

The Story of Two
MARVELLOUS NEW
RADIO INVENTIONS



The PHILCO
ALL-WAVE ALL-PURPOSE
AERIAL and
AUTOMATIC AERIAL SELECTOR



Sole Agents
FRYER BROS
BRECON

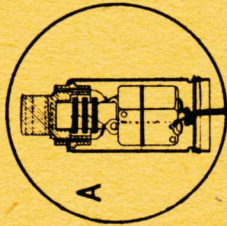
ONLY PHILCO HAS IT!

Price Twopence

PHILCO ALL-WAVE ALL-PURPOSE AERIAL

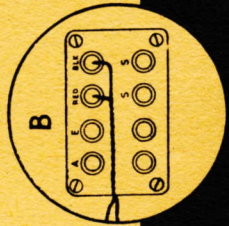
FOR USE WITH PHILCO
ALL-WAVE SETS

PRICE - - - each **22/6**
(I.F.S. 25/6)



The Danger Zone

The new, specially made transmission line provides a safe conduct through the "danger zone" — the zone of interference — without loss of efficiency or noise pick-up.



RADIO'S GREATEST ADVANCES FOR YEARS

THIS is the story of two of the biggest wireless inventions of recent years. It's a thrilling story; one that shows you how you can double the number of stations that your Philco brings in, how—with an All-Wave Philco—you can hear short-wave stations in a way that hasn't hitherto been thought possible, how—with *any* set of *any* make or type—you can cut down fading to a minimum and get rid of those unwanted noises that are such a nuisance.

These inventions, the results of nearly two years' intensive work by engineers of the great Philco Laboratories, are the Philco All-Wave All-Purpose Aerial and the Philco Built-in Automatic Aerial Selector. When you've read about them you'll agree that once again Philco has shown the rest of the world the way in radio progress.

THE STORY BEGINS

Years ago, in the very early days of broadcasting, stations were few and far between and their power was very small. So feeble were the impulses received from them that owners of wireless sets had to put up aerials of the most efficient kind known and keep them in good order if they wanted any results. As time went on broadcasting stations increased in number at an amazingly rapid rate and what had previously been looked upon as big transmitters were soon regarded as midgets, dwarfed as they were by the huge plants which sprang up in this country, all over the continent of Europe and in almost every part of the civilized world.

Progress was made in transmitting gear, and Philco receiving sets did not lag behind. Their sensitivity was increased almost beyond belief, and sensitivity means their ability to range further afield and to receive more stations. Selectivity (the power of separating one station from another) went up by leaps and bounds. Automatic volume control, which reduces the effects of fading, was improved year by year and in Philco sets *full* automatic volume control that really does the work has always been an important feature.

A GOOD SET DESERVES A GOOD AERIAL

Sets in fact became so good that they were far better than their aerial systems. The highly sensitive Philco receiver



Remember the one-armed paper-hanger?

You wouldn't expect him to be very efficient. Nor should you expect that radio set of yours to give really good reception with an out-of-date, inefficient aerial. Like the poor paper-hanger, it is trying to give a two-handed performance with only half the equipment.

would bring in station after station with nothing more elaborate than a piece of wire slung round a room. This being so, countless listeners put up aerials of the most inefficient kind when they bought their first Philco receivers, whilst others who were not newcomers to the most fascinating of all hobbies allowed their aerials to go year in

year out without any attention whatever.

IT IS NO EXAGGERATION TO SAY THAT OVER 80% OF THE RECEIVING AERIALS IN USE TO-DAY ARE HOPELESSLY INEFFICIENT.

The idea that a good set will work well from any old aerial is absolutely wrong. It will work, but it won't work half so well as it could and should.

The better the set the better the aerial should be. And conversely, the better the aerial the better are the results that you will have from your set, no matter what the type, cost or make.

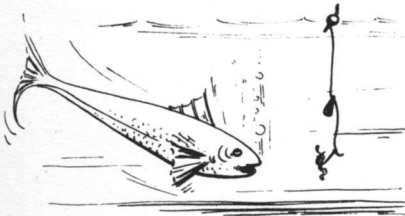
WHY HAVE AN AERIAL AT ALL?

