

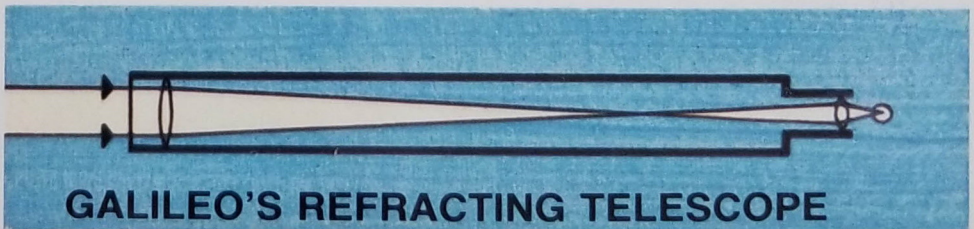
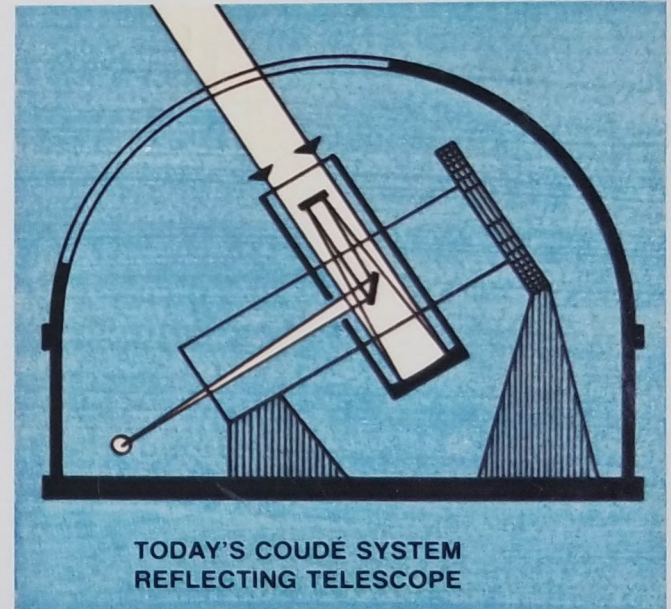
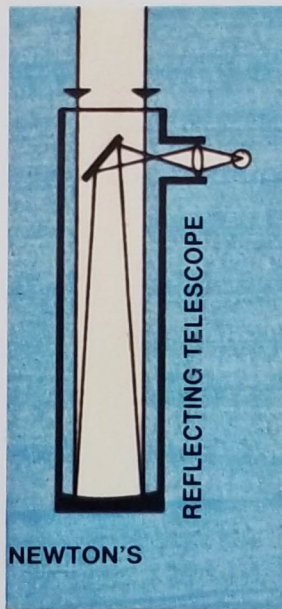
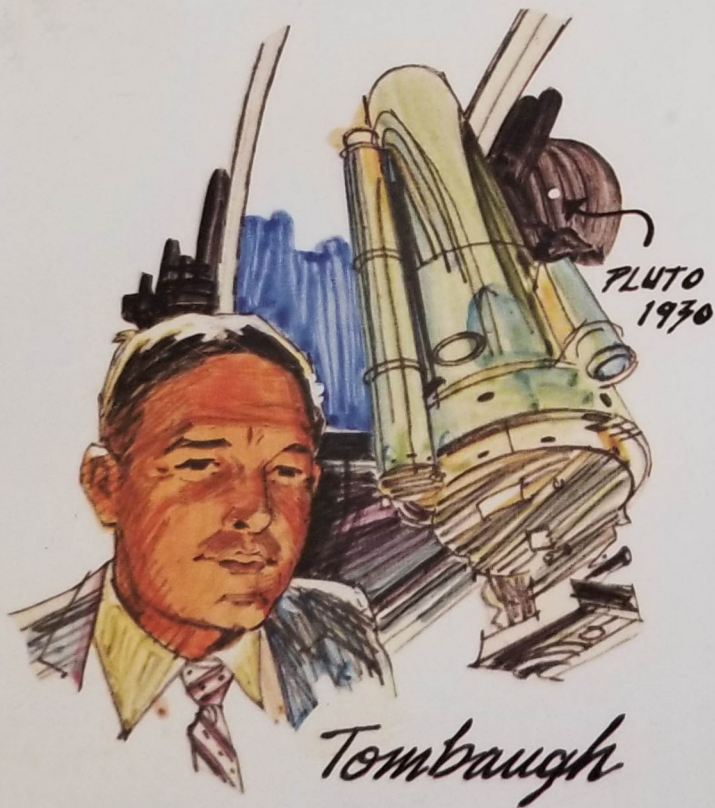
