1050-35-125   **Walter A Strauss*** (`wstrauss@math.brown.edu`), Department of Mathematics, Brown
University, Providence, RI 02912. *Pressure Beneath a Stokes Wave.*

A Stokes wave is a irrotational incompressible periodic 2D steady water wave under the influence of gravity. It is well-known that there is a one-parameter family of such waves. I will prove that the pressure in the fluid strictly decreases horizontally away from the crest line. Numerical evidence shows that this is not true in the presence of vorticity. Furthermore, the pressure strictly increases with depth provided the maximum slope of the free surface is less than 1. (Received March 02, 2009)