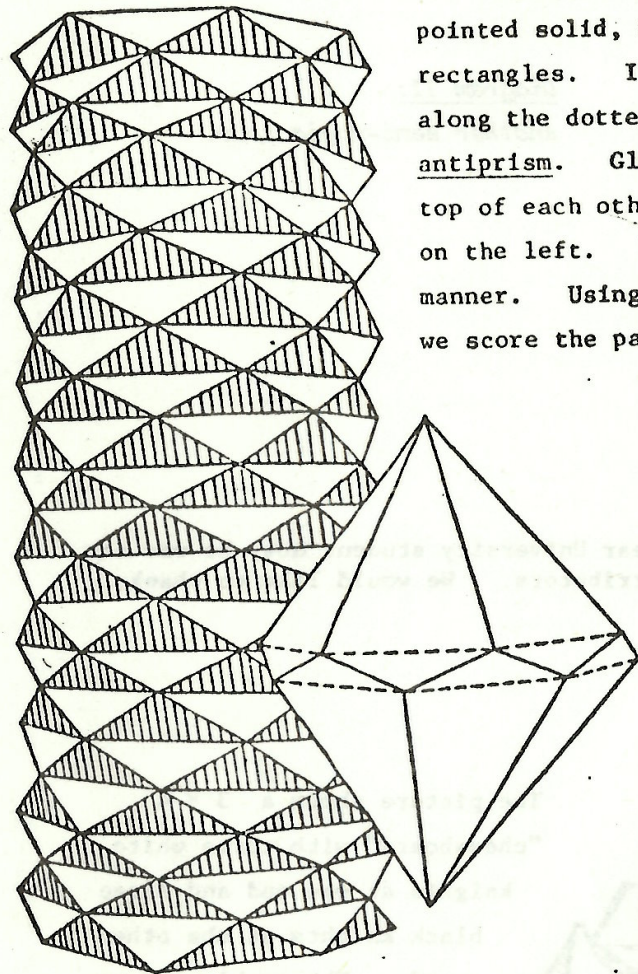


SCHWARZ'S BODY



In the middle of the page you can see a sharply pointed solid, formed by congruent "kite" shaped rectangles. If we slice this body horizontally along the dotted lines, we obtain two pyramids and an antiprism. Glueing several of these antiprisms on top of each other we obtain the "lantern" like body on the left. We can construct this body in a different manner. Using cartridge paper and the diagram below: we score the paper on one side along the horizontal dotted line. These will be the inner concave edges of the body. The diagonal lines we score in on the other side of the paper. These will provide the outward, "convex" edges of the solid. With the little flap provided we form a cylinder and then carefully push in the concave edges.

Every vertex of this body lies on a cylinder hence its volume is clearly less than the volume of a corresponding cylinder. At the same time flattening the little triangles, we can make its surface area 100 (or more) times larger than the surface area of the cylinder.

H.A. Schwarz (1843 - 1921) constructed this body to illuminate the difficulties involved in the definition of a surface.

Try to construct the body and convince yourself that its surface area is much larger than the surface area of a cylinder of the same height. In the next issue, we will describe some other similar surprising mathematical facts.