The aerial is the net that you cast out into the ether-sea to make your capture of wire-

less waves. If a net is very small you don't catch many fishes. Should its meshes be large you capture still fewer. If it is full of tears and rents it's only the unlucky fish that goes into the bag.

Still speaking of fishing, but this time of rod and line, it's the biggest

fish that always gets away! Also, the empty creel is often filled at the fishmonger's on the way home. The biggest fish in the



case of wireless is the most interesting station, which escapes you because your aerial isn't up to its work. Just as the unsuccessful angler can fill his creel by spending good money on stale fish, so you can obtain reception, far poorer than it should be, of a number of stations with the most indifferent aerial, but you will do so by sacrificing quality of reproduction, absence of fading, and freedom from unwanted noises.

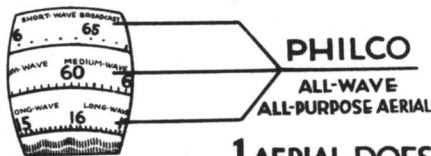
"ROOF" AND DOWN-LEAD

An ordinary aerial can be regarded as consisting of two parts. There's first of all the horizontal portion, which is usually called the roof. Then there's the vertical or semi-vertical wire which connects the roof to the wireless set. This is known as the lead-in or down-lead. No matter how much trouble is taken in making it as good as it can be, this kind of aerial has two big drawbacks. Philco engineers realized these to the full and set themselves the task of discovering the perfect aerial system. It was a long and difficult business, but all their painstaking work has been amply repaid by the amazing Philco All-Wave All-Purpose Aerial and the Philco Built-in Automatic Aerial Selector.

MISFIT AERIALS

Now let's see what the drawbacks of the ordinary aerial system are. First of all one and the same aerial of the ordinary kind cannot match each of the wavelength ranges of your set. If you make its roof long enough for the best results on the medium and long waves it will be too long for the short waves. Supposing that you cut the aerial down to the best dimensions for short-wave reception it would work excellently on the short-wave range, but your results on the medium and long waves would be poor. What is generally done is to compromise by making the aerial of medium length, which means that it is a misfit all round and that reception on any wave-band is not so good as it should be. To get the best out of a set, four or five separate aeriels would be needed—and nobody wants anything of that kind.

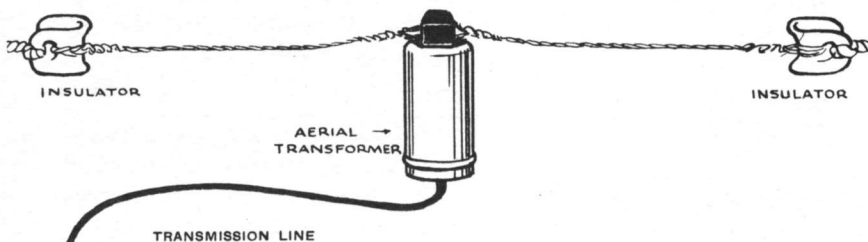
The Philco All-Wave All-Purpose aerial is really a whole family of aeriels in one.



1 AERIAL DOES THE WORK OF 3

THE PHILCO ALL-WAVE ALL-PURPOSE AERIAL

The roof of the Philco All-Wave All-Purpose Aerial consists of two pieces of stranded wire of different lengths, one 43 ft., one 17 ft. Between them is a small hermetically sealed metal box containing a transformer, which is an arrangement of coils specially designed for the purpose by Philco engineers. Built into the set is the Philco Automatic Aerial Selector, which also contains a transformer. The connection between the roof of the aerial and the set is very different from the down-lead of the ordinary aerial. It looks much the same, except that it is thicker and that it consists of two cabled wires twisted together in a special way; but it isn't in reality a down-lead at all; it's a transmission line. By using a transmission line instead of a



down-lead, Philco engineers have got rid of the second great drawback of the ordinary aerial system.

