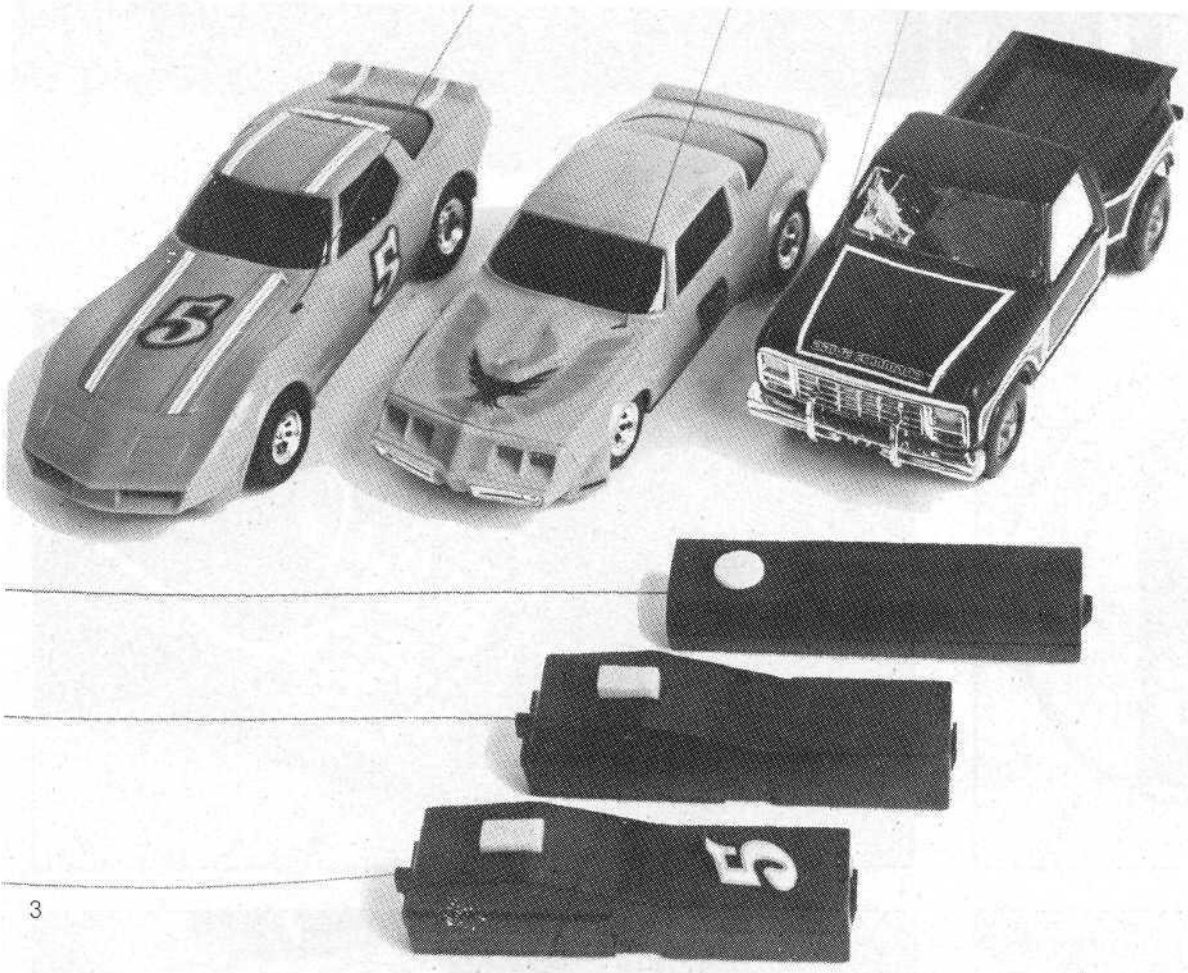
1

1.&2. A radio-controlled camera and flash can be used for a variety of things; insect photography is just one of them. Here, the receiver is protected by a plastic tube; a plastic color-slide box can also be used.
3. It all begins with an inexpensive radio-controlled toy car. . . .



FIRE YOUR CAMERA AND FLASH FROM THE REMAINS OF A TOY CAR!

HOW TO BUILD A RADIO CONTROL FOR $10!

BY JACK AND SUE DRAFAHL

Recently, we were able to prove that the phrase, "You can't see the forest for the trees," was originated by a photographer. While visiting a relative's house, we were watching a young boy playing with his new toy car (the forest) while we daydreamed about some upcoming photography projects (the trees). The young boy was operating his toy car from a distance, using a cordless remote control. As we watched, we wondered what the difference was between this toy car's remote control and a camera's remote control.

