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RESEARCHES AND TRANSACTIONS  
OF  
THE NEW YORK STATE ARCHEOLOGICAL  
ASSOCIATION

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LEWIS H. MORGAN CHAPTER  
ROCHESTER, N. Y.

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THE GREAT  
ALGONKIN FLINT MINES  
AT COXSACKIE

BY  
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State Archeologist



PUBLISHED BY LEWIS H. MORGAN CHAPTER  
ROCHESTER, N. Y.

1925

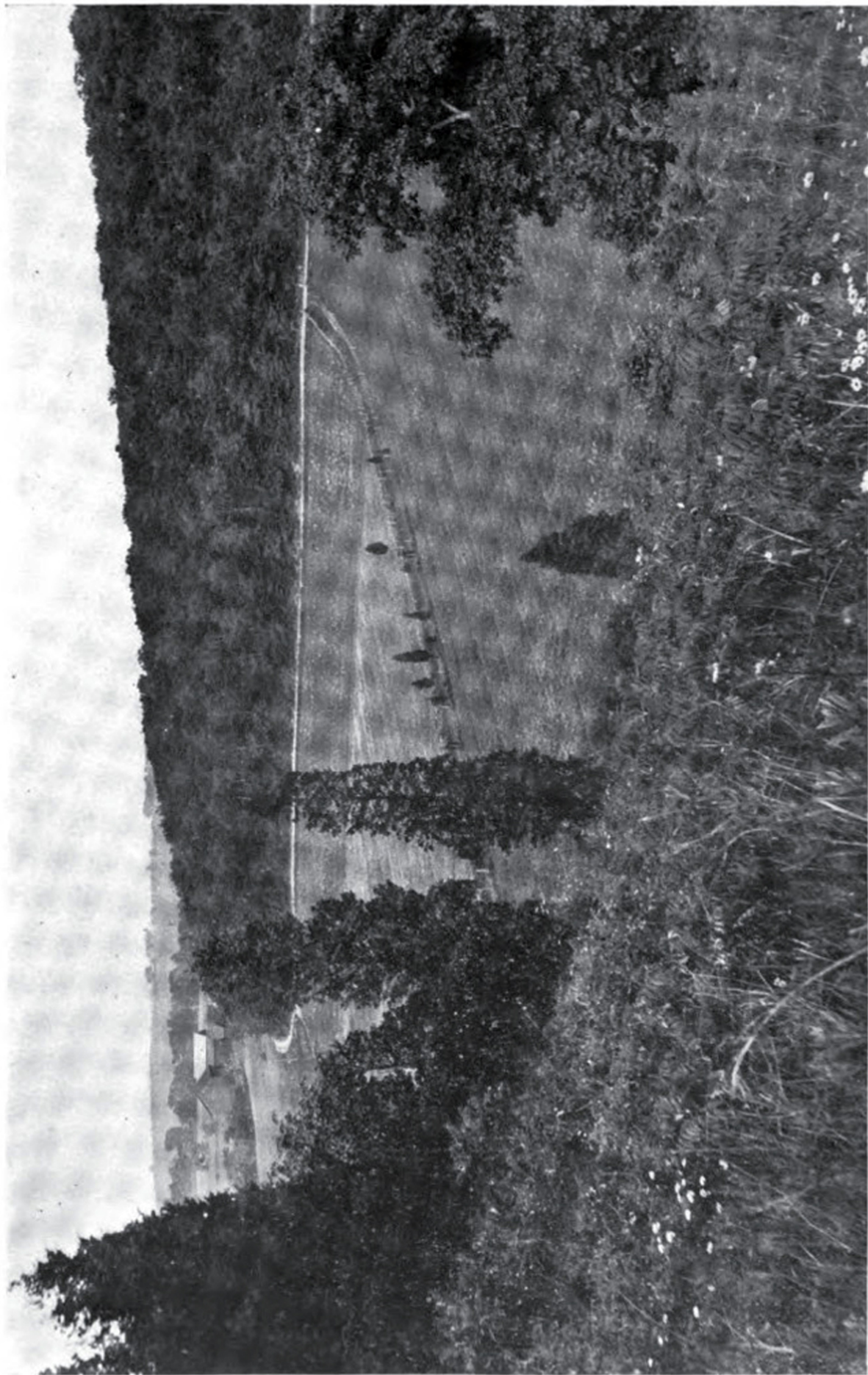


Plate 1. A view of the northern portion of Flint Mine Hill from the west. The Hudson river is over the hills in the extreme background.



