

THE WORLD OF RADIO

New Type Radio Is Big Success

"Signal Augmentation" Set Gets Astounding Results in Fine Selectivity.

This newspaper exclusively presents to its readers today the "Augmentation" set, a remarkable innovation, one that obtains greater amplification than the ordinary set, yet combines the selectivity of Foucault's heterodyne principle. A five-tube set, the new set is said to have recorded phonographically 50 selections from European stations, 30 from American stations, and 20 from stations in the recent international tests. There will be succeeding articles in this newspaper, presenting adaptations of this system to various types of sets, together with full constructional details. —The Editor.

By A. J. FARAN. (Copyright, 1924.) In spite of the fact that developments in the science of radio have been so rapid that it has been difficult for the specialist to keep abreast of the art, there have been very few, if any, really new circuits or systems of reception perfected. The progressive evolution of the art has apparently militated against independent endeavoring along lines other than refinement of established circuits and principles.

*Tendency of the designer has been to reduce losses and otherwise render the existing methods of reception more efficient. The effectiveness of these efforts is everywhere apparent in the modern receiver. It is only necessary to compare the radio sets now under present conditions of wave length congestion—to appreciate fully what has been accomplished, and even more, to recognize the strides which must be made in the immediate future if receivers are to retain the quality we now refer to as selectivity.

In the new system of radio reception developed Francis R. Hoyt called by him "signal augmentation," custom has been laid aside and the systems of the past ignored, and in this radical departure we find a system of radio reception which apparently satisfies all of the conditions—the most severe requirements—which can be imposed by present day broadcasting, and with an ample margin to spare. Selectivity and range have been combined in a practical receiver to a degree never before attained, and with it all unusual economy from an operating as well as a structural point of view.

Selectivity and Range.

Selectivity and range are rather difficult terms to define, and for the purpose of this description we will content ourselves with practical illustrations of the circuit possibilities in these directions. The data were compiled from actual tests conducted with a standard receiver located at Eighty-seventh street and Amsterdam avenue, New York City. This location can be considered as typical of the city condition, which we recognize as "rather severe" and perhaps a condition which only prevails in two cities in the United States. A test of this character is a critical one, as it calls upon a receiver for perfect performance, maximum selectivity and amplification at every wave length and general versatility not found in existing receivers, provided the locals are to be effectively tuned out in favor of distant stations, varying in wave length by only a few meters from operating locals. This is not considered accomplished without loss of quality.

In this particular location all of the local stations are audible over a wide band of wave lengths, with WFBH, 273 meters; 15 blocks away; WHN, 350 meters; WOR, 405 meters; and WJZ, 455 meters, as the worst offenders. A crucial test of this location is to require their going in between WHN and WOR, when both of these stations are "on the air" and play distant stations ranging in wave length from 370 meters to 400 meters, to the entire and complete exclusion of the locals. This, however, is a crucial test, is not considered sufficient for the augmentation circuit—since this is only a test of very narrow wave length band—it is required to perform in the same manner at every frequency.

A Regular Feat.

