The distribution of forest tree species on Lansing silt loam and Canfield silt loam near Ithaca, N. Y. was studied. The Lansing soil has an acid surface soil, but a calcareous subsoil. The Canfield soil is similar, with the exception that it is acid throughout the entire profile. The two soils occurring on adjacent areas offered an excellent opportunity for studying any factors associated with a calcareous subsoil.

The data indicated that American beech was significantly more abundant on the Canfield soil than on the Lansing. Furthermore, red maple never occurred on the Lansing soil, but was present in small numbers in the woodlots on the Canfield soil. On the other hand, basswood and American elm were much more abundant on the Lansing soil. The idea is suggested that the high calcium content of the leaves of basswood and elm might indicate a high calcium requirement of these species and thus be a factor responsible for their occurrence on the soils with a supply of calcium in the subsoil. The calcium content of the foliage of American beech is extremely low as compared with other deciduous species. No definite experimental evidence, however, is yet available to indicate that the species vary in their calcium requirements.

The exchangeable base content of the A horizon beneath pure stands of white cedar, red cedar, and white ash was much higher than that of adjacent open areas. On the other hand, a hemlock stand depleted the supply of exchangeable bases in the soil as compared with nearby abandoned open land. Great differences in the type of humus layer, soil structure, and organic matter content were noted under the different stands. It is suggested that the base content of the litter may be extremely influential in maintaining the productivity of forest soils, from a physical as well as a chemical standpoint.