ENGINEERING
MECCANO
FOR BOYS

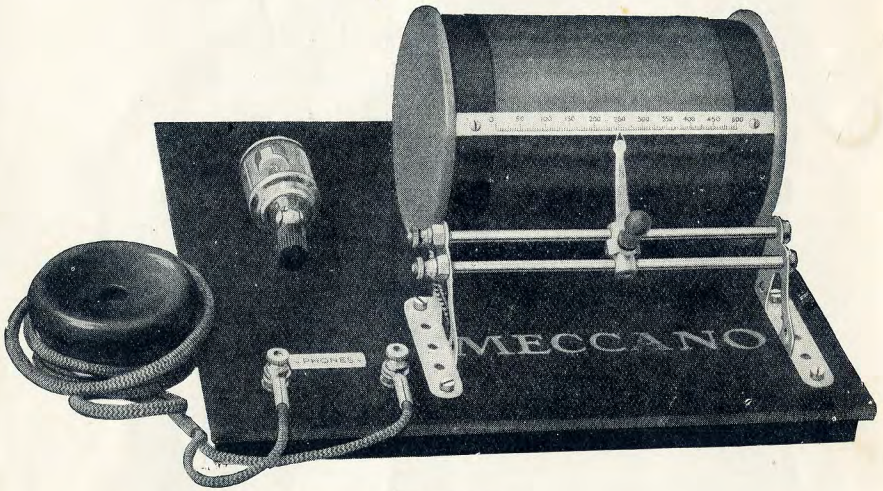
Meccano Radio Receiving Set

The Delights of Radio.
Amazing Progress.
What Radio is.
How to Receive.
What you can hear.
Radio at Low cost.

MECCANO LTD.
LIVERPOOL

THE MECCANO

No. 1 RADIO RECEIVER



PRICES

RS1. Meccano No. 1 Crystal Receiving Set, complete.
Tested and guaranteed **47/6**
Broadcasting fee, according to regulations. **7/6**

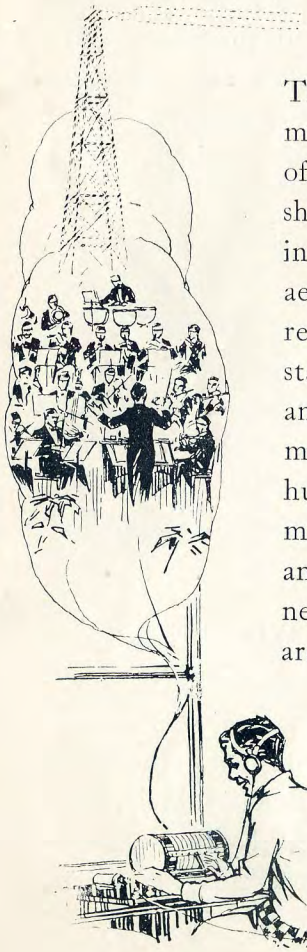
Price complete **55/-**

AS1. Aerial Set, complete, and ready for connecting to receiver (including antenna, insulators, pulleys, lead-in and earth wires) ... ... price **12/6**

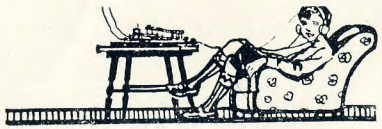
Meccano Radio Parts.

No.			s.	d.
404.	Insulating Handles	each	0	3
408.	Single Telephone Receivers (2000 ohms)	,,	18	6
409.	Detector Arms, complete	,,	1	0
410.	Crystals mounted complete with Clips, No. 411	,,	1	6
410a	Crystals mounted only	,,	1	3
411.	Clips for Crystals	,,	0	3

The Delights of Radio.



The purpose of this little book is to make known to boys the fascinations of the new science of Radio, and to show them how they may participate in its delights. Having erected your aerial, and connected to it your receiver, it is delightful to hear land stations signalling to ships at sea, and ships signalling back. It is even more delightful to listen to the human voice in song or speech, to music of all kinds (including bands and solo instrumentalists) and to news of current events. All these are heard with perfect clearness, just



as though the artists, speakers and soloists themselves, were with you.

It will not be long before we have our kings and princes, our statesmen and preachers, our scientists and teachers, our actors and actresses speaking to us in our homes, pouring their appeals, their knowledge, their artistry, into our eager ears.

We earnestly plead with every boy to study and understand this wonderful science. We do so in order that he may participate in the great enjoyment that is offered to him, and because it is to his own interests to become familiar with every aspect of Radio. We ask him not to stand aside and remain oblivious to the development of this, the most important invention of our time.

MARCONI INVENTS WIRELESS.

Wireless telegraphy was invented by a boy. Guglielmo Marconi was not twenty-one years of age when he succeeded in transmitting the first wireless signals at his home in Bologna, Italy, less than thirty years ago. Since that day the progress of wireless transmission and reception has been truly amazing.

installing a receiving set must persuade their fathers or elder brothers to take out licences for them.

