

ANNUAL REPORT

OF THE

BOARD OF REGENTS

OF THE

SMITHSONIAN INSTITUTION,

SHOWING

THE OPERATIONS, EXPENDITURES, AND CONDITION OF
THE INSTITUTION

FOR

THE YEAR 1879.



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1880.

FORTY-SIXTH CONGRESS, SECOND SESSION.

IN THE SENATE OF THE UNITED STATES,
May 22, 1880.

The resolution to print extra copies of the report of the Smithsonian Institution for the year 1879 has been agreed to by both Houses to read as follows:

Resolved by the Senate (the House of Representatives concurring), That fifteen thousand five hundred copies of the Report of the Smithsonian Institution for the year 1879 be printed; two thousand five hundred copies of which shall be for the use of the Senate, six thousand copies for the use of the House of Representatives, and seven thousand copies for the use of the Smithsonian Institution.

Attest:

JOHN C. BURCH,
Secretary.

diameter on an elevated spot $\frac{3}{4}$ of a mile from any stream. I found nothing in this but a small piece of galena.

No. 4, on the farm of George Brown, 3 miles southwest of Milroy, on an elevation $\frac{1}{2}$ mile from a large spring. This is different in structure from any of the others. It is 40 feet across and 7 feet high. Directly in the center and bottom of it was a small mound 10 feet in diameter and 3 feet high, of hard red clay, so hard as to be difficult to dig with a mattock. All over this was a layer of charcoal 2 inches thick, yet so perfect that I could easily distinguish the oak, ash, and poplar wood from which it had been burned. Over this was a stratum of ashes mixed with clay, and the remainder was yellow clay. Near the bottom was a skeleton lying with its feet towards the west (all the others lay in the opposite direction). On one wrist were two copper bracelets made by rolling up sheet copper, and close by, a bear's claw, probably an ornament. The right forearm was absent. Though this skeleton crumbled and could not be saved, the others were gotten out in a nearly perfect condition. Nothing strange about them except the peculiar bottle-shaped teeth, especially the bicuspid and molars, and the fact that the larger of the two bicuspids on both upper and lower jaws came first, contrary to the fact in the white and modern Indian races. From the appearance of the frontal bone they evidently possessed a fair degree of intelligence.

I have opened a number of other mounds, but they are all about the same, and I found nothing in them.

PRIMITIVE MANUFACTURE OF SPEAR AND ARROW POINTS ALONG THE LINE OF THE SAVANNAH RIVER.

By CHARLES C. JONES, Jr., of *Augusta, Ga.*

In selecting sites for the manufacture of arrow and spear points, respect was had to the convenience of the localities. Ready access to the raw material and to food and water, and the physical advantages offered for transporting their implements, when manufactured, entered largely into the calculations of the primitive artificers and determined their particular fields of operation. That such is the fact, may be readily inferred from the presence of extensive and numerous open-air workshops along the line of the Savannah River, and especially that portion of it bordering the counties of Richmond, Columbia, Lincoln, and Elbert, in Georgia, and the counties in South Carolina lying opposite. Here milky quartz, chert, and some varieties of jasper abound. The substance from which the implements were to be fashioned was at hand, and in quantities practically inexhaustible. The Savannah River, with its numerous tributaries, was a never-failing storehouse of food. Its islands and banks, adjacent forests, and dependent swamps afforded ample cover for game of various sorts. At that early period the woods and waters were

far more replete with animal life than they are at present. Then, the Savannah was a limpid river. At regular times the shad and sturgeon ascended and descended the river in countless numbers, while all the year round, perch, bream, catfish, trout, suckers, gar-fish, sun-fish, eels, and other varieties of fishes were found in it in abundance. These waters teemed also with turtles and mussels, which constituted favorite articles of food among the primitive peoples of this region. The buffalo, the black bear, the deer, the raccoon, the opossum, the wild-cat, the wolf, the mink, the otter, the beaver, and other wild animals, the turkey, the eagle, the fish-hawk, owls, and various birds had here their habitat. Reptiles, some sorts of which were utilized as articles of food, crawled beneath the shadows of the forests. The mulberry, plum, haw, crab-apple, and other native fruits yielded their annual tribute, while from the nuts of the walnut and hickory trees were obtained generous supplies of oil. It was a region attractive to man in a state of nature. Here, under temperate skies, the battle for life was not severe. Intermediate between the mountain ranges of Upper Georgia and the sterile pine-barren belt to the south, running parallel with the coast, this territory was well suited for the abode of primitive peoples. Many are the indications that it was occupied for an indefinite period by a by no means insignificant aboriginal population.

