CIVL231 : Photo Contest 1 due: Jan. 19, 2009

1. Take a nice photo of a **beam structure**.
2. Sketch the structural system.
3. Explain in a short paragraph (yes, in words) the structural concept of your object, how the loads are carried from origin to foundation and so on.
4. Send your photo and article on structural concept on max. two pages letter-sized documents in MS Word or Adobe PDF file format to sigi.all@gmail.com , with "PC#1" in the subject line.
5. The 3 best photos and articles will win ONE QUIZ with 100% and shall be published on the website. If your entry is better than an 80% mark, it may be used to excuse one missed quiz.

The above stated problem description may be subject to adjustments, if need arises.

In case you print out this sheet, you might find half a page without text a waste of paper, therefore I have added some extra text and picture:

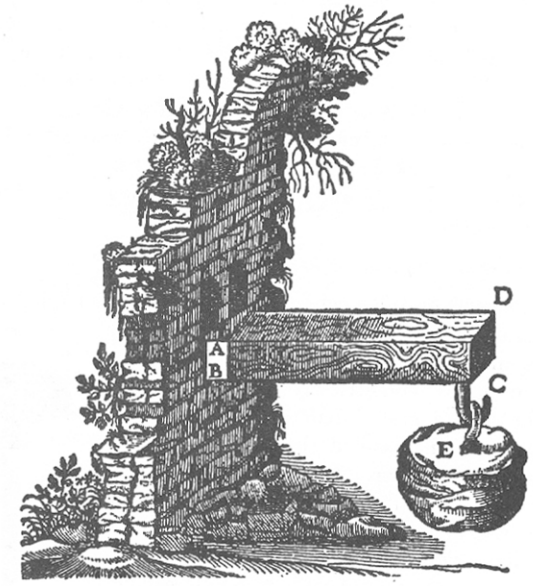

FIG. 15. Galileo's illustration of bending test.

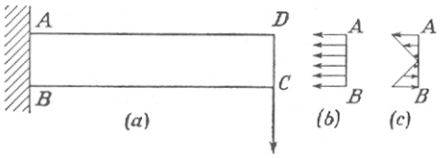

FIG. 16.

*Mechanics textbooks and instructors often credit **Galileo**'s (1564-1642) analytical attempt to determine the load carrying capacity of a transversely loaded beam as the beginning of beam.*
*However, while his name does not appear in any textbook discussion of beam theory, the mechanics education community should be aware that **da Vinci** (1452-1519) made a fundamental contribution to what is commonly referred to as Euler-Bernoulli (engineering) beam theory 100 years before Galileo. Historians of mechanics did not cheat Leonardo; they simply were not aware that he made the fundamental hypothesis upon which Euler-Bernoulli beam theory rests in Codex Madrid I: The normal stress and the moment-curvature formulas for slender linear elastic beams,*

$$\sigma(y) = My/I \quad \text{and} \quad EIv''/(1+v'^2)^{3/2} = M(x),$$

constitute what is universally referred to as Euler-Bernoulli beam theory. In these formulas

$$\sigma, M, y, I, v \text{ and } E$$

represent, respectively, the normal stress, bending moment, distance from the neutral axis, moment of inertia, deflection of the neutral axis, and Young's modulus. The fact that the theory is not called Galileo-Euler-Bernoulli beam theory is understandable; since Galileo incorrectly assumed that under transverse loading a beam's cross-section develops a uniform stress distribution.