With the Meccano Aerial and Receiving Set you may receive telephony and Morse the whole year round, every day and every night if you wish. There is no additional expense, for the concerts are broadcast free of charge by the British Broadcasting Co. Meccano Limited is a member of this Broadcasting Company and makes a contribution to them on account of every set that is sold. This contribution is your share of the expense of maintaining the broadcasting stations.

There is no danger in using a Meccano Receiving Set. No batteries are required ; nothing extra is necessary, and you can commence to " listen in " the moment you get your set home and have erected your aerial.

If you are interested in the wonders of Radio you should take the *Meccano Magazine* regularly, for in it you will find Radio news and articles that will interest you, and enable you to keep in touch with this wonderful new science. It is issued monthly and the Editor will be pleased to mail you a free copy on receipt of your post card request.

of linen at a long distance ; others have a high-pitched musical note. These signals are spelling out the Morse Code. If you are located near the coast, or near a large port, you may be sure of obtaining signals from ships at sea in communication with land stations. It is possible to receive Morse signals from greater distances than is the case with telephony. With the Meccano Crystal Set they may come in from ships at distances up to 100 miles or more.

A knowledge of Morse (which is not difficult to acquire and is already possessed by many Boy Scouts) enables these messages to be interpreted, thus giving added interest and enjoyment. No knowledge of the Morse Code is necessary for receiving telephony, which is heard just as though the receiver were a telephone instrument connected to a telephone wire.

RADIO AT LOW COST.

"Now, Dad, don't forget the Licence."

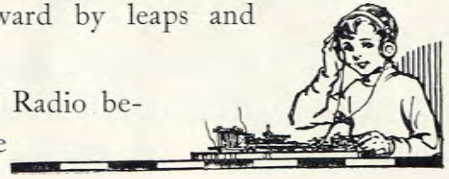
"Right you are Son!"

Before a Receiving Set can be installed, it is necessary to possess a licence. This costs 10/- and may be obtained on application from any Post Office. Licences are not granted to anyone under twenty-one years of age, however, so that all boys desirous of

About 35 years ago a German professor named Hertz discovered the existence of waves in the ether. Marconi read of this discovery, and his imagination was fired with visions of the great things that he believed would become possible thereby. Always interested in electricity, he at once commenced a series of experiments at his father's farm in Bologna, and it was not long before he was able to transmit signals without wires, from one side of the garden to the other. In 1896, he travelled to England to explain his method of wireless telegraphy to Sir William Preece, Chief Engineer of the British Telegraph Department.

This interview in London was the beginning of Radio as we know it to-day. Marconi carried out further experiments for the British Post Office on Salisbury Plain and elsewhere, and met with considerable success. It is doubtful whether even Sir William Preece or Marconi could foresee the tremendous results that were to be so quickly attained, for following those early experiments, wireless (or "Radio," as it is now called) has gone forward by leaps and bounds.

The story of Radio between that time



and to-day is one of continued and persistent work, followed by results that were increasingly encouraging. Gradually communication became possible over greater and greater distances. From a few yards it became two miles, and then (in 1899) the range increased to twenty miles, when wireless signals were sent across the English Channel. Two years later came the most wonderful achievement of all—the conquest of the Atlantic Ocean, when the first trans-Atlantic message was sent from Poldhu, in Cornwall, to St. John's, Newfoundland. More recently, messages have been sent over even greater distances, until to-day direct communication between England and Australia is a commercial proposition. In the space of twenty-five years, the range of wireless communication has increased from 12 yards to 12,000 miles!

A more recent development of the invention made Radio telephony possible, so that now the human voice or music may be transmitted over thousands of miles without wires. Broadcasting, an application of this extension, holds great possibilities for further development.

RADIO EXPLAINED.

The theory of Radio may be understood by a very simple illustration. Everyone has seen the ripples

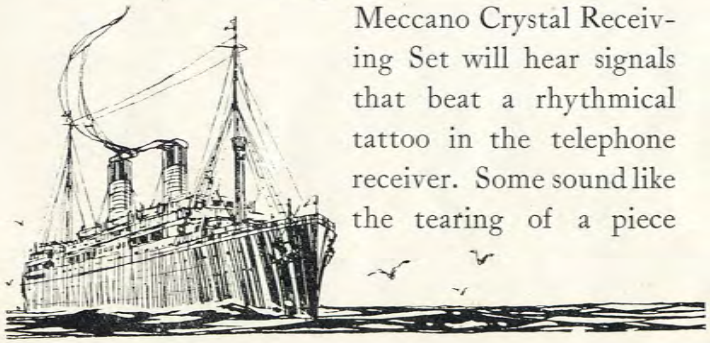
a lower aerial that may be surrounded by tall trees and houses.

THE JOYS OF RADIO.

