McMahon & Elasticity

$L \propto D^b$, b = ?

THOMAS A. McMAHON

1943-1999
Gordon McKay Professor of Applied Mechanics, Harvard University
biomechanic studies (*e.g.*, Jesus Christ lizard)
'tuned' Gordon Indoor Track
award-winning author in fiction
'trees learn from bending and must resist buckling'

ELASTIC SIMILARITY

similar elasticity

buckling invariant

e.g., **trees**
Thomas McMahon (1973)
'Social Register of Big Trees'
$L = a_{DL} D^{2/3}$
use as model for animals
$M = a_{LM} L^4$ or $a_{DM} D^{8/3}$

DATA

Brody 1945
   3000 Holstein cattle
   $H = a_{MH}\ M^{0.24}$
   $D = a_{MD}\ M^{0.36}$

Gummerson 1967
   Primates 0.28-22 kg
   $H = a_{MH}\ M^{0.28}$
   $D = a_{MD}\ M^{0.38}$