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DISCUSSION

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The authors are to be congratulated on their use of applicable theories in this interesting experimental work on subsequent yield. Although they are correct that the effects of hydrostatic pressure on yield criteria are generally ignored for metals, the opposite is usually true for the plastic flow of rocks where the Coulomb-Navier criterion is frequently employed. The reasoning for the disparate usage is that rocks are "imperfect" (the discusser's nomenclature) in that they contain voids and other defects in structure that are alterable by deformation under pressure.

The generality of expected result on the dependence of yield strength on pressure is, following Bridgman, an increase of 5 percent per 100,000 psi pressure. The discusser consequently asks whether the authors' experimental accuracy would show this expected 4 percent alteration at 80,000 psi pressure.

Authors' Closure

The authors agree that yield criteria which include the effects of hydrostatic stresses are currently used in several areas. The statements made in the introduction of this paper are intended to reflect current trends in engineering practice relating to common engineering alloys. The authors regret that this was not clearly stated.

Within the assumption that the test data in Figs. 8 and 9 are reasonably represented by straight lines, the pressure dependence of yield strength predicted by Bridgman was not found. Least-squares fitting techniques showed all lines representing subsequent yield data in Figs. 8 and 9 to have slopes equal to zero. Such analysis cannot be discounted totally. However, it is possible that tests conducted over a broader range of pressures could support Bridgman's predictions or could show regions of the yield surface where yield strength was not independent of hydrostatic stress state.

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