

interesting facts. In a paper by Dr. F. W. Langdon* is given a table of measurements of the crania which shows that the brachycephalous skulls (those with an index of breadth of 800 and over)† are largely in the majority, there being fifty-two out of seventy-two of this character. None of them, however, exhibit any signs of the flattening of the frontal bone, which is such a characteristic feature of the Natchez and other Southern races of Indians. The Caribs of the West Indies and the Chinooks of Oregon both flattened the heads of their children in infancy; and the skulls of the ancient Peruvians and the figures on the monuments at Palenque show a remarkable flattening of the frontal. This is generally considered to have been the natural form of the skull, to have been the type of beauty cultivated by the Peruvians, Central Americans, Toltecs, etc., and not to have been produced altogether by compression. The peculiar form of the skull became hereditary, and children were born with this (to us) deformity.

Various forms of diseased bones are found among the human remains. One of these is a peculiar anchylosis of the spinous and articular processes of some of the vertebrae, the bodies remaining free.‡ It is supposed to have been the vertebral column of a female dwarf, the skeleton of which presented several other points of interest. Among the crania are several which have been fractured by some blunt implement, and the fracture has been partially or completely healed. Two other very interesting specimens are among the human bones. One is the eleventh dorsal vertebra, in which is imbedded for a quarter of an inch one of the small flint-points called war-arrows. The other specimen is a sacrum in which there is imbedded a similar point. This last was found in a pit with twenty-two skeletons, and doubtless belonged to an individual killed with the others in a battle, all of the killed having been buried together. These specimens show with what force the people could send their arrows. Both had entered from the front of the body, passed through it, and were only stopped by the vertebral column. Some of the long bones exhibit various excrescences which have been referred to syphilitic diseases, and which show that the people here buried were afflicted with that fearful scourge which, as some one has expressed it, "turned Europe into a charnel-house."

But the bones of an extinct race of men, interesting though they may be, can tell us but little of their domestic habits, and it is to the implements found here that we turn with greatest interest. These are so abundant, and often of such a peculiar character, that we have much to speculate upon. First of all is the remarkable circumstance of finding so many implements of bone, the abundance of which has generally been thought to be a proof of a low grade of civilization. But probably their abundance or their rarity has been regulated also by the age of the deposit, for, the older the deposit, the less likely it is that the bone relics have resisted the action of time.

Many of the remains are of a peculiar character, unlike anything found elsewhere, and speculations in regard to their origin and use are rife. Still other relics are strikingly like some found elsewhere, not particularly in this country, but in Europe, as will be shown further on.

Among the most curious and anomalous of all are certain peculiarly grooved bones, as represented in Fig. 1*. They are usually made of the leg-bones of the deer or elk. But few of the specimens are perfect, the majority having been broken by use and wearing away of the bone. The groove is often highly polished, though scratches running the long way are visible. These scratches were made in the manufacture or use of the instrument or tool, but what its use was no one has been able satisfactorily to determine. Archaeologists are puzzled, and pronounce them to be unique. It has been supposed by nearly every one that they were used in dressing skins, but no such scratches as are observed could be made in that operation. Some have suggested that perhaps they were made to serve some purpose of ornamentation, but neither is this explanation

probable. It seems to me that the groove has been the result of rubbing, for the purpose of polishing certain other relics found here. There have been found numbers of peculiar cylindrical pieces of bone and horn, like Fig. 2, as unlike anything found elsewhere as the grooved bones; and it seems probable that these cylinders of bone have been rubbed and polished in the grooved bones. We find that the different sized cylinders fit well into the different-sized grooves, and certainly constant rubbing would both round off and polish the cylinders, and leave scratches in the groove. It has been a matter of speculation, also, to determine the use of these cylinders. Some have said that they were used in playing a game; but it is more likely that they were made into a belt for the waist, or a necklace, thongs being woven between them, first round one, then the next, and so on. None of them show any signs or attempt at boring from end to end.*