Deciding not to ponder any longer, we rushed to the nearest toy store and bought our own remote-control car for under $10.

Once we had our new toy at home, we set about dissecting it, and discovered that the transmitter was operated by a 9V battery which functioned when a small switch was depressed—just like a camera remote control. The car itself had one 9V battery that operated the receiver, plus four AA batteries that operated the car motor. When the button on the transmitter was depressed, a signal was transmitted to the car receiver, which operated a relay, causing the car to move—still the same principle as a camera remote control. We realized that it was feasible to make a radio control for cameras for about $10!

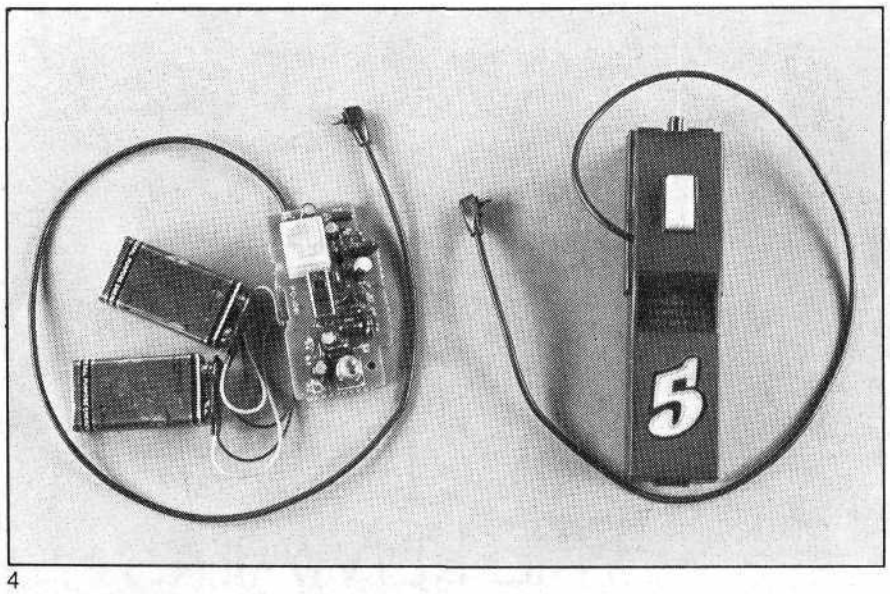
Here's a step-by-step account of just how to make a radio control for your camera, using parts from a $10 radio-controlled toy car:

1. Remove the main circuit board from the car, cutting all battery leads. Be sure to mark on the board where each lead went.

2. Install a 9V battery clip (purchased from your local electronics store) to the same terminals that were attached to the 9V battery in the car. Be sure to attach the red (+) lead to the same spot on the circuit board as before.