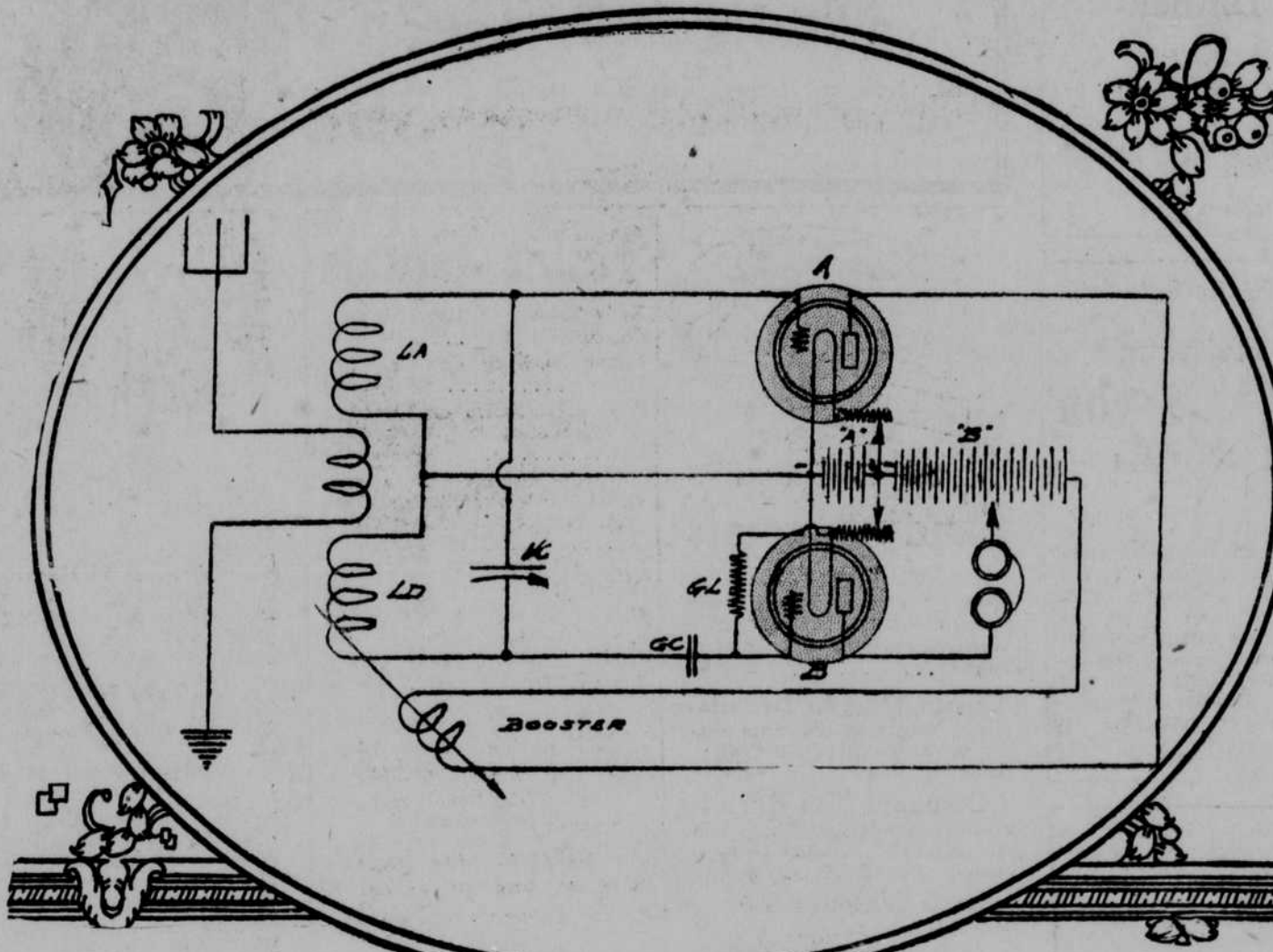
With WFBH broadcasting, WDBH at Worcester, Mass., on 268 and WNC at Boston Mass., 278 meters are readily tuned in, to the total exclusion of the local. The same thing applies to WGN at 370 meters in Chicago, WGY at 350 meters in Schenectady, WTAM at 350 meters in Cleveland, WJAR at 395 meters in Philadelphia, and WHAS at 400 meters in Louisville, while both WHN and WOR are broadcasting at 350 and 405 meters, respectively. Kansas City at 411 meters, station WDAF, can also be tuned in to the exclusion of WOR.

These performances are not freak performances, but are demonstrable, going now to the higher wave lengths, the Augmentation circuit is found in its ability to bring in WCAE in Pittsburgh and WCAP in Washington at 462 meters with WJZ on 455 meters going full blast. Going still higher up the wave length range, WIP in Philadelphia at 509 meters can be tuned in with WEAF going locally at 492 meters, and with WNYC the municipal station, broadcasting on 524 meters, KTV in Chicago on 535 meters is readily brought in.

The Fundamental Circuit.

As to its ability to bring in distant stations, or in other words as to its sensitivity, perhaps little more need be said than the above. Although in this connection it is of more than passing interest that Mr. Hoyt, employing this circuit during the recent transatlantic tests, phonographically recorded a number of the European stations. The facts in connection with these tests are to be made public shortly. The phonographic records have been turned over to the parties

How New Radio Principle of "Augmentation" Operates



who initiated and fostered the European experiment.

A schematic drawing of the fundamental circuit employed in the augmentation system appears on this page. Here we find an extremely interesting circuit for analysis, and one which will cause the investigator and experimenter some sudden reversals of hasty conclusions as to its method of operation.

The illustration has been stripped of all except the very fundamentals of the circuit, and a glance will show that the method employed is unique even though the circuit on first examination bears a striking resemblance to familiar radio diagrams.

Almost every one who has seen the circuit without having an accompanying description has gone through the same series of fleeting impressions. First, that it is regenerative, and after satisfying themselves that it is not, they turn to the heterodyne, and with this dispelled, push-pull amplifier comes in for its share, only to go the route of the others. Neither is dual detection, which seems a fair assumption, correct.

