RADIO

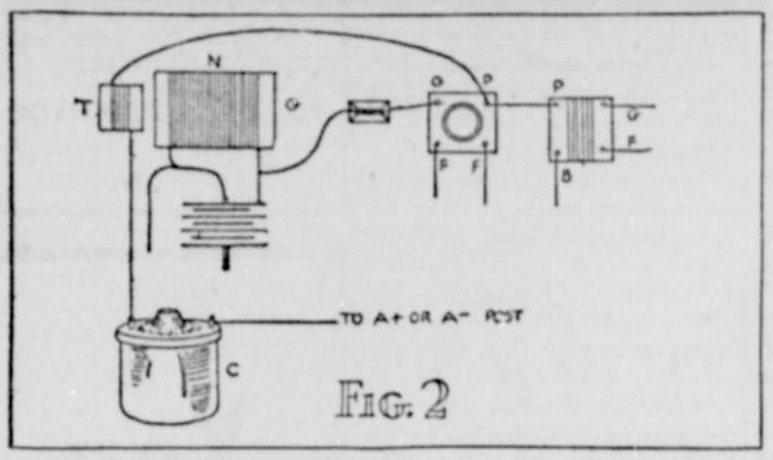


Diagram Showing the Tickler System Which Is Really Better, Since It Provides a Certain Regeneration Control Over the Entire Wave-Length Band.

By BRAINARD FOOTE
In the Philadelphia Public Ledger.

Five-tube tuned R. F. sets, home-made, are noted for their excellence of performance on short wave lengths and their failure on long waves. On wave lengths higher than 400 meters, reception of DX stations is seldom satisfactory, although locals, of course, are well received. Below this dividing mark reception improves, and in the vicinity of 300 meters is ordinarily very fine indeed.

Many well-made receivers, neutrodynes and other five-tube T. R. F. outfits are provided with an automatically varied device which increases the coupling for longer waves or otherwise varies the amplification so that long-wave reception is as good as on short waves.

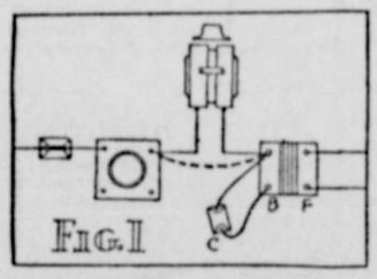
One of the most common methods adopted to provide equalized amplification in the two R. F. stages is to employ three 45-volt "B" batteries and a series variable resistance to permit varying the voltage and thus force the tubes into greater sensitivity by mere "brute" application of voltage from the "B" batteries.

Other methods call for variation of coupling by changing the position or number of turns on the primary windings of the R. F. transformers, but these methods are difficult, troublesome, and make it necessary to take the transformers out. One of the very best schemes consists in making the detector regenerative and is the method preferred by the writer.

Persons not interested in DX work need not touch this control and it may be left at zero.

Tickler on Variometer.

The regeneration may be added in two ways—with a tickler coil or with a variometer. The latter is certainly simpler, and to do it the circuit of Fig. 1. is followed. The detector (middle in the five-tube set) socket is



Regeneration May Be Added by Following This Diagram.

shown and to the right of it the audio transformer for the first stage. The connections originally were according to the dotted line, from the plate or "p" terminal of the transformer.

A fixed condenser is usually connected across the primary of the transformer from "P" to "B." This instrument is labeled (C) in the figure.

The variometer is inserted between the plate (P) of the socket and the (P) post of the transformer. It may be placed outside the set or on top of it, and the wires to it should be well insulated to prevent any short circuits. Manipulation of the variometer will make the detector oscillate and will cause a whistle. When moved slightly to stop whistle the best condition of regeneration is found and will result in a remarkable increase in sensitivity.

The variometer, however, is not quite as satisfactory as it might be, but the method is proposed for the benefit of those in position to try the method. The tickler system is really better, since it provides a certain regeneration control over the entire wave-length band, whereas the variometer does not always do so with complete satisfaction.

Tickler System Is Simple.

This plan is shown in Fig. 2. (N) is the third neutroformer or tuned R. F. coil which is connected to the detector. In front of it is shown its associated variable condenser. To the right is the detector socket and to the extreme right the audio transformer, as in Fig. 1.

The tickler system suggestion is quite simple, in that it does not mean installing a shaft and dial on the tuned R. F. coil. A tickler circuit with a fixed tickler coil and variable condenser for controlling the regeneration is given instead.