# THE GREAT ALGONKIN FLINT MINES

By ARTHUR C. PARKER  
*State Archeologist*

Of all the objects associated with the Indian of antiquity, the flint arrow head is the most prominent. There is something about the arrowhead that symbolizes the departed red man, there is something about it that deeply appeals to the innate instincts of men. This is so far true that it might be found that there is something inherently wrong with persons who do not feel some sort of a thrill upon finding an arrowhead. Men have been known to undertake long journeys simply to enjoy a hunt for arrow points, thousands of farmer boys and hired men have found zest in their otherwise arduous tasks of following the plow and plying the hoe, when their labors were spent in a field where arrow heads might be found, and even sordid scientists whose minds were concentrated upon abstruse problems, have been willing to abandon research for a trip afield in search of the flints which the aborigines lost or cast aside. There is something compelling about arrowheads; what is it?

The answer to this inquiry is not single but complex, for the arrow point represents more than a single appeal. Indeed it not only appeals to the intellect but to the emotions as well.

One seldom recovers from his first surprise and delight upon discovering an arrow head. From it he receives a psychic inoculation that brews in his blood the pabulum upon which the chromosomes of his own starved instincts feed. In him is revived the spirit of his own remote biological past and his physical contact with his own ancestral life is completed, thus bridging the great gap,—the long and seemingly bottomless chasm, that separates yesterday from today. The cell entities that build the marvelous colony that in the aggregate makes the physical man thereafter have a refreshed memory and an intensified consciousness of the long struggle through the ages to their present attainment. The arrowhead, therefore, has a marvelous appeal to what is most elemental in man, and its influence lives as a potent subconscious power. This is the biological compulsion that lingers in the little flint artifact.



Then, the chipped blade has within it a mystery. How came it to be where it was found? Who shot this imperishable tip of ancient missile? Indeed, who fashioned it from the treacherous substance which composes it, who gave skill to the hand and the feeling of symmetry to the eye that directed its form? Look at that substance; it is harder than steel, it resists the chisel's edge and is adamant to the file. By what subtle art, therefore, was the point reduced to its shapely form by the hand of primitive man? Here is deep mystery. Only the initiated know the answer to the riddle.

Search the world over wherever beings of the human kind have lived and arrow heads, spear points and blades of flint or of kindred material will be found. Not only does the New World yield them, but Europe, Asia, Africa, Australia, and countless islands along continental shores. Beautifully chipped points come from England, France, Switzerland, Italy and Greece, similar implements are discovered in Asia Minor; the region now embracing ancient Babylonia, Persia and India; and they are found in China, Burmah and Japan. Along the Nile beautiful points of jasper are discovered under deep layers of sand, or beneath the foundations of temples. The arrow head is universal, and mankind during its infancy knew no more facile projectile. As all blood comes from a common source, as all men are brothers of common ancestors, so all of human kind used the spear and the arrow, and used them during an eon of time so great that the duration of the period we call "civilization" seems but a day.

The arrow head had much to do with the molding of the human race. The shaping of flint,—that seemingly intractable substance,—developed skill, patience and ingenuity and engraved the inventive spirit into the will of man. *The arrowhead is the stylus of history*, and without its discovery and employment this race that we call mankind might still be uttering inarticulate cries of terror and be the prey of the carnivora. The race must never forget its debt to flint and its heavy obligation to the first flint workers of the world, and if it has forgotten, it must have its memory renewed and refreshed. This must be accomplished in order that the genius of the race of today may recognize its sire in the misty, far-off yesterday.

The projectile point of flint has another appealing tale; it is that of the youthful ventures of genus *Homo*. Time was when *Homo* was a frightened fugitive from beasts of prey, from huge reptiles and from the miseries of climate and of famine. Came the discovery that fire could be controlled, fed and used to bring comfort to the dwelling



place, and out of this grew the knowledge that fire would keep away the beasts. To them fire was a thing to fear when nothing else was feared; it was a transcendent energy the nature of which they could not divine. But fire was only a defensive thing in the struggle to survive, it was a tool and not a weapon.