It will be seen from the diagram that the incoming signal is transferred from the aperiodic primary (shown here for clearness) to the two secondary terminals of each of these secondaryaries is connected to the grid circuit of a vacuum tube, while the other terminals are connected together and are common to the filament circuits of the tubes. The two secondaryaries, or the two halves of the secondary, if it is preferred to view it in this way, are simultaneously tuned by the single tuning condenser, VC. In this way the two grid circuits of the tubes are each brought into resonance with the incoming signal, and respond to the signal in opposite phase—that is, when the grid of one tube is going positive the grid of the other is swinging negatively. (This will be amplified later; since a grid condenser is employed in the grid circuit of one tube, this statement may be confusing.)

How the Tubes Function.

The incoming signal therefore is causing the simultaneous fluctuation of the grids of two separate tubes. Again referring to the diagram, it will be seen that one of these tubes is functioning as an amplifier, while the other is simultaneously detecting the signal impulse.

The head phones or audio frequency stages are included in the plate circuit of the detector tube A, and constitute an independent detector circuit. The augmentation tube B may be removed from its socket, and the detector tube functions as an ordinary straight detector. Included in the plate circuit of the augmentation or booster is a coil having variable amplification coupling with the secondary LD, which acts to properly phase the amplified radio frequency variations in that circuit and to inductively add their effect to the radio frequency variations in the grid circuit of the detector tube, thereby reinforcing the detector's signal. This variable coupling coil is called the augmentation or booster coil.

A graphic presentation of the flow of the currents in this circuit appears on this page. Here the progressive steps of signal amplification are shown by lines of increasing breadth and the reinforcement from the augmentation tube to the detector tube by double lines.

From a survey of this illustration it will be instantly observed that the method of signal reinforcement in this new circuit is neither cascade amplification, regeneration nor heterodyning.

The fundamental augmentation circuit.

C. C. Calloway, 89, Still Living on Land Taken for Homestead in 1869

Fairbury, Dec. 19.—C. C. Calloway, 89, three miles northeast of Fairbury, is said to be the only man in Jefferson county now living on the land he entered as a homestead. He came from Missouri and homesteaded in 1869. He still directs the farming. This was his first and only home. It is free of incumbrance and is one of the few descriptions on which a mortgage has never been recorded.

His first house, a block-shaped one of one room, was built of rough lumber slatted by a neighborhood saw mill. When the new house was constructed it was built around the old house and the old structure now serves for the family sitting room.

The mother died about 10 years ago and Mr. Calloway lives with his daughters, Agnes and Susie. Mr. Calloway's plans do not call for a move to town. He desires to stay on the old place as long as he lives.

Poultry in Holt County Reported in Good Condition

O'Neill, Dec. 19.—Holt county poultry dealers and raisers are at loss to understand the embargo on Nebraska poultry recently enforced in the east, unless it was ordered to enable eastern cold storage men to get rid of heavy stocks of dressed poultry accumulated before the drop in poultry prices this fall. No mysterious disease has made its appearance and in fact dealers declare that poultry being received when the embargo went into effect was in better condition than for several years.

Good Roads Association to Meet at Kearney Jan. 12

Kearney, Dec. 19.—Nebraska Good Roads association is to hold its meeting at Kearney, Monday, January 12. This announcement was officially authorized today by W. H. Blakeman, president, in communication with Ray Turner, president of the Kearney Chamber of Commerce. Invitations will go out shortly to all affiliated with the association, to highway commissioners and to representatives of county boards to attend the meeting, which will be held in the Chamber of Commerce rooms. Important highway issues will be discussed and acted upon at that time.

RADIO

Program for December 20.

(Courtesy of Radio Digest.)
By Associated Press.

WMAQ, Chicago News (447.5) 8 band; orchestra; 8:45 phonology; 9 Chicago orchestra; 10:15 classical; 11:30 U.S. Navy; 12:30 Chicago Tribune (478) 7 orchestra; 1:30 classical; 2:30 U.S. Navy; 3:30 KVM, Chicago (555) 9:05 Youth's Companion; 9:25 late show; 12:30 Night Hawks; 1:30 Chicago (748) 10:12 review, review, orchestra, organ, barn dance; 11:30 Chicago (443) 7-8.

Half of Holt County Farms Are Free From Incumbrance

O'Neill, Dec. 19.—Fifty per cent of the Holt county farms are without incumbrance, according to an investigation just completed by R. H. Parker of O'Neill. The report shows that 25 per cent of the farms are but nominally incumbered, 15 per cent are heavily mortgaged and 10 per cent are in the process of foreclosure.

