Radio Topics

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The Best of Technical Radio Articles, News, and Fiction in This Issue

CIRCULATION, 47,500 COPIES

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The NATIONAL RADIO MONTHLY

RADIO TOPICS

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New York *Radio Show* Surpasses *Greatest* Anticipations

Attendance of 42,000 at Exhibit. Greatest Show Ever Held Sets All New York Wild Over Radio. Newspapers Fire Public's Imagination

THE second annual radio show held by the Executive Radio Council of the Second District at the Pennsylvania Hotel, New York City, March 7 to 11, achieved the greatest success of any commercial exhibition held in New York. The phenomenal attendances proved conclusively the extent to which the radio broadcasting has been taken up by the general public. A total of over 32,000 paid admissions were recorded and more than 10,000 additional are estimated to have been present during the four and one-half days that the show was open.

The interest displayed by the press and general public was far above the highest estimations of the committee, with the result that thousands of people were unable to obtain admission, the attendance being so great at times that it was necessary to stop the sale of tickets. Two hours before the show was scheduled to open the first night the crowds thronged every corridor and passageway in the hotel. The passenger elevators could not handle the multitudes, so the freight elevators were brought into play. The wonderful showing is even more remarkable when it is considered that very bad weather prevailed during a good part of the time.

Despite the unforeseen conditions, the members of the committee, prominent among whom are Renville H. McMann and J. O. Smith, handled the entire show with commendable skill.

Manufacturers and dealers from every part of the country were present with a diverse number of exhibits, some of which were very unique. The following is a list of those who had displays:

American Eveready Works
P. Andrea & Company
L. S. Broch Manufacturing Company
Connecticut Telephone & Electric Company
Chicago Radio Laboratory
Diamond State Fibre Company
Electrose Manufacturing Company
Experimenter Publishing Company
Formica Insulation Company
General Apparatus Company
Hudson Radio Club
International Radio Exchange
Jewett Manufacturing Corporation
Lexington Radio & Electric Corporation
Loyd Wireless Telephone Corporation
Nova Manufacturing Company
Westinghouse Union Battery Company
Acme Apparatus Company
Adams-Morgan Company
American Electro-Technical Appliance Company
American Radio Relay League
American Radio & Research Corporation
Clapp-Eastham Company
Continental Radio & Electric Corporation
R. U. Clark, 3rd

We don't quite understand what the idea of the transmitter is, but it does help the general effect of the picture. The receiving apparatus and the young lady were both on display at the New York Radio Show. We didn't dare try to claim, as did the Gotham newspapers, that Miss Gladys Wyville is in the act of sending a kiss by wireless.

Copper Clad Steel Company
De Forest Radio Telephone & Telegraph Company
Dreyfuss Sales Corporation
P. M. Dreyfuss Co., Inc.
George Fredericks
Freed-Eisemann Radio Corporation
Federal Telephone & Telegraph Company
The Globe
General Radio Company
A. H. Grebe & Company
Jewell Electrical Instrument Company
Keystone Wire Company
The Evening Mail
Manhattan Electrical Supply Company
Marko Storage Battery Company
The Modulator
William J. Murdock Company
Mills Radio & Electric Company
Pacent Electric Company, Inc.
Pres-O-Lite
Radio Audion Company
Radio Club of America
Radio Corporation of America
Radio Distributing Company
Radio Service & Manufacturing Company
Radio Topics
H. B. Shontz & Company, Inc.
Ship Owners Radio Service, Inc.
Shotton Radio & Manufacturing Company
C. D. Tuska Company
Wireless Press
Weston Electrical Instrument Company
Willard Storage Battery Company
East Side Y. M. C. A.
United States Army, Signal Corps
United States Department of Commerce, Radio Service

A review of the apparatus on display clearly showed the trend in the development of radio receiving apparatus. It points towards the efforts to produce a self-contained complete receiving set in cabinet form likened unto the present-day phonographs. There is little doubt but what the day is soon coming when every phonograph dealer will be carrying radio sets built into beautifnl cabinets, as well as combination console cabinets having on one side a standard phonograph and on the other side a built-in radio receiver, both employing the same sound box. A. H. Grebe & Co. had some very attractive looking instruments of this type on display. The Widdicomb Furniture Company of Chicago will next month place on the market eight different models of artistic cabinets into which sets can be readily installed.

During a good length of the show the American Electro Technical Appliance Co. operated a receiving set, bringing in the continual broadcasting

Mr. Herbert H. Hoover, U. S. Secretary of Commerce, proved himself the radio amateurs' champion during the recent wave length conference.

E. F. Glavin's radio controlled vehicle was, as usual, on hand at the show, and proved of intense interest to the multitudes. The biggest difficulty was in clearing a space in the crowd to operate it, without throwing some out of the hall.

stations, and by the use of two stages of audio amplification and two steps of power amplification led through a Magnavox were able to broadcast signals audible throughout the entire floor.

Paul Godley and his apparatus employed in receiving the Trans-Atlantic signals proved of interest to the visitors, as did the complete transmitter used by station 1BCG. The New York Globe and the New York Mail, daily newspapers, passed out sample copies of their papers, which are now devoting a large amount of space to radio. Both of these papers get out 24-page radio supplements each Saturday.

The DeForest Company, Ever Ready Battery Company, Electrose Insulator Co. and Formica all had nnusually attractive booth displays.

And, of course, no show would he a radio show without E. F. Glavin and his radio controlled vehicle, which he exhibited to those in the front line of the crowds surrounding a small circle which it was almost impossible to hold back. After the radio show on Friday night an exhibit of the vehicle was given at the Terrace Garden dance hall. Quite a party of notables accompanied the transportation of the car and the trip, which was made in an auto truck driven by some race track driver, who provided a thrilling ride, closely wrecking a number of cabs on the way.

A feature of the convention was the free-for-all championship speed contest of code reception. The winner was Jose M. Seron of the Radio Corporation of America, who resides at Mamaroneck, New York. He broke the world's record by successfully recording 49.5 words per minute with only three errors. Mr. Seron is from Chili and has studied English only nine month. B. G. Scntter, who made the record of 48.6 words per minute last year, came second with 49.5 words and four errors.

On Saturday afternoon a code speed contest was held for the women, which was won by Miss Ruby Yelland, who recorded perfect copy at the speed of 30½ words per minute. Miss Marion O. Chicken was second with 30½ words per minute and four errors. Radio Inspector Beane was a busy man during the five days, giving examinations, issuing licenses, calibrating meters and holding contests.

In spite of the large attendance at the show, the real amateur who goes around displaying his call letters and boasting of the work of his station, was quite conspicuous by his absence.

The gala affair terminated with a banquet Saturday night at the Pennsylvania Hotel, which was attended by some 800 people, who packed the banquet hall and its balcony. It started off with the regular banquet dinner, intermingled with songs and music. With the clearing of the tables J. O. Smith arose to signal for quietness and to present the speakers of the evening, at which point hundreds of miniature aeroplanes sailed majestically through the hall, performing every conceivable stunt. Each plane bore the inscription, "Just a plane above the others—RADIO TOPICS," and it was only a few seconds before

everyone in the hall was after one of them and then to shoot it on its way, with a rubber band for motive power. The many peculiar antics that some of the planes performed was indeed interesting as well as exciting, and some of the people in the balcony all but fell over the railing attempting to corral one of the planes in its flight. It was a regular riot for some minutes, until Mr. Smith's pounding gavel finally restored order. A number of speeches by men prominent in the radio field followed, and, together with further professional entertainment, brought to a close this very successful New York Radio Show.

Renville H. McMann, of the Federal Telegraph and Telephone Company, as well as the men assisting him on his committee, are to be heartily congratulated for their untiring efforts in making it the success that resulted.

The talk of the town as aftermath of the Radio Show at the Pennsylvania Hotel was the enterprise shown by Radio Topics in providing those novel toy paper airplanes for the amusement of the diners. Dignified men of the wireless equipment companies who were in the boxes vied with the schoolboys and amateurs in making the Topics flying machines do stunts.

This breezy exploitation was appreciated by the feminine contingent present and Mr. N. E. Wunderlich received much praise from young and old for his contribution to the night's entertainment.

Edward F. Glavin and his wireless controlled torpedo-shaped automobile was the big mechanical stunt of the Radio Show, but owing to the small space in which he was obliged to operate and demonstrate it, he was greatly handicapped in bringing out its possibilities. It is the model of future vehicles that might be used for numerous peace time purposes, according to Mr. Glavin's plans. It would enable a farmer to plow acres of his land on a rainy day without

Seven were entered in the woman's code speed contest. Reading from left to right they are Miss Abby Morrison, Miss Marianne C. Brown (3rd), Mrs. Eleanor C. Regan, Miss Ruby Yelland (1st), Miss Conia Soberg, Miss Marion O. Chicken (2nd), and Miss Beatrice W. Nathan.

leaving his house. He could just press the button occasionally and in the meantime go on with his indoor tasks or amusement. He could have a party of friends in a for a hand at bridge, rhummy or poker while he was operating the vehicle.

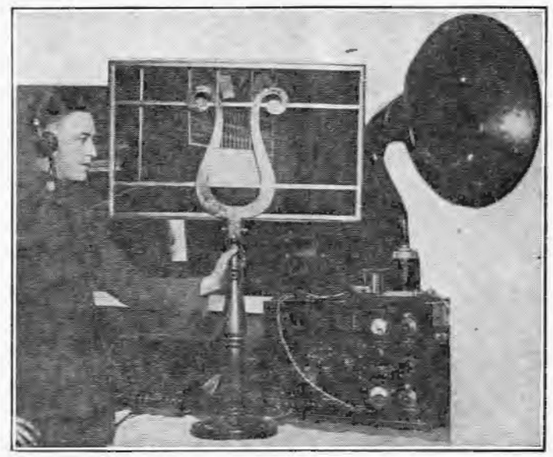
D. A. Bliss of the American Panel Company, Inc., of Cattaraugus, N. Y., managed to take in some of the musical comedies while he was on duty with his associates here for the Radio Show.

Arthur Freed, of the Freed-Eisemann Radio Corporation, of 255 Fourth avenue, city, had a busy week demonstrating the marvels of the "Marvel" receiving sets at the show. The firm's members are the inventors and sole manufacturers of this de luxe looking receiver. Mr. Freed displayed much good humor, despite the fact that he had to be a human information bureau for the throngs that assembled at his booth day and night. The young and old enthusiasts marveled at the "Marvel" and would have liked to see him take it apart and put it together again if their curious questions were answered in full.

H. Garity, who was in attendance at the booth of the De Forest Radio Telephone and Telegraph Company, wore his Tuxedo dress suit each night of the session and was often addressed as Mr. De Forest. And, by the way, Mr. De Forest was in Europe during the show and missed seeing the big crowds that thronged the booth. Messrs. Gilbert and Thompson were on hand each night to see that things went smoothly.

Thousands of radio fans with homemade or "boughten" sets for receiving broadcastings of concerts are overjoyed at the news that a permit has been granted for the erection of a wireless broadcasting station by the American Telephone & Telepragh Company. The station will be located on the roof of the twenty-four story building at Walker and Lispenard streets.

The bnilding is 350 feet high and the steel towers supporting the antennae or aerial will be 100 feet higher. Many novelties have been promised for this new broadcasting station. It will be equipped with the latest developments of the Bell System, including the use of electrical filters and new methods whereby several wave lengths can be transmitted simultaneously from the same point without interference.



A loop antenna in the form of a lyre was displayed at the show by Corp. C. A. Thompson with the Army Signal Corps exhibit.

Radio Station 9HY *of* Chicago

Station 9HY is located at 6027 Kimbark Ave., Chicago, Ill., and was completely designed and built by J. H. Jay and C. W. Clark

There is nothing like having a clean, neat-appearing station as has 9HY. Every piece of apparatus is handy and readily accessible. More stations should be built up in self-contained units.

A CW set using CW, ICW and MCW is the principal Transmitting unit, while a one-half KW spark set forms a secondary transmitting unit. Either may be used by throwing a switch.

The receiving set comprises a long wave tuner employing duo-lateral coils, a short wave regenerative tuner and a detector and three-stage amplifier. Either the long or the short wave tuners may be used by throwing a four pole double throw switch. Wave lengths of from 150 meters to 20,000 meters can be covered. The long wave tuner is made up of a triple coil geared mounting with two 43 plate variable condensers, the latter being a series parallel condenser. The short wave regenerative tuner is made up of the usual plate and grid variometers with douple tap coupler. Vernier variometers are used in series with the large variometers, which gives an adjustment much finer than a mechanical vernier. In tuning-in CW a complete throw of the vernier variometer dial is equal to but three white lines on the large variometer dials. The tuner is completely shielded with grounded copper plates. The long and short wave tuners are in identical mahogany cabinets and form a symmetrical layout with one above the other.

The detector and three stage amplifier unit is mounted in a large mahogany cabinet. A grid variable condenser and a 43 plate variable phone condenser are included in this unit, as is a 0 to 50 volt meter for giving detector "B" battery readings. A three way cam switch gives an off, "A" battery, and "A" with "B" battery positions. When set upon a low cabinet the above unit forms a complete symmetrical receiving unit with connections made by short nickel plated bars. There is no howling on three stages, as the amplifying transformers are spaced very far apart, the same being true of the tubes.