Deer and elk horns enter largely into the manufacture of many of the relics. Among others are what are known as bone arrow or spear points, shown in Fig. 3 and 4. They are invariably made from the sharp points of horn, the piece being first cut off, and then a hole driven into the blunt end with a flint. Marks made by the drill are still distinctly seen in the holes. The points were fastened to wooden shafts inserted in the holes. Now, strange though it may seem, relics of an exactly similar make and of exactly the same sort of material are found thousands of miles away. Dr. F. Keller, in his elaborate book on the "Lake-Dwellers of Europe," gives figures† of these implements found in the Swiss lake-dwellings, and Fig. 5 is taken from his book. It is immediately seen that the relics from the two localities are identical, with the exception of the small hole drilled into the side. In Fig. 5 one of the arrow-points has a portion of the shaft still fastened in the hole.

Large pieces of deer and elk-horn, with the prongs polished by constant use, have probably been employed as digging implements. Smaller pieces of the flat part of the horn, with two or three prongs, like Fig. 6, have circular holes drilled into them, and were probably used for loosening the ground in agricultural labors. Here also we have similar pieces found in Switzerland, and Fig. 7 is copied from Dr. Keller's book, before mentioned.* The same idea has evidently actuated the makers of both these articles. Still other implements of horn are known as skin-dressers. These are made of the broad bases of deer-horn, sometimes six or eight inches long and four inches wide. They are polished at the broad end by constant use, so that they look like ivory. Occasionally one is found with a hole bored in it, but such are exceptional, and were perhaps used for another purpose. Here, again we find relics of a similar character in Switzerland, as figured by Dr. Keller.†

Bone beads are also found with the other relics. These vary in length from one to three inches, and are often very highly polished. Fig. 8 is a large one, and has some peculiar zigzag markings on it, the significance of which is not known. Bone fish-hooks, as represented in Fig. 9, show the race to have lived by the product of the Little Miami River as well as by the chase. Bone harpoons, similar in make to those still in use by the Esquimaux,* show further that they derived sustenance from the river, while Fig. 10 shows a needle made of a fish-spine (c) with a large hole in one end, a deer-bone (b), used perhaps as an awl, and a turkey-bone (a), also used as an awl.

Besides the useful articles of bone that have been mentioned there are others used more for ornament. The beads have already been referred to. A peculiarly-shaped piece of elk-horn, with five teeth and a perforated handle, has been found and has been called a comb. Fig. 11† represents it, and a striking resemblance between it and one from the Swiss lake-dwellings (Fig. 12‡) may be noticed. Another piece, the use of which is not known, but which is supposed to have been perhaps some sort of flute or whistle, is shown in Fig. 13. It is a hollow piece of bone, with six holes of different sizes made in one side,

* "Journal of the Cincinnati Society of Natural History," vol. iv, pp. 237, et seq.

† The long diameter being taken in 100.

‡ For a figure of this and various other diseased bones, see article of "Journal of the Cincinnati Society of Natural History," vol. iv, pp. 241-257.

* Ibid., vol. iv, p. 252.

* Copied from "Journal of the Cincinnati Society of Natural History," vol. iii, plate 1. Most of the figures herein given are made from specimens in the collection of the Cincinnati Society of Natural History.

* Since this was written, Dr. Phené, of England, suggests that they were used as currency, and it is very possible that this was the case.

† See plates 45, 62, 89, and 91 for these figures. The ones here given are copied from Figs. 25 and 28 on plate 62, and Fig. 6 on plate 91.

* See plate 13, Fig. 2.

† See plate 13, Fig. 14.

* Lubbock, "Prehistoric Times," p. 504, Fig. 219.

‡ Copied from the "Journal of the Cincinnati Society of Natural History," vol. iii., p. 132.

† Keller, "Lake-Dwellings," plate 28, Fig. 8.