3. Insert a 9V battery in the transmitter, and another in the newly installed battery clip.

4. Turn the switch on the circuit board on (usually this is toward the antenna).



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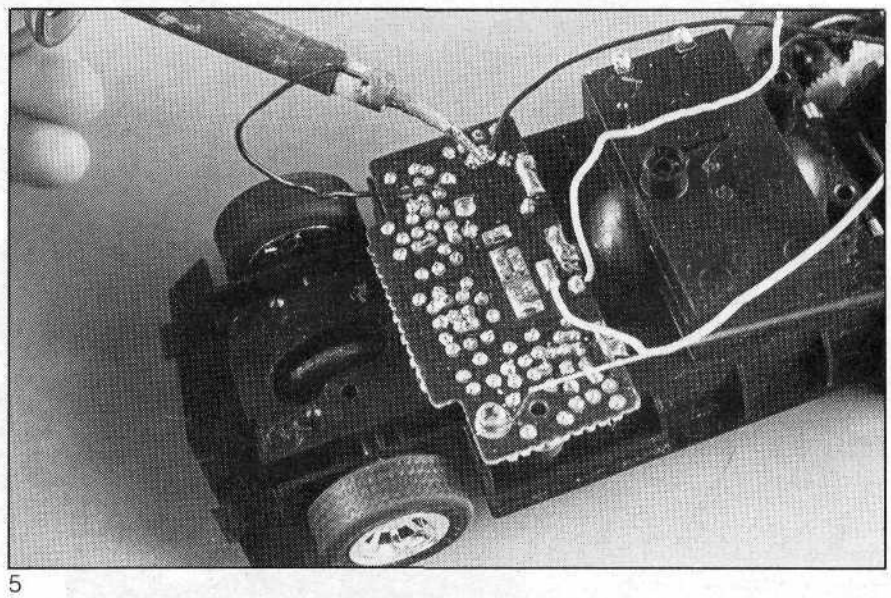
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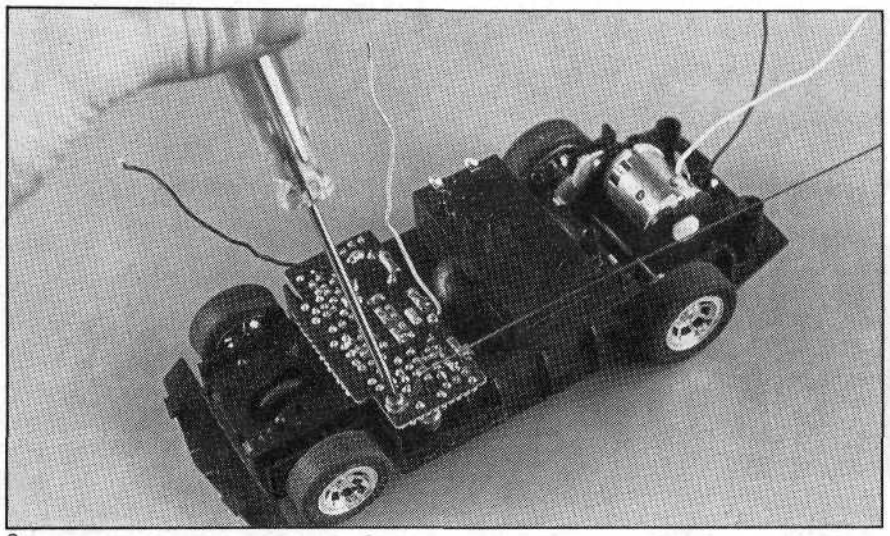
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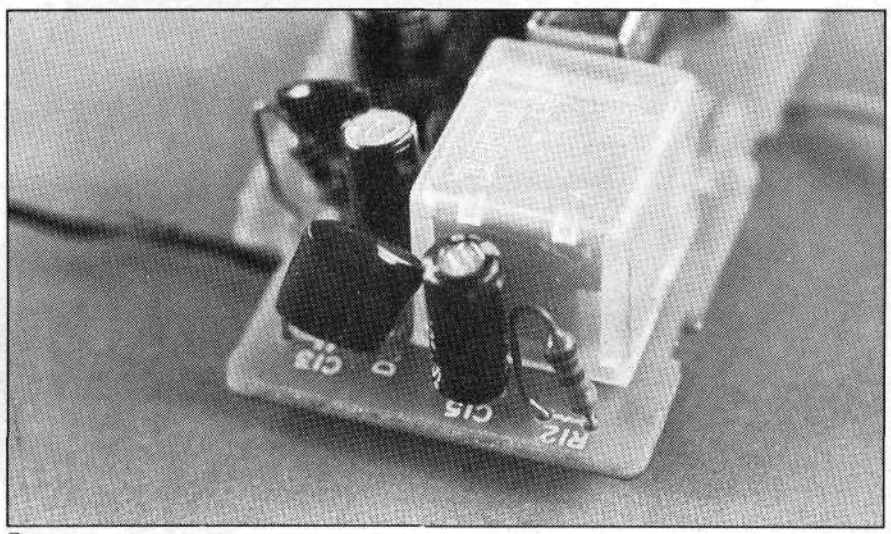

7

5. Test the system by depressing the transmitter button and listening for a click in the relay. If you don't hear a click, check the battery position and the position of the switch on the circuit board.

6. Locate the relay itself—it's a small, rectangular box on one corner of the board (see photo).

7. Turn the board over and locate the six to eight contacts from the relay.

8. All the contacts must be within the bounds allotted for the relay. You'll need an ohmmeter (available at your local Radio Shack) to determine this.

9. Select two contacts on the underside of the circuit board inside the relay boundaries, and touch them with the ohmmeter leads. If the meter reads 0 ohms (closed circuit), try another two contacts. Keep trying until you get an open circuit (no movement of the ohmmeter needle).

10. Holding the meter leads on these two contacts, push the transmitter button and hold it down for about a second. If the meter registers 0 ohms as soon as the button is depressed, you've located the right contacts. Mark them with a felt-tip pen.

11. If the meter registers 0 ohms when you release the transmitter button, you still don't have the right contacts. Try again. Be sure to mark the correct contacts with a felt-tip pen when you locate them.

12. Solder a wire to each of these contacts, and the other end of each wire to a jack that will fit into your camera motor drive.

13. You must remove the relay capacitor from the circuit board in order for the relay to operate your motor drive. The relay capacitor is located next to the relay (see photo), wired in parallel to the car motor. If the board is lettered, the relay capacitor should be labeled with the letter C followed by a number.

