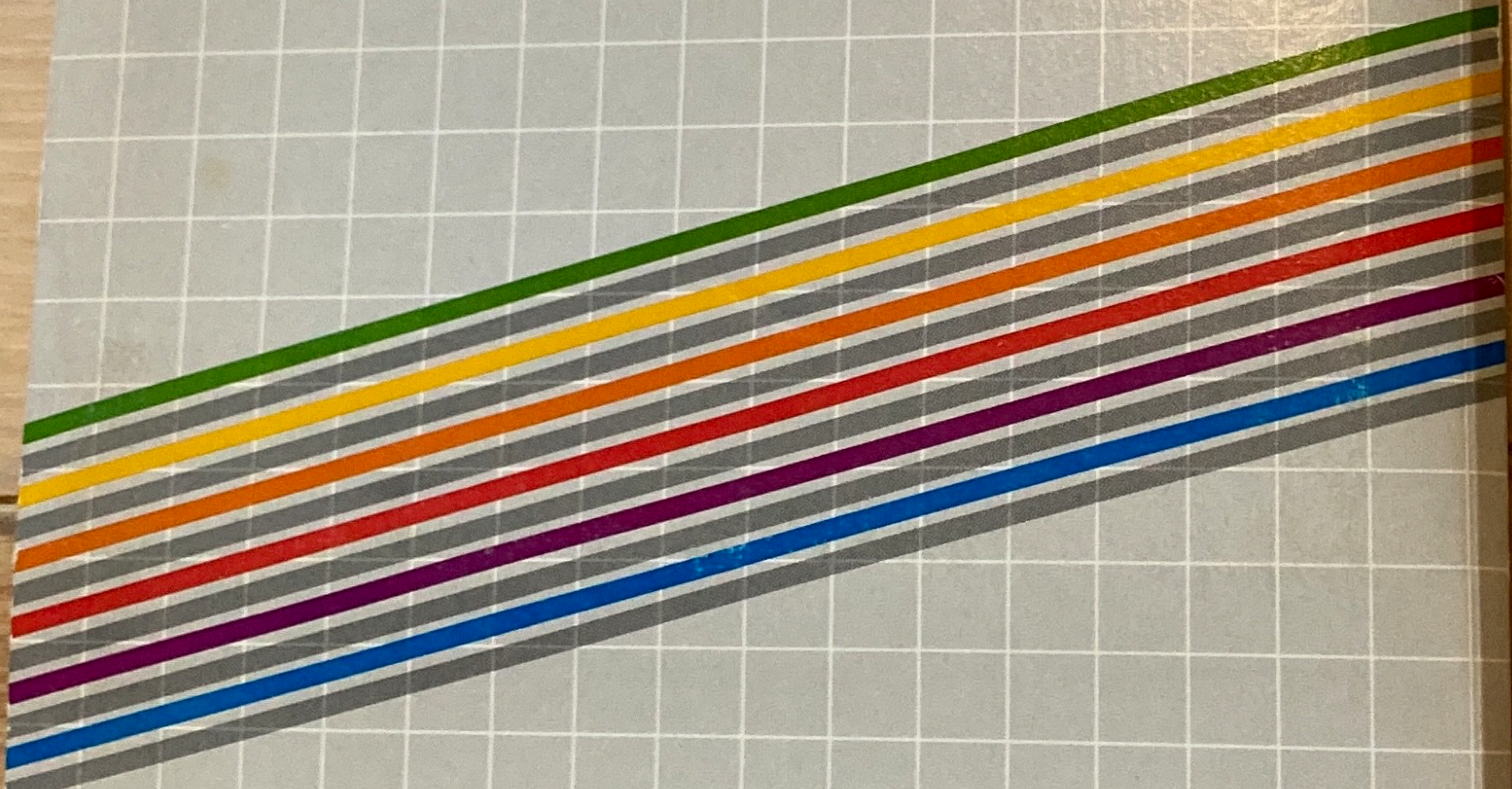TOPOGRAPHIC MAPPING

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USER'S GUIDE:
TOPOGRAPHIC
MAPPING PROGRAMS
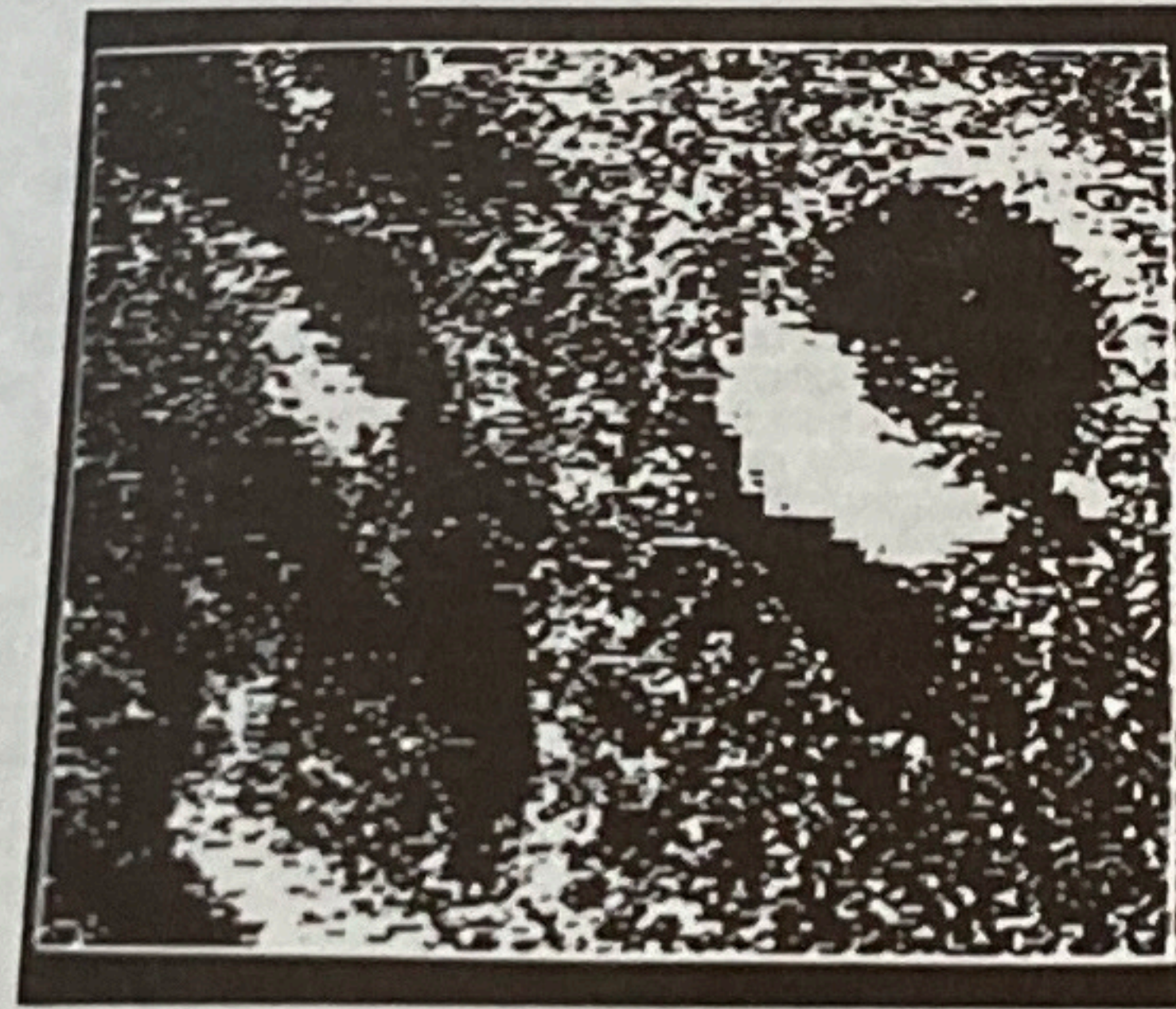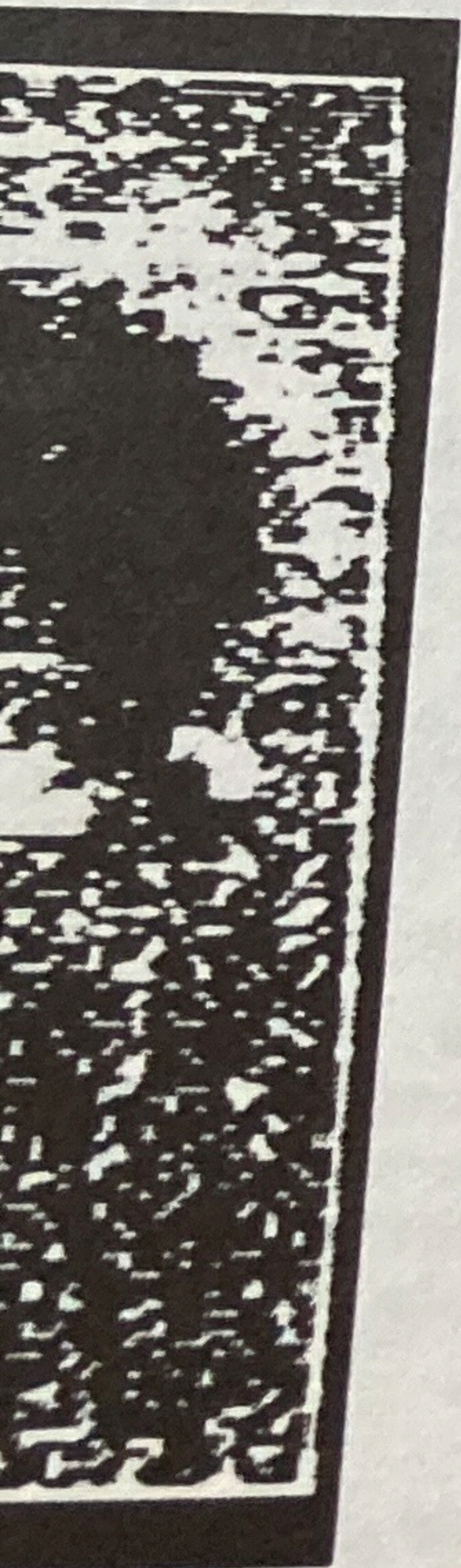