Think what it means to be able to connect your Receiving Set to your aerial, these dark winter evenings, and to listen all night long to all manner of good things from the nearest broadcasting station! You will hear full concert programmes, including songs, recitations, violin and 'cello solos and selections of Grand Opera. At other times you will hear special late news items, weather and market reports, bed-time stories and interesting lectures. There need be no more dull evenings and you will be able to entertain your friends and interest them in this wonderful new science.

SIGNALS FROM SHIPS.

In addition to telephony, the possessor of a Meccano Crystal Receiving Set will hear signals that beat a rhythmical tattoo in the telephone receiver. Some sound like the tearing of a piece



can be understood by any boy. Just as it is possible to simplify the theory of Radio, so too is it possible to smooth out the difficulties on the practical side. For many months past our experts have been engaged in a series of careful experiments, and as a result the Meccano Crystal Receiving Set has been evolved.

With this set concerts, music, etc., may be received by any boy living in or near any of the centres where broadcasting stations are situated. Already broadcasting stations are operating nightly in London, Birmingham and Manchester, and we understand that additional stations are shortly to be erected in Cardiff, Newcastle, Plymouth, Edinburgh (or Aberdeen or Glasgow).

The Meccano Crystal Receiving Set will receive telephony (i.e., concerts, music and speech) over distances up to twenty or thirty miles from a broadcasting station. The exact distance depends largely on the height of the aerial and the nature of the country in which it is located. For example, an aerial that stands high above the house-tops will enable telephony to be received at a greater distance from a broadcasting station than will

that follow the throwing of a stone into a pond. These ripples are really waves in the water, the impact of the stone causing a disturbance in a medium that in ordinary circumstances is calm. Speech is a similar phenomenon, being caused by disturbances that originate in the vocal organs of the speaker. In this case, however, the waves are sound waves and they are transmitted through the air.

Radio signals consist of electrical waves in a medium called the " ether." At present but little is known about the ether, except that it is universal—that is to say, it exists everywhere. Not only does it fill space between worlds, but it is believed that it also fills the invisible spaces, or interstices, between the atoms of matter of which solid objects are composed. By means of an apparatus, called a transmitter, disturbances are caused in the ether, just as a stone causes disturbances in a pond. Similarly, these disturbances, which are really electric waves, spread outwards in ever-widening circles.

There is, however, a difference between the two kinds of waves. In the case of the pond they are confined to the water itself, but in the case of Radio, they travel everywhere. A message sent out from a transmitting station in London, for instance, may be picked up with suitable

apparatus in any part of the room in which you are sitting. Not only that, but it may be picked up in any room of your house, in any house in your street, or in any street in your town, in any town in your country, and in any country in the world. It may be picked up by a ship on the ocean or by an aeroplane flying thousands of feet above the earth's surface. It may even be picked up at the bottom of a mine-shaft, hundreds of feet below the ground.

HOW RADIO WAVES ARE INTERCEPTED.

In order to intercept Radio Waves a length of copper wire is used. This wire, which is called the "aerial," is suspended from a high point, and the higher it can be placed the better will be the result. A pole may be fastened to a chimney or high place on the roof of the house, to take one end of the wire. The other end may be attached to a second pole fastened to another chimney some 100 feet distant, or to a high pole in the garden. If such an arrangement is not possible, one end of the wire may be fastened to an attic window-

frame, and the other end to a clothes-post or to the garden fence.

The wire must be insulated—that is to say, it must not touch anything that is capable of conducting an electric current, or the Radio Wave will be led to earth instead of to the receiving apparatus. The best way of insulating the aerial is to fasten it to porcelain insulators, themselves suspended from the two points (i.e., the poles, or the attic window and clothes-post) by rope or string.

As the electric waves from the transmitting station travel everywhere, they soon reach the aerial, and in passing cause a feeble electric current to be "induced" in it. By means of a suitable Receiving Apparatus this current is converted into sound, thus reproducing the original sound waves that were received by the microphone of the transmitting apparatus.

RADIO RECEPTION NOT DIFFICULT.

Although Radio is an abstruse science, this very simple explanation of its working principle