That the Indians resorted in considerable numbers to the banks of the Savannah and its tributaries to hunt and fish is attested by frequent and large refuse piles, still existent at many well-selected points, by ancient burial-grounds, by occasional tumuli, and by the sites of abandoned villages upon the islands, and the high grounds adjacent to the streams.

With a view, therefore, to easy subsistence, companionship, and a ready sale at home of the manufactured articles, it must be admitted that the primitive arrow-makers were wise in here locating their most extensive open-air workshops. Surrounded by multitudes engaged in the capture of birds, animals, and fishes, the demand for stone darts was necessarily continuous and very general. The loss and destruction of such projectiles must have been constant and great, and hence extensive manufacture was requisite, especially during the seasons set apart for hunting and fishing, to supply the waste thus occasioned. In exchange for them food and skins were freely offered. While to the women was mainly committed the fabrication of fictile ware and domestic utensils, and while nearly all the male members of the community were able, on an emergency, to chip implements of hunting and fishing, the manufacture of spear and arrow points was in large measure monopolized by certain men in each tribe. In such labor were they constantly and professedly engaged, acquiring a degree of skill born only of an accurate knowledge of material and continual practice. Day by day were these chipped barbs bartered away for food, clothing, and ornaments, and when the products of manufacture accumulated beyond

present and local demand they were stored away in the ground, in places known only to the artificers, whence they could be taken as occasion required.

It must not be forgotten that the occupation of the primitive worker in stone was deemed not only useful but honorable. For the purpose of disposing of his surplus stock he frequently made long journeys, and the knowledge of his mission and avocation secured him a welcome among, and hospitable treatment by, the tribes he visited.

While along the coast may occasionally be seen nuclei or parent blocks of jasper, transported from a distance, and there kept to be manufactured into implements, and while at some points, even in the depths of the swamp region, may still be noted traces of small open-air workshops, it appears entirely probable that the Indians inhabiting the sea-islands and the adjacent territory were largely supplied with arrow and spear points and other stone objects manufactured in the interior and furnished by the ancient trader. Stone implements found along the coast, as a general rule, are beautiful in material and of admirable construction. This suggests and seems to justify the idea that these primitive merchantmen brought with them in their trading expeditions articles well selected, attractive to the eye, and calculated to command the highest price in the way of exchange. From the dwellers near the salt water were obtained beautiful ocean shells, large drinking cups made from conchs, beads, gorgets, shell ornaments, and shell money. This interchange of commodities was very extensive, and prevailed from a remote antiquity. By means of long rivers traversing vast regions and finally emptying into the sea were these trade relations most easily conducted. Geographically considered, the location of workshops in the region we have indicated was most judicious. The territory permeated by the Savannah was extensive. Its tributaries, capable of navigation by canoes from single trees, were neither infrequent nor indifferent. The population permanently established in this region was considerable, and when the mouth of the river was reached, the network of inlets afforded ample opportunity for communicating by water with widely separated communities. All the outer islands guarding the coasts of Georgia and Carolina, and the headlands where these primitive peoples delighted to congregate, were thus rendered accessible. In the light of discovered relics it appears impossible to prescribe limits to the peregrinations, by land and water, of these traders of the olden time. To the knowledge of the writer, within a limited area in the heart of Georgia have been found copper implements from the Lake Superior region, a bead and pipe of catlinite, not of recent manufacture, large beads made of the columns of shells native to the Gulf of Mexico, and stone implements, whose material must have been transported from great distances.

From long experience, and after frequent and careful examination, we are persuaded that we can in many instances designate with cer-

tainty the locality on the Middle and Upper Savannah where many forms of arrow and spear points were manufactured, which have been found on the sea islands and in the territory of Southern Georgia adjacent to the coast. Despite the similarity in forms and style of manufacture which characterizes all objects of this class, to the practiced eye and to one critically conversant with the archæological products of particular localities there are certain marks or *indicia* which proclaim unmistakably the home not only of the material, but also of the artificer. It is curious and interesting to trace and recognize the indestructible proofs of these trade relations among these primitive peoples, and to note with what confidence the origin of the bartered article, alien to the locality where found, may often be assigned.