Illustration: A shaded-relief map of the area
of the craters Aristarchus (upper right) and
Herodotus (lower left) on the moon, generated
by the surface display program PLASTIC. The
direction of light is from the upper right.

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lef map of the area
(upper right) and
e moon, generated
am PLASTIC. The
he upper right.

Assuming that the color controls on your television display are set properly, the above input would give these results:

Elevations -14 to +19 units would be brown (color #8);
Elevations +20 to +59 units would be dark green (color #4);
Elevations +60 to +99 units would be grey (color #5);
Elevations +100 to +139 units would be orange (color #9);
Elevations 140 units or above would be magenta (color #1).

After the map is completed, the user may input END to end the program, or NEXT to generate another map of the same area, using different elevation ranges, different colors, or both.

A black-and-white reproduction of the map produced by the sample run above is shown in Figure 6, below.

Figure 6. LAYER Output Using "MERRIMAC" Data.
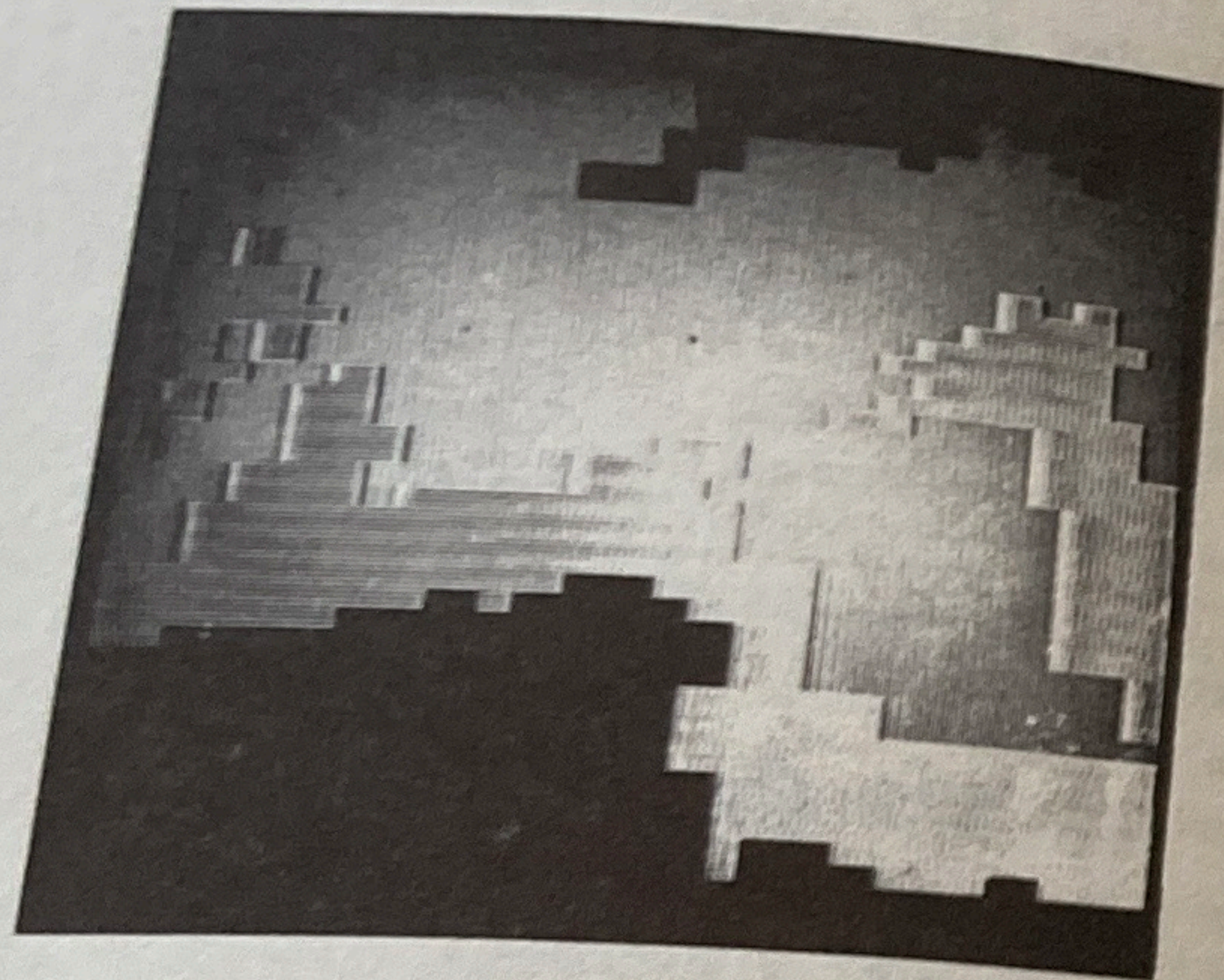
2.) Program SLOPE resembles LAYER in that it employs the Apple-II low-resolution graphics mode with up to 16 colors displayable. However, unlike LAYER, SLOPE displays terrain slope categories rather than elevation categories. As with the other display programs, the first user input is the data file name. When the data file has been read into the program, the elevations are converted into slopes (expressed as decimal gradients), a process that takes about two minutes. During this time, slopes are computed row-by-row, with the user being informed as to which row is currently being computed.