A small cabinet with one stage of radio frequency forms an intermediate unit between the short wave regenerator and the detector and three stage audio frequency amplifier unit. The plate variometer of the regenerator acts as the radio frequency air core transformer. In this same cabinet is also contained an "A" battery potentiometer.

As the complete receiving set occupies the entire length of the mahogany office desk upon which it is mounted, a provision had to be made for the key under the detector and amplifier unit. A low cabinet with

"The New York Radio Show was sure a good one, fellows, but I'm glad to be on my way home to Salem, Mass. Not near so many radio people there, but I don't want such awful crowds; just my Mama and my Daddy and our radio set."

Probably everybody is acquainted with F. Clifford Estey, owner of station 1AFV, at Salem, Mass., and general manager of the Clapp-Eastham Company. We'll miss our bet if this big son of his doesn't become as ardent a radio fan as his Dad and Mother.

a drawer and an arch opening for the key was made for the above unit which elevates it to the level of the other cabinets. The complete receiving assembly is mounted on plate glass, as is the key. A typewriter is enclosed in the desk ready for use by raising a portion of the desk top.

Brown adjustable and Baldwin phones are used. A loud speaker with large horn is used, which gives good volume.

Flanked on both sides of the desk are the transmitting sets, the spark set on the left and the CW set on the right. The transmitting units, like the receiving units, are made to fit into a symmetrical scheme of arrangement. A narrow mahogany table was constructed for the spark set, upon which was built a much smaller table arrangement for enclosing the muffled rotary gap. This smaller table, placed upon the larger table, is covered on the side next to the desk with mahogany, as is the top, while the front supports a switchboard. On the switchboard are mounted the antenna switch, a double pole, single-throw switch for throwing the key either in the spark set circuit or the CW circuit, another double pole single-throw switch for cutting in either quenched or rotary gaps, and a large Jewel 0 to 5 amp. thermo couple meter.

On top of the little table are mounted an Acme one-half KW transformer, a Thordarson oil condenser and a very large oscillation transformer. The oscillation transformer is supported over the transformer and condenser in a flat position by four legs. All insulation is very heavy and leads as short as possible. The rotary gap is designed to give the best results with the Acme nonresonant transformer, while an Amrad quenched gap with a line resistance can be used also.

The CW set uses four 5-watt UV 202 Radiotrons, which can be used in two different modulating circuits. Flexibility has been the keynote in the design of this set, and experience the chief adviser. The English circuit described by Mr. Whittier is used for the oscillating circuit, with a grid coil wound with No. 12 coupled inside of the antenna inductance. Either Heising constant current modulation, with two tubes as modulators, may be used, or four tubes may be used as oscillators, with a Magnetic Modulater for modulation. Four air-core honeycomb chokes are mounted in a bracket directly underneath the socket shelf, so that a choke is connected near the sockets to each

(Continued on page 28)

Just A Little *Radio* Jealousy

A Short Story *by*

EVALD A. SCHIVO

IF Vivian Durant intended to harass Harold Gayley by her installation of a wireless telephone, she was mistaken. The young man might have an inclination toward vengeance, but never under any circumstances would he feel annoyance. Although she might he the only girl he really cared for, he had no qualms because of his ability to best her. If she had delved into the intricate mysteries of radio telephony with the vivacious intention of bothering him, the outcome was her own concern. That a girl should even think she could outdo a radio man was preposterous, and to have her actually start the wheels to turning—absurd. Radio was for men, young men especially, not for girls. Harold was sorry for Vivian, but it was her own doing. He would do nothing to prevent other radio men from pestering her.

He listened for her voice, half expecting—and wishing—that she might not get the set in operation. A course of action had been decided upon: he would excel her to such an extent that she would discontinne the practice of radio in distress.

He waited. She had told him over the telephone line to expect her call. Eight o'clock, she had said; it was now eight-thirty.

The minutes passed. The young man only hoped that the entire night would pass in the same manner, but it was not to be: his name mingled among a dozen sparks awakened him from his reverie.

"Hello, Harold," the girl's voice greeted him. "Tune me in, please."

He adjusted his apparatus. In a moment her voice rang in his ears loudly. Surprised, he stared at his instruments as if they were live beings supposed to be dumb. The girl's test signals sounded as clear as a bell: her tone could not be surpassed if she spoken over any other phone in the city. No doubt some one had helped her with the difficult task of tuning a radio telephone transmitter. He had been prepared for a feeble scratching, or nothing; instead, the girl's signals were as powerful as his own.

"Hello, Vivian," he replied, half heartlessly. "How is my modulation?" He asked the question, hoping to frustrate her with a term often used in wireless telephone communication.

She seemed to know the meaning of the word. "Very good," came the laughing reply, "but, Harold, you don't seem very happy. Your modulation is somewhat different than when you talk with me over the telephone line. At least you might congratulate me. What's the matter, boy?"

"Nothing," he mumbled. "I'll call you later, Vivian. I have a few messages I wish to give a station in Vancouver. Please stand by for a few minutes."

"Certainly, if you prefer to talk with some fellow in Vancouver, go ahead," came the haughty reply.

Gayley intended to show her how natural a few messages could he spoken through a wireless telephone and picked up in the distant city. He was able to transmit a thousand miles with success. No other station had yet exceeded his record. That another amateur might do so was far from his mind. His apparatus had cost him a large sum.

"Hello, hello," he called, "Vancouver, Vancouver, answer, please. Gayley speaking."

No answer.

Again he called; he then listened. This time a voice greeted him.

"Hello, Gayley. Not very loud tonight; don't think I can get your messages if you have any. Too much static. Something to do with the aurora horealis coming on, I believe. Go ahead, I'll try."

Gayley groaned in dismay. Nevertheless, he slowly read off message number one. Number two and three then followed.

"Sorry," said the operator in Vancouver after Gayley had concluded, "I could get only a few words here and there. Try again. Conditions might be better."

"Vancouver, Vancouver," cried Gayley, incensed, "what's the matter? I can hear you the same as always and I am getting very little static. Here goes the messages again."

Gayley was vexed. The girl, likely, was listening to every word he said. Indubitably she was laughing at his inability to transmit the long distance successfully. If he must again repeat the message and fail a second time, ridicule would soon be forthcoming from the vivacious Vivian. He must live up to the praise he had given his set or—

He ground his teeth. He then very slowly and distinctly read the words of the three radiograms.

"Please acknowledge," he concluded, thinking that all the messages had been received without trouble as had those of previous date.

"Too bad, Gayley," came the words from Vancouver. "Didn't have much static that time and but little interference. Your signals, though, are a little weaker than heretofore. Shoot them through with the buzzer and I will have no trouble. Go ahead."

The Vancouver operator meant that Gayley should use a high-pitched buzzer instead of his voice.

Mr. Gayley, Harold's father, had a temper, and lucky for all concerned the gentleman was able to hold it in check under provoking circumstances. Harold had part of the temper, but not part of the check, in this case. If a third attempt failed him something was bound to happen. It was quite probable that his entire wireless set would be smashed to bits.

"Mr. Davis," began Harold, addressing the Vancouver operator, the young man paused, then went on: "I do not intend to use a buzzer as long as I have my voice. In the past you received me, static or no static, interference or no interference, and now you cannot. Either, Mr. Davis, your receiver is in bad condition or you are. Maybe I'm losing my temper, I have reasons to. Once again I'll read off those messages. You have my wave length, tune to it. Here goes."

This harangue was a little hard on Mr. Davis, more so because he had only heard part of it. A man that takes pride in his receiver does not like to be told it is not working properly. As fate would have it, Mr. Davis had heard every word in reference to his set, and if not the set, the operator of it. A man interested in radio, and one who had studied it for a number of years assiduously, is naturally a good operator. Gayley's words could mean one thing: the wireless receiver in Vancouver was inefficient or the operator was. Thus Mr. Davis, who made his own set, was affronted.

Gayley was excited, he had been from the first words with the girl he soon hoped to marry. A radio transmitter must be adjusted from time to time. Gayley forgot all about adjustments when he knew his Vivian was listening. His ampere-meter had been sadly neglected. After his cutting words to Mr. Davis he looked at it and was surprised to note that the current had dropped below normal. He immediately adjusted the flow.

Ashamed of his tirade he called Mr. Davis and a long apology followed. Many heard his words, but sad to state the man to whom the words were directed failed to hear them.

Needless to say, Mr. Davis would have nothing more to do with Gayley. He had been calling another station while the young man had been heartfully making his apologizing speech.

"Mr. Davis, Vancouver," Gayley called after he had received no acknowledgment.

"Please refrain from calling me," said Mr. Davis in answer. "I'll talk with more civilized people. That's all, good-by."

Gayley was far from comfortable. The only long-distance station he was able to communicate with had refused to exchange signals with him again. His apology, he thought, had been rejected. He suddenly realized the fact that Vivian had been listening in. What would the young lady think of him?

The young man groaned and looked disgustedly at his transmitter; he then grasped the transmitter and called:

"Vivian, Vivian, answer, please."

The young lady had been waiting

for his call for she came back with an answer immediately.

"Please stand by for a few moments, Harold," she said. "I have a few important messages for Vancouver." She laughed and, not waiting for a reply, proceeded to call the Vancouver operator.

"Mr. Davis, Mr. Davis," were her words as clear and distinct as before. "I have a few messages for you, please answer. Go ahead."

No sooner had she subsided than Mr. Davis replied.

"Certainly, young lady," he said graciously. "I will be mighty glad to oblige you. Where are you? Your signals are clear as a bell and on the same wave length as that reprobate in San Francisco. You sure have him beat ten times over. Go ahead, and I thank you for the opportunity."

"Thank you, Mr. Davis," responded the clear voice of the girl, "I am also in San Francisco. Here are the messages."

One after the other she read off the radiograms which Gayley had failed to transmit satisfactorily. When she had finished she asked Mr. Davis to please acknowledge.

"I did not miss a word," cried Mr. Davis enthusiastically. "All received, Miss, and may I hereafter give all my messages for San Francisco to you?"

"You may," laughed the girl. That's all now, I'll call you later. Good-by."

"Congratulations and good luck," came the parting words from Vancouver. "Good-by."

"Hello, Harold," the girl now called. "Were you waiting to reprimand me for transmitting your messages?"

No answer.

"Hello, Harold," she again called, laughing merrily.

Still no answer, for Harold was no longer at home. He had only waited to hear Mr. Davis congratulate. That she had intercepted his messages and then sent them instead of him was enough to do a little more than annoy him. How long would it be before she was talking with every fellow in the city and then some?

This was quite sufficient to send him post-haste to her home. He would either wreck her set or—

It was a foggy night. She lived within a mile of him. He had decided to walk and already his overcoat was as wet as the streets. This added to his already flaming temper.

Six months more and his college diploma would be within a frame. His thoughts raced with his rapid walking. For many months he had decided to make his graduation day also the day of his proposal, and now how could he do so if the girl he loved was to be the queen of the air, as she was bound to be if not already?

Street lights flickered dimly. What if the girl cared nothing for him? Supposed he damaged her set and she had him arrested? This was only a vague thought.

A few minutes' more rapid walking found him before her home. He quickly ascended the steps and rang the bell. A servant appeared.

"I would like to see Miss Durant," he said, controlling his vocie.

The servant recognized him and motioned him to enter.

"Miss Durant is in the wireless room," she said. "You may follow me."

The girl radio operator, Vivian, had already telephoned by line to Gayley's home and was told that he had left the house. It was no guess as to where he had gone. The servant had been told to show him up directly upon arrival.

"In that room," said the woman. She motioned him to a door which was slightly opened. The maid, perhaps with previous orders, left him to announce himself.

Gayley was on the verge of entering the room when the girl's voice stopped him.

"So your name is Harold," she was saying over the radio transmitter. "I like that name. No, I can't come, but I will call you tomorrow night, maybe. Good-by."

Gayley stepped itno the room.

"Vivian," he cried, "who were you talking with?"

"Why?" she demanded. "What difference does it make with you?"

The young man surveyed the shining radio apparatus at one glance. No wonder it worked with such perfection! He observed the powerful telephone transmitter and the numerous bulbs used as amplifiers for the receiver.

"Vivian," he cried, his eyes flashing, "either you promise to marry me after I graduate or I'll smash this set to smithereens!" He picked up a chair threateningly.

"My gracious!" cried the girl, "you are like a maniac. Please control your temper." She laughed excitedly.

"Promise," he bellowed, lifting the chair higher.

"Why, my dear boy," she said, with shining eyes, "my father gave me this set so that I would be on an equal footing with my future husband in radio knowledge!" Her eyes shone with happiness.

A light began to dawn. It was a little vague yet with Gayley, but he lowered the chair.

"You mean?" he asked.

"What else?" she inquired.

An Open Letter *on* Apparatus Deliveries

Editor Radio Topics
Gentlemen:

The Radio Corporation of America is endeavoring in every way possible to meet the unprecedented demand for radio devices, including vacuum tubes, broadcasting receivers and other equipment, which has recently met with much response, not only on the part of the amateur and experimenter, but also on the part of a great many people who are interested to equip their homes with suitable radio telephone devices for receiving music, concerts, lectures and other interesting features transmitted from radio telephone broadcasting stations.

The factories of the General Electric Company and of the Westinghouse Electric and Manufacturing Company, which are manufacturing such devices for the Radio Corporation of America, are now operating on a greatly expanded production program and it is expected that within the next few weeks considerable quantities of material will be shipped to us on orders already placed with the factories by the Radio Corporation. These will be delivered to our customers as rapidly as received in the warehouse.