Price 5 Cents

The Meccano Radio Receiving Set

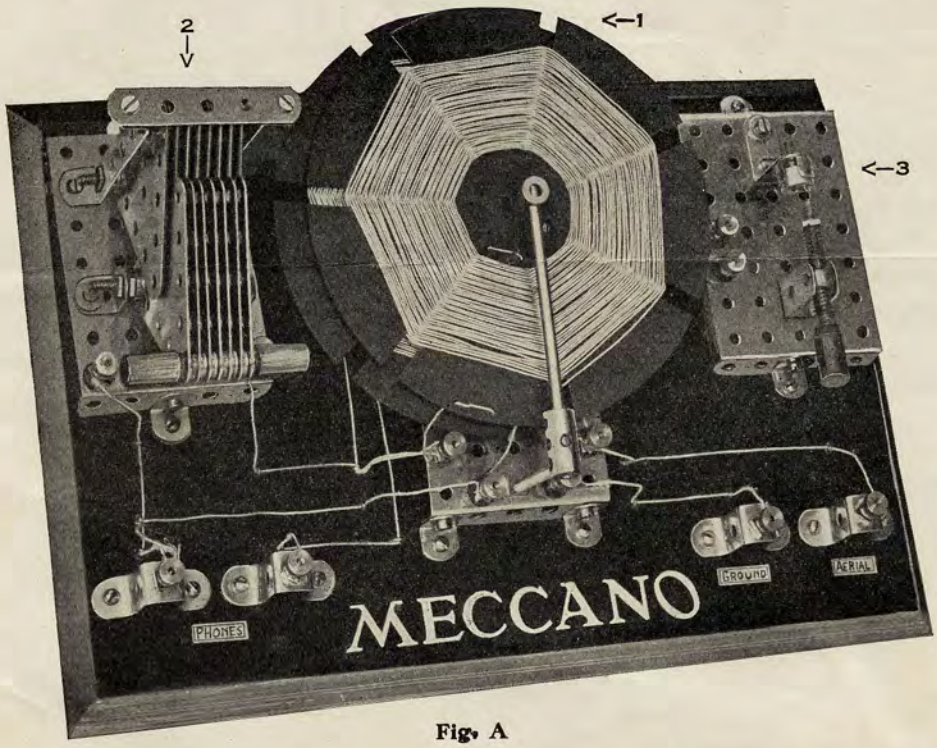


Fig. A

The Meccano Radio Receiving Set is the result of much study and experiment to produce an apparatus that will be both easy to make and efficient in operation. It is made up of the regular Meccano parts with the addition of one or two Radio fittings, such as inductance discs, crystal, etc. Everything is standardized, and any part may be obtained from your dealer, or direct from the Meccano Company. The set is as easy to construct as most of the regular Meccano models which boys all over the country are building every day, and anyone who builds it will be well repaid in pleasure and profit. We certainly advise all Meccano boys to go to work and make this wonderful receiving set. There is a delightful experience in store for you, and many a thrill when you hear concerts, speeches, and all kinds of entertainments by means of an instrument which you have built and installed in your own home yourself.

Do not consider that you have exhausted the possibilities when you have got your Meccano Receiving Set working nicely. Take a real interest in the subject, and try experiments. You have in the parts of the Meccano system a wonderful means of testing out any new ideas which may occur to you in an easy and rapid way. We want Meccano boys to be foremost in the field of invention and discovery—an unlimited field, with opportunities ever present, ready to be grasped by persistent, imaginative and inventive men. Many important radio inventions are the result of experimenting by boys. Major Armstrong, the brilliant young radio engineer, was scarcely out of school when he discovered his "regenerative hook-up," an invention which revolutionized radio, and is responsible for the long distance records being made by radio enthusiasts.

Tests and experiments in radio are being made hourly by highly trained experts in the Meccano factories, and we shall have much to say regarding the results of their work in the future. Already a number of valuable discoveries have been made in the direction of obtaining improved results in radio receiving by the aid of Meccano parts, and these will be first announced in the Meccano Magazine. We strongly advise Meccano boys to read the columns of this Magazine very closely in the future.

How to Make the Receiver

There are three distinct instruments in the receiver proper: The Inductances, 1, Fig. A; the Tuning Condenser, 2, and the Detector, 3.

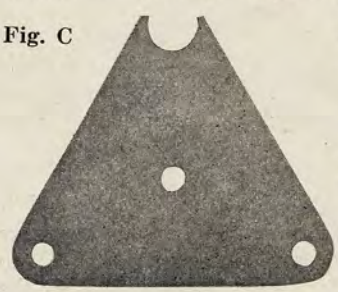
Condenser

This is made by mounting the two 2½" x ½" Double Angle Strips, 4 and 4A, on a 3½" x 2½" Perforated Flanged Plate, 5, as shown in Fig. B. The strips should be insulated from the plate by insulating washers and bushes, using the No. 6 B. A. screws and nuts. From one of these bolts a wire is brought to the insulated terminal 6 on the plate. Two ½" brackets, 7 and 7A, Fig. B, are bolted to the plate to form the bearings of the movable portion. These brackets are also insulated from the plate, and a wire is connected from one of them to another insulated terminal, 8.

A bolt, 9, Fig. B, is locked with a nut above and below the plate to form a stop to prevent the movable part of the condenser from being pulled out too far, and a ¾" bolt is fixed in like manner behind the double Angle Strips to prevent it being pushed in too far.