These open-air workshops exist not only along the line of the Savannah River, but frequently occur on the banks of the Oconee, the Ocmulgee, the Flint, the Chattahoochee, and other southern streams. While possessing a remarkable similarity in construction and identity in material, the products of these various factories often indicate diversities which, to the eye of the careful observer, are capable of ready recognition. In the particular region to which our attention has been directed, by far the greater number of arrow and spear points were chipped from milky quartz and chert. Many rude specimens occur made of slate, and attain unusual dimensions, some of them being a foot long and four inches wide across the wings. In the Flint River region these points are broader, thicker, and generally made of beautiful varieties of yellow and striped jasper. Not content with utilizing the milky quartz, chert, and slate which lay at their very doors, the primitive workmen of the Savannah obtained from a distance material of varied hue and much beauty, and from it fashioned implements which, for excellency of workmanship and intrinsic attractions of surface and color, challenge admiration. Those manufactured from pellucid crystals, chalcedony, rose-colored and black quartz, and jasper of brilliant hues, are peculiarly attractive. Within the past few years not less than eight thousand well-formed arrow and spear points have been collected on both banks of the Savannah where it separates the counties of Columbia and Lincoln in Georgia from Edgefield County in South Carolina. Even now the supply is by no means exhausted. The annual plowings and constantly recurring freshets reveal each season new examples of the taste and skill of these ancient workmen. In the enumeration of the implements taken from this locality we do not include multitudes partially formed and broken, which, with quantities of chips, still mark the spots set apart for the manufacture. Sometimes we encounter a locality, many yards long and several wide, the surface of which is covered to the depth of several inches with fragments struck off during the process of manufacture, and with cores and wasters abandoned from some inherent defect in the material or broken by the workman. Some idea may thus be formed of the extent and duration of the labors of these primitive workers in stone.

We can but regard these workshops as the places whence were obtained, and that for centuries, many of the darts used not only by the peoples who resorted for supplies of fish and game to the banks of the Savannah, but by the tribes of Southern and Southeastern Georgia and Southern Carolina.

If we may credit Adair and other early observers, the Savannah River at certain times of the year must have presented an animated scene. Upon its banks, at appointed seasons, multitudes of Indians from the interior congregated. Weeks were spent in the general and active pursuit of fishes and game. All accumulations beyond present subsistence were smoked and dried, and in the end transported to their homes. It was during these periods, when these riparian abodes were thronged by peoples from a distance, that the primitive arrow-makers reaped their richest harvests. Some of these spear-points are 14 inches in length, while arrow-points are occasionally seen scarce half an inch long. These last are marvels of delicate flint chipping; and, attached to a very small arrow-shaft, and feathered with thistle-down, were probably blown from a tube. Swamp-canec supplied the ordinary shafts, and these were guided by feathers. Into the larger end a spike-shaped flint tip was sometimes inserted, but in most instances a slit or notch was made for the reception of the barb, which was securely fastened by means of moistened threads of deer sinews, or glue made from the soft horns of a buck, or small thongs of deer skin. Reserve arrows were carried in a quiver made of fawn or cougar skin, suspended from the left shoulder, and hanging just behind the right hip, where most convenient access could be had. Hickory, locust, white oak, ash, and red cedar are said to have been the favorite woods employed by these peoples in the manufacture of their bows. These, the customary shape of which was that of a single curve, they seasoned well, and frequently anointed with bear's grease to render them flexible and to keep them from cracking.

Upon the use of these bows and arrows the Indians relied for subsistence and for defense. They "never lack meat," says the Hidalgo of Elvas. "With arrows they get abundance of deer, turkeys, conies, and other wild animals, being very skillful in killing game." Cabeça de Vaca describes the Florida Indians as being all archers, admirable in their proportions, spare, and of great activity. Their bows were as thick as a man's arm, eleven or twelve palms in length, and capable of projecting arrows for a distance of two hundred paces, and with such precision as to miss nothing. Even the good armor of the Spaniards proved an insufficient protection against these missiles; and a buffalo or bear could not withstand the fatal effect of these well-directed shafts. But the history of the use of the bow and arrow among these primitive peoples, and their various methods of hunting and fishing, are foreign to our present purpose. We desire simply to call attention to the manifest proofs of the extensive and long-continued manufacture of arrow and spear points along the line of the Savannah, and we conclude with the

remark that almost every known type here finds rich expression. The triangular, the leaf-shaped, the shark-tooth form, the spike-shaped, the one-winged, the chisel-ended, those with bifurcated tang, the repointed, and many other forms are here seen. As we write, no less than twenty-three varieties lie before us, all indicating the skill, the taste, and the fancy of the aboriginal workmen.

