

pit." Mr. Gillman was asked if there were in or about any of these ancient mines, any indications of the copper having been melted? His reply was, "not the least." And now, were not these innumerable copper chips that were strewn on every side additional evidence that these ancient men knew nothing about casting in copper? Those fragments would have been the most suitable to melt, as in all metals the smaller the fragments the more easily they melt. It is evident that those chips, being too small to make any form of their implements, were abandoned as useless.

Finally, how were they made if not cast? I believe that I have the key, and can fabricate any form of these, so called, ancient implements, so exactly as to deceive good judges. These ancient Indians, for I believe they were Indians, (and I think I have accumulated facts enough to prove them Indians,) used fire in their mining operations. The vein-rock was made hot by building a fire on or against it; then by dashing on water, the rock could not only be fractured, but the exposed pieces of copper be softened, so that it could be beaten into shape. When the metal became condensed and hard, in consequence of its being pounded, it was again heated and plunged into cold water; for copper is, in this particular respect, the opposite of steel; the one is softened, while the other is rendered hard. In this way copper was fashioned simply by pounding. In addition to the hammering process, cylindrical articles were evidently rolled between two flat rocks, which is the manner in which several of the articles in the collection in the State Historical Society might have been made. Some of those implements that have been supposed to be cast were swedged; that is, a matrix was excavated in stone, into which the rudely fashioned copper was placed, and then by repeated blows the article was made to assume the exact shape of the mould. Many of those plano-convex articles were undoubtedly made in this manner. Of twenty axes taken from mounds near Davenport, nearly three-fourths were of this pattern. I will quote a few lines from R. H. Farquharson on *Recent Explorations of Mounds near Davenport* (Iowa).

"The Davenport collection of copper implements consists at