WHERE THE DOWN-LEAD FAILS

Ideally the down-lead should be nothing more and nothing less than an easy path for wireless waves from the roof of the aerial to the receiving set. In other words, the roof should *collect* impulses and the down-lead should *conduct* them to the set without doing anything else. Unfortunately it does do other undesirable things. First of all it may be responsible for very serious losses, if its insulation is not too good; or if it contains poorly made joints; or if it passes close to walls and so on; or if it is of considerable length. Very few of the down-leads of receiving aerials of the ordinary type in use nowadays are without one or more of those "ifs" and the result is that though the roof may play its part well as a collector of wireless waves, the down-lead fails to deliver to the wireless set all that the roof has collected. The Philco transmission line with its transformers at either end knows nothing of "if's" and "buts." Its joints are factory soldered and permanently good.

This transmission line is not prone to leakages and losses as the down-lead is. A length of 50 ft. is normally supplied with the aerial, but you can make it 400 ft. in length if you like without impairing the performance of the set and you can staple it to the skirting board if you wish to do so.

NO CRACKLES HERE

Another weak point about the ordinary down-lead is that it will not stick to its job of *conducting*. It insists upon acting as a collector of wireless impulses and it is the down-lead which is mainly responsible for picking up interference from electrical machinery which causes those crackles, those noises like frying sausages and those unpleasant sounds like the tearing of a strip of American cloth with which most listeners are all too familiar. That is where the Philco transmission line scores. It does one job and one job only. It conducts but doesn't collect. It does *not* pick up man-made interference.

MAN-MADE INTERFERENCE

There's a very curious and interesting point about man-made interference, which can be caused by all sorts of electrical machinery, including tramcars, trolley-buses, the ignition systems of motor-cars, flashing signs and domestic appliances, such as the vacuum cleaner, the hair drier, the electric refrigerator, the electric fan and the home ciné projector. Every one of these can act as a miniature wireless transmitter sending out waves which cause our loud-speakers to emit nasty noises. But the waves that come from them do not rise very high above their source, though they may spread out horizontally for considerable distances. Generally speaking, if the roof of an aerial is 30 ft. high it will be above the field of interference. But it's no use having a high roof if your down-lead in passing through the "danger zone" picks up all the interference that is going. You see now one of the great virtues of the Philco All-Wave All-Purpose Aerial. Erect it so that its roof is reason-



THE OLD BONE-SHAKER GAVE YOU A RIDE OF A SORT

An out-of-date, inefficient aerial will give you reception of a sort too. But for real radio, the sort of performance that good set of yours was intended to give, get a real aerial.

ably high and its transmission line, which is a *conductor* and not a *collector*, will bring wireless waves from the station that you want safely through the danger zone without their being contaminated by interference.

HOW THE PHILCO AERIAL SYSTEM WORKS

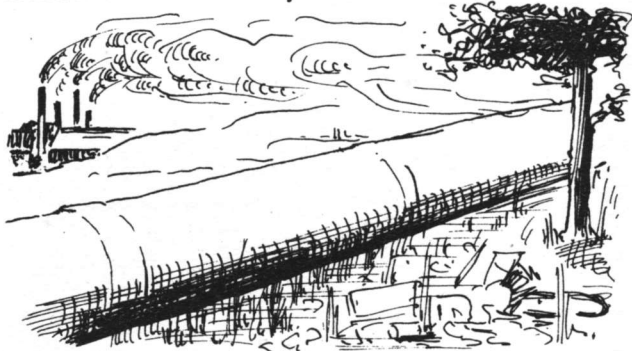
Perhaps we can best understand the working of the Philco All-Wave All-Purpose Aerial by thinking for a moment of the water supply of a busy industrial town which is covered by a pall of smoke from factory and household chimneys. Our imaginary town lies in a valley and on the hill-top far above the smoke region is a reservoir. Into this falls pure clean rain and the water of the reservoir itself is crystal clear. The City Fathers connect the reservoir with the town by means of a wide, shallow ditch which meanders down the porous soil of the hillside with many a bend and turn. Much of the water passing from reservoir to town seeps into the soil and is lost. The banks of the ditch are not too good and at some of the bends the stream overflows and spreads itself over the surrounding fields. Vegetation along the banks of the ditch sucks up a good deal of the water. Only a fraction of the available water arrives at its destination.



