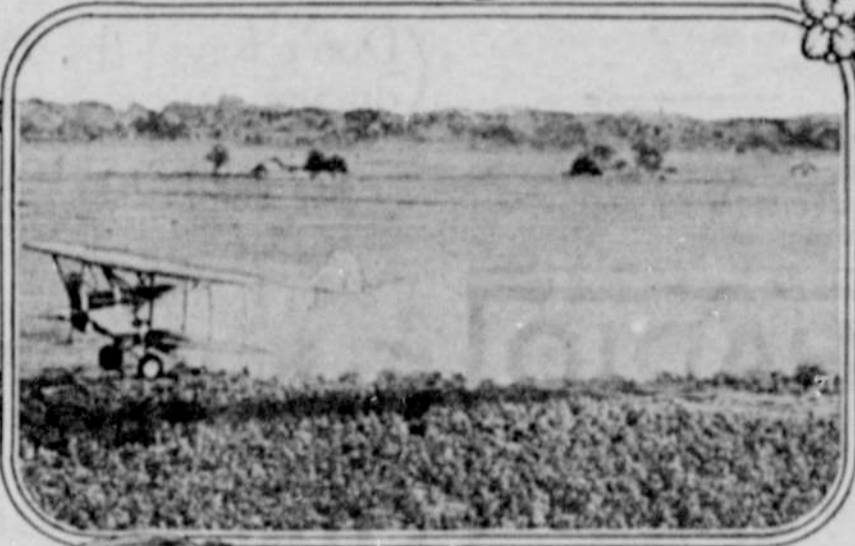


BOLL-WEEVIL

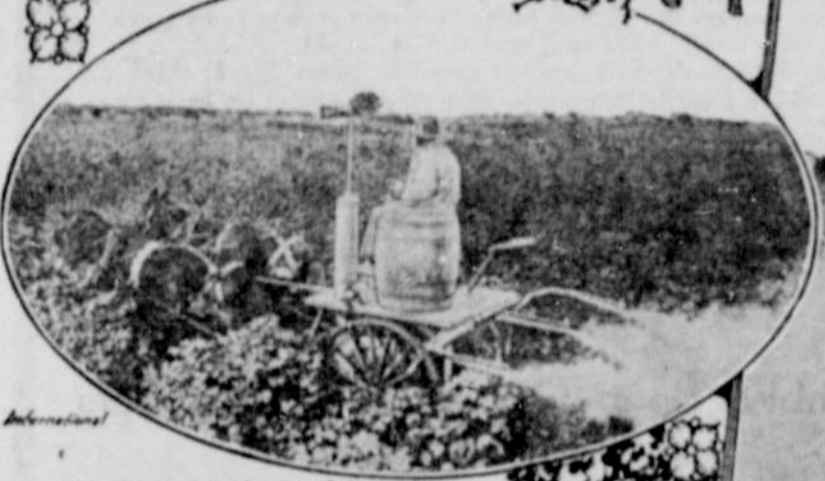
Pest, But Not Altogether an Evil



BOLL-WEEVIL MONUMENT
Courtesy of Good Hardware



DUSTING BY AIRPLANE



POISONING THE WEEVILS

By JOHN DICKINSON SHERMAN

OME day the bugs will get us—if we don't watch out. So say the entomologists. And other scientists say the bug men are quite right. What they mean is that the locusts, grasshoppers, beetles, borers, weevils and other pests of the insect world threaten to eat us out of house and home and starve us to death. They hold that the insect world is man's most dangerous enemy—so dangerous that only by eternal vigilance and unceasing warfare will the human race be able to survive.

In the meantime Uncle Sam, Entomologist, is authority for the official statement that a billion-dollar annual loss is inflicted upon our gardens, fields, orchards and forests by a hundred or more imported insect pests. Mind you, Uncle Sam says, "Imported pests." Offhand one would say that the earliest of these imported pests was the Hessian fly, which was brought over in the Revolution by the mercenaries hired by George III from a German prince. We treated the Hessians rough—you remember what George Washington did to them at Trenton—and the fly they brought in their straw packing has since destroyed enough of our wheat to pay the German war debt.