Distributors are requested to communicate the above information to dealers and to inform them that orders will be filled by us just as promptly as possible. This applies to all classes of radio apparatus for which we are accepting orders, including Radiotrons, Vacuum Tubes, etc., which are employed for reception.

We believe that radio broadcasting is here to stay. The great opportunities for the sale of radio devices can, in our judgment, only be properly taken advantage of if all those who are interested in distributing and selling this apparatus properly equip themselves to handle this class of merchandise in a satisfactory way. This means that the dealer or whoever is effecting the sale to the consumer must familiarize himself with the product, explain its capabilities as well as its limitations and lend assistance in every way toward the proper installatiou and maintenance of radio sets.

Those who desire radio eqnipment and cannot for the moment obtain it, should be informed that the present shortage is but temporary and due entirely to the great demand which suddenly came as a result of broadcasting, and that the Radio Corporation and its associates, the General Electric Company and the Westinghouse Electric and Manufacturing Company, are doing everything in their power to produce the necessary apparatus with maximum speed; that normal production is expected to begin within the next few weeks and that deliveries will then be promptly made.

A new catalog covering all of the radio devices being manufactured for the Radio Corporation of America by the General Electric Company and the Westinghouse Electric and Manufacturing Company is now in course of preparation and it is expected that it will be available for distribution within thirty to forty days from date. This catalog will contain information of value to the wholesale distributor, the retail dealer and the ultimate user of radio apparatus.

We solicit your co-operation and at the same time ask your indulgence until we have obtained factory production which will enable us to meet the demand.

Yours very truly,
E. E. BUCHER,
Manager Sales Department.

The Efficient Portland, Oregon, Radio Station 7XG

THE transmitting set, which was designed and built by Charles Austin, president of the Northwestern Radio Mfg. Co., whose manufacturing plant and experimental station (call 7XF), is located at 1556 East Taylor street, Portland, Ore., consists of four 50-watt Radiotron power tubes, two being used as oscillators and two as modulators, the Colpitts oscillatory circuit and the Heising modulation circuit being used.

To supply the filament current an Acme transformer is used, giving 9.75 volts A. C. on the filament. The plate current is supplied by a Robbins & Myers motor generator set, the motor being a three-quarter horsepower single phase 110-volt AC direct connected to a special double-wound generator with a 72-bar commutator at which end, each generator being ¼ KW and giving far in excess of the 500 volts required. By connecting the two generator output leads in series a voltage up to 1500 volts direct current is easily obtained. A voltage regulation from 300 to 1500 volts is obtained by a 10,000 ohm Ward Leonard rheostat.

At the lower left hand corner of the transmitting panel is a drum switch control which is marked "Voice," "Receiving," "Off," "C. W." and "Chopper." When turned to "Voice" the transmitting panel is ready for the transmission of speech or music, for through the ingenious arrangement of the drum switch the filaments are lighted, the motor generator is started, furnishing current to the plates, and the set is in full working order. The same holds true when control is turned to C. W. or Chopper. When finished with transmitting, drum switch is always turned to receiving position, and apparatus is then ready for receiving. To the right of drum switch control, first, is the wave length control; second, the coupling control, and third, the condenser control.

The Weston meters on the panel, starting from left to right, are as follows: First, oscillator plate current milliameter; second, oscillator grid current milliammeter; third, radiation thermo-ammeter; fourth, modulator plate milliammeter; fifth, volt meter for plate current.

A chopper motor, 1/20 h.p. Westinghouse, with 900 cycle note, is used for I.C.W.

The receiving apparatus was designed and built by the Northwestern Radio Mfg. Co., being a short wave receiver, which consists of a plate variometer, grid variometer, variocoupler, primary inductance and primary condenser.

This handles wave lengths from 160-450 meters. The 450-900 meter range is obtained by shuntiug a fixed condenser in the secondary circuit. Connected to the short wave set is a detector aud 2-step amplifier of the same make.

For long waves from 600-20,000 meters a Colin B. Kennedy long wave receiver is used. Control of the wave length of this receiver is obtained by switches cutting in and out, wound banks of inductances, connected to this receiver is a Northwestern Radio Mfg. Company two-step amplifier. For use with either the short or long wave receivers is a large Magnavox and a three-stage power amplifier, which consists of three stages of 5-watt Cunningham transmitting tubes, each stage having two tubes in parallel. An 8-volt, 80 amp. hour Exide storage battery is used to energize the field of the Magnavox and furnish current to light the filaments of the power tubes. For the plate of the power tubes three banks of Everready dry batteries are used, each bank being 108 volts connected in series.

A 6-volt, 100 amp. hour Exide storage battery furnishes current to the filaments of the Cunningham detector and ordinary amplifier tubes, and two 43-volt Everready B batteries furnish current to the plates of the detector and ordinarp amplifier tubes. I speak of ordinary audio frequency amplifiers to distinguish them from the larger Magnavox Audio Frequency Power amplifiers.

The storage batteries are charged by means of a 75-volt 6-ampere General Electric Tungar Rectifier.

The transmitting and short-wave receiving aerial is of the "T" type. The flat top portion is 40 feet long aud consists of four wires equally spaced on 10-foot spruce spreaders. Each wire of the flat top portion is insulated at both ends with a Victor insulator. These insulators are 24 inches long and will withstand 100,000 volts on a wet arc test. The bridles are also carefully insulated at all points.

The long wave receiving aerial is a 7-strand No. 20 phosphor bronze single wire and is 350 feet long, with an average height of 70 feet.

The poles supporting the flat top portion are both 100 feet high and 70 feet apart, each pole weighing 3½ tons and are 22 inches at the base and 8 inches at top. These masts are one piece and turned true to on a lathe,

and there are no guys used whatsoever. They are bolted between concrete saddles with 1⅞ inch bolts and do not go into the ground, hence, will not rot at the base.

The lead-in consists of four wires brought together about 50 feet above the ground, forming a rat tail from that point to the instruments. The wire used is 7-strand No. 20 phosphor bronze. A 6-wire counterpoise made up of 7-strand No. 20 phosphor bronze wire runs parallel with the antenna flat top portion, and directly beneath the antenna, the wires being about 1½ feet apart and 70 feet long, and very carefully insulated. The counterpoise extends 15 feet beyond the antenna at both ends. This counterpoise is connected to the inductance on the transmitting set, being used in addition to the ground. This gives greater radiation, as it reduces the antenna resistance to a minimum. The transmitting set radiates 4 amperes on modulated voice and 5 to 5½ amperes on straight C.W., using two 50-watt tubes as oscillators. The lead-in insulators are 15½-inch electrose.

The ground system consists of four 60-foot strips of three-inch flat copper ribbon, buried about 8 inches deep, directly underneath the aerial; each strip being spaced two feet apart.

Two Magnavox hand transmitters for talking and three different types of head phone sets for receiving are used, the receivers being the Brandes Navy type, Western Electric and the Baldwin Mica Diaphragm phones. A jack box is mounted on the table so the three sets of phones can be used at the same time. Also the large Magnavox and power amplifier can be used either with the short wave or long wave receivers.

The instrument table is twelve feet long and three feet wide, the top portion of the table being made of spruce and shellaced.

The latest type of electric-driven Victrola with Magnavox tone-arm is used for transmitting phonograph music, and a Steinway grand piano with a specially constructed spruce tone chamber is used, for transmitting vocal and instrumental music.

The operating room is very large, being 17 feet wide, 30 feet long with 8½ foot ceiling, inside measurements, concrete construction; electric lighted with 100-watt lights and steam-heated; has large fireplace and floors are covered with many genuine Navajo Indian rugs. A Western Union Master clock with 60-beat second hand and a Bell private line telephone completes the station.

The Northwestern Radio Mfg. Co. are already figuring on building for this station a 250-watt tube transmitting set, using one 250-watt tube as oscillator, one 250-watt tube as modulator, and one 50-watt tube as a speech amplifier. Also the same company is going to build for this station an Armstrong Super Heterodyne Radio Frequency Receiver, which will have four steps of radio frequency amplification, this being in addition to two ordinary stages of audio fre-

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A Simple Receiving Set Easily Constructed

REALIZING that there is always a certain class who are more or less limited in their means when it comes to the purchase of radio apparatus and for those who desire to experiment with a most simple type of receiving set, the apparatus here described will prove fairly efficient and is quite easily and cheaply constructed. It will suffice for the reception of the broadcasting stations up to a distance of eight or ten miles. For receiving telegraph code it will work very nicely up to quite a distance.

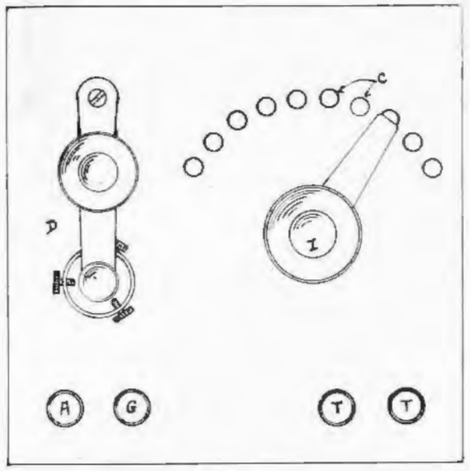

Fig. 1

In the construction of the set it will be necessary first of all to obtain a small panel of some insulation compound upon which to arrange the separate instruments as shown in Fig. 1. The dimensions of this panel should be about 5 by 5 inches.

Four holes are drilled, into which binding posts are placed. These are indicated by "A," "G," "T," and "T" in the diagram, and are for the connection of aerial, ground and telephone cord, respectively. The crystal detector is represented by the letter "D" and may be made up of a brass cup to hold the mineral which a post just opposite from which projects a spring strip of metal having a fine wire extending down to make contact upon the galena crystal.

The inductance switch lever is showing as letter "I" and is used to vary the number of turns of inductance in the circuit which incidentally changes the wavelength.

The inductance proper, shown in detail in Fig. 1, is an insulated compound or cardboard tubing, which should be about 3 inches long and 3½ or 4 inches in diameter, wound with 120 turns of No. 26 B&S double silk or cotton covered copper wire with taps taken off every twelve turns. The insulation at the end of the taps is scraped and the wire bared, after which it is attached, preferably soldered to the small contact points mounted on the front panel, in consecutive order.

The inductance coil may be securely fastened to the panel by employing wooden supports.

The instruments are connected up in the back of the panel in accordance with the hook-up shown in Fig. 3

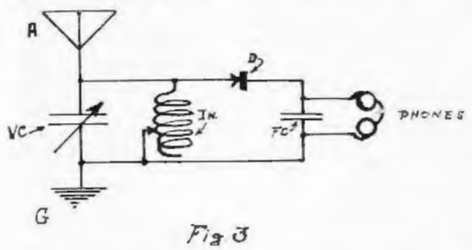

Fig 3

Connect post "A" to the cup of the Detector "D." From the other terminal run a wire to the outer binding post "T." Connect one free end of the inductance to the cup of the Detector. Then run a wire from post

(Continued on page 31)

The *Milwaukee* Amateur *Radio* Club

By C. N. CRAPO, President

THE Milwaukee Amateurs' Radio Club was founded in January, 1917, by L. S. Baird, A. C. Kletzsch, Jr., J. B. Hitz and Alonzo Pawling. In its pre-war existence it could have been characterized as the junior amateur radio organization of the city. This existence being one of but a few months, all the early members were drawn from but a limited section of the city.

Previous to the founding of the Milwaukee Amateurs' Radio Club two of the local high schools had organized radio clubs, and one or two other attempts were made to found local wireless clubs, but with one exception none endured long. This exception was the Milwaukee Radio Association, which at the time of the founding of the Milwaukee Amateurs' Radio Club constituted the senior radio association of Milwaukee. This association did not survive the war and period of government ban on amateur radio activities. Its post-war membership was absorbed by the Milwaukee Amateurs' Radio Club. Among these members were Robert Miregler, C. F. Bates, L. J. Prahl and L. A. Degner. The Milwaukee Boy Scout Radio Club was founded at about the same time, but existed for only a short period, while its members were receiving instruction in elementary radio from a member of the faculty of the School of Engineering. Some of its members joined the Milwaukee Amateurs' Radio Club.

In the spring of 1919 and shortly after the government ban on amateur radio activities was removed, a meeting of the Milwaukee Amateurs' Radio Club was held and plans were made for the coming club season of 1919-1920. A careful survey of the city was made and a list of all amateurs was compiled. This list was the nucleus of the complete record of all amateurs in the city that the club now keeps. The trustees' room of the Milwaukee Public Museum, which has a seating capacity of about one hundred, was secured as a hall for the club to convene in.

At the first meetings in the fall of 1919 a new constitution was adopted and officers elected and installed. The officers were L. S. Baird, president; C. N. Crapo, vice president; R. A. Teschan, secretary; T. V. Weston, treasurer, and R. A. Pelishek, business manager. Others prominent in the direction were C. S. Polacheck, C. M. Prinslow, A. C. Kletzsch, Jr., and A. B. Lord.

The club became affiliated with the American Radio Relay League, Inc., and L. A. Degner, a member, was appointed city manager. Many other events, both business and social, took place this year.