14. After you've found and removed the relay capacitor, check the relay again by pushing the transmitter button. If the relay does not work, you removed the wrong part! Replace it and consult a friend with a working knowledge of electronics.

15. If the relay still works, insert the newly installed jack into your camera motor drive and test it. Be sure to leave the antenna at its correct length and do not bend it into another shape.

16. After testing the remote control device, put the circuit board in a small box to protect the parts from damage—we used a plastic slide box. Also, be sure to turn the unit off when not in use, because it uses battery power from the moment it is turned on.

REMOTE FLASH, TOO!

This circuit is not limited solely to operating a camera from a distance. It can also be adapted to operate a flash unit from a remote location. Here's how to do it:

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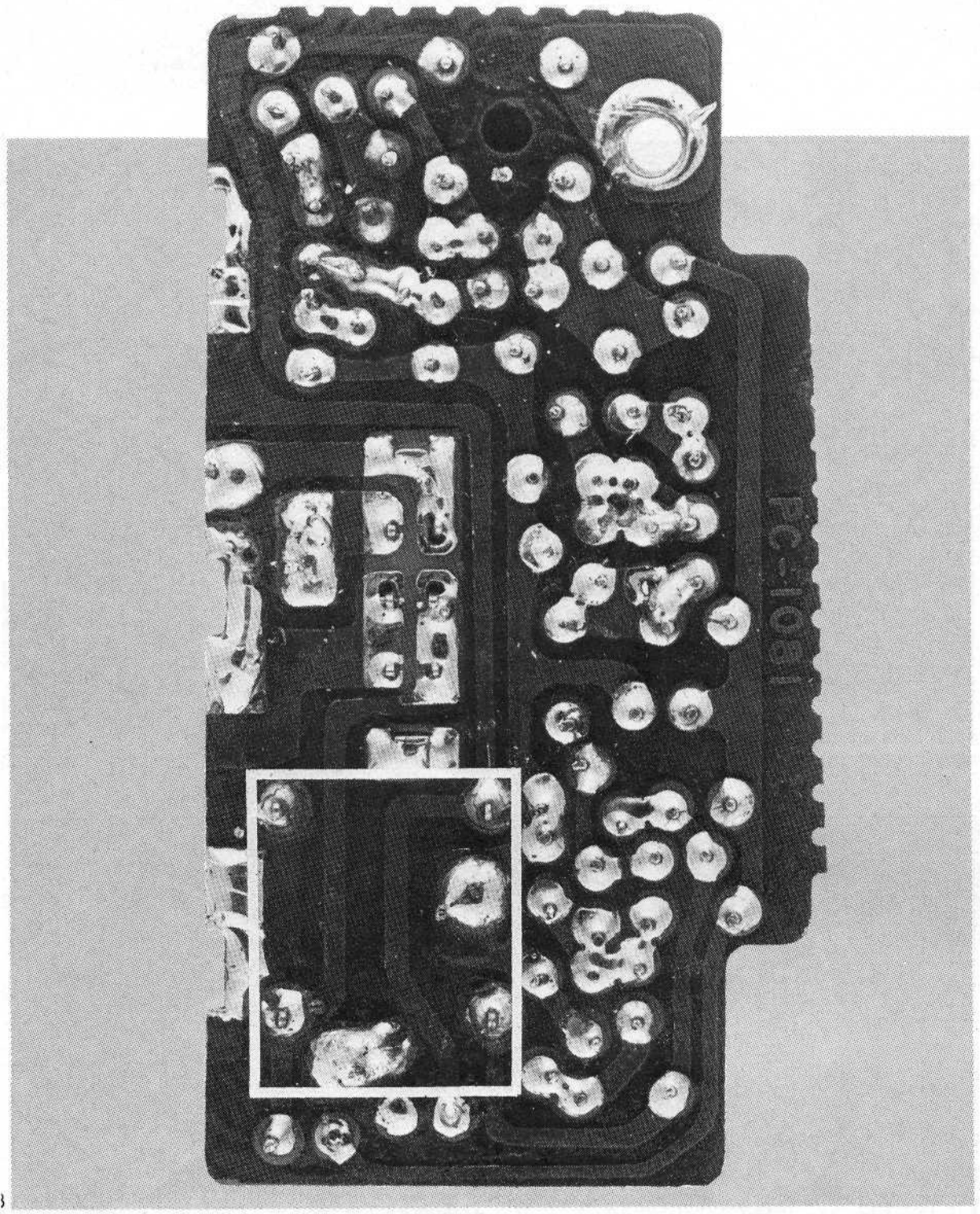
4. Here are the finished receiver (left) and transmitter, ready for use with flash. The PC cord from the transmitter plugs into the camera's PC socket; the PC cord from the receiver plugs into the flash unit. When the camera is fired, a signal from the transmitter will fire the flash unit. The receiver shown has two 9V batteries attached, for longer life.