Came another discovery; the fact that the hardest of the common rocks could be chipped to points and edges. These points and edges were hard and were capable of piercing flesh and bone. Placed upon spear shafts they became weapons with which *Homo* might pursue the beast into its very lair and kill it. In a later age when *Homo* had learned more he invented the bow and sent a winged arrow at a distance and, unseen, brought down his victims.

The projectile point thus became the symbol of man's ability to send his power afar and to make it perform as he willed. Through the flint point man came to a conscious realization of his possibilities; through it he realized his power over the beast world and through it he learned the meaning of conquest.

Little wonder then that dormant cells within the cerebellum and starved atoms in the blood, paled by lack of food and wanted stimulation, awaken to new memories and thrill with a new energy when an arrow head is found. Little wonder that there is the return of a strange delight to the heart, a kind of satisfaction that cannot be described exactly and an odd feeling that here in this arrow head is the bridge of history, the lost span of time, that unites the finder with the dim ages when saber toothed tigers, aurochs, reindeer, mammoths and cave bears swarmed Europe and the woolly rhinoceros roamed the marshes and waterways of Asia's westward peninsula.

It was not so long ago that the white man had his day of flint and when arrow heads were more important to him than diamonds, gold, copper, tin or iron. Then came the age of bronze and then of iron, and flint was so well nigh forgotten that when arrow points were found they were thought to be the product of thunder bolts, the off-spring of lightening. For many years Europeans clothed the flint point with the haze of mystery and imputed to it a non-human origin. But even so, arrow points were religiously preserved as potent charms and they were believed to be filled with magic.

With the settlement of the New World came the cultivation of what was usually thought to be "virgin soil." Forests were hewn down and where once had been a wilderness, farms and plantations spread out in every direction. The soil was ripped by plows and turned over



to afford new seed beds for the settler's crops. It was then that the eye of the worker saw strewn through the kindly loam masses of flint chippings and scattered about thousands of arrow, javelin and spear heads, many of them exquisitely formed. The farmer who had been in conflict with the Indian often hated these relics of his vanquished foe and broke them to bits, as was done in the Mohawk valley, with the exclamation, "this point will not harm another white man now," but others with an impersonal point of view, picked them up and preserved them as curious relics.

Arrow heads are widely distributed through the state of New York and there are literally thousands of collectors who have from a dozen to several hundred of them. They are not despised by advanced archeologists, many of whom make a particular study of them, and great museums display them in such a manner that the whole story of man's progress is outlined.

This abundance of flint artifacts leads to an important inquiry; it is, *from whence came the flinty material employed?*

This question, "Where did the Indians get their flint?" has been one of the most common connected with archeological research. It has been one of the most difficult for the archeologist to answer, for the known sources within the state of New York were apparently inadequate. And then came the discovery of the flint hill between Coxsackie and Athens in Greene County.

#### FIELD SURVEYS LEADING UP TO THE DISCOVERY

For a number of years collectors of Indian artifacts have found the shores of the Hudson river between the mouth of the Normanskill and Catskill creek the source of innumerable specimens of flint implements. There seem to have been special spots where these implements were chipped in former days by Indian arrowmakers, for chips and broken implements as well as numerous cache blades have been found on workshop sites.

During the autumn of 1920 the writer explored the shores of the Hudson below Catskill, especially near Embought bay. Here, between Green Point and Catskill there were places where flint chippings were so numerous that it was impossible to take a step without walking upon several fragments of worked material. On the "north lot" of the Ham farm, four miles below Catskill, was a site, brought to the attention of the State Museum by Mr. Egbert Beardsley of Catskill, where as many as twenty complete and partially completed



arrow points were picked up, simply by turning on the heel and looking amongst the flint debris on the ground, and locating the points.

The great abundance of worked flint and waste material from the manufacturing process was impressive and led to the inquiry as to the source of the raw material. If the ledges of flint or the quarries could be located much might be learned about the quarry process and methods of reducing the flakes to cache forms.

Possible sources were investigated at Lansingburg, along the Normanskill, along the Helderberg escarpment and at various places along the high banks of the Hudson south of Albany. Small quarry sites were discovered but the workings were not of major importance.

