Introduction

The brief descriptions of forest floors given below are the outcome of numerous field examinations of these materials in California made during several years by the authors. They are based in particular upon selected samples taken in June, 1937, from several important northern Californian forest types.

The forests of California are confined almost entirely to the hilly and mountainous parts of the state and to the high basalt plateau in the northeast. Exceptions to this mountain distribution are provided by some of the redwood (Sequoia sempervirens) forests, the finest of which stand upon alluvium deposited along the rivers which drain the Coast Ranges. The physiographic distribution of the Californian forests, therefore, is strikingly different from that of most of the eastern forests of North America. In addition, they exist in regions tending toward pronounced summer rainfall deficiency. The forest floor accordingly may or may not conform to the existing humus type terminology (4, 7, 8, 11) which has been developed chiefly as the result of studies made under the environmental conditions of northern Europe and northeastern United States.

Because of their predominant occurrence in mountainous country, Californian forests are associated commonly with relatively shallow primary soils possessing steep slopes. The nature of the underlying rock from which the soils have been derived appears in all cases to have influenced profoundly the characteristics of the mineral part of the soil profiles. It is most likely that in some way it has influenced also the characteristics of the forest floor. The nature of the parent rock and mineral horizons was accordingly given due consideration in this reconnaissance, which is the first attempt at any extensive kind of systematic description of the forest floors. It is evident that many additional examinations and more detailed laboratory measurements must be made before forest floors and humus types of northern California can be classified in an equivalent morphological scheme.

For these reasons it seemed necessary to approach their initial investigation entirely objectively and the sampling stations were selected without regard to those previously or elsewhere established forest humus types. It is possible that the existing categories may be found ultimately sufficient for all types awaiting discovery, yet any attempt to force newly described forms into such categories before they have received careful examination, preferably laboratory as well as in field, is undesirable.

The sample stations to which the descriptions herein presented refer have been selected with regard to the following factors: Forest cover type, thickness of the forest floor, petrology of the parent rock. All were situated between 38° and 41° N. lat. and 120° and 124° W. long.

The forest cover types are not clear cut because of fairly distinct altitudinal and associated climatic and life zones within California. Eight forest types are represented: Mixed conifers of the transition zone, consisting of white fir (Abies concolor), incense cedar (Libocedrus decurrens), sugar pine (Pinus lambertiana), and ponderosa pine (P. ponderosa); ponderosa pine of the transition zone; red fir (A. magnifica) of the Canadian zone; lodgepole pine (P. contorta) of the Canadian zone; white fir of the east side transition zone; ponderosa pine and Jeffrey pine (P. Jeffreyi) of the east side transition zone; Douglas fir (Pseudotsuga taxifolia) and tan oak (Lithocarpus densiflora) of the California Coast Range transition zone; redwood (Sequoia sempervirens).

All of the types were selected to represent as nearly as possible undisturbed old growth forest. The dominant stand therefore was composed of trees more than 200 years old with the possible exception...