

Radiographs

Latest Step in Radio—Super-Regenerative Receiver

BY PAUL F. GODLEY

America's Foremost Radio Authority
Build your own super-regenerative set.

It is not difficult if you get a clear understanding of the fundamentals. This type of receiving set, perfected by E. H. Armstrong, can give an amplification of 1,000,000. Extremely small energies—such as those set up in the receiver coils—are magnified into strong signals without even using an antenna. At distances up to 20 miles a proper combination of circuits gives plenty of volume without any aerial. Using a loop or coil antenna, the same volume may be had at double the distance. To go further than this—that is, to connect the set to an outdoor aerial—is at present impractical.

The super-regenerative set is essentially one which finds its main application where it is either impossible or undesirable to erect an outdoor aerial. As yet, it does not seem to operate successfully in covering great distances. Except to the engineering student, it offers no particular advantage over the present regenerative receiver and its outdoor antenna at points remote from the transmitting station.

Complicated. For reception at extreme distances there is no doubt that the superheterodyne receiver that I used during the reception of the American amateur signals in Scotland last winter, is the peer of them all. Regenerative, super-heterodyne and super-regenerative receivers—all are the inventions of the same genius—Armstrong.

The actions within the super-regenerative set are complicated—but easily comprehensible. To be certain of success in setting up the set, he must be sure to understand its action. There is small chance of successful operation of an experimental set-up of the circuit unless one does.

The operation of the super-regenerative set is based on that of the regenerative receiver. This takes advantage of the regenerative characteristics of the 2-electrode vacuum tube.

This tube is so constructed that energies which are passed through it are magnified several times. The regenerative receiver makes it possible to pass these signal energies through the same tube many times in rapid succession. Each trip amplifies them further.

Theoretically, this enlarging process could go on until the signal strength reaches an infinite value. Actually, however, on signals which are initially strong, the carrying capacity of the tube limits their value.

On signals which initially are extremely weak, the transient phenomena within the tube—such as minute irregularities in the electron flow from the filament—defeat full amplification.

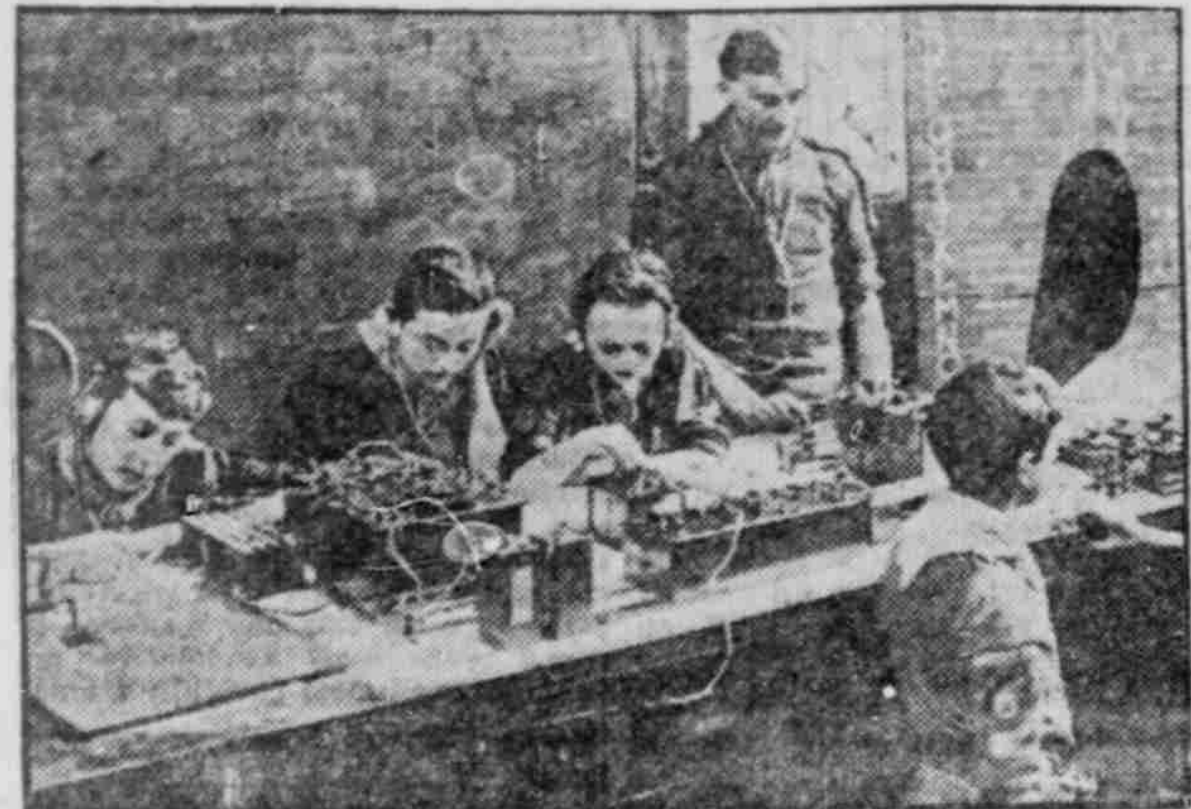
Hook-up. The diagram gives the hook-up of the Armstrong super-regenerative receiver circuit. Here, in addition to acting as detector, the vacuum tube is supplying oscillatory energy at two frequencies and acting as amplifier.