5. The first step is to remove the wires from the toy car's circuit board.

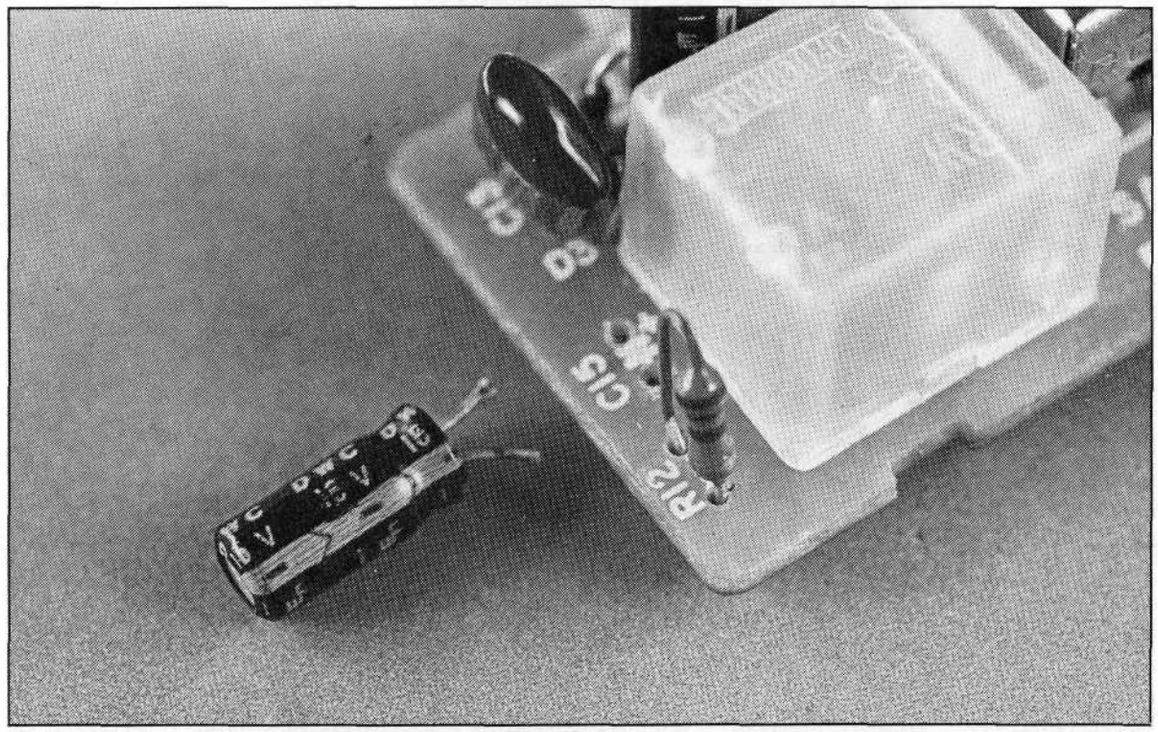
6. Remove the antenna for the time being.

7. Here are the relay (white plastic box) and capacitor (cylinder in center at front of board).

8. The white box shows the location of the pins from the relay on underside of circuit board.



RADIO CONTROL



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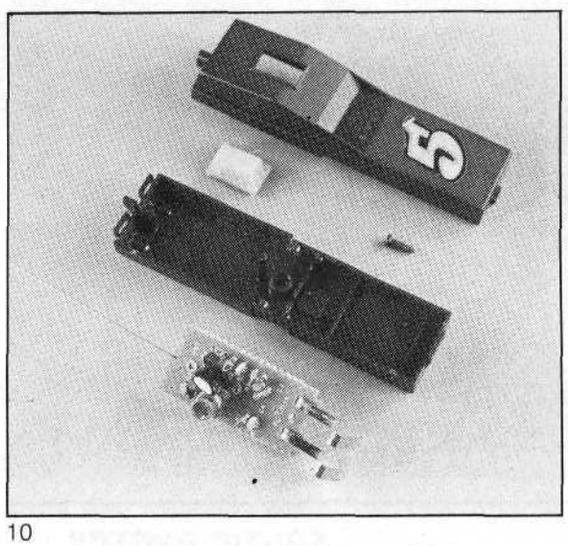

