Discussion

Starting with a low shear strength at atmospheric pressure, the strength is found to smoothly increase at an overall rate close to 0.16 kilobar per kilobar of confining stress (pressure). The strength rises to approximately 11 kilobars at a confining pressure of 70 kilobars.

The slope of the curves shown in Figures 2 and 3 yield values of the Coulomb coefficient of internal friction. The value is found to be close to 0.13 at the lower range of confining stress and increases to approximately 0.16 at 70 kilobars. The coefficient of sliding friction can be obtained by application of the equation derived by Bridgman (6) for conditions of initial loading where surface slippage and homogeneous torsional force can be assumed. The equation,

$$\mu = \frac{3\ M}{2\pi r^3 P},$$

where P represents the confining pressure, yields a value close to 0.1. Values are for conditions of the experiment.

Contrary to the behavior of most solids when subjected to continuous torsional shear under confining pressure in the range of 70 kilobars, pyrophyllite is found not to exhibit the changes in shear strength normally associated with ductility or with "stick-slip" behavior. Instead, both the cohesive and frictional strengths