We then began to investigate localities further inland where workshop sites were numerous. A site south of Coxsackie long known as Mineburg hill was brought to the attention of the State Museum by Jefferson D. Ray of West Coxsackie, and upon examining the records we found that it was listed as a quarry site by Wm. M. Beauchamp as early as 1900. Mr. Ray stressed the importance of the site and exhibited numerous points which he had found on the flats below the hill. It was largely through his invitation that the present writer went to the site in the spring of 1921 to make a preliminary investigation.

The result of this visit brought about the subsequent investigation. Our first sight of the ground at the base of the hill gave plain evidence of aboriginal activity. The earth in the cornfield along the road was so filled with flint chips that they might have been shoveled out by the bushel. Our first impulse was to photograph the ground, for there in the soil was the most astonishing evidence of flint working that the writer had ever seen. Mr. Ray's advice was to wait until the hill had been visited before making a photograph.

We ascended the hill through a rock cut and walked over the backbone of the ridge. Ten steps furnished evidence enough that here beneath our feet was *the most remarkable archeological monument in the state of New York. It was literally a mountain of arrowheads!*

### THE INVESTIGATION

Our first sight of the hill was in late April at a time when the fruit trees, in full blossom, were blanketed with a sudden fall of spring-time snow. The ground was wet and sodden, but the joy of discovery made us oblivious to the mud on the flats in which we wallowed in search of cache blades and finished points. What though top-coat



pockets were caked with clay when within them rested fifty points and blades, picked up in ten minutes from the ooze!

The character of the site was reported to the Director of the State Museum, Dr. John M. Clarke, who immediately authorized a month's investigation and survey. Camp equipment was brought together and Mr. Everett R. Burmaster, my old friend and field helper, left his work near Buffalo to join our expedition. By May 17 (1924), Mr. Burmaster and myself were on the spot and with the aid of Mr. Ray, who volunteered his services, we set up camp. Mrs. Parker, also a volunteer, came a day later, fully equipped to act as chainman in the survey which we had projected.

Camp was set up on the north nose of the hill in a cleared spot among the red cedars. It was a pleasant spot but there was some difficulty in making tent pegs hold owing to the stony ground. With a little ingenuity, however, we guyed to the trees and made fast our three tents and cook shack. With work chests opened and tools, cameras, surveying outfit and mess paraphernalia distributed we were ready for work.

The first task was to get acquainted with the site and measure its demands upon us for research. Let us first observe where we were.

The hill was long and narrow. Later our measurements showed it to be about 900 feet wide and over a mile in length. The general direction of the ridge was 28 degrees east of north. There was a covering of soil about the camp, but in places it was thin, though on the western edge it was fairly thick.

Near camp were depressions filled with broken shale, cracked chert and hornstone. For general descriptive purposes we called it "flint." Just beyond our tents to the south the woods commenced and a wood road afforded a rather indefinite passageway into the thicket. We followed this, finding pits and depressions in increasing numbers. Passing through the woods we came to a cleared space bordered on the western side with more woods. Entering these we discovered a great yawning pit 40 feet deep from the up-hill side. It was our first glimpse of the principal quarry. Entering it we found masses of detrius and flint and 12 or 15 hammerstones. To the west of the pit were dumps of material taken from the excavation. To the south and a bit down the hill was another, though smaller quarry pit.

To the west and to the north of these quarries were enormous dumps of broken quarry refuse. We found them to be more than 10