In his "Last Rambles amongst the Indians," Catlin furnishes us with the following account of the manner in which arrow-points were made among the Apaches. We presume the method adopted among the Southern Indians was not dissimilar:

"Every tribe has its factory in which these arrow-heads are made, and in those only certain adepts are able or allowed to make them for the use of the tribe. Erratic bowlders of flint are collected (and sometimes brought an immense distance), and broken with a sort of sledge-hammer made of a rounded pebble of hornstone set in a twisted withe, holding the stone and forming a handle. The flint, at the indiscriminate blows of the sledge, is broken into a hundred pieces, and such flakes selected as, from the angles of their fracture and thickness, will answer as the basis of an arrow-head.

"The master workman, seated on the ground, lays one of these flakes on the palm of his left hand, holding it firmly down with two or more fingers of the same hand, and with his right hand, between the thumb and two forefingers, places his chisel (or punch) on the point that is to be broken off, and a co-operator (a striker), sitting in front of him, with a mallet of very hard wood, strikes the chisel (or punch) on the upper end, flaking the flint off on the under side below each projecting point that is struck. The flint is then turned and chipped in the same manner from the opposite side, and so turned and chipped until the required shape and dimensions are obtained, all the fractures being made on the palm of the hand.

"In selecting a flake for the arrow-head a nice judgment must be used or the attempt will fail; a flake with two opposite parallel or nearly parallel planes is found, and of the thickness required for the center of the arrow point. The first chipping reaches near to the center of these planes, but without quite breaking it away, and each chipping is shorter and shorter until the shape and the edge of the arrow-head are formed.

"The yielding elasticity of the palm of the hand enables the chip to come off without breaking the body of the flint, which would be the case if they were broken on a hard substance. These people have no metallic instruments to work with, and the instrument (punch) which they use, I was told, was a piece of bone, but on examining it I found it to be a substance much harder, made of the tooth (incisor) of the sperm whale, which cetaceans are often stranded on the coast of the Pacific. This punch is about six or seven inches in length and one inch in diameter, with one rounded side and two plane sides; therefore present-

ing one acute and two obtuse angles, to suit the points to be broken. This operation is very curious, both the holder and the striker singing, and the strokes of the mallet being given exactly in time with the music, with a sharp and rebounding blow, in which, the Indians tell us, is the great *medicine* (or mystery) of the operation."

MICA BEDS IN ALABAMA.

By WILLIAM GESNER, of Birmingham, Jefferson County, Alabama.

In Clay County, township 19, range 7 east, section 26, in a corn-field on the east bank of a small stream flowing into Gold Mine Branch, a tributary to Talladega Creek, is a stone heap, many of the rocks from which have been used in forming a retaining wall on the lower side of a wagon-way into the Talladega and Ashland road. It is supposed by the residents here to have been formed by the followers of De Soto to mark the locality of an ancient excavation in one of the mica-bearing beds of quartz and feldspar belonging to this neighborhood, and that they obtained silver from it, and from others of like character.

The geology of this region is Huronian, being constituted in this immediate vicinity of gneissoid and mica slate, and hornblendic rocks. This excavation is in a stratum of mica-bearing quartz and feldspar exceeding 8 feet in thickness, and, judging from the apparent area given to its entrance, the aborigines must have worked in it for a long time, and without any of our appliances for quarrying, as no marks made by metallic tools or pieces of them are found, though the place has been searched time and again for silver, and latterly for mica, affording sheets of the latter (Muscovite) squaring from 1 to 10 inches, and in one instance 11 by 14 inches.

Southeasterly from this place about 300 yards, in the same range, township, and section, occurs a smaller excavation in a similar micaceous bed, trending parallel with the former, both of them being easily traced on their outcrop for miles in a northeasterly and southeasterly direction, with a dip of 62° toward the southeast. In Talladega County, township 20, range 6, section 12, there is another one of these excavations of as large dimensions as the first mentioned, and in a similar bed of mica-bearing quartz and feldspar, from both of which it is evident the aborigines obtained large quantities of mica.

It is observable in these three instances that these beds were attacked by them at their outcrops on the banks of streams, where denudation had revealed them, and that the entries were made on them in the most simple manner.