There has been a succession of these imported pests ever since. So nowadays Uncle Sam has a small army at work fighting them. In the Agricultural department, for example, he has established the bureaus of plant industry and entomology and the insecticide and fungicide board. Through them he watches the ports to keep new pests out. He scours the earth for pest-resisting plants and for insects that prey on pests that prey upon us. He experiments with insect poisons.

A 23-acre farm which includes insect pests among its chief crops is operated at Vienna, Va. The American people pay some \$40,000,000 a year for insecticides and fungicides with which to combat crop pests, fungous growths and household vermin. At the Vienna farm the pests are permitted to reach their full measure of destructiveness; whereupon they are subjected to treatment with commercial insecticides and fungicides to determine the effectiveness of such preparations.

Right now there is a big controversy going on over the importation of narcissus bulbs. Uncle Sam says that after January 1 importation will be restricted. Why? Because these bulbs are frequent and abundant carriers of two pests: bulb-flies and the European eel-worm. The former eats onions and the latter onions, clover, rye, oats and potatoes. Both have already gained a foothold here.

Of all these imported pests the one to get most frequently under the limelight is the Mexican cotton boll weevil. Scarcely a newspaper but has news of its doings or what is being done to it. For example, an item of current news is that an agricultural extension

service survey shows the cotton fields of North Carolina to be more heavily infested this year than last, in some cases as high as 50 per cent.

Another tells of the discovery of a germicide that will rid the South of the pest by a prisoner in the Atlanta Federal penitentiary who had been a Baltimore scientist of note.

A third is that the chemical warfare service of the United States army has been turned loose on the boll weevil with orders to find some poison that will put it out of business for all time. Probably one reason for the persistent throwing of the limelight on the boll weevil is the fact that cotton is one of our big crops. Some years it equals in value the corn crop. The cotton belt extends from the Atlantic to Texas and Oklahoma; probably it will be extended clear to the Pacific. And this American belt grows 54 per cent of the world's cotton. Our exports of cotton are about twice those of the rest of the world and we use 30 per cent of the world's production.

The boll weevil (*Anthonomus grandis*) is a gray insect about the size of a housefly. Both adults and grubs injure the cotton—the former by feeding, puncturing and laying eggs; the latter by feeding on the contents of the bolls. The boll weevil first entered the United States from Mexico in 1892, getting a foothold in southwestern Texas. Infestation spread slowly but surely. Climatic conditions made 1915 a year of catastrophe in the matter of infestation; no less than 86,840 square miles of cotton-raising territory were reported in bad shape. All told, the boll weevil has caused the loss of many million bales of cotton; also it has largely reduced at times the area devoted to cotton.

And yet the Mexican boll weevil, in its own way a top-notch as a crop destroyer, has not proved an unmixed evil to all of the cotton-raising South. On the contrary, one Alabama town is actually grateful to it and has shown that gratitude by erecting in the public square a monument in its honor. This town is Enterprise and the inscription on the monument reads:

In Profound Appreciation of THE BOLL WEEVIL And What It Has Done as the Herald of Prosperity This Monument Is Erected By the Citizens of Enterprise, Coffee County, Alabama

Back in 1915 "Cotton Was King" in Coffee county. Then came the boll weevil and cut down the yield 60 per cent. In 1916 the whole countryside was wrecked and ruined. The wolf was at the door, for planters knew

nothing of diversified crops and the boll weevil had destroyed King Cotton. Writes Carl W. Dipman in Good Hardware (New York):

But the city officials and the business men got together. They decided something must be done and done quickly. They saw farmers leaving the farms and the young men flocking to the cities. They saw a dying Enterprise. So they began preaching diversification—for the first time in the history of that section. Within one year Coffee county broke the world's record in the yield of peanuts, for a similar area, and also in the return in dollars and cents for hogs and cattle shipped. The farmers raised their own hay, corn, potatoes and other produce for home consumption, which they bought previously, when they raised only cotton. Coffee county has now become a flourishing cattle and hog market, as well as a peanut market. Alabama now sells to the Middle West. Before, it bought only.