Native-Grown Spruce Tree Nelson Holiday Feature

Nelson, Dec. 19.—A native grown spruce pine tree has been placed at the intersection of Main and Fourth streets as a portion of the systematic decorations here for the holiday season. Smaller trees are used at electric poles, and the lower section of the light globes grouped on these poles have the bulbs colored. The large tree at the intersection is wired and each night the whole system of red, green and yellow lights is used. The tree was a donation from the local fire company boys who erected it on condition that the city keep it lighted during holiday season. The tree is about 30 feet in height and can be seen from a long distance.

WOAW Program

Saturday, December 20.
8:00 p. m. reading of urian stories in Nebraska Tusserulda society's Christmas story contest by Marian Hand.

Airmen Get Peek at Queer Family Life of Japanese

World Fliers Dine on Flour With Natives as Pagan When Perry Landed There.

Told by LOWELL THOMAS. "Although we waited for hours on the shore of Lake Toshimoye hoping that the fog would lift, we were disappointed. As the day progressed we found it a blessing in disguise. In due time we had heard that the fog, we never would have got our most intimate glimpses of Japanese village life," says Les Arnold.

"At 10 on the morning of Dec. 20 we left our planes and gave up hope of flying on south until the morning. So we started out to explore the streets of Yanketo, near where the American and Japanese destroyers rode at anchor in Hitokappu bay. What a pleasant contrast this village was to the miserable huddles of huts in the Aleutian Islands. The idea seemed to be his first and only home. It is free of incumbrance and is one of the few descriptions on which a mortgage has never been recorded.

His first house, a block-shaped one of one room, was built of rough lumber slatted by a neighborhood saw mill. When the new house was constructed it was built around the old house and the old structure now serves for the family sitting room.

The mother died about 10 years ago and Mr. Calloway lives with his daughters, Agnes and Susie. Mr. Calloway's plans do not call for a move to town. He desires to stay on the old place as long as he lives.

"We were fascinated with the village of Yanketo, with its tiny houses that looked like egg shells. Here for the first time since leaving Sitka, Alaska, we saw trees. To be sure, they were squat, stunted ones, sort of fat on top, like you see on old Japanese prints and Japanese fans. Here, too, for the first time since leaving Seattle we saw horses, shaggy haired little animals not much bigger than a Shetland pony.

"Of course, we saw little of the home life of the people while making our 2,000-mile flight through the Japanese empire. However, we were strolling down the street in Yanketo when a Japanese gentleman with much smiling and bowing indicated that he wanted us to follow him. He led us across a little garden and at the door of a house which proved to be the home of our new acquaintance, we were met by a petite maiden who got down on the porch and bumped her dainty head several times before us. Puzzled and a little embarrassed, we took off our shoes. About all we knew of the customs of Japan was that boots, shoes, galoshes and other footgear must always be left on the outside.

Room Mins Furniture.

"Shuffling along in our wooly flying shoes, we entered a room as innocent of furniture as Erik's head was of hair before he started on this flight.

Bosch Nobattery Ready for Trade

New Unit Supplies Current to Radio Sets Without Batteries.

The long expected entrance into the radio field of the American Bosch Magneto corporation will become a fact in January, when that automotive accessory concern announces to the radio trade the Bosch nobattery.

This information was given out by H. B. Noyes, president of the Auto Electric and Radio corporation, official Bosch representative in this city. The new unit is a device for supplying current to radio sets without recourse to batteries.

Although the new unit is eventually to be supplied in four or five types, the first type will be for supplying so-called B current. It will secure its original electrical energy from the house lighting circuit which, in the majority of cities and towns, is of the alternating type.

It is the purpose of Bosch also to introduce a complete nobattery line, but among the first to be announced, following the present effort, will be a combination unit for the purpose of supplying both so-called A and B energy and thereby eliminating from radio sets of the most outstanding causes of annoyance, trouble and mystifying reasons for loss of efficiency and unsatisfactory reception.

The Bosch nobattery which it is expected will be available in January is to be known as the ban type, and will supply B current from 110-115 volt alternating lines, at 50-60 cycles. It uses less current than an ordinary 25-watt bulb and delivers a steady, even flow of current, at a constant voltage, the detector plate voltage being variable from 90 to 150 volts.

The attachment can be made to any set and is simple, requiring just the "plugging-in" to an electric lamp socket.

Next Day Foggy.