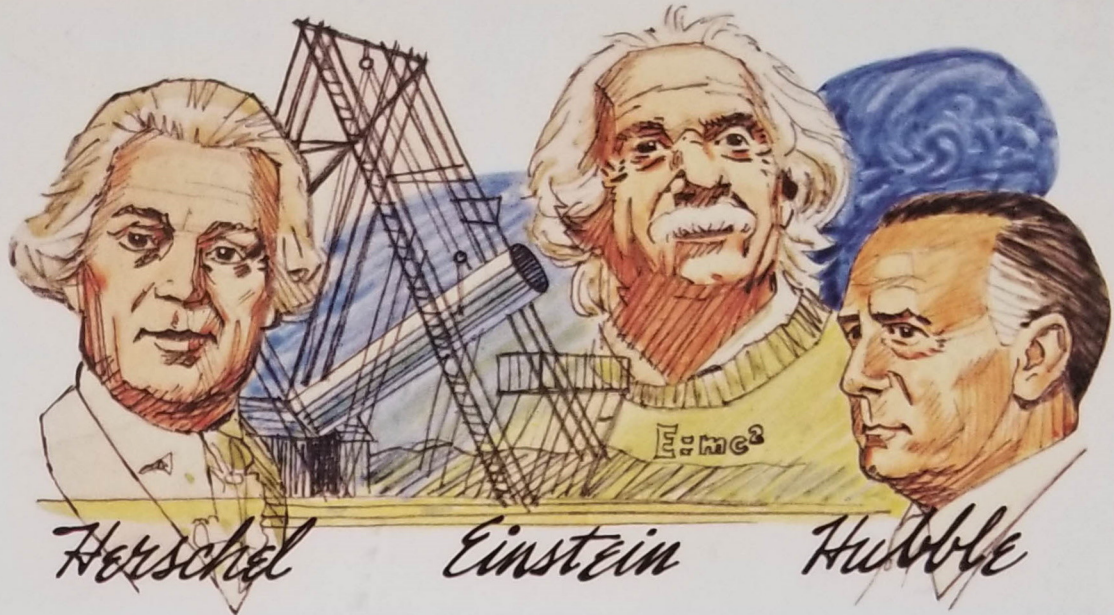
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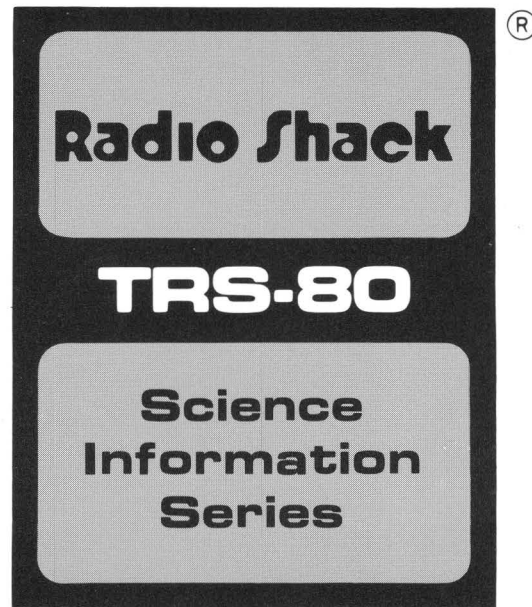