By 1918 and 1919, this entire section had learned the lesson of diversification. As a result, the whole county was rolling in prosperity. It was not until after the coming of the bug that Enterprise saw paved streets and sidewalks—paved at a cost of many thousands of dollars. The hardware stores did a flourishing business and the same was true of other stores. Several small factories came to the city and the post office rose from fourth class to second class. Handsome school buildings and fine churches, hospitals and beautiful homes were erected. All because the farmers learned to raise something besides cotton. Is it surprising, then, that on one of the principal streets of this little city was erected, in December of 1919, a monumental fountain to the memory of the Mexican boll weevil? This monument stands today as the only monument ever erected to the memory of a pest, on the American continent. The much-dreaded boll weevil proved to be a blessing in disguise.

When it was discovered that calcium arsenate was just about the best combatant against the boll weevil, thousands of "remedies" were taken into the South. Some of them were worse than the boll weevil. Uncle Sam's insecticide board was kept busy remedying the remedies. Now they have been pretty well regulated. So all the cotton planters are busy these days dusting their fields by man power, mule power, and even by airplane.

It's a fair guess that the boll weevil will come to a violent end before long—and by poison. Maj. Gen. Amos A. Fries, head of the chemical warfare service of the army, has established a research laboratory at the Georgia experiment station at Griffin. He has cotton plants. He is paying a cent apiece for live, vigorous boll weevils in lots of a thousand or more. He has at his command a mysterious lot of deadly poisons and gases developed in the World war. And he is out to get the boll weevil.

RADIO

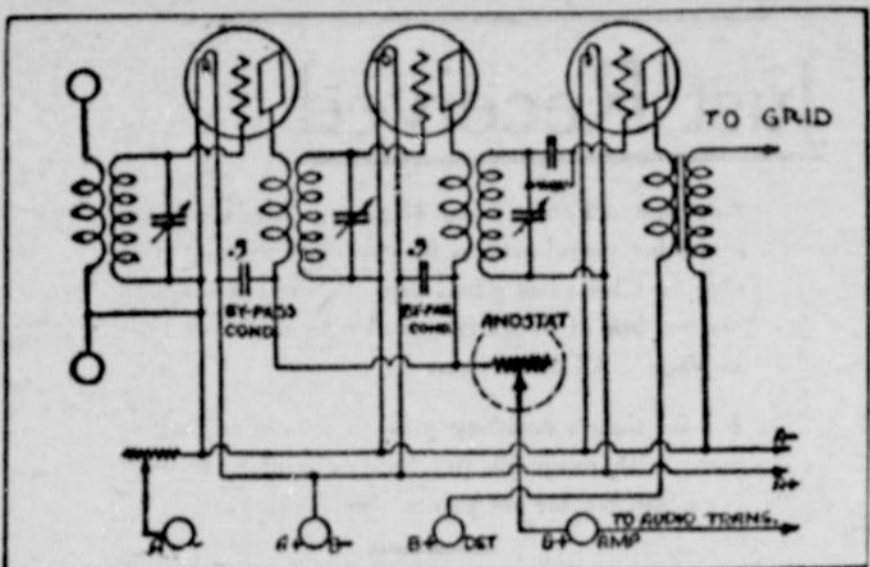


Diagram Showing Arrangement for the Prevention of Oscillation in R. F. Sets, Using the "Anostat" Combination Control.

By HARRY J. MARX, in New York Herald-Tribune.

Resistance is an inseparable factor in all electrical circuits. It may not be there in the form of a rheostat, potentiometer or other piece of resistance apparatus, but every part of the circuit, whether it is just copper wire, connections, condensers, coils or any other unit, has some resistance value. It may be great or small, as the case may be, but it exists and is a factor in the circuit. Copper wire is a good conductor, meaning its resistance is low, while a noncondenser simply means something that has a very high resistance.

Present-day radio apparatus is so designed as to reduce as far as practical all resistance in the tuned circuits.

Oscillation.

This elimination of surplus resistance permits much sharper tuning and, therefore, improves selectivity. But in radio-frequency circuits it multiplies the tendency of tubes to go into oscillation, producing the assortment of squeals, howls and whistles which not only come out of the loud speaker, but back up and go out in the air to play havoc with the neighbors' reception.

The old and incorrect practice was to add a potentiometer in the secondary circuit of the radio-frequency stages. This was equivalent to replacing the resistance back into the apparatus. It reduced the oscillation tendency, but it likewise killed the selectivity that was desired and in addition materially reduced the volume. Resistance should not be added where it becomes an integral part of the radio-frequency circuits.

