

**Merguerian, Charles, 1988a, Annealed mylonitic textures in polyphase deformed metamorphic terrains.**

During the evolution of ductile shear zones, early formed mylonites suffer pulses of metamorphic and structural reequilibration in response to continuing orogeny. Paleozoic metamorphic rocks of the New England Appalachians and the western foothills of the Sierra Nevada illustrate a continuum of three classes of mylonite formation at major tectonic boundaries. Early mylonitic textures produced near ductile faults may either be 1) preserved, 2) annealed or 3) obliterated depending upon lithospheric plate deformation paths.

In regions where uplift and erosion precede subsequent deformation, the early mylonitic fabrics are retrograded or mildly recrystallized and cut by strain-slip cleavage or cataclasite. Where progressive deformation occurs under similar P-T conditions the early mylonites are annealed producing morphologically intact fabrics. Here, the mylonites are overprinted by porphyroblasts, and may show highly laminated ribboned textures without subgrains and rotated porphyroclasts recrystallized into distorted single-crystal augen. Where subsequent deformation occurs under increasing load, metamorphic overprinting obliterates the record of prior mylonitization. Such deep-seated deformation results in intense folding of the early mylonitic foliation plus shearing, reorientation and recrystallization of early fabric elements. In extreme cases, a new penetrative transposition foliation (+migmatite) develops and locally preserves domains of preexistent annealed mylonite. Isostatic variations in mobile belts produced during orogeny control the first-order destiny of early mylonitic fabrics with changes in strain rate, fluid activity, plutonism, thermal gradients and accretion rates as important factors in controlling the ultimate development of mylonitic textures.

**To Cite This Abstract:** Merguerian, Charles, 1988a, Annealed mylonitic textures in polyphase deformed metamorphic terrains (abs.): Geological Society of America, Abstracts with Programs, v. 20, p. A214.