The Solar System:
Featuring the Discovery of the Planet Pluto

Catalog Number: 26-2647

The Solar System: Featuring The Discovery of the Planet Pluto

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The Solar System: Featuring the Discovery of the Planet Pluto is designed to supplement classroom instruction for upper-elementary and secondary students. The Color Computer program in this package uses high-resolution graphics and recorded speech to present facts about the planets in our solar system and how they were discovered. Use of a "blink comparator" (a tool of astronomy) is discussed. Part of the program is narrated by Dr. Clyde W. Tombaugh, the observer who discovered the planet Pluto in 1930. Also included in this instructional package is the book *Out of the Darkness: The Planet Pluto* by Dr. Tombaugh and Patrick Moore. This program can be used with a 16K or 32K TRS-80® Color Computer tape system.

**The Solar System:
Featuring the Discovery of the Planet Pluto**

Radio Shack[®]



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FORT WORTH, TEXAS 76102

First Edition

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INTRODUCTION

The Solar System: Featuring the Discovery of the Planet Pluto is designed for classroom use with the TRS-80 16K or 32K Color Computer tape system. The audio-visual program in this package discusses the planets of our solar system and how they were discovered. As the most recently discovered planet, Pluto receives special emphasis. Part of this program is narrated by the astronomer who discovered Pluto, Dr. Clyde W. Tombaugh. Professor Tombaugh tells how he looked for a trans-Neptunian planet and finally captured the planet photographically.

Presented through the Radio Shack TALK/TUTOR system, the Color Computer program includes high-resolution graphics, display of upper- and lower-case text, and recorded speech. Questions over the lesson material are presented in the program.

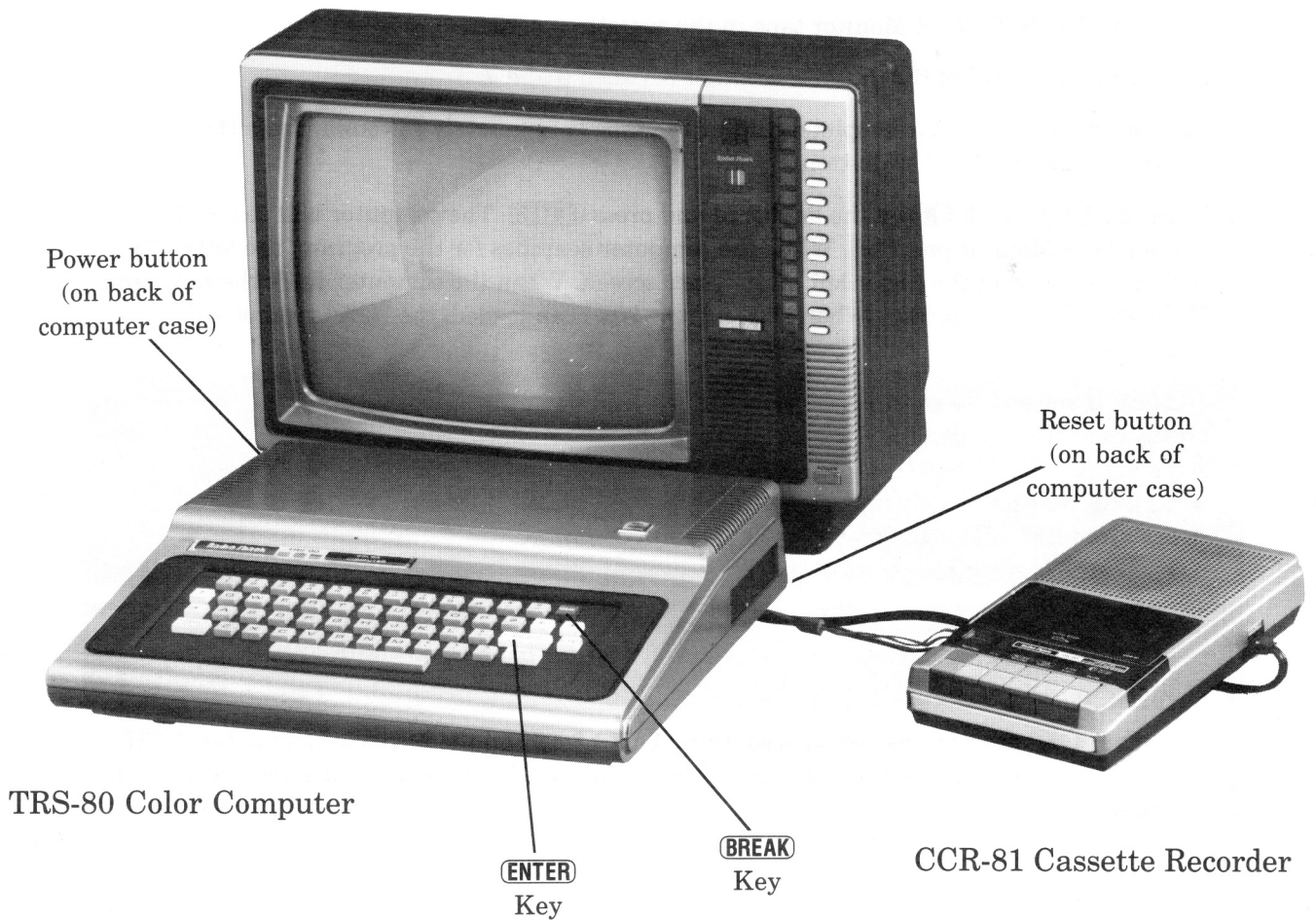
The program provides immediate feedback for each student response. Reinforcement is given for correct answers, while students are informed of incorrect answers. At the end of the lesson, the computer screen displays the number of questions that the student answered correctly.

