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Antennas, Antennas, Antennas ...

I have always cherished the hope that my involvement with antennas would someday pay off. Well, that day came last week. A local weekly newspaper, *The Valley Voice*, ran their weekly "guess what this picture is" contest. My wife happened to be looking through the paper and said, "Here's something you'd probably know. You're always looking at antennas."

I checked it out and lo and behold, there was a picture of the HF and VHF beams above the roof of my friend N1FS, Frank Somers. I called the paper and was the first to correctly identify the picture of those antennas. I won the "Weekly Monobuck Prize" and am now anxiously awaiting the arrival of my dollar in the mail -- gloating over the fact that my knowledge of antennas is finally paying off.

A Great Antenna Applications Book

A while back Stanley Mayo, WDX1B, sent me a book to review called *Antenna Applications Reference Guide*, published by McGraw-Hill. It was originally published as part three of Johnson and Jasiks' *Antenna Engineering Handbook*. It is a really valuable sourcebook of information on antenna applications, from low-frequency through microwave.

Although this guide was taken from an engineering-level text, it is an applications book rather than a design book, and presents mainly practical information at a level which readers of this column should be able to handle. Some math is presented, but the bulk of the information is applications discussion and most of it can be covered without dealing with the math. I've seen no better applications book anywhere.

The *Antenna Applications Reference Guide* has whole chapters devoted to such topics as low frequency antennas, medium frequency antennas, high frequency antennas, VHF and UHF communications antennas, microwave-relay antennas, tracking antennas, satellite antennas, earth station antennas, aircraft antennas, direction-finding antennas, radio-telescope antennas, and more.

While definitely not a build-it-yourself guide, reading through it will give you a tremendous amount of information about which antenna designs are most useful for what applications and how various communications problems are solved by appropriate antenna designs. Unless you are an antenna design engineer, I guarantee that you'll see quite a few antennas in this book which you've never seen before.

If you're looking for a good coverage of the multitude of antenna applications which the communications field has produced thus far, this book is hard to beat.

World's Simplest Antennas?

Some people who like to monitor shortwave, scanners, and other sorts of radio have the problem that they cannot erect an outdoor antenna. Their solutions are many: under the rug antennas, attic antennas, along the wall antennas and using a balcony railing or metal window frame as an antenna. Many other solutions have been tried with varying degrees of success. This month let's add one more solution to the problem with the "no-antenna" antenna.

When Is An Antenna Not an Antenna?

When is an antenna not an antenna? When it's your power line, that's when. Actually, that's just a play on words to say that you can use the power line which brings electricity into your home as an antenna. Think of it, that power line is suspended from poles at a reasonable height, and spans quite a distance. It should intercept some radio signals somewhere along the way, right? Well, it does, and so our job is to remove those signals and apply them to the antenna input connector of your receiver, without bringing the power line's 120 volt alternating current in along with the signals!

The means of doing this is simplicity itself. We take a length of aluminum foil and wrap it tightly around the AC power cord of our radio. (Do not remove the insulation off the power cord, fellah!) To this foil, attach a wire and run it to the antenna input of our receiver. An alligator clip will help attach the wire to the foil.

The electrical capacity between the foil and the power line conductors allows the passage of the rf signals on the power line through the insulation of the power cord, and into the antenna wire. I have seen FM broadcast receivers which came equipped with a similar no-antenna antenna, made of a strip of metal, rather than foil.

In building your no-antenna, for UHF and VHF a short piece of foil, perhaps six inches or so long, may suffice. For

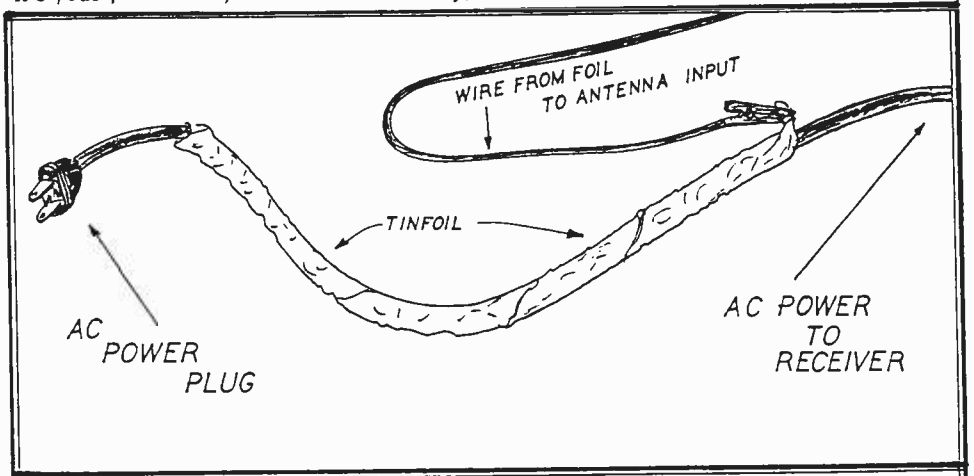

FIG. 1. A "NO ANTENNA" OR "POWER CORD ANTENNA."

shortwaves a longer strip should be used, perhaps even a few feet in length. In any case, if you don't get decent performance with your first try, try again, covering more of the cord's length with foil.

Be very careful that you do not get the foil where it can contact or short the plug on the AC cord, or the socket of any extension cord you use. Also, inspect the cord for cracks and exposed wire before you try this. Older power cords occasionally have cracks which expose the wires inside, and are dangerous with or without this type of antenna.

In days gone by, a commercial variant of this antenna was sold which plugged right into the AC power socket! One wire from a low capacity capacitor (perhaps .001 mfd) was connected directly to the hot side of the plug, and the other capacitor wire was connected to the antenna terminal of the receiver. This accomplished the same thing as your foil-and-power-cord capacitor, but became lethal if the dielectric of the capacitor became defective! For that reason, I don't recommend using the direct-connection approach.

Such a Deal!

The main reason for the existence of the no-antenna is that sometimes it is not practical to put up a better antenna. Note that I say better, because the "no-antenna" often lacks sensitivity. It is hard to predict how it will work in any particular situation. You may find that it does the job for you, or it may not give the sensitivity you need for the signals you want to monitor. But, if it doesn't give the results you want, you haven't lost much by trying this simple design. And, on the other hand, if it does the job, you've got a real bargain on your hands!

RADIO RIDDLES

Last Month: Last month we covered several functions which an antenna can perform, above and beyond the basic "reception or transmission of electromagnetic waves." We discussed antenna directivity as one possible means of using antennas to select between two stations which are simultaneously transmitted on the same frequency. Then we asked you to suggest a different means of doing the same thing, using a different function of antennas. Did you get the answer?

The answer is that we may sometimes use antenna polarization to reject one of two signals transmitting on the same frequency. Polarization refers to the orientation of the electrical wave which the antenna emits, or best receives. Polarization is determined by the orientation and shape of the antenna. One example of this is that, in communication satellite work, circularly polarized antennas allow rejection of unwanted signals from nearby satellites on the same channel by use of right-handed circular polarization for one antenna, and left-handed circular polarization on the other.

This Month: What U.S. president was known as the "radio president," and why? Find the answer right here next month.