The construction of the fixed portion, 10, Fig. B, of the condenser may now be proceeded with. It is formed by connecting eight 2½" triangular plates together at the lower end by a 2" threaded rod, 11, and at the same time spacing them by two nickel washers between each plate, afterwards clamping them at each end by a washer and a nut. At the upper end another 2" threaded rod, 11A, is used. Before threading the rod, two insulating plates, Fig. C, should be placed between each two metal plates, and should be spaced apart from each other by a nickel and a brass washer, clamping them together in the same manner as the lower end. It will be noticed on reference to Fig. C that one of the corner holes is cut out. This is intended to clear the washers on the rod 11, in order that the metal plates and washers may

Fig. C



make an electrical contact with the rod 11. The fixed portion of the condenser may now be fastened in position between the strips 4 and 4A; extra nuts are threaded to each end of the rods 11 and 11A to centralize them in a fixed position. Rod 11A is also locked to the strips 4 and 4A by nuts, 12. The 2½" strip, 13, is then bolted at the top with a spacing washer at each end. The movable portion, 14, Fig. B, is composed of

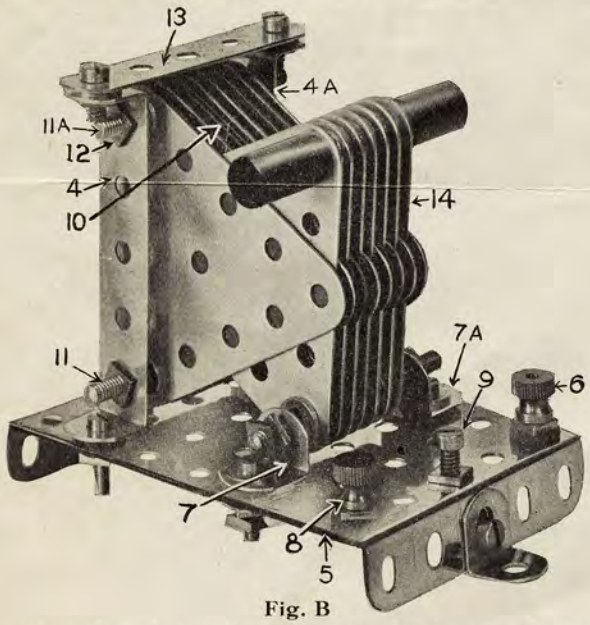


Fig. B

seven triangular plates which are threaded in a similar manner to those in the fixed portion, 10, with two nickel spacing washers at the top and bottom, no insulating plates being used. This movable portion, 14, is then passed between the apparatus of the stationary portion, 10, and connected to the brackets 7 and 7 A, and lock-nutted on the outside of the same brackets. The insulating handles may now be screwed on; these are intended to prevent what is known as "body-capacity"—a phenomenon which results in decreasing the signals when the hand comes in contact with the metal of the condenser.

Crystal Detector

On a 3½" x 2½" Perforated Flanged plate, Fig. D, mount a single bent strip, 17, which must be insulated from the plate. An insulated wire is brought on the under side of the plate from the bent strip, 17, to the insulated terminal, 18, on the plate. A 1" Angle Bracket, 26, is bolted directly to the plate as shown in Fig. D and in the upper hole is bolted a detector cup, 19. A terminal, 20, is bolted directly to the plate without

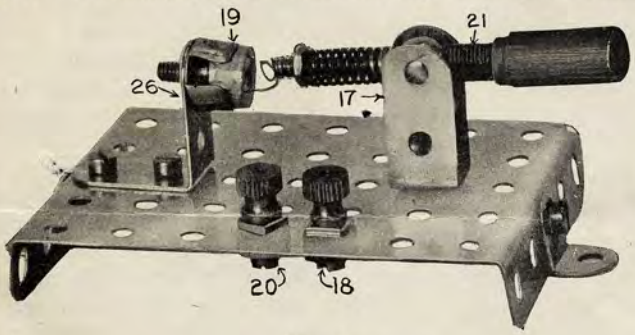


Fig. D

the use of insulating washers and bushes. The crystal is placed in the cup and the detector arm, 21, is then placed between the faces of the bent strip 17, with which it forms a universal joint to enable the best position to be found for the fine contact wire, or "cat-whisker," as it is called.

The Inductances

The Inductance Discs are furnished already wound and it is a simple matter to prepare the base upon which they are mounted. This consists of a 3½" x 2½" flanged plate, 22, to which is attached a reversed angle bracket, 23, Fig. E. At the other end of the plate is secured a threaded rod, on the upper end of which is threaded a coupling which supports a four-inch axle rod. At the upper end of this rod is another coupling, 24; this construction is clearly shown in Fig. E. The light

