

only casts in clay of the outside of the pieces. The carbonaceous substance has disappeared; only the incombustible part, the ash, remains in the form of a white powder, which we find as we break the specimen and expose the cavities. We have therefore to examine both the impressions in the clay and the ash-skeletons in the cavities.

These cavities are only the molds left by the hulls and other substances. The best way to reproduce the original form is to make casts with putty, which gives very fine representations of the original substance.

From this examination we find that the grain was derived from two plants: from a wheat, and from a barley.

The wheat shows the glumes, glumelles, and hull form that belong to the group of *Triticum vulgare*. There are also present the remains of ear-spikes and of straw. The barley is represented by remains that belong certainly to *Hordeum distichum*. Especially characteristic of *H. distichum* are the side-flowers in the ear. Of barley, we find parts of the stalk and of the ear-spikes, very many beard-spicules, and very few glumes. The results obtained from the casts are confirmed by the study of the ash remains contained in the cavities. We find under the microscope the remains of the highly silicated epidermis of these varieties of cereals; and especially characteristic is the rippled form of the wall of the epidermis cell, which is much thickened. The short cells of the glumelles which occur between the long epidermis cells are especially characteristic for distinguishing between wheat and barley. In *wheat* the short cells have a circular contour with undulated cross-walls. In the silicated substance there are often small pores. This form occurs in the epidermis of the glumes and in parts of the stalk. I was able to prepare some slides from the ash, which showed these characteristic short cells. In many places the silicated substance of the short cells has become detached from the epidermis.

In the *barley* the short cells of the epidermis are pressed closely together. The cells are often so narrow that the *lumen* appears only as a fissure. The cross-walls on both sides are generally of unequal thickness. I was generally able to recognize these characteristic short cells of the barley in the ash-skeletons. They do not detach themselves from the tissues, but generally remain connected with the remains of the adjoining long cells of the epidermis. Remains of barley-beards are very abundant and easily recognizable on the epidermis cells.

These ash-skeletons included in the brick supply the clearest proof that hulls and remains of the stalk were used in preparing the bricks. In consequence of the silicification, the characteristic form of the epidermis cells is observable—as in this case—even after incineration. It can not be mistaken for anything else.

While the examination shows that remains of barley and wheat were used in mixing the clay, it is only possible, by aid of the casts of the cavities, to determine that the wheat belonged to a small form of the common wheat *Triticum vulgare* and that the barley came from the two-rowed form—*Hordeum distichum*.

The great number of impressions present in this piece is evidence that these plant remains are not there by accident, but that they were intentionally mixed