The club opened the season of 1920-1921 with L. S. Baird, chairman of the board of direction; C. N. Crapo, president; A. B. Lord, vice president; Louis Heyman, secretary, and E. W. Ruppenthal, treasurer and business manager. Mr. Crapo succeeded Mr. Degner as city manager for the American Radio Relay League, Inc. Meetings were held this season in a lecture room in the Old Insurance Building, obtained through the courtesy of the School of Engineering of Milwaukee. The Milwaukee membership of the now defunct Wisconsin Radio League, which had been founded by M. B. Grogan and R. F. Laidlaw, was absorbed by the club. Mr. Grogan became the Milwaukee Amateurs' Radio Club's publicity manager. Before the organization of the Milwaukee Radio Executive Council, the club became affiliated with the Chicago Executive Council (Radio). The "Chicago Plan" for control of radio traffic was adopted and enforced first by the club and then by the Milwaukee Council. It was through the efforts of the leaders of the club that the Milwaukee Radio Executive Council was formed. This club and several others are represented in the council. The season was closed by a successful social and dance held in the dining room of St. James' Episcopal Church.

The season of 1921-1922 was opened with the following officers: L. S. Baird, past president; C. N. Crapo, chairman of the board of direction; D. J. Gellerupt, president; H. F. Wareing, vice president; L. W. Klingbiel, secretary, and E. W. Ruppenthal, treasurer and business manager.

The club meets weekly at 8 o'clock on Monday evenings, except the third Monday of each month, in the trustees' room of the Milwaukee Public Museum. Visitors and prospective members are welcome at all meetings. At meetings when outside speakers are not present, members present papers and informal discussions take place. Previous to the hour of opening the meeting, half an hour is devoted to code practice for those that desire it. Members are encouraged to present before meetings both radio traffic and technical problems. It is the hope of the direction of the club that in the near future a plan will be inaugurated where by a certain period of the meetings will be devoted to giving instruction in elementary electricity and radio communication.

This year the club has embarked on an extensive lecture program. An attempt has been made to secure from the ranks of employes of Milwaukee's electrical industries a number of men who could lecture on some subject that has points in common with radio communication. Some of the lectures that have been given and some that remain to be given are: December 8, 1921. "The National Electrical Code and Its Application to Radio Signaling Apparatus," by A. C. Schultz, Electrical Inspector, Wisconsin Inspection Bureau; January 23, 1922, "Serving the Radio Amateur," by W. S. Wilder, Sc. B., E. E., Electrical Testing Division, the Milwaukee Electric Railway and Light Company;

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Complete Report *of* the Washington Conference on the Reassignment of *Wavelengths*

Offers a Working Schedule of Wave Length Allocations Which It Is Hoped Will Solve Problems of Use of Ether for Radio.

WASHINGTON despatches indicate that the radio conference has come to certain broad conclusions as to the use of the wireless telephone and the allocation of wave lengths.

Broadly, the committee seems to have determined that amateurs shall continue to operate under 200 meters, except in cases where they are carrying on experiments similar to technical and training schools, in which case they may be permitted to go up to 275 meters.

The further recommendation that all wave lengths under 6,00 meters be set aside in a general way for use of the telephone, except in such lengths as have long been fixed by custom for telegraph service, as the "SOS" call, is extremely interesting, as indicating that the conference considered the easy public use of the radiotelephone of paramount importance. Since the band of lengths which are at present available are extremely limited, it is of the utmost importance that the users of the telephone be granted as many as possible. The telegraph, being so much more flexible, may be trusted to utilize the more difficult air channels.

The committee added that it hoped that ultimately the telephone might be given as its exclusive right all wave lengths from zero to 4,000 meters; in view of the current progress in such communication, it seems quite likely that before a year is out these maximum and minimum figures will be available, hence bringing into use a far greater number both of receivers and transmitters with the greater number of available paths for simultaneous use.

Paul Godley, who represented the Amateur Radio Relay League at the conference, said:

"Whether at peace or at war, no nation could possibly possess a greater asset than a large body of radio amateurs—practical young scientists in diligent pursuit of the last word in communication. The story of progress in our lifetime is one written by communication methods. The high spots in our progress during the next decade is now being written by radio telephony and telegraphy.

"A few short months ago the world at large, as represented by the great general public, knew very little concerning radio communication methods. As the result of a great love for their hobby, radio amateurs have so perfected these communication methods as to demand the attention of the entire world.

"A few short months ago only America in the least degree encouraged operation of amateur radio plants. American radio amateurs have rapidly forced all the great nations of the world, as a matter of self-interest and self-preservation, to initiate a policy of encouragement for this sort of work. And now we see Holland taking every advantage of

Various members of the Washington conference on Radio Wavelengths seen leaving one of the meetings

radiophone broadcasting. Mexico, our troublesome neighbor, follows suit with a similar policy. South American republics all are greatly interested in the possibilities of this wonderful thing, and but recently, to the great surprise of amateurs in America—and needless to say their delight—the republic of France has legalized amateur transmitting and receiving stations in a thoroughly worth-while fashion.

"This points unmistakably to that time—now almost here—when the free exchange of private radio communications between the citizens of all lands will occur at more or less regular and frequent intervals. Ready communication is the bond of a nation. This sort of communication will prove a real world bond, too. America may well be proud of the accomplishments of her thirty thousand radio amateurs."

That the conference agreed with Mr. Godley in principle was evident from the moment of Secretary Hoover's keynote speech. Whether the measures to be adopted will prove satisfactory is generally agreed to be a matter of test and experience.

The allocation of wave lengths seems likely to follow the plan outlined some time ago. After the amateur bracket will probably come the broadcasting stations, which will remain at 360 metres, the most accessible position; then ships, with the S O S call at 600 metres, up to the commercial long-distance work above 1,700 metres.

The complete allocations recommended are:

Reserved for experiment below 150.

Amateur, exclusive, up to 200.

Technical and training schools, up to 275.

City and state, public safety broadcasting, 275 to 285, exclusive.

Restricted special amateur radiotelegraphy, non-exclusive, up to 310.

Private and toll broadcasting, exclusive, 310 to 435 (360 will probably continue to be the standard, however).

Aircraft radiotelegraphy and telephony, exclusive, up to 500.

Mobile radiotelegraphy, up to 525, exclusive.

Mobile radiotelegraphy, up to 650, non-exclusive.

Government and public broadcasting within a radius of 700 miles inland, 700 to 750.

Radio compass, up to 850, exclusive.

Aircraft radiotelephony and telegraphy, up to 950, exclusive.

Radio beacons, up to 1,050, exclusive.

Government and public broadcasting, general, up to 1,500, exclusive.

Aircraft, radiotelephony and telegraphy, up to 1,500, exclusive.

Fixed stations, up to 1,650, non-exclusive.

Government broadcasting, 1,850 to 2,050, non-exclusive.

Mobile service, 2,500 to 2,650, non-exclusive.

Fixed service radiotelephony, 2,850 to 3,300, non-exclusive.

Trans-oceanic rediotelephone experiments, 5,000 to 6,000, non-exclusive.

It will be observed that several brackets have not been assigned. These will eventually be given out in the discretion of the department of commerce as the need for them arises.

Elevated Roads to Adapt Radio

IF the present plans of the Chicago Elevated Railroad do not miscarry, the patient strap-hangers will gladly pay the present fare without any murmur and be willing to donate an extra dime or two for the privilege of riding on the elevated. The elevated is figuring on installing a radio system on its lines and furnish its passengers with songs, music, and even grand opera on their way to and from work. Not only will the passenger be entertained, but it will be possible for you to call your home while in transit and order your meals. The first trial of the radio was made on a Chicago, North Shore and Milwaukee electric line yesterday. A dozen pretty girls from the offices of the line danced with the road officials to the strains of music transmitted from the radio station on top of the City Hall. They were also able to carry on conversation with the chief of the fire alarm system in Chicago, and every test proved eminently successful.

RADIO REACHES BROADWAY THEATER

A radiophone concert tested acoustics of a Broadway theater in New York City for the first time on the night of March 26, when the program from the Newark, N. J., station was received and amplified by the courtesy of the Winchester Company, 47 East Forty-second street, at the Sam H. Harris Theater.

The concert and demonstration were arranged for the benefit of the Convalescent Home for Veterans, which is called the "Rest Awhile Buddie Camp" and the tickets were sold for from $2 to $5 each, just as if it were a high priced Broadway cast giving the show.

All the local radio clubs joined in with the women of the Flora McCloy Unit Women's Club of the Service Flag to make the affair both a radio and financial success.

RADIO DANCE FOR BOYS' CLUB

To raise funds to add valuable parts to their already well assembled equipment, the members of the Hndson Radio Club will give a radio dance on the night of April 21 in the Leslie Hall, this city. The music for the dancing will come through the air from Newark, N. J., broadcasting station, where the Century Dance Orchestra will play the dance program after 9 o'clock.

Miss Abby Putnam Morrison, the New York society girl, who is the only licensed U. S. naval operator and who served as an inspector of radio on board ships for the government during the war, is boosting her Woman's Amateur League of America, Inc., which is akin to the Amateur Radio Relay League.

Her efforts to have chapters of the national organization in Chicago and other cities will mean an increased demand for radio equipment. Dealers in the Middle West who know of the nucleus of chapters among the girls and women of their towns may help the thing along by sending the names of prospective clubs that would be interested in becoming allied with the league to the office of Radio Topics. All letters of application will be forwarded to Miss Morrison, who will accept the chapters and add to the strength of the organization, which aims to relay the messages of its members from Gotham to the Golden Gate.

Paul F. Godley, who was under a nervous strain all week, was on the sick list, too, last week at his home in Montclair, N. J., but was out on the job just the same. Hiram Percy Maxim was too ill with an infected finger to attend the dinner and Edward H. Armstrong, the inventor, also joined the sick list before dinner hour.

John Di Blasi, of the Continental Radio and Electric Corporation, of 6 Warren street, remarked the other day that in pre-Volstead times some persons measured the enjoyment of a banquet by the sore heads they had in the cold gray dawn of the morning after the night before. Maybe that explains why the energetic John did not show up at the office the next two days after the Radio Show. Anyhow, even if nothing stronger than aqua Croton was in sight on the tables there is a strong suspicion that somebody had something on the hip at that table, even if John was innocent.

Hutchinson, Kan., Board of Trade to Buy Set to Get News

Heavy rains which have deluged Kansas, resulting in the severance of wire communication with many towns, has inspired the members of the Hutchinson, Kan., board of trade to pool $2,500 with which to purchase a high-powered radio station. According to an Associated Press dispatch, the set will have a receiving radius powerful enough to pick up messages from Eiffel tower in Paris, to get the news on the bourse in Paris and other faraway stations. The reports of the Chicago board of trade, sent every half hour by radiophone, can be received by the Hutchinson station when it is put in operation. The sending range planned by the Kansans will be several hundred miles.

Coincident with the Chicago board of trade's establishment of radio market report service the Omaha grain exchange instituted a similar service, sending ont tbe messages at 9:45, 10:45 and 11:45 a. m. and 12:30, 1:30 and 8 p. m. The Kansas City board of trade also has established the same service and the Wichita board of trade and the Minneapolis chamber of commerce are now considering the broadcasting of quotations.

A few weeks ago, when the severe sleet storm in Wisconsin destroyed telegraphic and telephone communication, isolating many towns and making the operation of trains and the publication of newspapers difficult, Emmett A. Platten of Green Bay, formerly wireless operator on the ill-fated Eastland, established communication, dispatching trains and keeping the local papers supplied with wireless news from the Associated Press.

Radio fans have a Greek letter fraternity of their own, called Rho Delta Omega, which, when reduced to its symbols, reads R D O (not a far cry from Ray-dee-oh). The headquarters of the new fraternity are at 644 East 15th street, Brooklyn, N. Y. Announcement is made by officers of the organization that experienced men with wireless interests who wish to form chapters of the organization may communicate with the organization.

A *Short Wave* Regenerative *Receiver*

Easily Made in This 150 to 600 Meter Set, Fitted With a Tickler Coil for Amplification.

NOW that the experimenters are getting on the scratch line for the long distance, short wave work for which everyone is preparing, every man wants a regenerative set. There is a certain amount of choice between various circuits in use at present, but if the majority favors the type using no condenser in the secondary, it is probably because the manufactnrers have specialized on it.

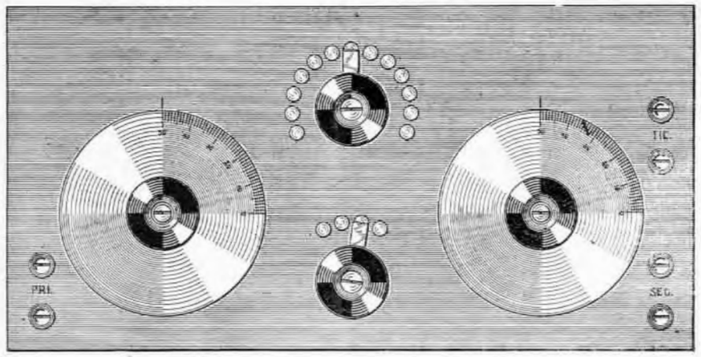
While we are on the subject of the variometer-tuned secondary set, it might be well to clear up a question that seems to lurk unspoken in the minds of many experimenters—a sort of skeleton in the closet question, ignorance of which no one wants to admit. "What does the secondary variometer do? How can it tune the circuit to a given wave-length, when there is no capacity in the circuit?" Yet the variometer does tune, and very sharply.

