

In this case the answer came from modern chemistry. Early in this century, Edward G. Acheson, a noted American chemist and inventor, already famous for his invention of "Carborundum," and for his discovery that graphite could be produced artificially, was puzzled by the fact that American clays were considered far inferior to those imported from Germany. Though the chemical composition of the two types of clay seemed to be identical, the German clays possessed a far higher degree of plasticity and greater tensile strength. Acheson found that the best foreign clays generally came from a secondary source, to which they had been carried by a stream of water, and suggested that small amounts of organic matter suspended in the water might have profoundly altered the workability of the clay, even though ^{so}slight as to be extremely difficult to detect by chemical analysis. When he tested this possibility, by adding small amounts of various kinds of organic matter to types of clay that were difficult to work, he found that the addition of gallotannic acid resulted in ~~tremendous~~ ^{tremendous} improvement. After describing these experiments in an article in the Transactions of the American Ceramic Society, Vol. 6, p. 31 (1904), he added the following remarks:

"I made an effort to find in the history of clay-working some record of the addition of vegetable or organic matter to clay. Only one instance could I find, that of the ~~Egyptians~~ ^{Egyptians} as recorded in Exodus 5. The accepted theory of using the straw fiber as a ~~binding~~ ^{binding} agent for the clay never had appealed to me, and it now seemed likely those ancient people were familiar with the effect I had discovered. I procured some oat straw, boiled it in water, decanted the resultant reddish-brown liquid and mixed it with clay. The result was like that produced with gallotannic acid, and equal to the best I had obtained. This explained why the straw ~~was~~ ^{was} used and why the children of Israel were successful in substituting stubble for straw, a course that would hardly be possible were the fiber of the straw depended upon as a bond for the clay, but quite feasible where the extract of the plant was used."

As a result of this Acheson ~~concluded~~ ^{concluded} concluded that "Egyptianized Clay" would be a fitting name for straw-treated earths.

In view of this discovery, it is easy to see why taking away the straw from the Israelites would make their work so much harder. It also shows how even stubble could be useful to them. (cf. v). Moreover, it indicates that the absence of visible marks of straw in an ancient brick is no proof that straw was not used. Thus an incident