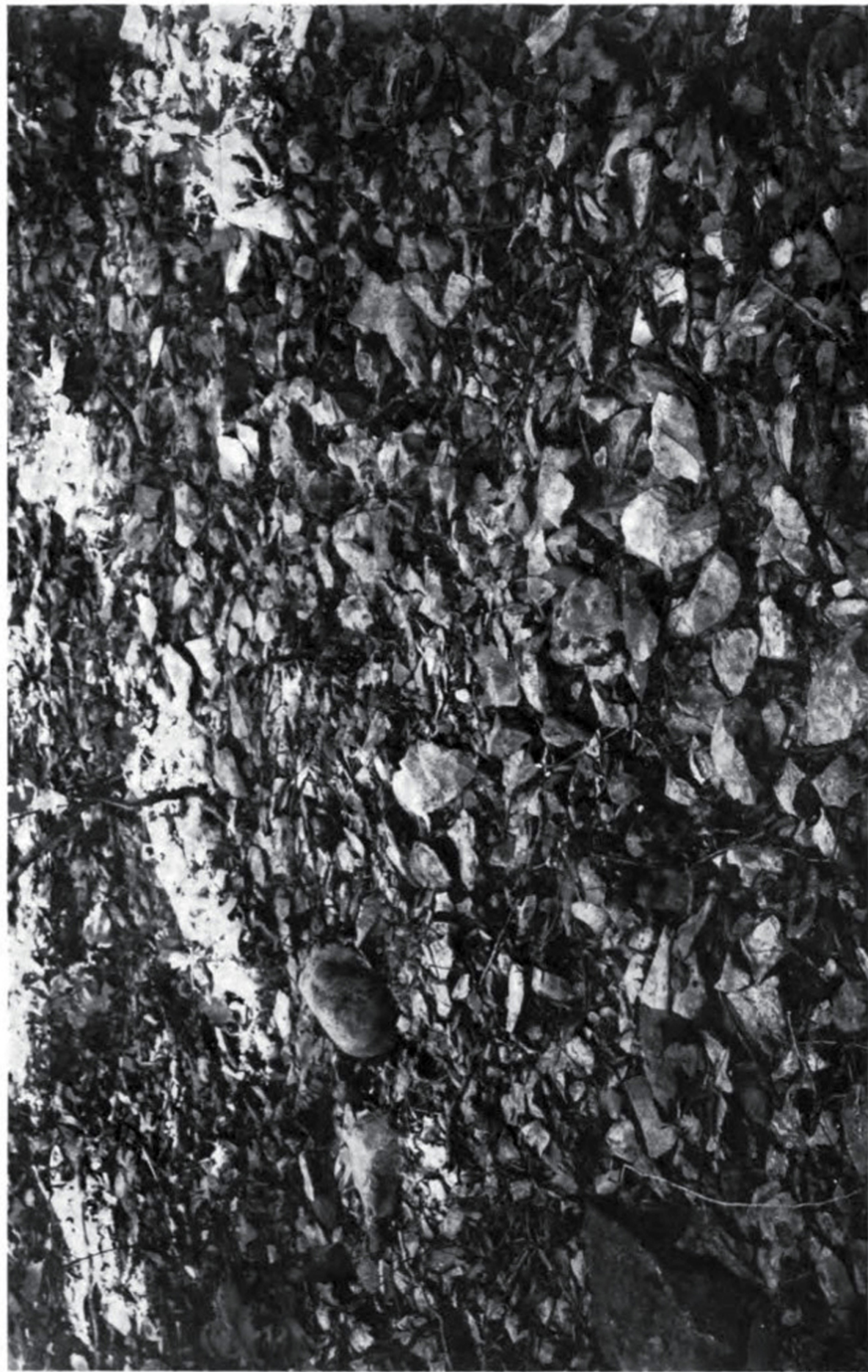


Plate 2. The surface of the ground at the northern chipping station. Note the hammer stone and the work blades among the debris.



feet deep in places and there is little doubt that they are not 20 feet thick in places.

The great dumps of refuse along the hill on both sides impressed us. The amount of material to be seen there is enormous and may be measured in hundreds of train loads. One dump to the north of the great pit looks as if it had been thrown down with a mathematical eye, for its edge is straight and the angle of repose quite uniform. It looks like a railroad embankment. Burmaster found a fine arrowpoint in the rubbish. Broken cache blades were numerous. Hammerstones were so abundant that we resolved to pick up a full thousand for study purposes. After the first thousand we resolved, further, to try for 3,000 and when, as time went on, we had our three thousand, we lost interest.

After our first walk over the hill we returned through the woods convinced that the place was of prime importance. My notes show that the trees upon the hill, noted in this first tour, to have been red cedar, hemlock, pine, white ash, prickly ash, hickory, white and black oak, ironwood, butternut, maple, cherry, poplar, beech and birch.

Birds seen on May 18, (1921,) were crow, yellowbreasted chat, blue bird, red winged blackbird, white and red eyed vireos, song sparrow, chipping sparrow, wood thrush, robin, towhee, brown thrasher, whippoorwill, Baltimore oriole, phoebe, chestnut sided warbler, great crested flycatcher and Maryland yellow throat.