The answer is simply this: The condenser effect between the grid and filament furnishes the capacity, a small amount, about 0.00002 mfd., but enough to make the secondary circuit oscillatory. To tune to 300 meters with such a capacity, requires only 1.3 mh. inductance.

Because the tube is depended upon to furnish the capacity, a large variation in inductance is required to cover any considerable wave-length range. Since only a part of the inductance is adjustable, the balance acting as the coupling coil, the variation of the inductance and, consequently, the wave-length range, is quite limited.

Therefore, to make the set of wider utility, the equipment described in this article is designed to operate with a 0.0005 mfd. variable condenser in the secondary circuit.

Again, a straight tickler coil is employed instead of a tuned plate circuit. The reason is a constructional one. A tickler is much easier to make than a variometer.



General Description

Figs. 1 and 2 show the front and rear of the receiver, mounted on a panel 5 by 10 by 3/16 ins., with a complete circuit in Fig. 3. In the primary the thirteen taps give a wave-length range, with a 0.0003 mid. antenna, up to 600 meters. On the first secondary tap, a 0.0005 mfd. condenser will give a range of approximately 150 to 450 meters, and on the second tap, 250 to 700 meters. Thus the set is adapted not only to 200-meter work, but to the reception of 600-meter commercial stations as well.

In the plate circuit of the audion the tickler is connected, preferably with a 0.001 mid. fixed condenser around the telephones and B battery, although this is not shown.

The Primary Coil

A tube 3½ ins. in diameter and 2¼ ins. long is needed for the primary coil. This is wound for 1.7 ins. with 20 No. 38 high frequency cable, giving 38 turns per inch, or a total of 65 turns. These are tapped as follows:

Tap 1	15th turn	Tap 8	40th turn
Tap 2	18th turn	Tap 9	45th turn
Tap 3	21st turn	Tap 10	50th turn
Tap 4	24th turn	Tap 11	55th turn
Tap 5	27th turn	Tap 12	60th turn
Tap 6	30th turn	Tap 13	65th turn
Tap 7	35th turn		

Two methods of tapping can be employed. One is to wind the coils without taps. Then mark with ink where the taps should be. Unwind the wire, scrape at each marked point, and solder on leads. The other way is to bring out a loop for each tap, and tie a knot in the loop. This holds the wire securely at the tapping point while the coil is being wound. When the work is completed, the loops are cut to the proper length and soldered to the switch points. A better method is to make short loops, and use No. 14 bare copper wire leads to the points and other connections.

Short, threaded brass pillars or angles of ½ by 1/16 in. brass strip can be used to mount the primary tube. This must be accurately and securely fixed. Otherwise, because of the small clearance, the secondary coil will touch the primary tube.

The Secondary Coupling Coil and Tickler Coil

The construction of the secondary coupling coil and tickler are identical, both as to the method of mounting and the size of the coils. The tubes are 3 ins. in diameter, and 1¼ ins. long, wound with 20 No. 38 high frequency cable. Each section is ⅜ in. long, with a separation of ¾ in. between them.

If the bearing at the panel is carefully made, no rear support will be required for the shaft of either the coupling or tickler coil. For each coil, two brass washers, ¾ in. in diameter and 3/16 in. thick, are cut and threaded at the center with an 8/32 tap. The brass shaft, of 3/16 in. rod, is threaded at one end for a distance great enough to take one washer, the adjusting knob, and a nut to clamp the handle against the washer. Then, from the other end, the rod is threaded to within the thickness of the panel from the other threads. The washer under the handle bears against the front of the panel, while the other washer bears against the rear, leaving the unthreaded part of the rod to run in the hole in the panel. A lock nut holds the rear washer in place, and maintains a small amount of friction.

Two sets of nuts hold the coil in position on the shaft. Leads, run in Empire or soft rubber tubing, can be wound around the shaft and brought off to the terminals.

Secondary Loading Coil

The secondary loading coil, in series with the coupling coil, provided coupling to the tickler, independent of the primary-secondary coupling. The tube is 1¾ ins. long by 3½ ins. in diameter, wound for 1 in. with 20 No. 38 cable. Starting at the rear end near the tickler, a tap is taken off at the tenth turn and connected to the first point of the secondary switch, as can be seen in Fig. 3.

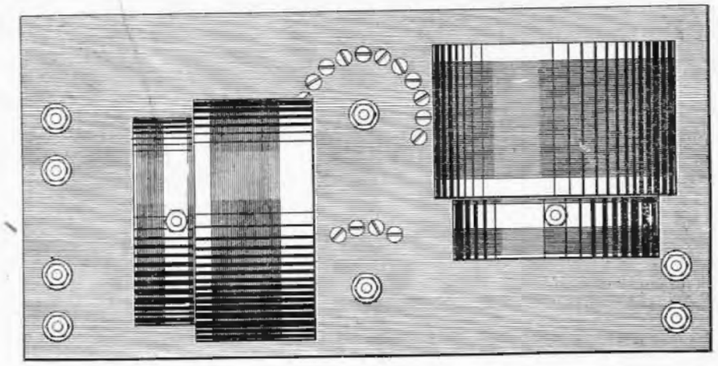
This coil should be mounted in a manner similar to that used for the primary. With this coil completed and in place, and the set carefully connected with No. 14 bare copper wire, all joints soldered, the set is ready for use. A condenser, mounted as shown in some of the preceding articles, and a vacuum tube mounting, complete the set. If 5 by 5 in. panels are used for the audion and condenser, the set can he made up neatly with the 5 by 10 in. panel below, and the two smaller ones above.

OPERATION

Tuning in the primary circuit, accomplished by the 13-point switch, will be found quite sharp. The secondary condenser, giving a facile control over a considerable range, saves just the amount of time which, with a receiver less easy to handle, causes the loss of a call. The coupling to the primary is usually made tight for listening-in, and loosened for sharp tuning.

If the tickler leads are of the correct polarity, regeneration can be readily adjusted, and will need practically no changing from 200 to 600 meters, another advantage over the tuned plate circuit which must be fixed for each sginal.

Complaints about poor operation can ofted be traced to wornout B batteries. When anwthing goes wrong the plate batteries should be examined first of all.



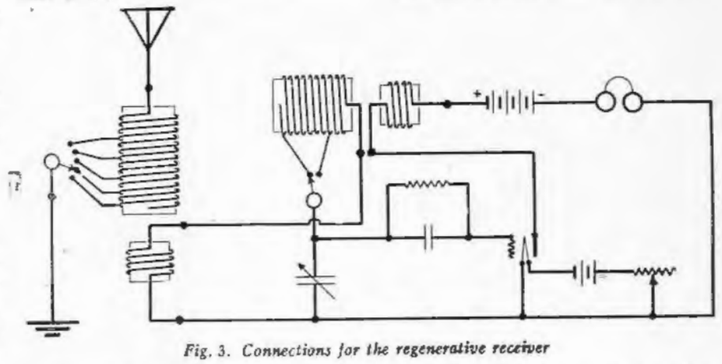


Fig. 3. Connections for the regenerative receiver

In Phantom's Grasp

Mr. Beck hasn't a radio receiving set. Still he gets messages sent through the air at night, he says. The silence of his bedroom is continually interrupted with lectures, music and other things transmitted by radio. One night, he said, he awoke as in the grasp of a phantom. A crackling noise greeted him. A cold chill ran down his back and something clutched him with unconquerable grasp. He had been shocked by the wireless thing, he said. He moved to Chillicothe, but the radio "bug" followed him and continues to disturb his peace of mind, he said.

Radio authorities here say his bed springs, an ideal wireless aerial, may have attracted the signals but cannot account for the reception of signals without a receiving set. Can Mr. Beck be afflicted with a strange case of radiophinitis? Can a new disease be spreading through the country now that the air has become so filled with wireless broadcastings? Peorians who have heard of the strange case wonder.

CANADIAN NOTES

(By Canadian 3BP)

1GM is reported QSA here.

3BP blew his P tube and is still talking to himself.

4CB is pounding away on his CW and working California stations with his three watters. He has test with 3BP, which should amount to something.

Toronto is bothered with spark coil QRM.

3GE is doing good work.

3EI has made some changes and is stepping out.

3FO has also been doing better.

9AL and 9AW burned out their large tubes and are using 5 watters for a while.

9AL has a schedule with 8ANJ in Niagara Falls.

2BF is still off account of sickness.

2BG is, however, doing good work in his place.

A *Radio* Frequency Amplifier *Without* Transformers

High Efficiency and Freedom From Limiting Resonance Effects Are Characteristic of This Amplifier Which Also Cuts Down Interference.

ALL things considered the tuned impedance coupling is the most satisfactory for experimental radio frequency amplifiers. The principle of this arrangement is illustrated in Fig. 1, and a complete circuit for the apparatus to be described is given in Fig. 2.

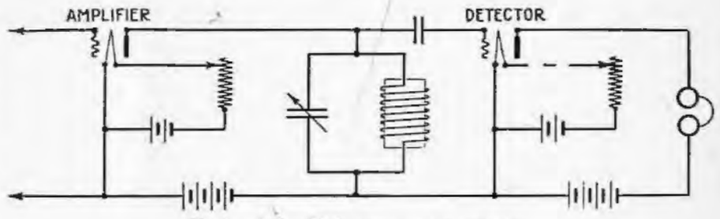


Fig. 1. A simplified circuit of the amplifier

It can be seen that a condenser and inductance are connected in parallel across the plate and filament of the amplifier tube, and across the grid and filament of the detector tube. It is well known that, in a series circuit, the impedance is zero when the circuit is tuned to resonance with the alternating current flowing through it. In a parallel circuit, such as that in Fig. 1, the impedance at resonance is infinite.

At the same time, the direct current resistance through the inductance is only 3 or 4 ohms, so that the full voltage of the battery is applied to the plate.

The necessity for tuning the coupling circuit is an advantage in that interference is reduced, but, when several stages of radio frequency amplification are employed, the tuning of so many circuits makes it impractical.

However, this single step radio frequency amplifier has several distinct advantages. In the first place, it is cheaper than a single step audio frequency amplifier, containing only a coil and 0.0005 mfd. variable condenser, and particularly at long wavelengths is easier to make function at maximum efficiency. If well made, this amplifier should produce nearly as loud signals as the usual audio frequency transformer coupled type.

Using only one step, this set is better than the resistance coupled type, which requires an extra potential battery, or the straight impedance and transformer coupled amplifiers which have such resonance effects that they must be designed for a limited range of wave-lengths, and cannot be made readily by experimenters.

Construction of the Amplifier

The set described in this article is for the B-C wave-length range, that is, from 200 to 2,000 meters. (See page 116, Everyday Engineering, November, 1919.) Fig. 3 shows the front of panel, with the inductance and condenser controls, and Figs. 4 and 5 the side and rear views.

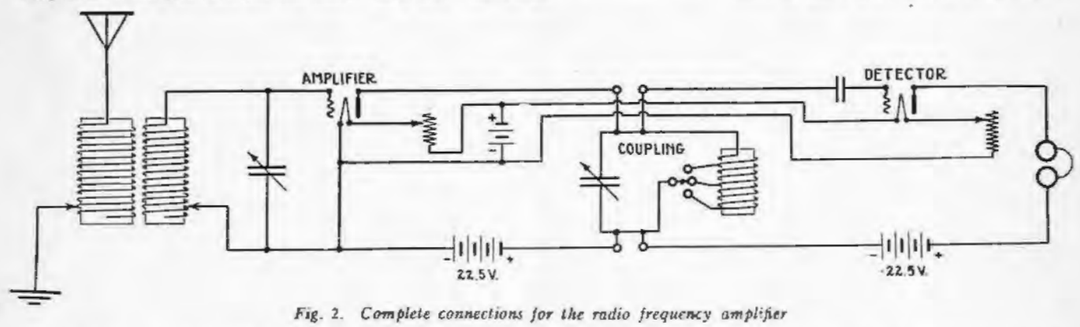


Fig. 2. Complete connections for the radio frequency amplifier

The Condenser

Any condenser of 0.0005 mfd. maximum capacity can be used, although one of the General Apparatus type is indicated here. A Corwin dial, fastened to the panel by means of two small machine screws, is well suited as an indicator.

The pointer is simply a ⅛ in. brass rod, slotted at one end and threaded at the other. In the slot, a piece of No. 30 brass sheet is soldered and filed down at an angle corresponding to the beveled edge of the dial.

For this particular condenser, the knob is made with a hole drilled part way through it of a diameter to take the shaft. Then a smaller hole is made the rest of the way to take a 6/32 screw which is threaded into the end of the shaft. In this way, the handle is held securely in place.

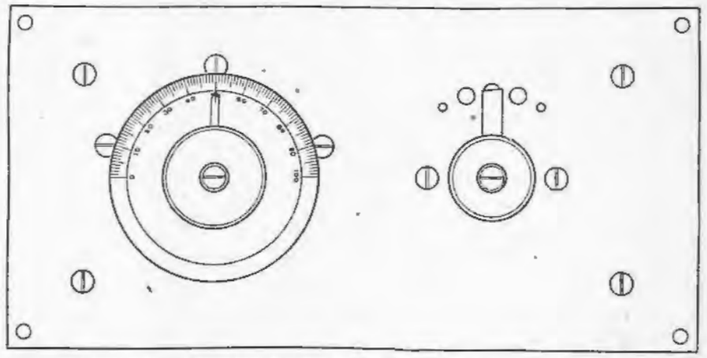


Fig. 3. There is nothing difficult about the construction of this set.