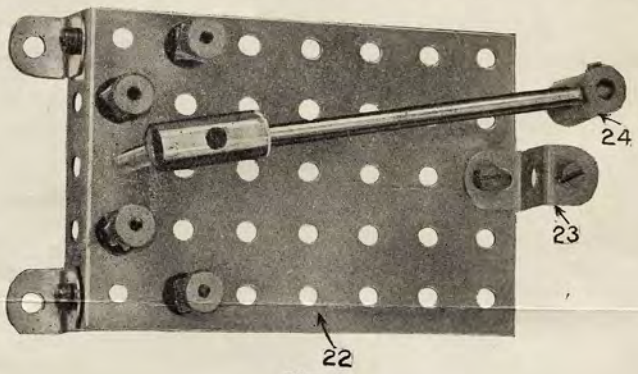


Fig. E

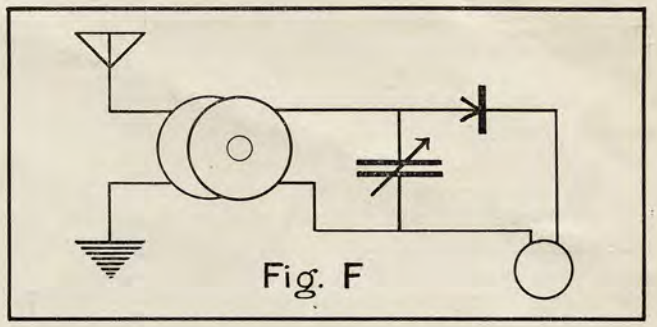
colored disc is bolted to the reversed angle bracket, 23, and the other coil is bolted to the coupling, 24. Turn the first coupling the proper number of turns to bring the two coils as closely together as possible but still allowing free sideward movement of the upper coil. The ends of the wires are brought to insulated terminals on the plate—the wires from the lower coil are connected to terminals on the one side, and the wires from the upper coil to terminals on the other side of the threaded rod. Two Angle Brackets screwed to the plate to hold it in position on the board complete the instrument.

Assembling

Having now made the condenser, detector and inductances as described, the next operation is to mount the various parts on the baseboard. The relative positions are clearly shown in Fig. A. Note that the Inductance Discs should be brought to the left as far as possible in order to allow the upper disc sufficient movement to the right without striking the detector.

Wiring

The apparatus is now ready to be wired or "hooked-up," as it is called. There are several different ways in which this set can be connected and each one will work efficiently under certain conditions. The best "hook-up" for amateur use, however, is given below in Fig. F.



From the terminal marked "Aerial," Fig. A, a wire is run to one of the terminals on the inductance base, 1, Fig. A, to which one end of the lower inductance winding is also connected. The other lower, or "primary" inductance winding terminal is connected to the terminal marked "Ground." Two wires are connected to the left "Phone" terminal, Fig. A; one of these is run to the left terminal on the condenser and the other to one of the "secondary" inductance terminals. Two wires are also connected to the remaining secondary inductance terminal; one of these is connected to one of the detector terminals, and the other should be run to the right hand terminal on the condenser. From the remaining detector terminal a wire should be connected to the right-hand phone terminal; this completes the hook-up.

The symbols used in Fig. F and Figs. H, K and M are the standard symbols used in radio hook-ups and every Meccano boy should be familiar with them.

The Aerial

To catch the incoming radio waves an aerial is necessary, as shown in Fig. G. This may consist of one copper wire 100 feet in length, spread as high as possible between two flagpoles, chimneys, trees or anything substantial that is handy, and should be as free and unobstructed as possible. The two ends of the aerial should be insulated from the supports by means of porcelain or composition insulators, which can be obtained from any store dealing in radio supplies.

To one end of the aerial should be soldered another copper wire, called the "Lead-in," which enters the house and is connected to the radio set at the terminal marked "Aerial," Fig. A. Both aerial and lead-in should be of copper wire not smaller than No. 14 gauge, either bare or covered—it makes no difference.

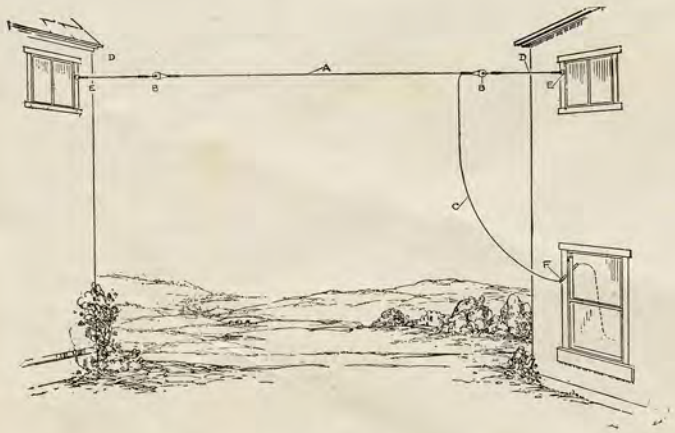


Fig. G

The construction of the Aerial is clearly illustrated in Fig. G, shown above. A represents the aerial wire and B the insulators, which insulate the aerial A from the supporting wires D, which in turn are fixed to screw-eyes E, screwed into the building or other supporting means. Wire C represents the lead-in, which enters the house through the porcelain tube F and is then connected to the set as described on the previous page.

