



Manzanita (Arctostaphylos pungens) in the chaparral about twelve miles northeast of the Boyce Thompson Southwestern Arboretum.

How the Distribution of Manzanita in Arizona is Governed by Winter Rain, Acid Soil, Topographic Elevation and Freezing Weather. Both *Arctostaphylos pungens* and *Arctostaphylos pringlei* are common species of Manzanita in Arizona's "chaparral" vegetation. They are stiff-stemmed shrubs with pliable thick leathery evergreen leaves and a deep root system. The beautiful red stems have an elegant appearance reminiscent of fine furniture which has been deeply stained and then rubbed to a smooth mellow finish. The plants form almost perfect symmetrical rounded hummocks a few feet tall. Applications in landscape architecture are obvious. When desert dwellers plant Manzanita in their yards, however, it frequently dies and plant scientists are called upon for advice on how to get a replacement Manzanita to grow.

The answer to this recurring question is that if the factors of the plant's natural environment are not duplicated or compensated for, the plant will not live. Manzanita has the characteristics of an arid plant. Indeed it is a true sclerophyllous xerophyte because of the water-conserving anatomy of the leaf. The plant endures long hot summers and can live months with no rain at all. But this is deceptive. Gardeners need to become better acquainted with the factors that govern its distribution to determine if they are capable of growing it in their habitat.

First, Manzanita belongs to the Heath Family of plants,

the Ericaceae. Species in this family generally are limited to acid soils. This is true of *Arctostaphylos* as well. Therefore it will grow on soil derived from granite or its extrusive equivalent (rhyolite) or a siliceous sedimentary rock such as many sandstones. It will not grow well on alkaline soils of the Phoenix-Tucson area and particularly not where caliche (CaCO_3) is present. Manzanita has a deep root system which must be in contact with moisture at all times. The "chaparral" vegetation to which Manzanita belongs is found only in parts of the world where there are dry summers but rain in the winters. The evergreen sclerophylls grow and make food in winter and are rather dormant through the summer dry season. Winter daytime temperatures need to be high. The seeds need a cold treatment for germination, so winter nights should be in the freezing range.

Rather dependable precipitation should fall in winter to charge the soil with moisture to last for many months. At elevations of 3,500 feet or more in Arizona there is usually sufficient orographic effect for seasonal precipitation to fall from Pacific cyclonic systems which are forced to rise up to pass over the regions of topographic relief. Manzanita occupies the dry sites in these regions, being replaced by oaks and conifers where moisture is more abundant or by cacti where freezing temperatures are not so severe.