The Inductance

The inductance is clearly shown in the accompanying illustrations. It is made up of a two-bank winding of 10 in. No. 38 high frequency cable, on a tube 3½ in. in diameter and 2¼ in. long. Looking at the panel from the rear the coil is started ⅜ in. from the right-hand end, and is tapped at the 27th and 58th turns, ending at 135 turns. This makes the coil 1.5 ins. long, with the taps 0.3 and 0.65 in. respectively from the start.

Operation

There are two ways to use this amplifier. The first requires at least an approximate idea of the wave-length adjustments of the primary and secondary tuning circuits. Then, at various settings of these circuits, the amplifier can be quickly tuned to the same wave-length.

This probably sounds worse than it really is, for, with only three taps on the inductance, the amplifier is easy to tune. If the amplifier is to be used for 200-meter traffic only, the inductance can be reduced to only 27 turns. In that case, only the variable condenser will need adjusting.

The other method, used only when signals with the detector alone can be heard but are too faint to read, is to have a switch by which the secondary circuit can be connected directly to the detector for standby work, or to the amplifier for copying. This simplifies the amplifier tuning, for with the primary and secondary already adjusted, it is an easy matter to tune the amplifier to the other circuits.

This is a most interesting equipment, as well as being equal to or more efficient than a one-step audio frequency amplifier.

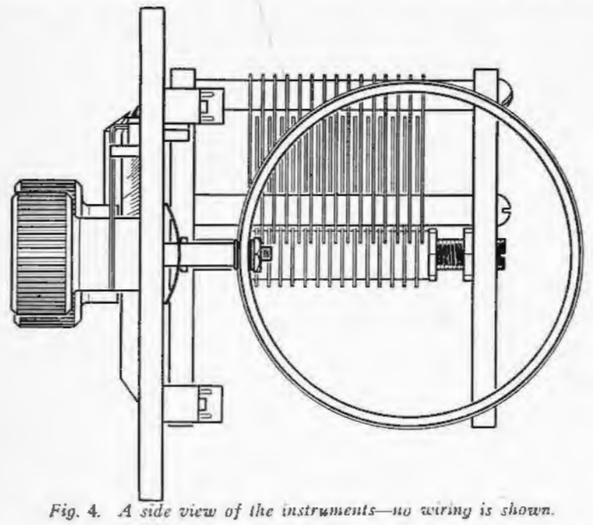


Fig. 4. A side view of the instruments—no wiring is shown.

Care must be taken that the turns are wound closely enough to give the required number in the given space, as errors in this respect will change the inductance coil. Forty-five turns per inch were allowed for the 10 in. No. 38 double silk covered cable. Single silk covering is not good, for with such slight protection over the fine enameled wires, they are too liable to be damaged.

The inductance at the three steps, when the coil is carefully wound, is 120,000, 500,000, and 2,000,000 cms. This gives a wave-length range, with a condenser of 0.0001 to 0.0005 mfd. of

Tap 1. 200 to 460 meters
Tap 2. 420 to 940 meters
Tap 3. 840 to 1,885 meters

As a matter of fact, the G. A. Standardized condenser has a maximum capacity of 0.0006 mfd., bringing the maximum wave-length up to 2,000 meters. By adding another section on the coil, the wave-length with 0.0005 mfd. could have been brought up to 2,000 meters, but this shortcoming did not seem to warrant the additional wire required.

Connections

Four Fahnestock clips are provided for connection to the other circuits. As shown in Fig. 2, the condenser and coil are joined in parallel, and wires run from each side to two of the terminals. One set of binding posts go to the plate and filament of the amplifier tube, and the other set to the grid and filament of the detector tube.

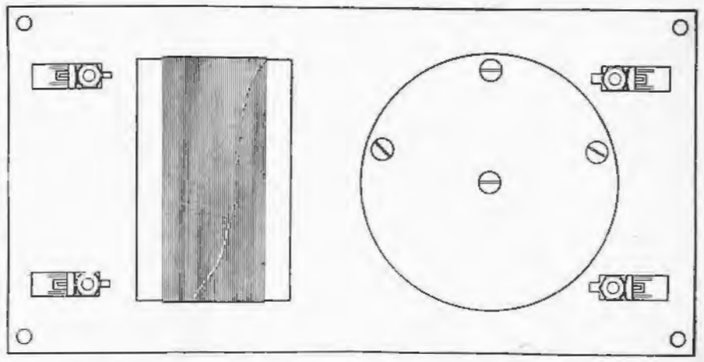


Fig. 5. A condenser and inductance are the only instruments needed.

Chicago Is Awarded Silver Loving Cup for 1921 Achievements

THE Chicago Executive Radio Council has been awarded the Smith-ARRL silver loving cup for having attained the greatest achievements and having made the most prominent advances in amateur radio during the year of 1921. The votes from the representatives of each district gave Chicago a total of 21 points and the chairman of the award committee, Mr. Kruse, states in his final report that it is his belief that the cup was justly awarded and that the Chicago organization without a doubt produced the outstanding developments in amateur radio during the foregoing year.

Chairman A. D. Lasker of the United States Shipping Board plans the installation of radiophones in every ocean cabin as a result of the recent successful tests between the S. S. American and the New York land station.

It is reported that the Department of Agriculture will soon change over to the nse of radio telephoue instead of radio telegraph stations for the broadcasting of farm reports. It has been found that the farmers do like the idea of learning the continental code.

The further popularity of radio telephony was reflected in an advertisement appearing in a Philadelphia newspaper, in which a local builder announces that the $1,000,000 houses he is constructing will be wired for radio telephone service.

Radio station 3XM of Princeton, N. J., will suspend operation until next September. A fire occurred last month which completely destroyed the transmitting equipment. It is believed that the fire resulted from sparking caused by surges of high voltage current.

Recognition of the wonderful advances in radio telephony, especially in its connection with stock and grain reports, is given in the Grain Dealers' Journal, which devoted a full page to the subject.

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RADIO TOPICS is on sale the first Wednesday of each month. Manuscript and advertising forms close the 22nd of month preceding issue.

OAK PARK, ILL., APRIL, 1922

RADIO INTEREST AND THIS ISSUE

EVERY decided change has come over the entire radio field within the last two months, the manufacturers and dealers being just swamped with orders, new broadcasting stations going up every day, newspapers devoting one and two pages exclusively to radio and in some instances they are publishing entire supplements for radio. Thousands upon thousands of newly interested people are taking up radio.

It has become just as common to hear people on the streets, on the subway, street cars and elevateds talking about their radio sets as it is to hear them discussing automobiles. Some one recently made the remark that radio was now at a point where the automobile field was not so very long ago. And surely nothing has ever before swept the country and gripped the interest of every class of people as has this new advent in radio telephony. Never has anything been of such widespread attraction as to induce the daily newspapers to devote such space to it.

Everywhere people are clamoring for periodicals covering the subject so that they may read and learn. To meet this greatly increased demand RADIO TOPICS has taken decisive steps to put out a bigger, better and more interesting magazine that will appeal to all people. It is quite impossible to please everyone all of the time, but we can and will please the majority.

The editorial staff of our publication has taken on a number of expert radiomen who understand the field from every angle, whose duty it will be to produce editorial material above the average; correspondents in every section of the country are being recruited, our clerical force has been enlarged and our new printing plant and editorial offices will be the finest of their kind; an art department, subscription department, reportorial staff, and a nation-wide advertising organization will all combine to make RADIO TOPICS a better magazine for the benefit of reader and advertiser.

The cover of this issue will undoubtedly open a point for discussion pro and con. It is merely a test design suggested by our new art staff. The readers will confer a great favor upon us if they will let us have their candid opinion together with any suggestions as to our future covers. At the same time a discussion of the editorial contents would be very much appreciated. Realizing that many writers feel that their efforts are worthy of due compensation, announcement is made that future contributions will be paid for at space rate upon their acceptance, which we sincerely hope will bring to us many good articles.

BUSINESS CONDITIONS

WHEN the boom in the radio business struck the country new dealers sprung up over night like bootleggers when the prohibition act went into effect. From drug stores and barber shops to automobile dealers, they have all seen big possibilities and have written to the various manufacturers requesting dealers' information, with the result that the manufacturer has been literally swamped with correspondence.

We were present in the room of a certain sales manager of one of the manufacturers upon the closing night of the New York show, and he showed us a stack of business cards that piled almost a foot high, each card representing a new dealer who was interested in learning of this particular manufacturer's proposition.

The business field is without a doubt expanding by leaps and bounds. There is one very vital thing that many are overlooking—the fact that business conditions are very falsely inflated. One will ask, "How, why?" Says the dealer, "Why, if I had the material I could have sold $5,000 worth last week alone." We will take that situation as an example and set our stage in a fair size city. Say there are five dealers in radio apparatus in this city. Mr. Prospective Buyer with $5,000 to spend goes to dealer number one and is unable to obtain the desired instruments, likewise at the other four. Each of these five dealers orders according to the demand, and a survey of business in this city would appear to indicate a market for five times five thousand, or $25,000, this being only apparent, for in reality there is but the original five thousand, this being the only amount that could be sold when deliveries are made.

This is a condition parallel to that of the electrical trades but a short while ago, and in the same manner many radio dealers may find themselves stranded among a new situation. We do not wish to be pessimistic, for there is much business to be obtained and there will be more of it later on. We do, however, feel quite certain that two or three months will see conditions changed from a buyer's to a seller's competitive market. The persistent user of advertising space will then hold forth in the front ranks.

ORGANIZATIONS

PROBABLY one of the finest things in this world is organization, for it is the thing that really accomplishes great deeds. We learn that plans have been completed to organize a radio club in St. Louis for which they are carrying on a drive to secure at least one thousand members. Such a body, properly conducted, will be a splendid movement, for it will bring together all of the forces interested in the art and, working as one, they will be in a position to foster and promote great things in the radio field.

Just what organizations can do is suggested by the advancements in amateur radio by the Chicago Council, who have been awarded a large silver loving cup in recognition of their many successful attainments during the preceding year.

Newark Show Managers Prevent Actors from Appearing on Radio Telephone Programs

THE Theatrical Managers' Association of Newark, N. J., has voted that no artist in the employ of any of its members shall be allowed to contribute to any performances for the radio telephone broadcasting stations.

This stand was taken upon the grounds that the radiophone broadcasting offers direct competition to the theaters, and as such they desire such opposition. As Newark has one of the most prominent broadcasting stations in the vicinity of New York, they hope to hand a serious blow to performances.

The Aeolian Company has co-operated heartily with the broadcasting programs. This company, open to conviction and quick to grasp the possibilities of the growing interest in radio, for qnite a length of time solely furnished the entertainment in addition to an Aeolian phonograph and records gratis for broadcasting when a band in person or an artist could not be obtained. This information, to a large extent, discredits the assumption that is prevalent in phonograph and music publishers' circles that the radio interest will materially hurt their business. It is not very likely that the Aeolian people would be rendering this service for the radio interests if they thought it would curtail their own business.

The Aeolian Company has incidentally installed a time receiving set of its plant which it uses to signal its working whistles. As one of the employees has said: "Time ain't what it used to be."

The radio craze has been raging in Kansas City, and the question of show people lending their services for the broadcasting programs was covered in an article by E. B. Garnett, dramatic critic for the Kansas City Star. He said in part: "The wisest people in the commonly called show business are turning their eyes and ears to the possibilities of the radiophone. It is a subject that must instantly challenge every mind that houses whatever degree of intelligence is required to look into the future to look out for himself. Just now the performer, singer, player or composer who is a creator of music or elocutionary utterances might well consult a lawyer or someone versed in the drawing of contracts. The near future is very apt to offer great opportunities for any artist who can assist the purveyor of sound thru the air. Not only will concert and opera managers have to hold forth some inducements to performers in the way of royalties for air rights, but they themselves may be compelled to pay royalties to composers for music broadcasted by radio. The producers who are now finding wireless concert broadcast by commercial companies very profitable because of the unusual publicity accorded them soon may discover there is a boomerang attached to the radiophone. The air mak kick back.

"For example, the Star on Friday recorded several incidents where worthy young men and their mothers, who otherwise might have been at the Convention Hall for the symphony concert, remained at home and heard the music on their wireless sets."

Radio and Actor Fought For by Kansas City Papers

A meeting of the Theater Managers' Association was hurriedly called one day last month to consider the question of allowing acts to appear at the radio concerts being given by the Star and Post, daily newspapers of Kansas City, Mo.

The two papers were in a heated newspaper war with their radio entertainments and the managers were caught between the forces.

The climax was reached when the Post announced Trixie Friganza, headliner at the Orpheum, as its feature for Monday's concert.

The story goes that the Star immediately notified the Orpheum management that if Miss Friganza appeared for the Post the Star would throw the Orpheum advertising out. In return, the Post threatened the same thing if Miss Friganza did not appear.

She did not appear, claiming that it was out of the question, as she had orders from her managers not to do so. The Star used several acts from other houses for its Monday concert.

Within the last few months the demands for books on radio at the public libraries has resulted in a veritable run on their supply. One library which has 4,200 volues on this subject advises that they have a waiting list of over five names for each book.

Radio telephone service is to be installed in several of the largest apartment houses in New York as a result of tenants who wish to install receiving sets.