For each data point, slopes, based on elevation difference and distance, are initially computed to each of its four nearest neighboring points (except for edge points, that have only three neighbors, or corner points, which have only two). The greatest such slope is taken to be the slope at the point being processed.

The maximum and minimum slope for the entire map are also computed, and then displayed. The next output is the map scale, in elevation units per row and per column. This is followed by a table of slope statistics. This table divides the total slope range into 10 equal-width ranges, along with the percentage of the map's area that falls within each range. This last information is given in order to help the user decide which slope categories to depict with distinct colors.

The user's next step is to decide on the number of slope intervals to be displayed (up to 16), aided, if he wishes, by the display of a color menu. Then, the user inputs, for each slope interval in ascending order, its lower limit and its color number. When all intervals desired have so been specified, the map is drawn. When the map is finished, the user inputs "END" to end the program, or "NEXT" to generate another map of the same area, with different intervals, different colors, or both.

Below is a sample run of SLOPE using the "MERRIMAC" data file. As before, user inputs are underlined.

SLOPE

```
THIS PROGRAM ACCESSES AN ELEVATION DATA
FILE AND OUTPUTS AN APPLE-II LORES
SLOPE-CATEGORY MAP.

INPUT DATA FILE NAME (SKIP '-LORES'
PART): MERRIMAC
NOW COMPUTING SLOPES FOR 39 ROWS
ROW 0
ROW 1
:
ROW 39

MAXIMUM SLOPE = 1.0251119
MINIMUM SLOPE = 0

1 MAP ROW = 27.559 UNITS
1 MAP COL.= 42.3984615 UNITS
```

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