On leaving the reservoir the stream of water flowing through the shallow ditch is perfectly clear; but it ceases to be so soon after it enters the pall of smoke, where it becomes contaminated not only by drops of dirty rain, but also by the dead cats, old bicycle tyres and other little offerings that those living near its banks fling into it, as dwellers by the side of any stream invariably

do. And what of the water which eventually reaches the city in this way? To begin with only a portion of what the reservoir puts into the ditch ever reaches the city, since so much is lost on the way. Next, the water leaves the reservoir pure, clean and clear, but it is far from being any of these when it arrives at its destination.

Realizing that this state of affairs won't do, the City Fathers install a large straight pipe between the reservoir and the city. The water now has the easiest of easy paths; none is lost by evaporation, by the transpiration of trees and plants, by leakages or by seeping into the ground. There is no contamination by smoke-dirtied rain or from the various discards of mankind. The city receives the whole of the water that its reservoir collects and it receives it free from any sort of contamination.



A COMPARISON

The wide shallow ditch corresponds to the ordinary down-lead and the pall of smoke through which it passes is the invisible pall of man-made interference—the danger zone—which covers every town and every village where electrical machinery is in use or where there is much motor traffic. The reservoir is, of course, the roof of the aerial. Being above the interference pall, it collects wireless waves free from disturbances; but on their way through the down-lead the waves become contaminated by interference and serious losses take place.

The large straight pipe is the Philco transmission line. Here there is no contamination, no picking up of interference, and all that the roof of the aerial collects is passed into the set without loss.

WHERE PHILCO SCORES

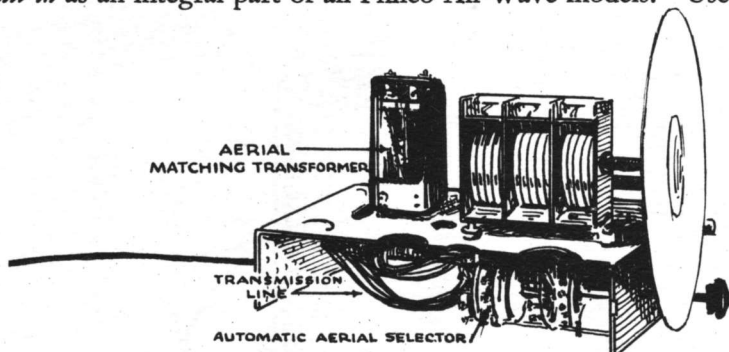
You see now why it is that the Philco All-Wave All-Purpose Aerial with its transmission line is so far ahead of the ordinary aerial, and indeed of any other receiving system.

OTHER ADVANTAGES

There are other advantages, too, about the Philco Aerial system. Suppose, for instance, that you want to have your Philco all-wave receiving set in a *front* room of the house whilst the only available space for the erection of a good aerial is the garden at the *back*. There is no difficulty at all here, for the transmission line can be several hundred feet in length, if need be, without spoiling results.

THE PHILCO AUTOMATIC AERIAL SELECTOR—BUILT-IN

The wonderful Philco Automatic Aerial Selector is exclusive to Philco All-Wave Receivers. Since May, 1935, it has been *built-in* as an integral part of all Philco All-Wave models. Used



with a Philco All-Wave All-Purpose Aerial it tunes the aerial *automatically* to the wavelength you wish to receive and so it gives you not just a compromise, not just good results on this waveband, fair on that and poor on a third, but the very best possible reception over the whole range of wavelengths, short, medium and long, covered by your All-Wave Receiver (medium and long on an ordinary receiver).

With the Philco Automatic Aerial Selector—Built-in—there's nothing to forget. As you move the wave-change switch from one waveband to another the aerial is *automatically* tuned and you obtain the very best reception on every wavelength.