The secondary circuit and tickler are adjusted for oscillations at the frequency of the wave it is wished to receive.

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English Boy Scouts Radio Fans



England is just as wild about radio as is America. Any Boy Scout over there will say so. They go to school especially to learn all they can about new scientific amusement. Here are a group at the Westminster City School learning the rudiments of radio under direction of their scoutmaster, E. Hartuck.

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Shopmen Walkout at Cleveland in Orderly Manner to Fight Wage Cut



Shopmen of the New York Central leaving their work in the Collinwood shops, Cleveland, to join in the National Railroad Shop Workers' strike.

ago to put up the car. As Miles descended from the car he beheld a battle-scarred tom-cat clawing to reach a plate of stale meat on a high shelf, and an inspiration came to him. Taking the envelope from his pocket containing the five tablets, he selected one of them and, rolling it in a small piece of meat he dropped it on the floor. With a growl the cat pounced upon it. For a moment the animal crouched and then its eyes widened with a look of almost human surprise. It rose, turned in a wavering half-circle and then all at once relaxed rather than fell upon its side with all four feet outstretched and the lurid eyes flamed.

So Roger had not been bluffing, after all! As Miles replaced the envelope in his pocket, his fingers came in contact with another, the one which Hobart Drake had dropped on the dining room floor. What could it have contained to drive him into such a tempest of fury?

The detective was turning it over speculatively in his hands when suddenly he uttered a sharp exclamation. He needed no magnifying glass to verify the truth; the canceled stamp had been transferred from another envelope and the postmark was a forgery. That letter had never passed through the mails!

It was close to midnight when a stocky figure enveloped in a heavy ulster wormed its way through a gap in the hedge and started a circuitous course about the Drake house.

A faint glimmer showed on the third floor and silhouetted against the dim patch of light appeared the profile of a man. The watcher below picked up a handful of loose gravel which he against the window. Almost instantly the light was extinguished, there came the slight, grating sound of a carefully raised sash, and the tiny spark of a cigarette gleamed just above the sill.

A low, peculiar whistle emanated from the line of the natural visitor as the cigarette, describing a wide arc, fell upon the lawn almost at his feet as the window was softly closed once more.

In a few moments the kitchen door opened and Owen Miles in the sweater and sneakers of his nightly vigil slipped around the corner of the house.

"Scottie, old scout! I knew you'd try to get in touch with me if you could."

HERBS USED IN MEDICINES. A Manchester, England, paper urges the renewed cultivation of old-fashioned medicinal herbs in English gardens. In the United States they have also gone out of fashion as a feature of the small garden, although they are imported in large quantities from Turkey, India and China, where they are grown purely for commercial purposes, as their medicinal value is recognized by many leading physicians. Tons of medicinal herbs are used annually in the preparation of Lydia E. Pinkham's Vegetable Compound, a most successful medicine for women's ills. It contains no narcotics or harmful drugs, and women afflicted with such ailments should try it. Adv.