A book by Professor Tombaugh and Patrick Moore is also included in this package. *Out of the Darkness: The Planet Pluto* provides further information on how astronomers observe planets and how Pluto was discovered. A "SUGGESTED ACTIVITIES" section in this program manual presents ideas for individual and group activities based on the program and the book.

The Solar System: Featuring the Discovery of the Planet Pluto is appropriate for use in upper-elementary, secondary, or adult education science classes. (See PLANNING YOUR APPLICATION on page 7 and SUGGESTED ACTIVITIES on page 8.)

THE TRS-80 COLOR COMPUTER TAPE SYSTEM

TRS-80 13" Color Video Receiver
or
Any Color TV



LOADING THE "DISCOVERY OF THE PLANET PLUTO" PROGRAM

Set up and connect the Color Computer, color video receiver or TV, and cassette recorder according to the instructions in the *TRS-80 Color Computer Operation Manual*. If you want to use a joystick to answer lesson questions, attach your joystick to the computer at the "RIGHT JOYSTICK" port.

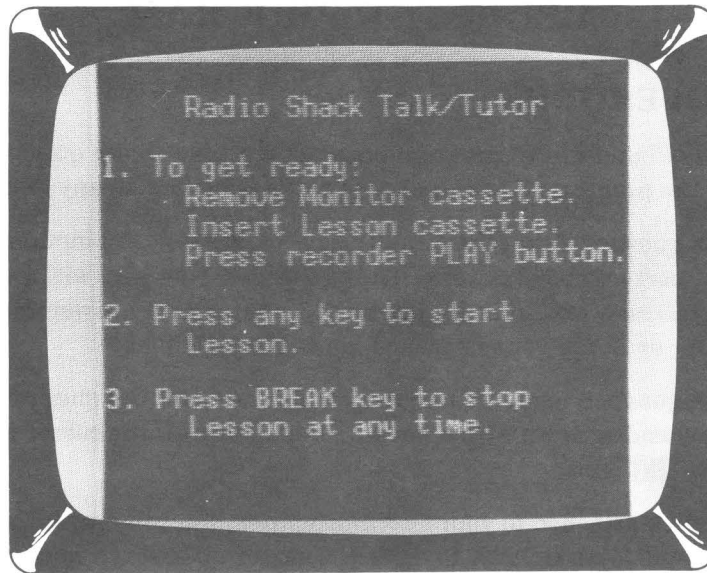
1. Turn on the color video receiver or TV, and set the volume at a normal listening level. Select channel 3 or 4 (whichever is weaker or not used in your area). Select the same channel on the "channel select" switch at the rear of your computer.
2. Turn on the computer by pushing in the power button on the back of the computer case. You'll see an "OK" prompt appear on the video screen.
3. Place the TALK/TUTOR Monitor tape in the cassette recorder.
4. Set the volume level of the cassette recorder between 5 and 7.
5. Rewind the Monitor tape completely. After the tape is completely rewound, press the cassette recorder's "PLAY" button.
6. Type **C L O A D M** on the keyboard and press **ENTER**. The computer will search for and load the Monitor program. While the computer searches for the program, the letter "S" will be displayed in the upper left of the video screen. When the computer finds the program, "F MONITOR" will appear. When the program has been loaded, the "OK" prompt will reappear.

NOTE: If you should get an error message while loading your Monitor program, the volume on the cassette recorder could be too low or too high. You should:

- press the "STOP" button on the cassette recorder
- turn the volume a little higher or a little lower
- press the RESET button on the back of the computer
- repeat the instructions from Step 5 above.

Should **consistent** loading problems develop, take your cassette recorder to your local Radio Shack store or Radio Shack Computer Center for proper balance, azimuth alignment and cleaning.

7. Once the "OK" prompt has reappeared, type **EXEC** on the keyboard and press **ENTER**. In a moment, you will see a title screen. Then you'll see the following instructions appear on the screen:



8. Complete the first step on the screen, making sure to rewind the lesson cassette completely before you press "PLAY." When you are ready, press any key to start the lesson.
9. As the lesson begins, use the volume control on the color video receiver or TV to adjust the volume of sound as necessary.

NOTE: If you should hear a buzzing noise from the cassette recorder during a lesson, you can eliminate it by turning the cassette recorder volume down slightly. However, if the volume is turned down too low, the visual and/or audio presentation will stop or become garbled. If the volume is too high, audio distortion will result.

USING THE PROGRAM

ANSWERING QUESTIONS

The “Discovery of the Planet Pluto” program presents multiple-choice questions over the material covered in the program. You can answer these questions in any of three ways:

1. You can answer a question using the number keys on the Color Computer keyboard. Type the number of the correct answer choice. The cursor (flashing box) will move to the answer you selected and the answer will be highlighted. To enter your answer choice (that is, to make the computer evaluate your response), press the **ENTER** key.
2. You can answer a question using the arrow keys on the Color Computer keyboard. Just press the up-arrow and/or down-arrow key (**↑** and **↓**) until the cursor is at your answer choice. Then press **ENTER**.
3. If you have a joystick attached to your Color Computer, you can use the joystick to answer a question. Just use the joystick lever to move the cursor up or down until the cursor is at your answer choice. To enter your answer when you are using joysticks, either press the red button on the joystick box or press the **ENTER** key at the Color Computer keyboard.

If you answer a question incorrectly, the computer will sound a tone and a hint or explanation will appear on the screen. After you see a hint, pressing **ENTER** or pressing any key on the keyboard will return you to the question screen to try again.

At the end of the lesson, a score display screen shows the student how many of the questions he or she answered correctly on the first try.

ENDING THE PROGRAM

To stop the program at any point, press **BREAK**.

