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RADIO IN THE HOME
By HENRY M. NEELY

What Do We Mean by "Tapped" Coils?

It is always a surprise to a "hard-boiled ham" as they call an old-time radio operator, to talk to a layman, using the most familiar terms of wireless and then suddenly find his listener doesn't know what he means. "You don't know what a 'tapped coil' is? Why, a tapped coil is—a coil that is tapped. Everybody knows that."

But he finds that everybody doesn't know it. But a tapped coil is really a very simple piece of apparatus and, as it is used in virtually every receiving set, let's spend a few minutes examining it.

But first let's forget wireless and think of ordinary plumbing. You've all seen those coils of water pipe that go



This diagram represents a coil of pipe in a water heating apparatus. There are supposed to be spigots on each pipe at the supply tank and also on each pipe at the receiving tank. The accompanying article explains its similarity to a coil in radio.

Into modern heating systems for the rapid heating of water. The more pipe surface you expose to the flames, the more hot water you will get.

Our illustration shows such a heating coil as it might have been built by a man with the nightmare. Suppose we have such a coil with flames all about it but with different pipes running from the supply tank to different turns of the coil and different other pipes taking the water from different other turns of the pipe and delivering it to the receiving tank, which may be considered the rest of the heating system. Remember that there are flames all around the whole coil and every square inch of its surface is heated.

You see spigots on all the pipes from the supply tank and all emptying into the receiving tank.

Now, suppose we open spigot marked "0" from the supply tank and the spigot marked "0" to the receiving tank. Obviously, we aren't going to get any hot water, for the water is going to run straight from the upper tank to the lower because the two "0" spigots are directly connected by pipe.

But (assuming the coil pipe is always full of water), suppose we open supply spigot No. 0 and receiving spigot No. 10. Then, following the pipe connections, we find that the water will run through ten turns of the hot coil and be heated as much as those ten turns can heat it. If we want it a little hotter, we can use supply spigot No. 5 and receiving spigot No. 10 and then we will get the heating effect from fifteen turns of the coil.

If we have ten supply spigots, numbered from 0 to 9, and eleven receiving spigots, numbered from 0 by tens to 100, with the two 0 pipes connected, we can get any heating effect from zero to 100 turns.

Now, that's all a "tapped-coil" in radio is. The electricity is the water, the wire is the piping and, instead of getting heat from the coil, we get certain electrical effects which give us greater or less wave length. The more turns of coil we use in the pipe, the greater the heat; the more turns of wire we include in the radio coil, the greater the wave length we tune to.

The supply tank in the illustration is the leading-in wire from your aerial. The supply spigots are the "unit" switch points numbered from 0 to 9. The receiving tank is your ground wire and the receiving spigots are your "tens" switch-points numbered from 0 to 100.

On an ordinary amateur aerial with an ordinary cylindrical coil, you will use something like twenty or thirty turns to get 200 meters and the whole 1000 turns ought to give you close to 1000 meters. The broadcast concerts ought to come in somewhere around fifty or sixty. Of course, this is only guesswork, as length, height, number of wires, length of lead-in and ground and local conditions vary the natural wave length of any adjustment. But it will give you an idea of what to expect.

Moving the "tens" switch will usually let you hear the signal more or less faintly. You tune your secondary by changing coupling and condenser until you get best response and then try moving the unit switch of the tapped coil to see if you can still further improve it.

In the next article, we'll see how easy it is to wind and tap such coils as this.

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