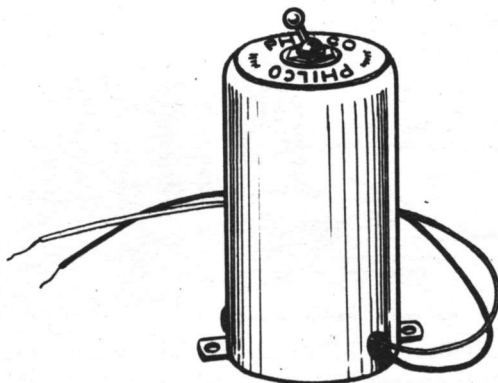
IF YOU HAVE NOT A PHILCO ALL-WAVE RECEIVER

If you have not a Philco All-Wave Receiver, if your set is a Philco two wave-band model (medium and long waves only),

or if your set is not a Philco at all, but of another make, you can still use and enjoy the advantages of the Philco All-Wave All-Purpose Aerial.

Naturally, the Philco Aerial cannot give you short-wave reception unless your set is an all-wave receiver, but it can and does give you clear, noise-free reception with any set whatever. It improves the performance of *any* set of *any* make on *any* waveband. It is an all-purpose as well as an all-wave aerial.

When it is to be used with receivers other than Philco All-Wave sets, the Philco All-Wave All-Purpose Aerial is supplied with a *set transformer*. This transformer, mounted close to the receiver, enables you to tune the set and aerial system to the short-wave band, or to the medium- and long-wave bands.



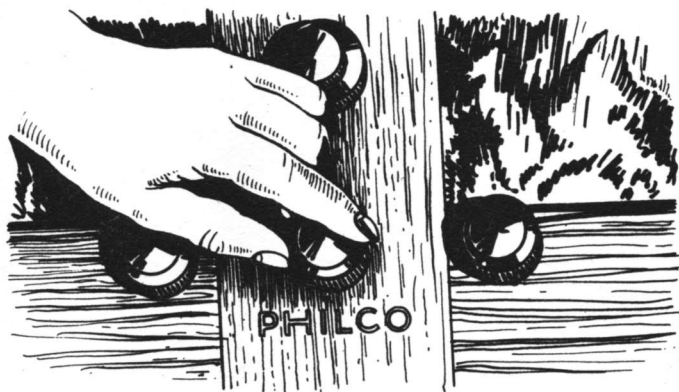
PHILCO LEADS THE WAY

With the All-Wave All-Purpose Aerial and the Built-in Automatic Aerial Selector, Philco offers you something that only Philco *can* offer: smooth, effortless efficiency on all wave-lengths with interfering noises cut down to a minimum, combined with completely automatic working. The Philco All-Wave All-Purpose Aerial and the Built-in Automatic Aerial Selector will double the enjoyment that wireless reception gives you. **ONLY PHILCO HAS IT.**

The two following pages summarize for you the manifold advantages of these two new marvellous radio inventions—the Philco All-Wave All-Purpose Aerial and the Philco Automatic Aerial Selector.

THE PHILCO AUTOMATIC AERIAL SELECTOR

1. Builds into every Philco all-wave set the necessary special coils and transformers to provide the exact electrical characteristics to tune the set and aerial system perfectly to each waveband.
2. Ties them right into the waveband switching mechanism, so that when you turn the knob which switches the set from one band to another, the tuning of the set and aerial system to the particular band occurs *automatically*.



3. This, in turn, makes everything error proof. No one can tune his Philco all-wave set to the long-wave band, for instance, and because of forgetfulness, leave the aerial system tuned to the medium- or short-wave band, which would, of course, actually decrease power and increase noise. In the Philco system (Philco all-wave set, *plus* Philco aerial), the set and aerial system *cannot* get out of tune with *any* waveband. The tuning is automatically shifted with the band.
4. With the Philco aerial tuning system the ordinary user can really enjoy short-wave reception as well as get vastly improved performance on medium- and long-waves. He gets over twice as many foreign stations, and gets them with a minimum

of noise, with maximum volume and clarity and with a minimum of fading.

All this, without having any more to think about. No additional knobs to turn; no reaching round in the back and turning a separate switch; no worry whether the set and aerial are tuned to the band in use or not. He can't go wrong.