To start the program again from the beginning after you have pressed **BREAK**:

- rewind the program tape completely
- depress the cassette recorder’s “PLAY” button
- press any key to begin the lesson

To re-start the program from where you were when you pressed **BREAK**:

- depress the “REWIND” button for a few seconds to partially rewind the program tape
- depress the cassette recorder’s “PLAY” button
- press any key to begin the lesson

NOTE: Re-starting the program in the middle won’t damage the program tape. However, doing so will temporarily garble the first graphics that you see when you re-start the program, until the graphics “catch up” with the audio.

This is why you should rewind the tape for a few seconds — to make the program start a little before the part you want to review.

ERROR MESSAGES

If you see the message, “**? SN ERROR**” when you are trying to load the program, this means that your Color Computer keyboard was in lower-case mode when you entered **C L O A D M** or **E X E C**. (If letters you type are displayed within dark boxes, this is a clue to the same problem.) To get back into upper-case mode, press **O** while holding down the **SHIFT** key. Then rewind the tape and try again to load the program.

PLANNING YOUR APPLICATION

A Color Computer can be used with students in many ways. Some applications that are especially appropriate for "The Discovery of the Planet Pluto" are:

- A single Color Computer is placed in a classroom with the color video receiver set up so that it can be seen by all the students. (Remember that you can use a color television screen of any size with the computer.) When the lesson presents questions, students can take turns answering or can answer by class consensus.
- A Color Computer can be set up as a Learning Center in a classroom to provide instruction for one student or a small group of students.
- Individual Color Computers and educational software programs are loaned or "checked out" to students to take home as an incentive for individual studies.
- Color Computers are provided for general use in a library or learning lab — during school or after hours — for periods of time that a student can reserve in advance. The Color Computer and educational software programs can be used as resource materials for special projects.
- Computers are provided for use by teachers at a central service center or audio-visual library. A teacher can check out a system for use in the classroom. Possible applications include using the program as a special "treat" for the class, or using it to supplement a unit or mini-course. The portability of the Color Computer makes these uses especially convenient.

Numerous combinations of these and other uses are possible.

SUGGESTED ACTIVITIES

Activities for Upper-Elementary through Secondary Grades

1. Individually or in groups, students can make models or diagrams of the solar system. Or, students may enjoy choosing a planet like Jupiter and making a representation of the planet and its satellites.
2. Students can be assigned a short research project — finding out more about the mythology behind the names of the planets. With help from the teacher, a class discussion can be built around this question: “Are there any connections between the mythological names, the characteristics of the planets, and the astronomical symbols for the planets?”
3. The teacher may want to make a short presentation about recent space explorations and what they have told us about the possibility of life on other planets.
4. The color poster that comes with this package features important people, events, and things in the field of astronomy. Let individual students pick one of these as a research or report topic.

Activities for Secondary Grades through Adult

1. Students can be asked to find out more about a tool of astronomy (such as the “blink comparator”) and make a short report to the class about that tool. Some examples:
 - Achromatic objective lens
 - Cassegranian telescope
 - Equatorial mount
 - Reflecting telescope
 - Refracting telescope
 - Schmidt telescope
 - Photoelectric photometer(These terms are all listed in the index of the book that accompanies this package, and/or defined in the glossary. Recent encyclopedias and astronomy textbooks are other possible resources.)
2. Students may enjoy finding out what conditions would have to exist for a planet to support life. (The program gives one hint when it mentions an *atmosphere*.) There are different theories about the answer to this question. (Check the library for recent books on this topic.) Your students may develop some theories of their own!
3. The book *Out of the Darkness* which accompanies this program can easily be broken into chapters for book reports. Assign one chapter to each student or group of students and have them present what they read to the class.