Although in Fig. G the aerial is shown supported between the two windows, it would be better to support it from the chimneys on the roofs, or, even better, from poles raised above the roof. The higher and less obstructed you can get your aerial, the better will be the result.

The Ground

From the terminal marked "Ground" (Fig. A) a wire is run to the nearest water pipe or other metallic substance making a good connection with the earth, and preferably soldered to it to make good contact. If a water pipe is not available, a piece of pipe or iron rod about 6 feet long buried in moist earth will be suitable. The telephone receiver is connected to the terminals marked "Phones" (Fig. A) and the set is ready to operate.

How to Operate the Set

First, put the movable section of the condenser in about the center of its arc of movement. Then place the upper, or "secondary," coil directly over the "primary" coil. The next operation is to adjust the detector. The Meccolite will be found to be sensitive over its entire surface so that all that will be necessary is to see that the "cat whisker," or small wire makes contact with the crystal.

If you are unable to obtain satisfactory results after experimenting at first inspect the wiring of the set carefully—a single loose or broken connection will make the set inoperative.

Too much emphasis cannot be placed upon the need for a good telephone receiver. A "headset" is much better than a single receiver; such a set consists of two receivers mounted on an adjustable band which fits over the head and holds the receivers close to the ears, leaving the hands free. Good receivers are essential, and we urge all who build this set to purchase good receivers of a standard make. Beware of the cheap receiver—it is usually poorly made and will give very little service. The difference between hearing a radio concert and not hearing it is very often decided by the quality of the receivers used.

When voices or music are heard in the receiver, slowly change the adjustments of the condenser and inductances until the best results are obtained. These adjustments will vary with locations and conditions, and can be found only by experiment.

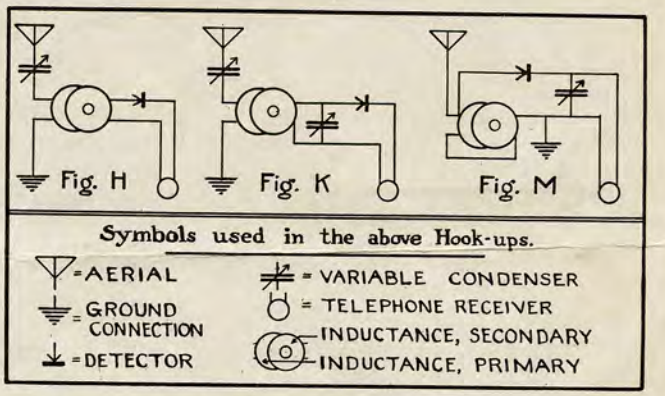
It is best not to wire the set permanently until it has been tested and found to be working properly. After this has been done and the most successful hook-up decided upon, the instruments can be mounted on the board and wired. Be careful not to have the wires come in contact with each other, as this will produce a short circuit and the set will not work. Use the Meccano insulated wire furnished with the outfit for making the connections.

To protect the set from danger of being struck by lightning, the National Board of Fire Underwriters require that each receiving set be equipped with an approved lightning arrestor. There are a number of makes of these arrestors to be had at any radio supply store. They are simple to connect to the set. One terminal of the arrestor is connected to the lead-in wire, and a wire is run from the other terminal to a good ground connection, either inside or outside the house. The same pipe or other grounded object to which the set is grounded may be used, provided it is not a gas pipe, which is not approved for a lightning ground.

An aerial properly grounded by such an arrestor is a protection to the house rather than a source of danger. Once the arrestor has been properly installed, no further thought need be given to it.

After the set is completed and working efficiently, you will not be content to sit still and merely "listen-in"—you will surely want to see how you can improve your outfit.

You can also have a great deal of fun trying to develop new radio apparatus with Meccano. Some of the experiments you might try are to hook up your set as shown in Fig. H; you might also make an additional condenser and connect it as shown in Fig. K. A small fixed condenser across the terminals of the telephone receivers might help to bring in the tones clearer and one could easily be made with a few extra Meccano parts. You might also get better results by adding more plates to the present condenser.



A further experiment is shown in Fig. M. In this hook-up the two coils are connected in "series," that is, the wire in both forms one continuous length. The condenser is connected across the telephone receivers and tuning is effected mainly by altering the position of the secondary coil. This method of wiring converts the set from a two-circuit receiver to a single circuit one, and the inductances are thus connected to form a simple variometer.

These are just a few suggestions—no doubt you will think of many more that you can try. Future issues of the Meccano Magazine will contain illustrations and descriptions of additional Meccano radio instruments and other important information. A sample copy of the Meccano Magazine will be sent to you on receipt of a stamped, addressed envelope.

