(1966) have shown how dislocation theory may be applied to analytical solutions for the deformation of the rock mass. In this deformation displacements are thought to be restricted to narrow zones (to the surfaces of the mechanical discontinuity). Young states that "The derivative of strain along a shear zone defines a strain gradient which is physically and mathematically equivalent to a continuous distribution of infinitesimal dislocations. This gradient gives rise to a stress field that is identical to that caused by the dislocation distribution and that is readily calculated by applying dislocation theory." This encouraging start should stimulate further treatment along these lines.

Most workers agree that the important factors in the deformation of the rock mass that must be recognized and quantified include the following:

1) the surface discontinuities presented by macrofractures, faults, bedding, foliation, and schistosity--their orientation and development, degree of mineral filling, water saturation, and contribution to rock mass permeability;

2) the contrasts in shear and tensile strength between the representative coherent rock sample and the surfaces of mechanical discontinuity; and

3) the size of the rock mass and its topographic and tectonic setting.

<u>Orientation of the Discontinuities</u>

In the main the rock mass deforms primarily by displacement along the planes or surfaces of mechanical discontinuity, i.e., bedding, foliation, schistosity, and above all macrofractures. As Hagerman (1966) points out this is particularly true in rock masses composed of strong rocks wherein the surface discontinuities are the decisive factors. In weak rocks, on the other hand, the physical properties of the intact specimens are dominant. In the former case, therefore, any prediction of the deformational behavior of the rock mass must be based in part on a description of the orientation of the discontinuities. Bedding, foliation, and schistosity (including slaty cleavage) are reasonably