THE SOLONETZ-LIKE SOILS IN SOUTHERN CALIFORNIA

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MARBUS (6) states that the “soils with heavy clay layers having all the morphological characteristics of Solonetz soil are of common occurrence along the coast of southern California. Their chemical characteristics have not yet been studied so it is not definitely known whether or not they are true Solonetz soils.” More definite and detailed information regarding these soils is given by Storie (10) who states that “a number of California soils have the well-developed structural profile of the Solonetz... Those having the best developed Solonetz profile are the Huerhuero, Aliso, Stockpen, Merriam, Mouzerate, Antioch, Olivenhain, Las Flores, Tierra, Olcott, Solano, and Canby series. Approximately a half million acres of these soils have been mapped in California during the past four or five years; further soil survey will no doubt extend this acreage to a considerable extent.”

A similar statement has been made by Kelley and Shaw (5) who report that “more than 450,000 acres of soils have been mapped having more or less definitely developed ‘Solonetz’ morphology”, and also that “Kelley has reported on seven profiles, six of them having a very definite Solonetz, and one a semi-Solonetz morphology”. The paper of Kelley (4) to which the last reference has been made is entitled, “The So-Called Solonetz Soils of California and Their Relation to Alkali Soils”, which shows that the author was not at all sure that these soils are the true Solonetz.

It appears that these authors agree that many soils in southern California have a well-developed Solonetz morphology; none of them, however, affirms positively whether or not these soils are the true Solonetz.

A definition of the genetic type of any given soil requires a critical consideration of the morphology, chemistry, and genesis of this soil and their comparison with the norms established for this genetic type. It is assumed, however, that a strictly pedological morphology of any normally developed soil is a direct result of its own chemistry. Therefore, very often a sufficiently accurate correlation is based on soil morphology alone, provided that the latter represents a true pedogenic development.

A strictly pedological or genetical morphology refers to a harmonious development of the soil horizons. It is an “acquired” morphology that may be contrasted with the one “inherited” from the original parent material. The parent material consists not infrequently of several different layers. A fundamental distinction between the normal genetic soil horizons and the mechanical layers of parent material is that the former develop simultaneously, so to say collectively, through a common soil-forming process, whereas the latter

1Contribution from the Bureau of Chemistry and Soils, U. S. Dept. of Agriculture. Received for publication June 15, 1937.
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3Figures in parenthesis refer to “Literature Cited”, p. 796.