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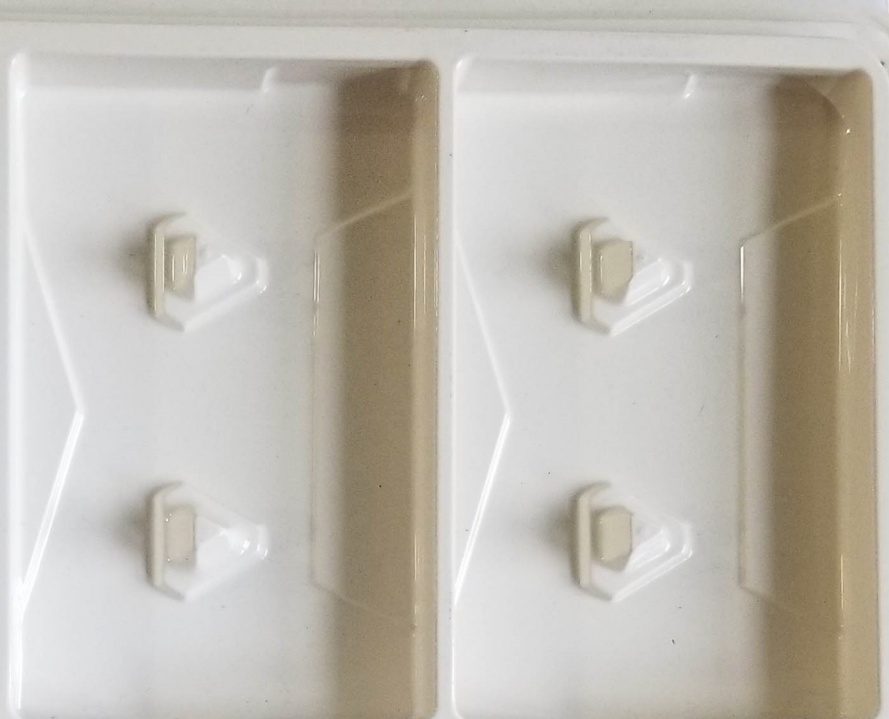
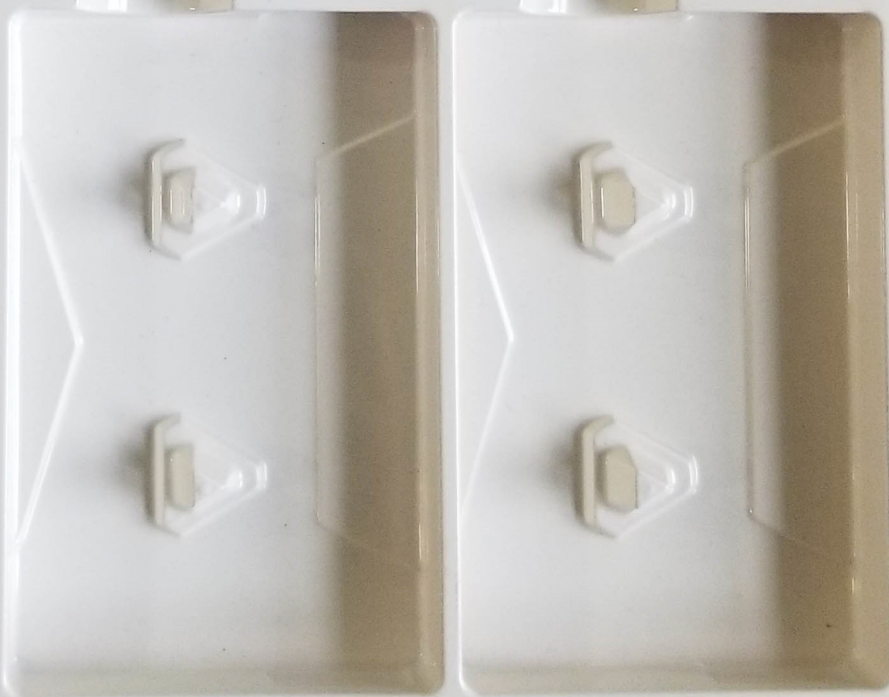
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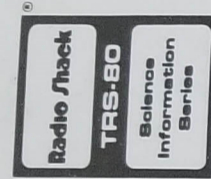
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