An estimate that seems almost improbable places the number of receiving sets iu Pittsburgh as one to every six homes in the city.

TRADE NOTES

The Chicago Radio Apparatus Company, formerly located at 508 South Dearborn Street, has removed to some very excellent quarters on the main floor at 415 South Dearborn street, Chicago. Every possible accommodation has been made for the purchasers and visitors.

Manhattan Electrical Supply Company's Chicago store has completed its remodeling and presents a most attractive appearance. The great demand for moderate-priced headsets

has resulted in the Manhattan Company placing upon the market receivers of their own product. The headband is designed for sanitation, being made of flat spring steel, rubber japanned with no covering. The sliding friction grip method of adjustment is employed. The case proper is flush on the back and the cord tips are concealed within the case. It is made in two types, 2000 and 3000 ohms.

The Telephone Maintenance Company, formerly located at 17 North La Salle street, has removed to more spacious quarters at 20 South La-Salle street. It is now jobbing a new loud speaker and a new "B" battery.

The Widdicomb Sales Company, manufacturers of the distinctive Widdicomb phonographs, will shortly place upon the market eight different types of cabinets into which receiving sets may be installed. Constructional details are such as to meet the exact requirements of the individual apparatus and are equipped with the Widdicomb amplifying tone chamber. Its offices are located at 327 South La-Salle street, Chicago.

The Allen-Bradley Company of Milwaukee, Wis., has just placed upon the market a new and unique type of rheostat, adjusting of current being obtain through the variation of pressure on a block of carbon pile blocks. Minute adjustments, impossible to secure with other types of rheostats, are possible with the new make.

We have authoritative advice that Harry C. Stutz, the Indianapolis automobile manufacturer of Stutz fame, has become strongly interested in radio sales and manufacturing.

THE MILWAUKEE AMATEUR RADIO CLUB

(Continued from page 13)

February 13, 1922, "The Theory of the Electron Tube," by R. C. Siegel, Sc. B., the University of Wisconsin, 1921; February 27, 1922, "Some Possibilities in the Development of Electron Discharge Apparatus," by Arthur Simon, member I. R. E., Electrical Engineer, Cutler-Hammer Manufacturing Company; March 13, 1922, "Storage Batteries," by J. P. Schroeter, Electrical Engineer, formerly Consulting Engineer, American School of Correspondence, Chicago, Ill. All radio men and other interest persons are invited to attend.

The club has several committees through which much of its work is accomplished. Membership in one or more of these committees entitles the radio amateur to become actively engaged in the solution of the problems of local radio organization. There is a committee on interference and relay which has for its duty to co-operate with the A. R. R. L. city manager in the solving of problems of local radio traffic. Some other committees, the work of which is obvious from their names, are the committee on papers and publications, program committee, publicity committee and the committee on research and development. The work of the last named committee is shortly to be transferred to a radio labratory founded by several radio club members.

Membership appeals alike to the "DX" man, the radio experimenter, the beginner, and to those who have only a set for the reception of radio broadcasts. There are three classes of membership, viz.: Member, associate and junior. Dues for the first two classes are fifty cents a month and for juniors twenty-five cents. An initiation fee of one dollar is charged. The direction of the club is especially desirous of having for members all local members of the A. R. R. L., making the club a real local section of the league.

There are several other radio clubs in Milwaukee and its suburbs, three of which are affiliated wtih this club through the Milwaukee Radio Executive Council. They are as follows: Wauwatosa Radio Club, meeting on Monday evenings in the Wauwatosa High School; West Allis Radio Club, meeting on Friday evenings in the West Allis Public Library; South Side Radio Club of Milwaukee, meeting on Wednesday evenings in the South Side Branch of the Public Library. Although the Milwaukee Amateurs' Radio Club has a centrally located meeting hall and embraces a city-wide membership, its direction realizes the expediency of having additional radio clubs in the suburbs and various sections of the city. The Milwaukee metropolitan district is large enough and boasts a sufficient number of amateurs to make it a multi-club one. The direction of this club does not view these contemporary clubs as competitors, but as organizations striving with this club to make Milwaukee's radio organization a success.

All club correspondence should be addressed to 601 Enterprise Building, Milwaukee, Wis.

Operating Department

(First District Reported by 1BOP)

1BDI has put in 100 watts CW and is doing good work. Handy is on the job nightly and will give us the what's what on Maine stations next month.

The QRM of CW on 200 meters is as bad as with spark, but as a few CW stations are somewhat over 200 it has still the advantage of tuning.

We miss 1DY's old set. What's matter, Johnson?

1CK is FB on sink. Also 1CK.

1AKG is not on regularly but is by QSA when pounding the key.

The Maine stations, 1APO, 1BQL, 1BRA and 1ACO are all good.

1ADC hasn't been heard lately.

1BEA and 1BUA are the berries on CW.

1GM is doing great work. He is reported very QSA in Ninth District.

1BEA having worked a station in Ellendale, N. D.

1BSZ, 1CHJ and 1BHO are stilling on spark and FB, too.

1BOP also on spark and is QSA.

1BDC is putting in CW.

1ON is reaching out with sink gap.

1AZK of Fall River is usually good.

1AW is O. K. (when on).

1COK has a wicked spark.

1QP and 1TS working on CW are sure handling traffic.

1CKI and 1QO on spark are doing good work.

SECOND DISTRICT

(New Jersey Notes by James R. Cozier, 2AIU).

Many stations have reported the signals of 4EW, but we learn that real 4EW has not been transmitting and has been receiving QSL's on his sigs. all over the country. Who is this faker? The stuff should be stopped.

2JZ is on the air again.

2DX is certainly living up to his name, for he sure reaches out.

One night during February at 2AIU a spark was heard singing 2QQQ. That bird is ahead of the times or call book.

2AQI is now heard on his old gap again. Guess his sink gap didn't suit him.

2AJF still continues to pound in on CW, 1CW and fone FR OM.

Did you notice the cartoon in the Globe recently featuring 2OM, 2LH and 2UA?

2AFP is probably the loudest 1CW station in this part of the Second District.

2BDA, using one five-watt tube, is sure reaching out. He has been heard by Canadian 9AW.

2BDR has a five-watt CW, using 100 volts on plate, and he does fine work with it.

2BBL is now heard on the air again. He recently blew his transformer and was out for a few months. 2BBL has done some good daylight work on ¼KW.

2BLW has installed a ½KW along with his fone set. He uses an Amrad gap and gets 4 amps. F. B.

NEW YORK NOTES

2LH sure reaches out with his fone set and CW. He is planning tests with an amateur in England.

The Hudson trunk line with 2BM, 2DA, 2OO and 2AR are all on now and push through their usual good work.

2OM still hits the ether hard.

2AWF is on again with CW and spark.

2BXW clears quite a few around Albany.

NOTES OF BROOKLYN

(By 2PF)

The gang is fast recuperating from the Second District Convention and will be O. K. in a few days.

2FP was unable to attend the banquet as his Stutz got stuck in the wilds of the Bronx. (Wonder what he was doing there?)

2PF handled all the messages received at the show, as the shipowners' set at the Radio Show refused to reach out. About 75 were handled in two days.

2BRB has a new 250 watt tube now. He's a lucky boy. XJ.

2PF is installing a 50 watt tube set to be used with his spark.

2UD was heard in Los Angeles, Cal., on his CW set. He uses two 50 watt tubes.

THIRD DISTRICT

3PU does good relay work.

3CN in New Jersey handles his share of messages.

2HJ continues to make the diaphragms stick.

3QW and 3UD come through fine.

3UQ and 3UD, 1BOQ in daylight (good work).

3ACE and 3AOV certainly pound in.

Third District amateurs send me reports and pictures of your stations. —Eastern Editor.

FOURTH DISTRICT

4EA is still about the best fourth station.

4GL on CW is also good.

4CX, 4EL and 4AG when on are QSA.

FIFTH DISTRICT

The best "5" is 5PY pound through QSA.

5ZA and 5FD are both FB.

5DA and 5EW both reach out.

5FV also comes thrugh at times.

SIXTH DISTRICT

No Sixth report this month. What's matter, Sixth District?

SEVENTH DISTRICT

7XD and 7ZU on spark were reported here in the Second District.

EIGHTH DISTRICT

Where is 8HP? We miss his spark.

8AXX on CW is FB. He uses ¼ KW.

8AMZ was reported QSA by 6IV of Riverside, Calif., during Christmas vacation. 8AMZ is now attending Cornell University. He is sure missed on the air.

8WO is reaching out.

8ASL is doing good work.

NINTH DISTRICT

The Ninth District contains numerous good stations. The following are a few of the best: 9UH, 9ZJ, 9ZN, 9AIR, 9AIU, 9AGR, 9ACY, 9ACN, 9DKV, 9VL, 9WK, 9MC and 9BP.

9AL on CW is FB.

Hoover Denies Radio Charge

Belief on the part of amateur users of radio telephone apparatus that the radio conference was directed toward restricting amateurs in their development of wireless telephony, expressed by Paul F. Godley of Cedar Grove, N. J., representing the American Radio Relay League, brought from Secretary Hoover at today's meeting a vehement denial that the conference had such a purpose.

Mr. Hoover declared whoever started such a report was "maliciously fabricating." The secretary asserted that the primary purpose of the conference was for the protection of amateurs in the use of the new means of communication.

A very promising project is being fostered by a large group of St. Louis radio men who have undertaken the organization of a radio club on a much larger scale than has ever before been attempted. A permanent salaried secretary and promoter will be retained and club quarters established in the business district of St. Louis. A membership drive is now on to obtain 1,000 new members by 1923.

A survey conducted by the Associated Press throughout the middle west discloses a 1,000 per cent increase in the number of radio fans. Within the last four or five months the total number of radiophone sets has jumped to 600,000, as compared with the 50,000 in operation a year ago.

RADIO STATION 9HY OF CHICAGO

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grid. This prevents one tube surging back into another.

Either rectified AC or motor generator can be used for the plate supply, the set being so wired that either may be used by throwing a four-pole double Federal switch. An Acme 200-watt 550-volt unit, rectified through two DeForest rectifying tubes, is used for the rectified AC supply. The motor generator is a special Ray-Di-Co unit, with a double commutator generator delivering 750 volts at 150 watts. It will deliver 1,000 volts open space and is rated at 150 watts conservatively. A Radio Corporation tone wheel is coupled between the motor and generator, the 1,750 RPM of the motor generator giving the desired frequency. The center of the tone wheel was turned out on a lathe and it is insulated from the motor generator with a bakelite bushing, so that it will not ground through this unit. A double brush is used. The filter system is made up of eight IMF Federal condensers and 3 1½ Henry Acme chokes.

When using motor generator, the filament winding of the Acme unit is used to light the filaments, while the secondary is thrown out of the circuit. In this way the Acme unit serves both as a power unit and a filament heating unit. The motor generator is used for phone work and ICW, while rectified AC is usually used for straight CW. Very good modulation is obtained on phone, with no hum or objectionable carrier wave. A double-throw double-pole switch changes the generator commutator connections from series to parallel, giving either 750 or 550 volts, respectively. A big jump in radiation is obtained with the highest voltage, with no great stress on the tubes. Although rated at 5 watts, 20 to 40 watts are put into the tubes. The difference in the results did not warrant using larger tubes and the 5-watt tubes certainly are better economy.

All instruments are mounted on a base and panel, and the whole is placed in a cabinet with small doors in the sides and top for accessibility and ventilation. At the rear of the base is mounted the 200-watt Acme unit with condensers at each side, while over it is a fiber shelf upon which are mounted the two rectifying tube sockets, the chokes, and four Federal condensers. Thus the power and rectifying circuit, together with the filter is all in one unit, isolated from the rest of the set. Farther forward on the base are mounted two large fixed condensers, over which are supported two 5000 ohm grid leaks and two inductance coils.

The antenna inductance is large, consisting of thirty-six turns of No. 8 brass wire 6 inches in diameter and is supported by heavy brass uprights fastened to the brass panel supports.

On the panel are mounted an 0 to 600 volt Firco meter, a General Radio hot wire ammeter, a Jewel 0 to 200 milliammeter and a Jewel 0 to 15 volt AC meter. A small dash pilot lamp is placed over the meters to light the dials. On each side of the meters a 6 ampere rheostat is mounted, one for the rectifying tubes and one as an auxiliary filament control to the oscillators and modulators. Below the meters are four glass peek holes in line with the tubes, which are mounted on a shelf back of the panel. These peeks are large, giving a full view of the filaments of the tubes, and beveled nickel-plated brass rims holding beveled plate glass are inserted in the holes to trim them up.

Below the peeks are mounted four General Radio 2½ ampere rheostats, one for each tube filament. Each individual filament can be set, and then all adjusted together with the auxiliary filament rheostat. Below the rheostats three variable condensers are mounted. Just above the condenser dials the two Federal switches are placed, one for sending and receiving and one for phone, ICW or CW. The down position of this switch is for phone, the middle position for tone wheel and the up position for straight CW. No binding posts are used on the panel whatever, thus giving a clean appearance. The binding posts are mounted high in back of the panel on a terminal board, and a hard rubber shelf at right angles to the top of the panel acts as a guide, with properly spaced holes to space and feed the leads to the terminal board. On top of this shelf are placed the binding posts for the motor generator and tone wheel, while the Federal switch for throwing from motor generator to rectified AC is mounted to one end of this shelf.