"Next day was foggy also and we were unable to hop off for the usual 5:30 the following morning. On this trip we flew over more islands, smoking volcanoes, and above a cloud bank that cut us off from the world beneath for a distance of 50 miles. Perhaps the most interesting feature of this flight was seeing the villagers rushing out of their huts and running to the shore to greet us. On the base of a mountain, and there the inhabitants would be right up to the tiptop of the peak, where they could see us from the best point of vantage. Every one along the route seemed to know we were coming.

In spite of the fact that we had repeatedly sent wires requesting that no reception be arranged for us at Minato, a very elaborate one had been prepared. There must have been 20,000 or 30,000 people on the beach, and there were huge 'welcome' signs, reception tents had been erected, and a luncheon prepared. Glant firecrackers and skyrocketes were touched off as we taxied to our moorings. Even the governor of the island was there all set to make a speech.

"It was here that we were met for the first time by Lieut. Cliff Nutt, the advance agent for this second division of the flight. Cliff knew just what we wanted and at the moment we arrived he put out for the shore with three sampans loaded with gasoline, oil and water, and on each sampan he had an American interpreter. We were trying to reach Tokyo that day and decided not to go ashore despite the fact that it was sure to appear discourteous. So we gave Cliff the thankless job of presenting our compliments and regrets to the governor and reception committee, much as he would rather have been shot than do this.

Rural Mail Carrier III; Daughter Takes His Route

Nelson, Dec. 19.—John Crandell, veteran rural route mail carrier, was taken seriously ill with acute appendicitis and had to abandon his work. He was successfully operated on and seems on his way to recovery. His daughter, who last year graduated from the Nelson High school, has taken the route in the meantime and is weathering the zero storms for her father.

York School Children Will Sing Carols About Town

Table Rock—John N. Phillips, formerly of Table Rock, who was sentenced to from three to 15 years in the state penitentiary for assault on a 15-year-old Table Rock girl, has begun to serve his term in the Pawnee county jail because the state penitentiary is already full and no more can be accepted.

York, Dec. 19.—Under direction of Miss Cora Conway, director of public school music, the children of York public schools will sing Christmas carols about town Monday, Tuesday and Wednesday evenings of next week during shopping hours. The program is contingent on the weather. If it is too cold the children will not be taken out.

Table Rock—John N. Phillips, formerly of Table Rock, who was sentenced to from three to 15 years in the state penitentiary for assault on a 15-year-old Table Rock girl, has begun to serve his term in the Pawnee county jail because the state penitentiary is already full and no more can be accepted.

Radio Storage Batteries Hold Their Charge Both "A" and "B"

Omaha Battery Company
2212 Honey AT 3394



WOAW Program

Saturday, December 20.
8:00 p. m. reading of urian stories in Nebraska Tusserulda society's Christmas story contest by Marian Hand.

8:15 p. m. To be announced.
8:45 p. m. dinner program, Chamber of Commerce, 405 Broadway, state secretary Charles A. Musickman, state secretary Y. M. C. A.
9:00 p. m. regular monthly Father and Son program, sponsored by the Young Men's Christian association of Nebraska, held in the Chamber of Commerce, 405 Broadway, state secretary W. A. Luke, general secretary.
9:15 p. m. Father and Son, sponsored by C. L. Vossler, secretary Boys' Work, Lincoln, Y. M. C. A.

Vestal—Mrs. Ferdinand Hanneel died at her home south of Vestal Tuesday. She was born in Austria and came to this country with her parents when 4 years old. She is survived by her husband and five children.

"The maid brought in a small iron stove that stood on three legs, like a table, I believe they call it. We all sat around on cushions while the lady of the house, who had also come in with another bumping of the head to the floor ceremony, deftly arranged a tiny pile of charcoal so it would burn better. The amount of heat that little charcoal gave out was surprising. As we smiled one to another and attempted in vain to carry on a conversation by means of gestures alone, our hostess brewed tea over the charcoal fire in a brass kettle. Then the maid insinuated herself softly through one of the panels with a tray of wee teacups.

"Thus far the only thing regarding our world flight that General Patrick and Lieutenants Street and Brown had overlooked was to give us a course in Japanese etiquette. So we should know that we were being rude when we failed to show our appreciation of the tea by sipping it noisily like you occasionally hear some one playing a noodle soup oblige in a Los Angeles cafeteria.

Stenauer—Mrs. Ferdinand Hanneel died at her home south of Vestal Tuesday. She was born in Austria and came to this country with her parents when 4 years old. She is survived by her husband and five children.

See Want Ads produce results.