Molding Sand in Eastern Iowa

John E. Smith
THE OCCURRENCE OF CALICHE IN OKLAHOMA

John T Lonsdale

(ABSTRACT)

The word caliche has been used for many years in the southwestern part of our country to designate the layer of calcareous material which lies just below the surface over wide areas in New Mexico, Arizona, Texas and Oklahoma. This material is essentially an impure limestone, one to twenty feet thick, buff to white in color, showing in places a fine horizontal lamination. Many local names, such as marl, rim rock, gyp, indurated clay, and caprock have been used in connection with it but because of the general use of the term caliche in the southwest, where the material is so abundant, it is hoped that this name will be generally adopted.

By the earlier geologists the caliche was considered to be a fresh water lake limestone but it is believed now by W. T. Lee, W. P. Blake, J. A. Udden, and others that the material is an evaporation product of ascending solutions drawn upward by capillary action. A dense compact upper zone of the caliche is due to enrichment by material carried downward in solution by descending water after rains. In the region where caliche is abundant there is evidence that after each rain there occurs a redistribution of some of the material. At such times the evaporation of surface water caught in basins results in finely laminated deposits of calcium carbonate. It is possible that some of the thicker deposits also originated in this fashion.

This paper serves to emphasize the occurrence of billions of tons of caliche in Harper, Ellis, Woods, Woodward, Roger Mills, Texas, Beaver and Cimarron Counties, Oklahoma, and to summarize the views concerning its origin.

University of Oklahoma,
Norman, Oklahoma.

MOLDING SAND IN EASTERN IOWA

John E. Smith

(ABSTRACT)

Molding sand is found on and near the bluffs east and southeast of the larger stream valleys or of large curves in these valleys.
It is also found on the upland in interstream areas in Benton, Cedar and in a few other counties. It occurs chiefly in deposits believed to be eolian and some of these are in the form of ancient dunes now covered with soil. Part of the molding sand in some of these old dunes is a residual mixture.

In many places the deposits consist of thin layers of argillaceous sand alternating with thin layers of silt or clay in such quantities as to give the right proportions of these ingredients for molding sand. The grains of sand are coated with iron oxide which gives them a color varying from red to buff. In many places this coloring of the sand grains is somewhat uniform through a depth of five to twenty-five feet in the deposit. These deposits are believed to have been accumulated by action of the wind. When wind velocity was high the layers of coarser material were transported and this gave way to deposits of silts and clays when the wind velocity was low. Much of the coloring was done before the material was transported to its present position. Some of the smaller deposits of molding sand may be partly fluvial in origin.

There is an abundance of nearly all kinds of molding sand in Iowa and some of each is now being used in the various foundries of the state. The principal producing counties are Polk, Jasper, Marshall, Cedar, Floyd, Johnson, Muscatine and Wapello. Our own sand should be used much more extensively instead of that shipped here from other states.

GLACIAL GEOLOGY OF STORY COUNTY

JOHN E. SMITH

(ABSTRACT)

Some of the larger valleys of pre-glacial and inter-glacial topography have been located and described by Dr. S. W. Beyer and by Prof. I. A. Williams in earlier papers. Further information concerning these and other features is afforded by a study of the shallow artesian wells of the county and by a careful examination of the major features of the present surface several of which are hills, ridges and valleys of pre-Wisconsin time modified by a mantle of glacial till.

The Wisconsin till covers the county and the Nebraskan and Kansan tills have been recognized beneath it in several places. In his geology of Story County, Dr. Beyer mapped the Altamont (terminal) and the Gary (recessional) moraines of the Wisconsin till within the county. Between these there are several smaller,