The fundamental cause of oscillation is due to a great extent to the amount of voltage across the plate circuit. If this voltage is controlled so that it can be adjusted to a value just below the point where oscillation

starts then radio-frequency amplification can be used to full advantage. But this control must not be such as to add resistance in the tuned circuits.

Plate Voltage Control.

Oscillation can be effectively prevented if a variable resistance is connected in series between the plate or primary coils of the radio-frequency transformers and the "B" battery to prevent oscillation by reducing the plate voltage on the radio-frequency tubes. Now, by connecting a one-half mfd. condenser between the "B" terminal of the primary on the radio-frequency transformers and the filament terminal of the tubes, this artificial resistance can be shunted out of the tuned circuit. This condenser closes the plate circuit to the filament of the tube for the radio-frequency currents. In other words, on account of the condenser these currents do not have to pass through the resistance—hence the resistance does not affect the tuning and selectivity.

This variable resistance provides a means of reducing the plate voltage and therefore controls oscillation. This means of controlling oscillation was first utilized commercially by E. F. Andrews in the *decesandyna* receiver.

The "Anostat."

Engineers have now developed the use of this by-passed plate circuit resistance as a volume control, as well as an oscillation control. This is done by using an extremely high variable resistance having a maximum value of several megohms. The circuit is just the same as for the control of oscillation. The first part of the resistance can be used for oscillation control, and the high resistance part for controlling volume. Volume can thus be adjusted without the slightest distortion, and with great saving in "B" battery current.

A combination control which may be used for this purpose is known as the "anostat."

"Kilocycle" Is Taking Place of "Wave Length"

A new word, "kilocycle," gradually is taking the place of the word "wave length" in the vocabulary of radio fans.

The Department of Commerce has explained that the marking or logging of dials is found to have certain advantages in the new term "kilocycle," which means frequency, or the number of waves per second.

"Just as a musician," the department said, "can vary the number of oscillations of his vocal cords, but cannot control the length of the sound waves, so a radio station can vary the number of oscillations per second, and let the wave lengths be what they will."

"To obtain the frequency when the wave length in meters is known divide 300,000 by the wave length in meters. The answer is in kilocycles. Likewise, the other way round, divide 300,000 by the number of kilocycles to get meters."

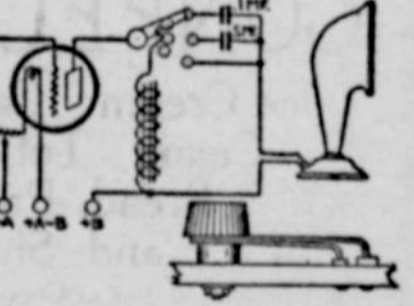
Tube Is Not Governed by Brilliance of Filament

The effective operation of any vacuum tube is not governed by the brilliance of the filament. As a matter of fact, one should never use the brilliance of the filament as an indicator that the tube is working properly. Modern vacuum tubes have a coating placed over the filament which greatly increases the electron emission. The filament merely serves as a heater to generate the emission of electrons. One will find that with tubes using the coated filament the life of the tubes is not governed by the filament burning out, but by the loss or deterioration of the coating on the filament. When this happens the tubes will remain lit, but no signals will be heard.

Speaker Connections That Will Vary Pitch

Many radio listeners find that the pitch of the music received is above or below normal. An impedance placed in the speaker circuit will raise the pitch. With a switch to cut in condensers of different sizes as shown, the pitch may be varied at will.

Three changes are shown, the upper position with the smallest condenser giving the higher pitch. The lower position with impedance and condensers cut out and battery feed through



Switch to Cut in Condensers to Control Pitch.

the speaker gives the lowest tone. The switch requires two arms, the contact edge of the lowest being filed down to give clearance from the upper. The inner contacts should be smaller than the outer and spaced as close as possible to each other.—Radio Digest.

Seldom Work Together

Radio frequency and regeneration seldom work together for the simple reason that the set becomes unstable and extremely hard to handle. Adding only one stage of radio frequency to an ordinary regenerative set is a pure waste of time, as the regeneration action is fully as good as one stage of radio.