

## A DEMONSTRATION RADIO SET

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The demonstration radio set to be described here was built to make the transition between the circuit diagram and the actual circuit easier for the beginning student, and to provide a working model with which the function of each stage of a radio set could be readily demonstrated. All the wiring and all the parts of the set are placed on the top side of the mounting board, and as far as possible the layout of the wires corresponds to that on a conventional circuit diagram. Thus the function of each connection is made immediately apparent to the student. See fig. 1.

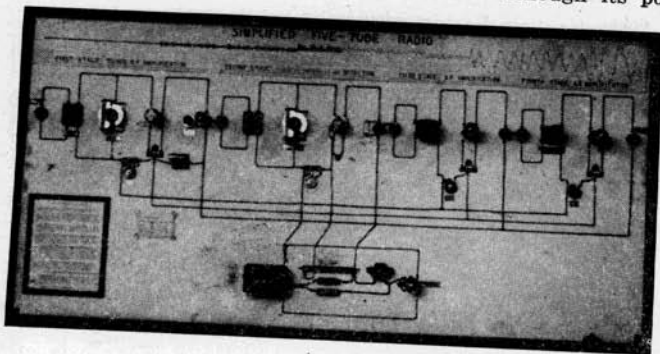


Fig. 1.

The radio employs a tuned radio frequency circuit since it was felt that the importance of the superheterodyne principle to the beginning student was not sufficient to warrant the added complication in the construction of the set. The model has four stages: a tuned radio frequency amplifier stage using a type 26 tube; a combined tuned radio frequency amplifier and detector stage using a type 27 tube; an audio frequency amplifier stage employing a type 26 tube; the power amplifier stage employing a type 71A tube. There are two tuning condensers which must be adjusted separately. Transformer coupling is used the audio frequency section. Sufficient power is developed to operate either a pair of

headphones or a small magnetic speaker. The power supply employs a type 80 tube operating as a full wave rectifier supplying 250 volt plate potential.

Each stage in the set is terminated in an ordinary wall socket, and the connection to the next stage is ordinarily made by means of a short double wire running to another socket adjacent to it to which is connected the input leads of the next stage. However, by using a longer wire it is possible to skip any stage by bridging over it. The set will operate with any stage except the detector missing, although its power is greatly decreased.

Thus the purpose of each stage is impressed upon the student.

On the top of the mounting board and running the entire length of the set is an oscillogram giving the wave form of a typical signal for the stage immediately below. Thus the progress of the signal is graphically illustrated from antenna to loudspeaker. It is also possible to connect an oscilloscope at any stage

and obtain the wave form of an actual signal. In this manner the effects of detection and amplification are readily shown.

The set was built at virtually no cost by Mr. John P. Karbler from discarded materials which inevitably collect in any laboratory. The mounting board is  $\frac{3}{8}$ " plywood, 6' x 3', painted white and permanently mounted to the wall. The set was built under the direction of Dr. Harvey B. Lemon. It is used both for the instruction of superior students in the Physical Science Survey course and for the students in the regular General Physics course. It has proved to be of invaluable assistance in demonstrating the basic principles of radio to beginning students.