# hobby corner

Here's the answer to last month's Mystery Light puzzle

EARL "DOC" SAVAGE, K4SDS, HOBBY EDITOR

LAST MONTH I TOLD YOU ABOUT A MYSTE-rious light box submitted by Tom Faron. I told you what it *looks* like and what it does. As you recall, the question was: *how* does it work?

A few of you sent in workable solutions but others missed the boat. In case you did not figure out the puzzle, here is the way Tom made his box.
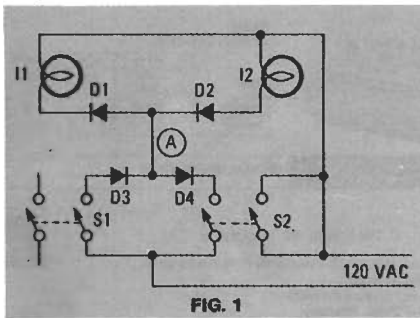
FIG. 1

First, let's examine the *actual* circuit that is shown in Fig. 1. Remember: this is *not* what you see when you look at the clear plastic box, but we will come back to that later.

The real trick is diodes (D1–D4), which provide independent control of the lamps by the switches. Switch S1 controls lamp I1 and S2, I2. The wire labelled *A* functions as a dual-lane highway for the current.

The result is that, with only two wires between the switches and the lamps, you can turn both lamps off, both on, or either one on by itself. Note that this circuit will not function properly with a DC voltage applied.

Now all this would not be so tricky if Tom had not put it in a clear plastic box so that it *appears* that he has nothing to hide. But he does hide several things and here is how he does it.

Of course, the diodes are a dead give-away so they are hidden in the wire connections. The diodes are of the sub-miniature variety and they are soldered in with very short leads. Since all the wiring is done with insulated wire, Tom's use of heat-shrink tubing insulation over each diode makes it look like a plain insulated solder joint. In fact, even after you know the diodes are in there, their shapes are hard to see.

The second deception is in the selection and wiring of the switches. SPST switch-es are all that the circuit requires but

DPST switches are used. The straight-through side of the AC line is routed through the switches and "dummy-wired" to the unused contacts. Actually, all the switch contacts are jumble-wired and it takes a sharp eye to discover that one side of the line is not broken at all.

Tom's final deception lies in his choice of lamps. They burn at only about half-brightness in this circuit (because of the diodes, each one can get current for only half the AC waveform). Since this, too, would be a giveaway to the circuit, he chose an uncommon lamp—in this case, a clear 7½ watt lamp. Any bulb will work but pick an unusual one so that the observer is not likely to say right away: "Hey, those bulbs are not as bright as they are supposed to be!"

There you have the solution to the mystery light box. Put one together and you can have some fun with your "smart" friends. Thanks, Tom, for sharing your circuit.

If you liked this puzzle circuit and have one of your own, send it along and we'll see if other readers can figure out how it works.

The mailbag

We really do enjoy and appreciate the many letters and questions that you send in. Since so many of you take the time to write, I think you would like to know what kind of letters we get from other readers. Well, the letters and cards can be divided into three groups. There are the *simple*, the *interesting*, and the *impossible*!

The simple ones ask things like parts sources (that answer was covered in an earlier column, and the answer is maga-zine ads, mail order catalogs and local suppliers). Another example is inquiries for information that is readily available in any common reference. Come now; every serious hobbyist should have a few basic reference books. On IC's, for instance, Don Lancaster has written an excellent series of *Cookbooks* (TTL, CMOS, etc.) and there are many others from which to choose.

Normally, you don't hear about the simple ones but from time to time, we do discuss some of the interesting letters and questions. They are the ones that raise unusual problems and offer solutions to others. But you don't hear about the third

type either—the impossible ones are just that.