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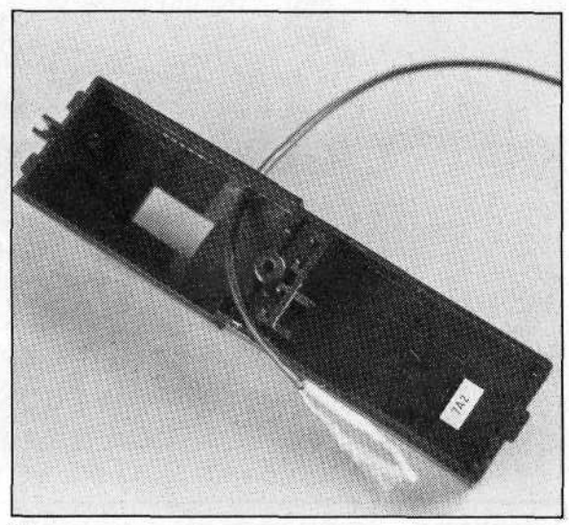

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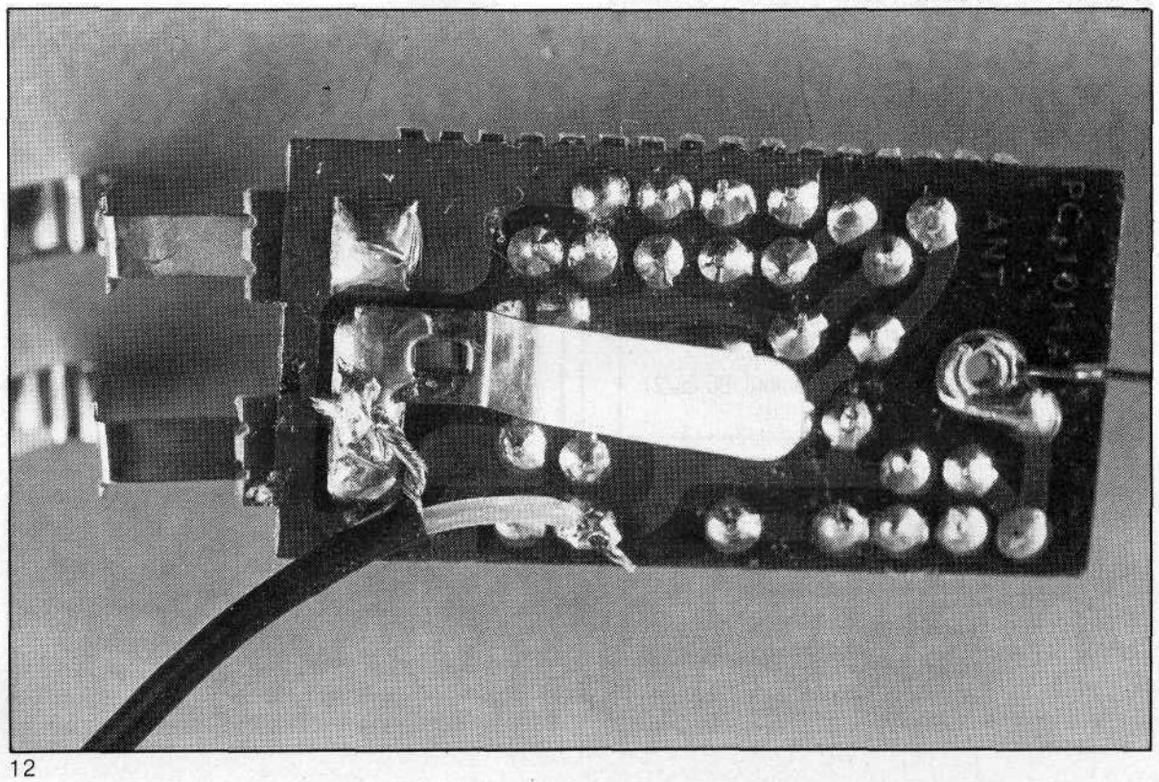
ALL PHOTOS BY THE AUTHORS



12

1. Purchase a PC extension cord from your local camera store.
2. Cut the cord in two and solder the wires from the male end of the sync cord to the same contacts as the motor-drive cord on the circuit board.
3. Attach your flash unit's PC cord to the PC plug on the receiver circuit board.
4. Turn on the flash unit and the receiver switch.
5. Push the transmitter button. The flash should fire. If it doesn't, check the wiring and the on-off switch.

We're sure you're asking yourself by now just why someone would want a remote flash. Be patient; we're not through explaining everything yet.

6. Open the transmitter case and locate the two points that make contact when the button is depressed.
7. Wire the remaining PC female plug to these two points, and reassemble the transmitter.
8. Attach the PC cord from the transmitter to the camera.
9. Attach the other PC cord from the circuit board to the flash.
10. Turn on the flash and fire the camera. The flash should fire.