In making this addition it is necessary to remove the fixed condenser (C) mentioned in connection with Fig. 1, since this would "by-pass" R. F. energy needed for regeneration. The result is an improvement in both volume and tonal qualities, apart from the gain by using regeneration. The tickler coil itself consists of from 10 to 30 turns of wire of most any convenient size, preferably small, wound on a short piece of tubing smaller than the tuned R. F. coil.

Care must be taken that in inserting the tickler its wire cannot come into contact with any of the binding posts, soldering lugs or wire already on the coil, and, moreover, it is to be situated at the filament end of the coil (N).

This can readily be determined by noting which end of the coil is connected to the unmovable plates of the variable condenser and also to the grid condenser, shown between the coil (N) and the (G) post on the socket.

If the tickler (T) is wound in the same direction as (N) the ends of (T) will be connected as indicated. In case of doubt (T) can be inserted one way and, if no regeneration results, it can be taken out, turned around and inserted the other way. The variable condenser (C) is preferably an instrument already mounted and located outside the set.

Later on, if you like the results, you may install this extra condenser on the panel, with an external knob or dial. The size of the condenser (C) is not of especial importance, since, if it is too small, more turns can be used on coil (T) and, if too large, some taken off.

The regular 23-plate condenser is suitable. One of its terminals is connected to the tickler (T), while the other goes to one of the "A" battery binding posts or to any convenient point on the filament circuit. The wire used should be insulated to avoid accidental contacts and the connections ought not to be too lengthy.

Operation.

Making the detector regenerative in this way permits you to employ the whistle to tune for DX stations. The set must be carefully neutralized to prevent radiation, but even then it is better not to allow the detector to oscillate when you are on the wave length of any local station simply because there is a chance that you might interfere with some one.

When the "whistle" has been heard and the R. F. dials accurately set, the capacity of condenser (C) is reduced until the whistle ceases. A slight touch of the tuning condenser for coil (N), the detector coil will bring in voice or music. On long wave lengths it will be found necessary to increase the capacity of (C).

And on short wave lengths it may be necessary to set (C) at zero. Where the natural period of the antenna interferes with reception around 220 meters, as it so often does, the regeneration control will offset this trouble.

Where it is never necessary to use more than a quarter or a third of the capacity of (C) to produce regeneration the tickler should either have fewer turns or should be moved partially out of coil (N). In case regeneration cannot be obtained on the high wave lengths it follows that the tickler should have more turns.

On account of the two stages of tuned radio-frequency in such a set the added "feedback" for making the detector oscillate will be very slight and much less than the amount of regenerative action required where there is only one stage of tuned radio-frequency. The difference in sensitiveness on waves formerly sort of "dead" is truly astonishing.

The Valley of Voices

By GEORGE MARSH

Author of
"Toilers of the Trail"
"The Whelps of the Wolf"

CHAPTER VIII—Continued

—13—

"Is this the same one we heard at Wailing River?"

"Mebbe. Mebbe 'nodder one. 'Jibway say plenty ov dem een valley o' de Wailing."

"But what do you think, Michel?" demanded Steele hotly. "Here I am, with David, giving up my time to help you run this thing down and, if possible, save the post for St. Onge; and you don't trust me. Why don't you open your heart to me?"

Michel straightened and going to the small fire David had built on the beach, calmly examined his tattered shirt and trousers, as he dried out.

"You are good man, M'sieu Steele. Daveed tell me, but I have de eye to see. W'en you come back on de snow, I tell you sometling."

That was all, and Steele understood. It was evident that Michel had bound himself to secrecy. But why had he told David?

"In the morning we must hunt for a trail," Steele said, philosophically bowing to the inevitable. Now we'll have to do what we can to quiet those poor squaws."

As the canoe landed on the beach below the silent tipis, one by one, dark shapes of Indian dogs slunk from the adjacent scrub, tails between legs, to whimper at the feet of the men.

"Scared stiff," said Steele. "And from the sound the squaws are worse. Go and talk to them, Michel. Tell them it was a mad wolverine or lynx and we've hunted it out of the country. I'll get a fire going while David brings some tea from the island. It will cheer them up—the tea."

But both his patience, and his knowledge of the woods Indian's belief in the supernatural, were taxed to the uttermost before Michel succeeded in convincing the women that the Windigo they had heard on the ridge was not now luring them to their doom with the assumed voice of the headman of Wailing River.

