# TOPOGRAPHIC MAP SKILLS

Topographic maps of any area of the United States may be obtained from the U.S. Geological Survey by calling the map sales office in the Denver Federal Center at (303) 236-7477 and requesting the Index Map and Order Form for the State or States of interest. Indexes and order forms are free and usually take about a week to arrive. The index map shows all topographic map coverage (and some other special purpose maps which may be of interest to the students). Order individual maps by following the instructions in the order form or by listing the map names in a letter. Orders must be prepaid by check or money order payable to U.S. Department of the Interior/U.S.G.S. A pamphlet of Topographic Map Symbols is also available at no cost. Allow four to six weeks for delivery. Mail to:

U.S. Geological Survey
Map Distribution Center
Federal Center, Building 810
Lakewood, CO 80225

# CONTOURS AND CORNFLAKES *

## by Joseph W. Bencloski

The interpretation of certain slope types on a topographic map is sometimes difficult for students with no prior map reading experience. This teaching tip suggests a method of demonstrating concave and convex slopes by using a simple bowl with contour lines drawn on the inside and outside.

The four basic slope types depicted by contour lines on a topographic map include uniform gentle, uniform steep, concave, and convex. Most instructors begin teaching slope characteristics on topographic maps by explaining that the wide spacing of contour lines indicates a gentle slope, while the close spacing of contour lines indicates a steep slope. Armed with this basic information, students can progress to an understanding of the four basic slope types.

The visualization of uniform gentle and uniform steep slopes on a topographic map usually poses no problems for students. A uniform gentle slope is illustrated by contours that are evenly spaced but far apart, while a uniform steep slope is illustrated by contour lines that are evenly spaced but close together. Concave and convex slopes, on the other hand, are more difficult for students to visualize and locate on a topographic map. Before asking students to examine a topographic map, these slopes can be demonstrated by drawing contour lines on both the inside and outside of a bowl or pie plate. Right side up, the bowl illustrates the characteristics of a concave slope. That is, beginning at the rim (the highest elevation), there is a steep drop down the side of the bowl to the gently sloping bottom. Using the rule for slope steepness and the spacing of contour lines, the instructor or students can draw contour lines on the inside of the bowl to illustrate a concave slope. Progressing down the steep sides of the bowl from the rim, the contour lines will first be spaced close together, and then farther apart on the nearly flat bottom.

If the bowl is turned upside down, it can be used to illustrate the characteristics of a convex slope. That is, beginning at the top center, the slope is first gentle, and then steepens as one descends the sides to the bottom. The drawn contour lines would be widely spaced near the top, and closely spaced on the sides of the inverted bowl.

The bowl can also be used to illustrate two topographic features shown by contour lines: a hill and a depression. A hill can be illustrated by turning the bowl upside down, and drawing contour lines in the form of closed loops inward from the rim toward the center. Similarly, a depression can be illustrated by drawing closed contours with hachures on the inside of the bowl turned right side up. While these demonstrations are simple, they provide students with a vivid mental image of the spacing of contour lines on a familiar object. The technique also reinforces learning because students are reminded of topography while consuming their breakfast cornflakes.

** The original version of this article was published in Teaching Geography (Oct. 1985) under the title "Demonstrating Slope Types."*

*(Joseph W. Bencloski is editor of Perspective and a professor in the Department of Geography and Regional Planning at Indiana University of Pennsylvania.)*