

plastic-elastic boundary has reached the outer surface

a result obtained by van Iterson (1912) by a slightly different method. Using this the Leinss factor a may be derived.

$$= \frac{(K-1)\sigma_y}{P_r} = \frac{K-1}{\log K}. \quad \dots \dots \dots \quad (8)$$

For values of K between 1.5 and 4.0 this approximates to a linear relation between a and K with a slope of 0.4. It allows, however, no variation of slope with σ_n and, therefore, cannot fully describe the experimental results.

The Leinss equation remains a most useful empirical relation between easily measured properties of a metal and the maximum allowable internal pressure for a cylinder of that metal.

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VI. REFERENCES

- BRIDGMAN, P. W. (1911).—*Proc. Amer. Acad. Arts Sci.* **47**: 441.
 BRIDGMAN, P. W. (1914a).—*Proc. Amer. Acad. Arts Sci.* **49**: 627.
 BRIDGMAN, P. W. (1914b).—*Phys. Rev.* **3**: 153.
 BRIDGMAN, P. W. (1915).—*Phys. Rev.* **6**: 1.
 COOK, G., and ROBERTSON, A. (1911).—*Engineering* **92**: 786.
 COOK, G. (1932).—*Phil. Trans. Roy. Soc. A* **230**: 103.
 COOK, G. (1934).—*Proc. Instn. Mech. Engrs. Lond.* **126**: 407.
 CROSSLAND, B., and BONES, J. A. (1955a).—*Engineering* **179**: 80.
 CROSSLAND, B., and BONES, J. A. (1955b).—*Engineering* **179**: 114.
 VAN ITERSON, F. (1912).—*Engineering* **93**: 22.
 LAME, G. (1852).—“Leçons sur la Théorie Mathématique de l’Elasticité des Corps Solides.” (Bachelier: Paris.)
 LEINSS, H. (1955).—*Engineering* **180**: 132.
 MACRAE, A. E. (1930).—“Overstrain in Metals.” (H.M.S.O.: London.)
 MANNING, W. R. D. (1945).—*Engineering* **159**: 101, 183.
 TURNER, L. B. (1910).—*Trans. Camb. Phil. Soc.* **21**: 377.

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terrestrial vegetation community.

1. Aims and methods

objectives tested in this study were: (1) to describe the tree species & their relative density, relative abundance, & species richness in each of three different
soil/substrate types across steeped glacial moraine, upland talus, and valley floor
sites; (2) to describe floristic dynamics (invasion, establishment, survival, and
death) among tree species differently established on bare bottom & talus slope substrates
during the first 100 years post-glaciation.

2. Study area and methods

researched plot (10-m²) was located in a valley side
located on the Keweenaw Peninsula, Michigan, USA (Figure 1).
Extending across 100 m, the plot sits atop a talus slope substrate
with a 10% slope gradient, and contains a mix of talus and talus substrate (soil).

3. Results

The 10-m² substrate plot contained 20 tree species. The most abundant
tree species were white birch (Betula papyrifera), jack pine (Pinus strobus),
red pine (Pinus resinosa), and aspen (Populus tremuloides). Other
species included balsam fir (Abies balsamea), white spruce (Picea
glauca), Norway spruce (Picea abies), black spruce (Picea mariana),
white birch (Betula papyrifera), yellow birch (Betula alleghaniensis),
paper birch (Betula papyrifera), red maple (Acer rubrum), sugar maple
(Acer saccharum), red oak (Quercus rubra), white oak (Quercus
alba), northern red oak (Quercus borealis), black oak (Quercus
velutina), and American basswood (Tilia americana).

4. Discussion

Establishment of tree species in the talus slope
substrate plot was primarily through seedling recruitment.