In the end, they crept from the tipi to the friendly light of the fire, horror in their shifting eyes, gray-faced children clutching their skirts. There, comforted by the tea, and heartened by the presence of the three men, who kept a huge fire going, the circle of stricken women passed the night.

In the opinion of Steele, who kept vigil with his pipe, beside the snoring David and Michel, rolled in their blankets, the coming of the beast to Big Feather before the freeze-up, was the gravest menace which the fortunes of Wailing River post, and the girl who had given him until spring to accomplish the impossible, had yet encountered. For, as a forest fire runs in dry timber, so rumors of the howling of the Windigo at Big Feather would travel from hunter to hunter through the upper valley of the Wailing. The tale would spread, gathering horror as it went as a snowslide gathers momentum, until in time the whole region learned that a Windigo was loose in the valley of the Wailing—a fiend fierce beyond belief and hungry for the flesh of the Ojibway. Then would follow, unless the beast were killed and the terror ended, swift exodus from the valley of the families still trading at the post, the resurrection and revival of the ghastly traditions surrounding the rapids and the river below—the end of the St. Onges and the post at Wailing River.

Steele's teeth bit savagely into the stem of his pipe. This might happen before the freeze-up, and until the snow made it possible to follow a trail, there was small chance of solving the mystery of the night wailing.

Now, Steele mused, when the men returned from their hunt to hear of the voice in the night from the circle of half-demented women cowering there around the fire, the tale would straightway travel to the four winds, and hardly indeed would be the hunter who would drive his dog team this Christmas down the white valley of the Wailing to trade at the ill-fated post. With no Christmas, and little prospect of a spring trade, unless the mystery were solved by the running down of this beast with the miraculous vocal cords, Wailing River was doomed. Even if Denise married Laselles in the spring, the post could not be continued under a taboo.

True, St. Onge had sworn that she should never make the sacrifice, but the factor was at his rope's end, and she would override him. She would not see him disgraced. Her pride would drive her to it—that fierce pride of race. She was a thoroughbred and would go to her spiritual death with a high head, in the spring.

In the morning Michel would go in search of the caribou hunters, for after that night the women would not remain alone at Big Feather. David would cross to Portage lake to learn if the Windigo had been heard on the Little Current. He, himself, would cover the country back of the ridge for a trail which he had little hope of picking up, and endeavor to hold the women at their camp until their men returned. On the return of David they would at once start for Nepigon, leaving Michel to meet the canoe St. Onge was to send.

With Michel would go two letters, explaining his change of plans. The sole hope of holding the Indians now was in scotching the Windigo terror early in the winter by tracking down the beast on the first snow; and so, strongly as his heart drew him toward the post, he made his decision.

CHAPTER IX

For three days Steele searched the ridge and back country for tracks, but without success. David returned from Portage lake with the good news that the fishing camps were taking large catches of pike and whitefish, and there was no Windigo gossip. So, in spite of the shrill protests and indignant refutation of their squaws, Steele, corroborated by his men, assured the Ojibways that what the women had heard on the burnt ridge was the caterwauling of a lynx, and at once started with David for Ogoke lake and the Nepigon.

It was on a windless day in the heart of the northern Indian summer that the canoe bound south for the Nepigon approached the islands guard-

"It Looks as If the Whole Outfit Is Out to Meet Us."

ing the east end of Ogoke. Like silhouettes of anchored battle fleets they rode the sleeping lake, their fighting tops and stacks, of black spruce, their armored hulls, of age-worn rocks.

"Where is the post, David?" asked Steele.

"Four—five hour paddle, yet. Eet lie on long spruce point. You see eet today ver' far off."

"You realize that you can't start anything at Laflamme's place now, don't you?"

Repeatedly, David's square shoulders leaned to the stroke, as his arms swept the blade through, before he turned his black head to his chief.

"David has waited ten year, he can wait leetle tam longer. We got plenty troubles dees long snow on de Wailing. Daveed weel wait; you not worry for heem."

"I knew you wouldn't do anything when we have this work down river ahead of us; but I realize that it will be hard, if we stay a day or two, for you to keep your hands off of him. His gang would get you anyway if you did square it with Laflamme, and that would put me in a hole as well."