THE PHILCO ALL-WAVE ALL-PURPOSE AERIAL;
SUITABLE FOR USE WITH ANY SET OF ANY MAKE
OR TYPE

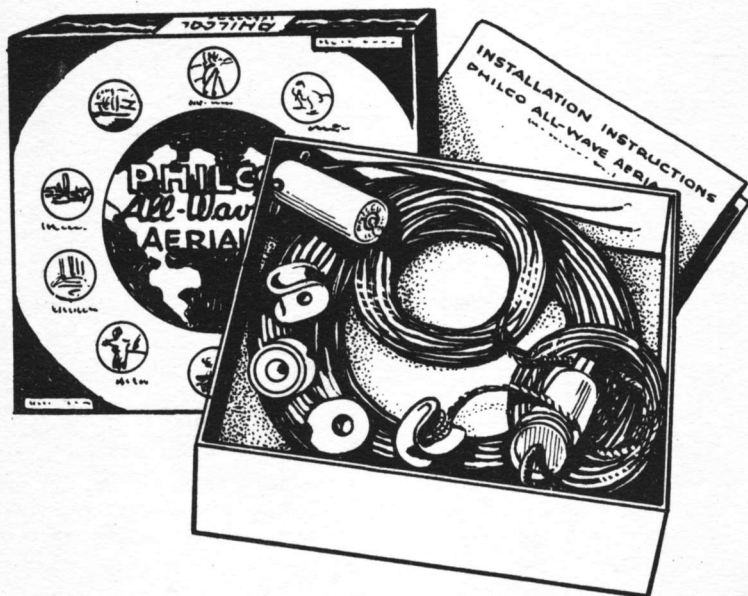
1. Provides the highest possible efficiency of reception from *any* set on *any* waveband.
2. Is the first aerial to give satisfactory reception on all wave-bands from 12 to 2,000 metres; on all frequencies from 23 megacycles all the way to 150 kilocycles.
3. Makes short-wave listening practical and satisfactory. Improves listening on medium- and long-wave bands as well. Is an *all-purpose* as well as an *all-wave* aerial.
4. Reduces or eliminates noise and crackle. Stops interference and cuts fading to a minimum.
5. Is easy to install.
6. Maintains its first efficiency under any and all weather conditions.



**He gets along
somehow with
only one skate**

Nine out of every ten radio sets are like this boy—trying to give perfect performance with only half the equipment. Nine out of ten aerials are out of date—inefficient.

The better your set, the better your aerial should be. A Philco All-Wave All-Purpose Aerial built to the Philco standard will give a new sparkle to the performance of your set—give you the kind of reception it was built to produce.

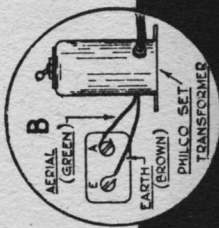
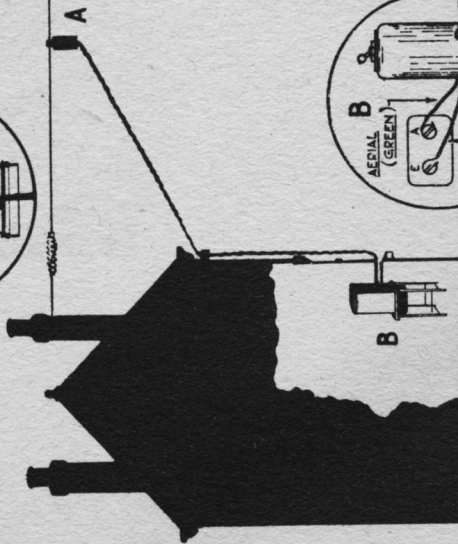
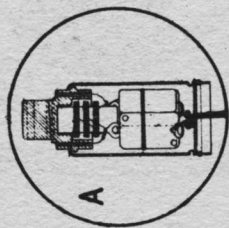


Prices, descriptions and illustrations of the products in this book are subject to variation without notice

PHILCO ALL-WAVE ALL-PURPOSE AERIAL

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OF ANY MAKE OR TYPE

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(I.F.S. 31/6)



The Danger Zone

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