Some of the impossibles are from folk who build a project out of this column, other articles or, even, other magazines. They find that it doesn't function proper-ly and write to find out why not. (Did you ever try to troubleshoot a project from 2,000 miles away?) Then, there are let-ters that indicate a lack of understanding of basic electronics or, even, electricity.

Those are impossible because a re-sponse would be as long as a book—half of a book, at least. I'm not making fun of those writers—all of us were like that when we started out. The thing is that one must attempt to grow in knowledge as he gains in experience. Reading only "how-to-do-it" articles simply will not build a sufficient knowledge base for anything more than dabbling in electronics.

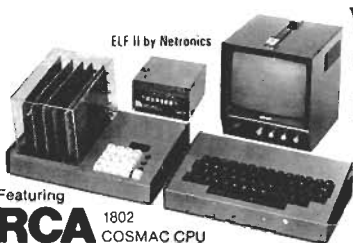Well, what to do? Here are some of the many possibilities:

- Read and study the theory or "how it works" sections of con-struction articles. Passing up those paragraphs will cost you in the long run.
- Give special attention to the arti-cles you find on basic electronics and theory. Every new idea you understand will be needed and valuable sooner or later.
- Begin a study program if you want to do more than dabble in elec-tronics someday. This is a neces-sity whether you want to make a living in this fascinating field or simply be a competent hobbyist. There are many approaches to a study program: planned serious reading and study entirely on your own; following a plan designed by experts (Heath, American Radio Relay League and others); night classes offered by your local pub-lic schools or a Junior/Community College.

Remember the old adage: "If it's worth doing, it's worth doing *well*." Electronics is not all parts, tools and instruments. That's a large and fun portion of it but unless it stands on a good knowledge base, it is quite limited.

Start your own collection of reference books. Undertake a study program. Get the most out of your hobby.

Getting back to the subject of letters *per se*, there are two more points of importance: the matters of time and the self-addressed stamped envelope *continued on page 80*

(SASE). There is a difference between writing a magazine business office about your subscription or whatever and writing to the author of an article.

Most of the guys whose articles you read make their living at some other job and do their writing "on the side." (This one is no exception.) The result is, of course, that the time available for answering letters is quite limited. We really enjoy your cards and letters and hope that you will keep sending them. However, please understand if there is not enough time to answer every one of them. If you do want a reply, you must enclose an SASE. All letters to this column should be sent to: Hobby Corner, **Radio-Electronics**, 200 Park Ave. South, New York, NY 10003.

Soldering irons

A while back I wore out my last fine tip for my favorite soldering pistol. I couldn't find a single replacement within a 50-mile radius.

As I was looking, I kept seeing these little cordless irons and, finally, I decided to take the plunge and buy one. After all, it would be nice not to have a line cord dragging over the workbench. I bought a Wahl *Iso-Tip* outfit—iron, recharging stand and several tips.

Oh, boy! "Cordlessness," which I had expected to be *the* advantage, has turned out to be just the icing on a very big cake. Why hadn't someone *told* me about these things?

So, I had better tell anyone who hasn't already discovered it: these irons are the eighth wonder of the workbench! I'll hold on to my regular gun (formerly small) for larger soldering jobs, but I have found my bench companion.

Not only does my new iron *not* drag a cord around the bench *but* it is also lightweight. The pushbutton control is more convenient than a trigger, and makes it much easier to control the tip temperature. A wide variety of tip shapes can be interchanged quickly since they are spring-loaded. The tip sticks out less from your hand, resulting in better balance and control. The iron heats up much faster than any iron I have used before. The built-in light is located nearer the tip so that I can better see what I'm doing.

Well, I wish I had discovered this iron when it first came out. Give one a try; there are several manufacturers. The Wahl comes in a number of models—three that are especially interesting for hobbyist use. These are *models 7500, 7700,* and *7800,* which are the same except for their recharging time—overnight, 4 hours and 1 hour, respectively.

If you haven't already done so, take a good look at these cordless soldering irons. You may be pleasantly surprised as I was. **R-E**