On this day, also, we observed that wild strawberries in abundance were ripe, that huckleberries were well formed, also raspberries, blackberries were in bloom, Solomon's seal had its berries formed and the fruit of the May apple was developing.

The hill is abundantly supplied with water, having springs on the north, west and east sides. These only need to be dug out to make the supply copious and potable. On the west side an adjoining neighbor has tiled up a spring, and on the east side across the road is a stoned up spring with a copious flow. This spring we cleaned and used during our stay on the hill.

Our first glimpses of the hill and our first examination was in the spring of the year when flowering plants and verdure were new. We could not help but feel that the hill and its workings symbolized the Springtime of man's endeavor to wrest from stubborn stone the elemental inventions that made civilization possible. Our hearts were strangely moved by the thoughts that came as we clustered about the campfire at the close of our first day and we could not help but think



of those other campfires that flared and flickered in that dim far off yesteryear when the hill was a red man's workshop.

The backbone of Flint Mine Hill is an uneven ridge of varying widths and elevations. In it are several sags that provide drainage and easy access to the level below, but in general the hillside is quite steep. The southern end has considerable soil made from decomposed shale intermixed with clay and gravel, but the northern end is roughened by protruding rocks and ridges. It is in the Normanskill shale deposits that the flint is found and wherever it is in evidence there one will find the tell-tale marks of aboriginal activity.



Fig. 1. Types of flint outcropping along the road cut at the north end of the hill.

The hill is unlike the surrounding elevations near it in that it contains but a trace of sandstone. This is at the north-west corner facing a hill to the west which is mostly brown sandstone, (Normanskill grit). Flint Mine Hill is principally composed of Normanskill shale, the shale lying above the sandstone rock.

Beginning at the northern end of the hill near the house and barns of the abutting owner, the flint bearing rock protrudes from the



surface and shows evidence of working. The garden to the rear of the barn is strewn with quarry refuse and broken stone tools. We found fifty hammer stones and some fine blades at the rear of a small barn. In the chicken yard we picked up arrowheads and more unfinished blades. The Russian refugee owner of the place, Colonel Jacob Dun-aif, became greatly interested in our work and while aiding us in picking up specimens told us of his adventures with the Red Army that fought the Czar and in turn had to fight the Bolsheveki.

Along the eastern side of the hill at the northern end is a road-cut blasted through the rock on the property line to provide a right-of-way for farmers living west of the hill. This road in places is cut through heavy layers of black hornstone and a fine exposure may be seen at the top of the road. This we photographed. Just above this cut on the hill to the south is a mound-like knoll of flint-bearing rock, now covered with earth. Upon this knoll we raised our flag pole.

There is a garage and a pump at the foot of the hill at the wagon entrance to the farm house and here was a pile of rocks in which were mingled numerous broken hammers and unfinished blades. These we sorted. Westward and up the hill through a little orchard we found other implements and hammerstones. All along the eastern slope of the hill the soil is stained a deep black with Indian camp refuse and beneath for a foot or more are layers of broken quarry material and rejected implements.

Above, on the top of the hill to the south of the "flag mound," was what we called the campus for we pitched our tents there. Here are deep refuse heaps and layers of cracked flint six or more feet in depth. The deposit here is earth covered for a thickness of several inches but it is rich in worked blades and hammers. We found 117 specimens in a six-foot trench which we ran for 60 feet. Some of the blades were apparently finished but nevertheless were cast aside with other rejects for defects seen by the skillful craftsman of old. A photograph was taken depicting Burmaster digging down into the deposit. (Plate 3 a).

Fragments of animal bone were discovered here indicating that food refuse was dumped in with the quarry debris.

Further along and just inside the woods to the west we found a rocky knoll. At the foot of it is a level space which was covered with fallen leaves, mostly beech, oak and maple. These we raked aside under Mr. Ray's direction, for he had found arrow points here. After



clearing a space to show the lay of the ground we photographed a typical spot. After exposing the plate I picked up 20 cache blades and finished points besides several hammer stones, all within range of a 5 x 7 camera plate. See plate 2. We picked up several hundred blades and points here. Sometime afterward we entertained the ladies of the Dana Natural History Society of Albany and on this spot every woman picked up at least one finished arrow point and several found even more. The newspaper reporter found a full dozen in a cleft between two rocks. Near by were the hammers and chips left by some ancient worker. To find arrowheads or blades was simply a matter of removing the blanket of brown leaves and then raking the cracked stone that lies beneath.