Parts Required

to Build the Meccano Radio Receiving Set

Condenser

No.		Quantity
5	2½" Perforated Strips	1
12	Angle Brackets	4
37A	Nuts	28
37B	Bolts	5
38	Washers	60
53	Perf. Flanged Plates, 3½"x2½"	1
60	Double Angle Strips, 2½"x½"	2
76	Triangular Plates, 2½"	15
81	Screwed Rods, 2"	4
111	¾" Bolts	1
302	Insulating Bushes	6
303	Insulating Washers	6
304	6 B. A. Screws	6
305	6 B. A. Nuts	10
306	Terminals	2
403	Insulating Triangular Plates	14
404	Insulating Handles	2
405	Brass Washers	7

Inductance

No.		Quantity
12	Angle Brackets	2
16	Axle Rods, 3½"	1
37A	Nuts	6
37B	Bolts	5
53	Perf. Flanged Plates, 3½"x½"	1
63	Coupling	1
63C	Coupling, Threaded	1
81	Screwed Rod, 2"	1
125	Reversed Angle Bracket, ½"	1
302	Insulating Bushes	4
303	Insulating Washers	4
304	6 B. A. Screws	4
305	6 B. A. Nuts	8
306	Terminals	4
407	Inductance Discs	2

Hook-Up

No.		Quantity
34	Spanners	1
36	Screw Drivers	1
45	Double Bent Strip	4
304	6 B. A. Screws	4
305	6 B. A. Nuts	8
306	Terminals	4
406	Hook Up Wire	length 1
412	Polished Mounting Board	1
412A	Brass Wood Screws	14
412B	Wire Staples	16

Detector

No.		Quantity
12	Angle Brackets	2
12A	Angle Brackets, 1"	1
37A	Nuts	5
37B	Bolts	5
53	Perf. Flanged Plates, 3½"x2½"	1
102	Single Bent Strip	1
302	Insulating Bushes	3
303	Insulating Washers	3
304	6 B. A. Screws	3
305	6 B. A. Nuts	4
306	Terminals	2
410	Meccolite (all sensitive crystal)	1
411	Crystal Cup	1
	Springs	1
	Detector Arm Rods	1
	Cat Whisker Wire	length 1
	Insulating Handle	1
	Detector Sleeve	1

Price List of Parts used in Radio Set

Part No.		Price
5	Perforated Strips, 2½" long ½ doz.	.15

(12A)

(45)

12	Angle Brackets 1 doz.	.12
12A	Angle Brackets, 1" each	.05

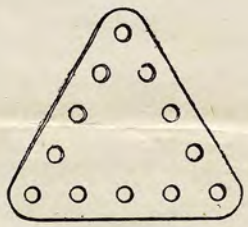
16	Axle Rods, 3½" long each	.05
34	Spanners each	.10
36	Screw Drivers each	.10
37A	Nuts 1 doz.	.05
37B	Bolts 1 doz.	.10
38	Washers 1 doz.	.05
45	Double Bent Strips each	.05
53	Perf. Flanged Plates, 3½"x2½" each	.20

60	Double Angle Strips, 2½"x½" each	.05

(63)

(63C)

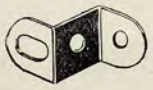
63	Couplings each	.15
63C	Couplings, Threaded each	.20



(76)

Part No.		Price
76	Triangular Plates, 2½" each	.05
81	Screwed Rods, 2" long each	.10
102	Single Bent Strips each	.05
111	Bolts, ¾" long each	.02

(302)



(125)

(303)

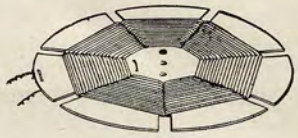
125	Reversed Angle Brackets, ½" ½ doz.	.20
302	Insulating Bushes 1 doz.	.15
303	Insulating Washers 1 doz.	.08
304	6 B. A. Screws 1 doz.	.15
305	6 B. A. Nuts 1 doz.	.10

These and any other Meccano parts can be purchased at any time in any quantities. If your dealer cannot supply you, we will ship your order direct on receipt of price. We prepay postage on orders over $1.00 only.

(306)

(404)

Part No.		Price
306	Terminals each	.05
403	Insulating Triangular Plates, 2½" each	.03
404	Insulating Handles each	.15
405	Brass Washers, ⅛" 1 doz.	.10
406	Hook-up Wire length	.05



407	Inductance Discs, wound pair	2.00

409	Detector Arm, complete each	.45
	(This Arm includes the last five items listed under "Detector" above.)	

(410)

(411)

410	"Meccolite" (All-sensitive crystal) each	.30
411	Crystal Cup each	.10
412	Polished Mounting Boards each	1.25
412A	Brass Wood Screws 1 doz.	.10
412B	Wire Staples 1 doz.	.05
	Instruction Leaflets each	.05

Ask your dealer for a free Entry Blank for the big Meccano Prize Contest. $1,250 in prizes given away to boys for new designs. Any boy can enter—there are no restrictions or entry fees.

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