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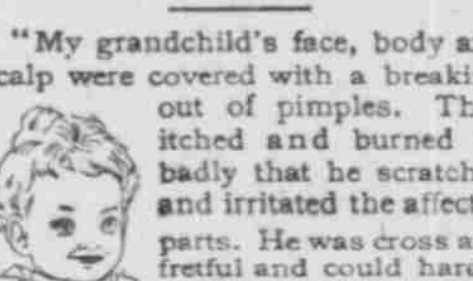
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The TAHOOD ARM

Isabel Ostrander
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BEGIN HERE TODAY. The strange and unexplained eccentricity of three wealthy, sedate and middle-aged brothers has caused

OWEN MILES, detective sergeant, and his colleague.

ERBERT McCREADY, known as "Scottie," to investigate on the request of

PATRICIA DRAKE, daughter of the youngest brother, HOBART DRAKE, a Wall St. broker, who startled his neighbors by appearing in the town square, clothed in a sheet, and delivering a mock oration.

Miles, in the guise of a houseman, is employed at the home, and on his first night hears two brothers, ROGER, the scientist, and ANDREW, who has recently come from Australia, talking in loud tones. Roger, by making a business of a scientific paper, and Andrew, by playing with tops on the parlor floor, has equaled Hobart in eccentricity.

"I'm not going to endure it," Miles heard Roger cry. "There is a way out, quick and sure."

GO ON WITH STORY. "You're talking like an ass and worse—a coward!" Andrew interrupted with sudden, subdued fury. "Jerry's all right but you've gotten Hobart's girl. Could she live down the fact that her uncle was a suicide?"

"You know what chance we have of averting what is coming!" Roger laughed in a strained falsetto which made the listening detective shudder in spite of himself and there was a quick movement within the room. "Pat had better live with the knowledge that one or both of her uncles—and her father as well—had died by their own hands than that all three of them were—!"

"Here! None of that!" Andrew cried. He had evidently thrown caution to the winds for his tones had risen to a bellow and a door opened down the hall. Miles retreated hastily toward his screening corner of the wall near the back stairs but not before the sound of a sharp struggle came from the room where the brothers were, followed by an oath and the tinkle and crash of shattered glass.

At the thought Miles sprang downstairs and darted out the window he concealed himself in the

shadow of one of the great pillars. No one was in sight. Leaping from the porch he ran around the rear of the house to the other side. The pantry was dark now but the two faint patches of light from Roger's room still fell upon the sparse grass of last year's lawn. In the glow of the further one, something glinted like a handful of diamonds.

Broken glass! He had anticipated a pistol or perhaps even a knife of some sort but not a bottle!

Throwing himself flat upon his face the detective writhed inch by inch along the ground until he was close to the scattered fragments of the bottle and then he saw among them a number of tiny white tablets. Seizing a handful of the gravel and tablets together Miles stuffed it into a pocket of his trousers and ran swiftly around the house again to the library window.

CHAPTER V. Carter was ill the following morning—a touch of sciatica—and the new houseman was forced to assume the more complex duties.

Under the kindly guidance of Pierre, he finished arranging the table for breakfast and then remembered the mail. When he had cleaned the lower hall a short time before it had not arrived, but now a small heap of letters and rolled circulars and periodicals lay upon the table and he sorted them rapidly. There was nothing for Andrew Drake nor Miss Patricia, but a formidable pile of correspondence awaited Roger and several letters were addressed to Miss Jerusha. There was only one envelope to place beside Hobart Drake's plate.

Miles noted idly that it was plain, with a typed address and a New York City postmark. Then he hurried out and returned with the fruit just as the elder Miss Drake entered.

"Good morning, William." She inclined her gray head formally. "I see you have made a good beginning. Mohitabel, my maid, tells me that Carter is ill and you have assumed his duties."

The three brothers entered almost together and took their places with a perfunctory greeting to their sister. Roger seemed aroused and shaken and his drawn, yellowish face paled as his glance fell on the heap of correspondence beside his plate. He pushed it aside with a

Squeeze the juice of two lemons into a bottle containing three ounces of Orchard White, which any drug store will supply for a few cents, shake well, and you have a quarter pint of harmless and delightful lemon bleach. Massage this sweetly fragrant lotion into the face, neck, arms and hands each day, then shortly note the beauty and whiteness of your skin.

Famous stage beauties use this lemon lotion to bleach and bring that soft, clear, rosy-white complexion, also as a freckle, sunburn, and tan bleach because it doesn't irritate.

GIRLS! LEMONS
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