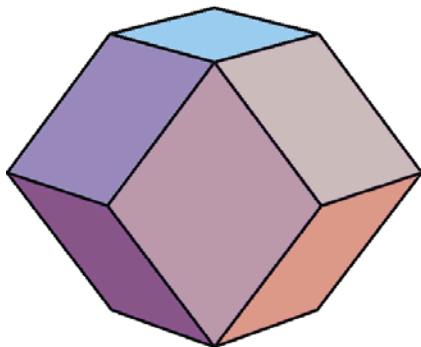Proposed by Bernardo Ábrego and Silvia Fernández.   **April 25-May 2**

A cube and six congruent right pyramids are put together to construct a polyhedron with 12 faces. The base of each pyramid and the faces of the cube are 25 in^2 squares. The pyramids are affixed to the cube so that each cube's face coincides with the base of one pyramid. Two triangular faces of different pyramids sharing an edge form a rhombus (without this condition the resulting polyhedron could have 24 faces).

Find the volume of this polyhedron.

Solution by Barbara Falkowski.

To make a 12 face polyhedron instead of 24 face polyhedron the faces of the pyramids must be at 45 degrees to the bases of the pyramid. The six pyramids can be fit together such that each of the pyramid faces is touching another pyramid's face. In this configuration forms a cube which is 5 inches on a side. The volume of the cube is 125 cubic inches. The volume of the cube that forms the center of the polyhedron is also 125 cubic inches. The volume of the polydederon is the sum of the volumes of the components that make it up. It is 250 cubic inches.