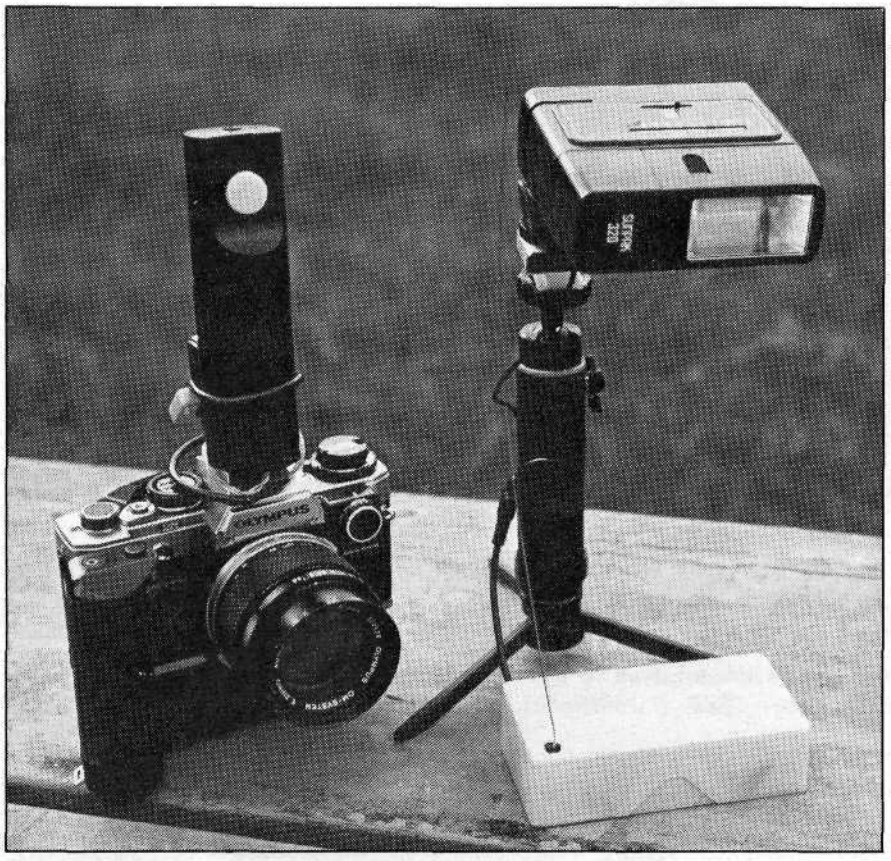
Note: The electronics in this radio control take some time to operate. If you use too fast a flash sync speed, the flash may operate faster than the radio control. You might have to use a slower flash sync speed (usually around 1/30). Run a test with film, using speeds of 1/60 and 1/30 to ensure that there is no image cutoff.

When purchasing your radio-controlled car for this project, choose one with a one-button control on the transmitter. The 49mHz transmitter is a better unit than the 27mHz, because it has less interference and will generally carry a signal farther (up to 75 feet, against 50 feet for the 27mHz unit).

A note of caution: If a lot of children are playing with radio-controlled toys in the immediate area, you might find your camera or flash operating by itself for no apparent reason. If this is a problem, you can remove the antenna from the receiver when you are working within a ten-foot distance. Reattach

9. The capacitor must be removed from the circuit board.
10. To prepare the transmitter for flash use, first disassemble it.
11. Run the PC cord through the plastic case of the transmitter.
12. Connect the leads from the PC cord to the two points that make contact when the transmitter button is pressed.

RADIO CONTROL



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13. Here's the setup for flash. The receiver is attached to the flash unit, and the transmitter is attached to the camera. When the camera is fired, a signal from the transmitter will fire the flash unit. Note the antenna protruding through a corner of the receiver box.

14. Here, the receiver is attached to the camera. You can fire the camera from a distance by pressing the button on the transmitter.

15. By attaching the camera to a pole and firing it with the radio control, a photographer can make pictures from a different perspective.

16. In the studio, the radio control enables the photographer to fire the camera from any convenient position—he need not be behind the camera.

the antenna when you go on location.