The reticent David had never divulged even to Steele the cause of the ancient grudge he bore the free-trader. He had said simply that he wished to meet him—had twice journeyed far for that purpose; once missing him, the second time finding him camped with his fur canoes. As David had no quarrel with Laflamme's men, who would have come promptly to the aid of their chief, he had bided his time. In some way, years before, Laflamme had injured the Ojibway. That was the extent of Steele's knowledge.

Gradually, as they approached, the clearing opened up and the buildings of the fur post took shape. So keen was his curiosity that Steele ceased paddling to examine them through his binoculars. Here lived the man who was waiting until the snow flew for St. Onge's answer to his offer of a partnership in the trade for the price of Denise, the man who was luring the Ojibways for hundreds of miles with his whisky.

Although the freeze-up was little more than a fortnight away, tipis squatted, here and there, on the post clearing. This, of itself, meant but one thing to the man who held the glasses—whisky. For, throughout the wide north, September finds the hunters on their winter trapping grounds, preparing for the coming of the long snows.

"Wal, w'at you t'ink ov dat place?" asked David, as Steele put his glasses in their case.

"He must have a lot of people there—big buildings, too."

"Yes, eet ees beeg place."

As they approached the long point, Steele was surprised at the number of people moving about the buildings. On the beach the post dogs already awaited the strange craft, while a group of post people formed behind them. The canoe was close in shore when two men left the massive tradehouse and drifted to the log landing stage, off which a York boat rode at its mooring.

"It looks as if the whole outfit is out to meet us."

David turned a grim face to his chief. "Somet'ing strange here!"

"They may think we're a police canoe," suggested Steele.

"Ah-hah!"

"Is that Laflamme talking to the big fellow on the landing?"

"Ah-hah! He don' talk lak' dead man." So low were the sinister words spoken that Steele, in doubt, asked:

"What's that?"

The Ojibway turned to his chief a face twisted with hate.

"He don' know—he ees—dead man!"

"Some day you can settle with him—but not now, not now! We have a job on the Wailing—you and Michel and I," hastily objected Steele, fearing this meeting with the man he hated had jarred David off his mental balance.

The set features of the Ojibway relaxed. His narrow eyes glowed as he reassured the man who trusted him. "Daveed promise to meet Michel on de November snow. We have de beeg job—you an' Michel an' Daveed; I mak' no trouble here, boss."

Under the inspection of many pairs of curious eyes, the canoe slid into the beach. Leaving David to keep the dogs off the canoe, Steele walked through the silent huskies who instinctively drew back from his approach and closed in behind him, walking on stiff legs barely out of reach of the paddle he carried, awed yet threatening. The bulky half-breed, whose sinister face wore the red gash of a scar from chin to ear, Steele dismissed with a glance, but nothing, from the heavily beaded moccasins of smoke-tanned moosehide, to the wide-brimmed stetson of the free-trader, escaped his appraising eye. To his surprise, also, the dark features which met him with a look both surly and questioning, were undeniably handsome.

"Good day, gentlemen!" said Steele, affably, ignoring the coolness of his reception.

"Good day!" returned Laflamme, coldly, probing the smiling face of the stranger with a sharp look in which doubt and concern patently mingled.

"I am headed for Nepigon, from Fort Albany, and need some supplies," went on Steele. "Can you sell me some stuff?"

With a curl of the lip Laflamme replied: "That depends on what your business is on this lake."

The tawny-haired American laughed in the face of the speaker.

"Business on this lake? Are you joking? You seem to have all the business here. My business is to get back to New York before I'm frozen in, and report to the American Museum of Natural History. I've spent the last five months on the Albany, collecting. Now, I'm bound for Nepigon and the railroad."

The half-breed and his chief exchanged looks. Steele realized that he was suspected of being a government agent in disguise, so, as he needed supplies and wished to study Laflamme while David circulated among the post people, he desired to relieve the mind of the free-trader at once.

"You say you're from the States—doing collecting among the Indians? I should be glad to see some of your stuff."

Laflamme was taking no chances, and Steele welcomed the opportunity to establish his identity.

"Yes, I've two packs in the canoe. My name is Steele. I've been on the Albany two years—left a thousand pounds this year, at Fort Albany, to go out by boat." Then he hazarded: "You know Lascelles, the Revillon man there?"

Laflamme's reaction to the remark was instantaneous. His face darkened with anger.

(TO BE CONTINUED.)

Song the Hammers Sing

The constant clang of your hammer means that you will succeed. The constant clang of other hammers means that you have succeeded.—Youngstown Vindicator.