Three rotary switches are also mounted on this shelf. One switch is for shorting the milliammeter out of the circuit, which is subject to injury while sending straight CW, due to its violent ducking when the key is pressed. Another switch cuts the high voltage plate meter out of the circuit, while the third switch cuts the antenna series condenser out of circuit, which at times increases radiation. At other times this condenser is necessary, however.

For flexibility and actual results this CW set has exceeded expectations. On straight CW, using only two 5 watt UV 202 Radiotrons, 1,100 miles have been covered. Six stations in New York, Syracuse, Philadelphia and other stations in the east have all reported CW sigs QSA. Two stations in Denver, Colo., Oklahoma City, Omaha, Neb., and others in the west have also reported sigs QSA. Have been heard in Alabama and also QSA by Langley Field, Va. The latter also reported having heard phone, which is the best the set has done on phone. Modulation has been reported very good on phone with voice and music.

The spark set has been logged as far as Wilmington, N. C., but it is far from being the equal of the CW set.

Radiation on straight CW with two 5 watt UV 202s has been as high as 2 amps, and seldom less than 1.8 amps.

All woodwork in the entire set is of antique brown mahogany with a four-coat rubbed piano finish. A 100 amp. hour 12 volt Willard battery furnishes the receiving filament supply, with eight large cells from a farm light plant for reserve. A Home-

(Continued on page 32)

Sally's Impressions of Radio Shows

By SALLY SPARKS

NOWADAYS everybody is talking radio. Instead of saying "Good morning, have you used Apple's soap," friends inquire if you have radio showed or received the last opera concert via broadcast. Hearing so much shooting and shouting about the thing I sallied up to the roof garden, where appropriately the ethereal exhibition was held. I thought I'd better do it and get it over because we are threatened daily with other such expositions to satisfy the thousands of radio fans who do not get past the brave fireladdies guarding the gates when the place was overcrowded.

I wanted to see if the show was anything like the old-time county fair or a Barnum circus. It was those and a few others rolled into one. For variety of entertainment it had the old bicycle and automobile shows tied to the mast, anchored or going backward when left at the post. I found that everybody's radioing now and, disguising myself as a Cynical Observer, I studied the enlightened type of fans. There was also the novice with his or her unrestrained surprise, listening to the technical explanations of the dress suited salesmen in the booths.

I asked myself: "Is radio really so popular and efficient as it is said to be?" My thought was answered by a growling noise coming from the far end of the room. It might be a wholesale dog fight or the gentle snore of one of those Pleiasaurian monsters reported seen lately. On close examination it was found to emanate from a large black tin lily, a strange shaped horn. It was a vocal spasm with a very marked guttural German accent. Taken as a whole I got the impression that it was a disonant symphony combined with a wordfest between a man and several croaking birds interspersed with a child's squeaky voice.

"What's the man's name? The one who is speaking," the Observer asks.

"It's not a man. It's a woman telling bedtime stories," is the answer.

The Observer wonders how the children are expected to sleep after hearing this hair-raising symphony. They should have nightmares all night if they ever did get to sleep.

"Well, I can't understand anything," says one of the anxious tiptoeing bystanders. "I'm going to hear it."

"Aw, wait a minnte," calls the twelve-year-old boy. "You'll get used to it in a minute."

This persuades the Observer to hang on a little longer to see what it is all about. The small boy must know. The crowd must be enjoying itself or else this radio bugism magic must be more powerful even than reported. It seems sort of a modern Circe which attracts maliciously and holds its hearers in a spell so that they stand like statues, mouths open, greedily lapping up the aesthetic food and always ready for more.

And the worst part of it is that it is as contagious as the most destroying disease. The Observer feels herself getting the serious expression, face turned sideways, ears cocked up, toe dancing attitude and all for one intelligent word from that devilish horn. If only ears were made on a rubber attachment and could be stretched out a distance it would help so much. Why doesn't one of these radio bugs invent an artificial portable and stretchable ear be thrown in free with the radio apparatus?

Although nothing at first can be distinguished, the spell of that strange voice seems to bind the listeners to just waiting to listen to it, ugly as it is. It is as if Hansel and Gretel's witch had waved her wand and rooted them to the ground.

Then came a few words from the horn. "Bear, boy, hm . . . a hm . . . he was so hungry so he hm hm.

Just as the Observer was commencing to tune his ear to the monosyllabic sputtering a horse crow comes cawing in and a sinister whistle.

The hear turned on the boy and . . . a blood curdling human cry comes out of the mouth of the horn.

The story is very real, that's sure. One can imagine the boy trembling and white, his heart up in his throat waiting for the bear to spring and enfold him all too lovingly. Most useful is the audion with its howl as an accessory to the dramatic story. That is, if its takes into its head to be considerate and follow its cue at the proper moment.

Unfortunately it is not an obliging element of nature, more like a mischievous sprite it does its shrieking at the wrong time, and too frequently. Why, the Observer thinks, does not some inventive mind regulate this superflous sound to

Readers and Advertisers will find a message for them on page 34

use as a stage effect for dramatic stories. Similarly with a chance timelines, but usual objectionableness, the telegraph code breaks into the harmony of the child's cry.

This, too, might also be harnessed for effective use, for when the voice went on the bear said "Woof" out from the horn comes a series of scraping sounds which well represents the bearish growls. This is fine, but all through the story as an underlying motif and at the end where the boy is saved and the bear has fled with an incongruity pies in the scraping spark of the emergency coil for peculiar modulation.

While standing in the crowd listening for scraps of news from the horn the Observer finds herself scientifically picking the sounds apart. He wonders why certain vowels are clear and the rest muffled, why the a's and o's are distinguishable and the e's and oo's are not. Is it lack of resonance in the voice on those vowels or is it due to horn characteristics? But this problem takes too much brain effort and he leaves it to the engineers to settle the question and moves to where another crowd is gathered about a large cabinet with an open mouth. Into this several men are stretching their ears.

The crowd behind them is under the impression that it is hearing the bedtime story but these persons are in reality listening to the apparatus which the Observer has just left across the hall.

In another room the Observer hears again the woman's voice but this time it is sent out by an ordinary Victrola horn and lacks the extreme distortion of the other. So much so that novices passing by insist that there is a phonograph hidden in the flower pot behind the horn. The voice stops and code thunders out:

"That's not wireless," volunteers a passing man. "It's something else," but what that something is he does not explain.

Then a song is transmitted from a phonograph at the sending station. This makes the onlooker certain that it is fake wireless.

"But I hear the circular whirling sound of the phonograph record, and you wouldn't hear that in the wireless; you can't fool me," he insists.

However, if the voice comes clearer from this horn so also does the audion howl of anguish. For the first time one is witness that woman has found her match—a worthy competitor in a talking competition. Man she may vanquish in her particular metier, but the elements are mightier than man or even woman and are no mean adversary. Man in harnessing some of nature's electrical energy has generously increased the scope and enlarged the audience for woman's words. Now woman is attempting to conquer the opposition of nature to her efforts of speech and she is having an interesting game in so doing.

"Why is there so much interference? Why do you get the audion shrieks? They do not seem to be touching the apparatus?"

"Oh it's becanse there are too many aerials on the roof," volunteered one bystander. And from another came the explanation:

"It's Paul Godley's transatlantic set. Every time he makes his adjustment we hear his audions."

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"G" to the switch lever and from there to the inner post "T."

To place set in operation, connect your antenna, which may be a single wire, either bare or insulated, about 75 feet in length and strung as high above the ground as possible, to binding post marked "A." Post "G" is connected to the water, gas or steam

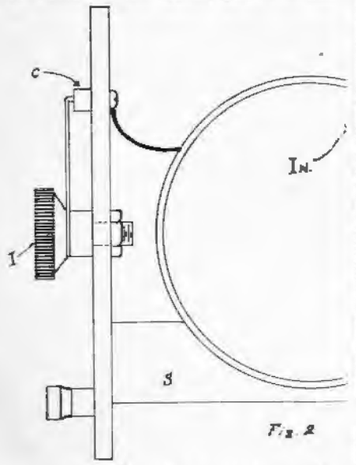

Fig. 2

pipe to provide of a ground connection. A variable condenser of say .001 capacity is conuected across the antenna and ground as indicated in Fig. 3.

The fine wire contact on the crystal of the detector is adjusted until a sensitive point is found as indicated by strong audible signals. A standard electric buzzer, when operated in the vicinity of the receiving set, will

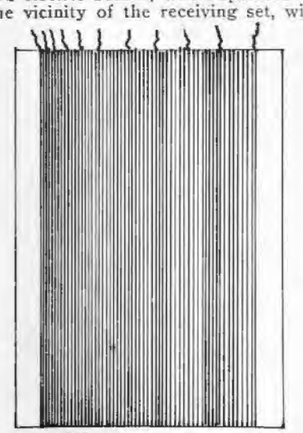

Fig 4.—INDUCTANCE

provide a means of telling when a sensitive spot on the mineral is secured.

The telephones are connected to the binding posts "T," "T" across which a small telephone condenser may be shunted. Now, placing your variable condenser at zero capacity, move the switch lever to the first contact. Next, vary the condenser thru its entire scale and repeat this on each contact until you find the most desirable adjustment that brings in the stations most audible.

CLUB NOTES

Roselle Park Radio Club

The following officers were elected at a meeting held in the new clubhouse on Chestnut street:

President—R. H. Horning, 2KK.
Vice-president—Gus Bosler.
Secretary—Charles A. Reberger.
Treasurer—H. T. Ryder.
Traffic manager—Howard Suttgens, BCC.

Assistant traffic manager—Marvic C. Lane, 2BTM.

Radio inspector—Paul Larsen.
Assistant radio inspector—Cunard Hagberg, 2BCP.

The Y. M. C. A. of Portland, Me., now has the old call of John Marshall (IFM) and would like reports of the signals.

H. C. Sever of Portland Me., is the inspector and operator. A1KW spark set has been installed.

The Radio Club of Brooklyn Polytechnic Institute has a new way to get visitors on "open house night" and that is by broadcasting the invitation by way of their radiophone. The station call is 2KT.

Work on this new station has already been started and it is designed to cover an area from 100 to 150 miles surrounding the city.

This will be the first station to provide a service in the way of distribution of news on a commercial basis for such persons as may wish to contract for the handling of their business schemes by wireless. Within this station's area there are now about 35,000 receiving sets awaiting the broadcastings, so apparently there is money in it for the station and entertainment for the listeners-in.

The wave lengths of the different broadcasting stations are as follows:

	Meters
WJZ—Newark, N. J.	360
KDKA—Pittsburgh, Pa.	369
WBB—Springfield, Mass.	

RADIO STATION 9HY OF CHICAGO

(Continued from page 28)

charger charging unit of large size keep the batteries up.

The antenna is composed of five stranded tinned copper wires 45 feet long and 70 feet high. Two masts 30 feet high elevate the antenna from the apartment building roof upon which it is located. It is of the "L" type, with lead-in wires fanned to the edge of the roof. The end opposite the lead-in is fanned out. Hollow spruce masts are used to elevate the antenna and are guyed with eight guys apiece. The spreaders are also of hollow spruce, the masts and spreaders being well varnished.

Ground is made to the steam line and city water system. A counterpoise tuned to the ground system will be added.

It has been our contention that good results and good appearance should go together, and we have tried to bear this out in radio station 9 HY.

Sidelights On the Second District Convention

Did you see the editor of Topics with his polo coat (hot coffee)?

Who started those paper aeroplanes at the banquet? I wonder who.

That bird with the magnovox sure reached out. He shook a mean fist, though.

The OMs were there in numbers and sure were interested.

Did you try and find anyone at the convention? If you did you deserve a medal. J. O. and McMann must have used a shoehorn to get the people in.

Notes About the Broadcasting Stations

A radiofone service about market prices are being sent by radiofone from Washington, D. C., daily. This station has a range of 600 miles and is broadcasted at 12:30 p. m. This certainly is of great value to farmers who have had their homes installed with wireless receiving sets. The wave length is 1,160 meters.

The U. S. Army Signal Corps station, WYCB, located at Fort Wood, broadcasts daily at about 9:05 p. m. Their wave length is 1,450 meters.

Man Haunted by Radio Voices and Shocked in Bed Says He Can't Sleep

Voices in the air.

Voices coming out of the still of his bedroom at night. Sparks flickering through his bedroom—shocking him.

Music that seemed to creep out of a ghastly nowhere and molest him when he slept.

That's what radio has come to, according to E. C. Beck, who formerly resided at 110 North Bourland street, now a Chillicothe resident.

"It's got to stop, this wireless thing," Mr. Beck told a reporter recently. "When it starts bothering people in their homes at night it's already gone too far. Why, I haven't slept for two weeks. It comes from that radiophone set at Bradley institute."

THE EFFICIENT PORTLAND RADIO STATION 7XG

(Continued from page 12)

quency amplification and three power stages, which will give altogether four stages of radio and five stages of audio frequency amplification.

This station (7XG) has been heard on CW, ICW, and modulated voice in the Hawaiian Islands, near Honolulu, a distance of about 2,500 miles air line, this being verified by a signed statement from the operator of the station near Honolulu. This station (7XG) is located at 400 East 22nd Street, North, Portland, Ore., and would be more than pleased to receive communications from any stations hearing 7XG on voice, CW or ICW. Anyone wishing further information can be assured that their inquiries will be promptly and cheerfully answered.

See Page 34

Just Look at this Issue of Radio Topics!

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