NOW USE IT

Here are a few suggested uses for your radio-controlled camera:

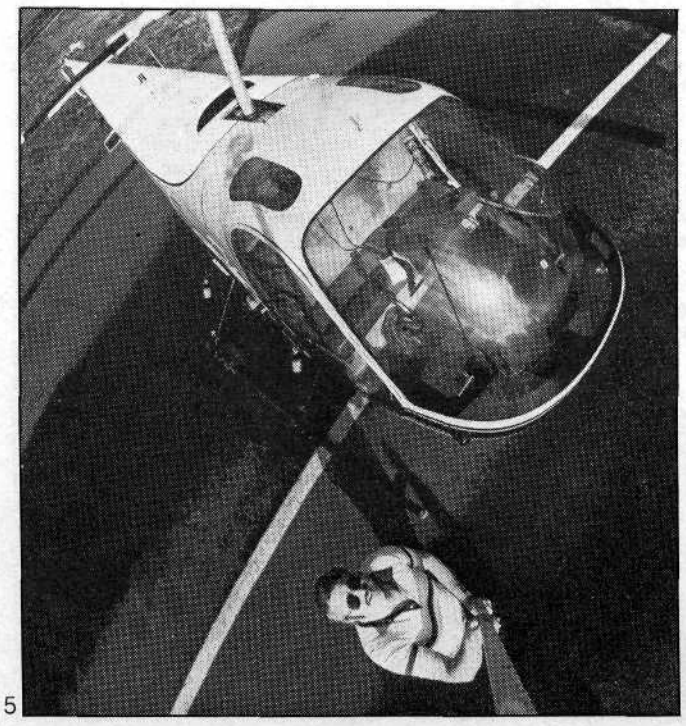
1. Bird photography. You'll need to disguise your camera and muffle the sound of the motor drive in order to achieve great photos.

2. Insect photography. You'll need to mount your camera on a tripod and prefocus the lens on a certain flower, then wait for an insect to cooperate.

3. Photojournalism. You can mount the radio-controlled camera on a tall pole to get photos from an unusual perspective. With a remote camera located at a different angle, a photojournalist can get two photos at one time.

4. Studio photography. You can put a radio-controlled flash unit inside a large object that is to be photographed. This eliminates the need for unwanted cords. During a complicated studio shoot, you need not be behind the camera to take the picture with the radio control.

Owning a radio-controlled flash and camera enables you to obtain photos that were unattainable before. As for the left-over toy cars, they make great presents for kids in the neighborhood. So, run to your nearest toy store and make yourself a radio control device for your camera or flash. Then go out and experiment and enjoy. How can you lose for $10? ◙



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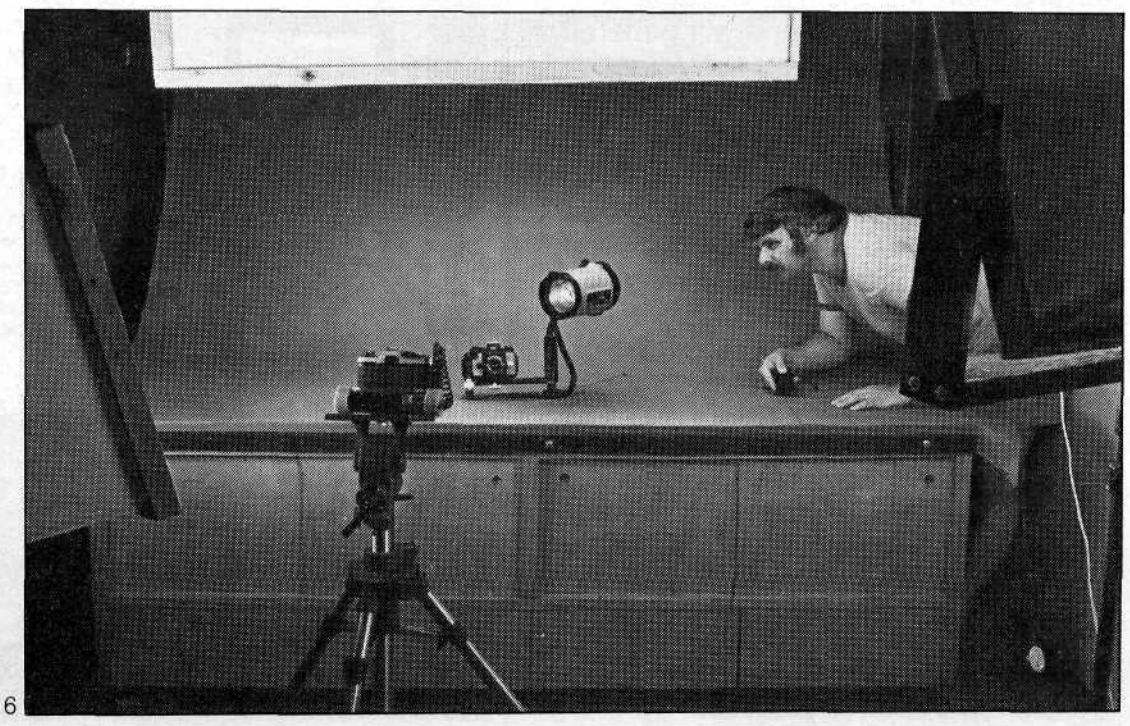

16