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## Asymmetrical Valleys in Central Alaska

Sharply asymmetrical valleys with gentle south- and west-facing slopes and steep north- and east-facing slopes, widespread in central Alaska, were studied in detail in the Tanana A-1 and A-2 quadrangles about 80 miles west of Fairbanks. The asymmetrical valleys are developed in slightly metamorphosed and unmetamorphosed sedimentary rocks ranging in age from early Paleozoic to early Tertiary; valleys carved in granite and valleys carved exclusively in Quaternary silt are not markedly asymmetrical.

Although the orientations of the valleys reflect strong structural control, the steep north- and east-facing walls are not consistently composed of the more resistant rock types. Structural control can be ruled out as a cause of valley asymmetry here. The operation of Coriolis Force can also be eliminated because the compass orientation of asymmetry remains the same respectively in east- or west-flowing streams and in north- or south-flowing streams. Geomorphic processes of waste production and transportation differ markedly on north- and east-facing slopes on one hand and on south- and west-facing slopes on the other, as a consequence of the markedly different insolation received by different slope exposures in this latitude (65° N.), but this seems not to be the fundamental cause of valley asymmetry. Instead, the asymmetrical valleys can be shown to have resulted chiefly from persistent southward and westward lateral migration of streams during a prolonged period of slow downcutting. The cause of the lateral southward and westward migration by the streams remains unknown.

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