Further along through the pleasant woodland near the east side of the hill is a pit some 30 feet in diameter and six feet deep. It was filled with broken stone looking like coarse macadam. Chief of the smaller pits, we called it "Crow's Nest" not only because of its shape but because there was a crow's nest in a tall slender oak just above it.

Crow's Nest is the largest of the round pits and all about it, especially to the southward, and even all along the western crest of the hill are other smaller pits. There are 300 or more, some visible enough and others obscured by leaves and earth. Beyond is a long trough-like pit, which we called "Rattlesnake pit" because in it we observed the only snake we saw on the hill. It was a frightened little ribbon garter and not a frightful *Crotalus horridus*.

The pits are excavations in solid calcareous shale and reach down into the folded layers and pockets of precious flint rock, of which there are several grades and colors. Most of the pits are not more than six feet in diameter but so numerous are they in spots that there is the suggestion that a portion of the upper surface of the hill must have been removed in order to permit further excavation by the pit process. There are pits and more pits as we go southward and then they apparently play out. One pit, beneath a wire fence as we leave the woods for a field now growing up to a jungle of sumach, seems to indicate a farewell, but a glance at the hillside to the west brings a startling revelation. It is a solid mass of quarry refuse for a full thousand feet and runs down the hill for two hundred feet. The layer is deep here and we estimated that there were at least a million cubic feet of quarry dump at this one location.

We now proceed across the hill to the eastern slope. We pass a



shaly knoll and bear down the slope to its wooded eastern edge. Here another surprise awaits us.

Looking through the fringe of trees we see a deep cavernous pit on the hillside. Its upper side is forty feet deep and its lower about ten. It is 125 feet long and 60 feet wide. This is the Big Brother pit from whose sides and bottom layers of the best grades of flint were taken. Even now the walls show projecting ledges just as they were left when the last ancient craftsman turned his back upon it.

Above this quarry, whose bottom is now filled with loosened rock, to the north, is a long regular dump with an even upper edge and a



Fig. 2. A view of the larger quarry showing the flint outcrop.

slope that reaches down to a shelf-like level, below which is the great eastern dump running along for a thousand feet and extending downward to the base of the hill.

To the south and a bit to the east of Big Brother is the Little Sister quarry, about 80 feet in length. The dump borders its eastern edge and extends down the hill.

Here and there near the quarries are piles of rock some of them of brown sandstone. What they are we can not tell though we examined them and dug beneath for several feet. Some appear to have



been piles of shale which had been burned in order to loosen the flint, while others seemed to be of siliceous slate and burned to crack the flint. They are still to be found and the problem of their presence and purpose yet remains to be solved.

Above Big Brother is a deposit of cracked flint that has weathered a light gray but upon being broken reveals a greenish-blue color. It is known as "white weathering flint." Among the rubbish here we picked up a number of large blades and hammerstones.

Hammerstones were abundant about the quarries and may still be found, though we took away hundreds of them. They are of two general types; one a cobble of any convenient size, from a half pound in weight to five pounds; the other is a disk of hard stone artificially shaped like a large lense with edges more or less sharp. Among the 3,000 specimens of hammerstones and disks that we found not one had "pits" on opposed sides like the common pitted hammerstones from village sites, but all showed battered edges.

Few completed implements were found upon the hill itself, most of the objects being work blades and the rougher forms in process of reduction. An examination of the flats along the eastern side of the hill and one to the north-west revealed that if arrow heads were wanted the places to look for them were here. Jefferson Ray made this his work and found more than 3,000 beautiful specimens of completed points of all sizes, many of them strangely shaped. He also found four amulets in or near the springs and one copper chisel edge. The usual village site objects were lacking. There was no clay pottery whatever but a fine portable mortar and pestle were found near the barn.

### SORTING STATIONS AND WORKSHOPS

An examination of the various areas and places which we had inspected with such consuming care seemed to indicate that there were several types of stations to be differentiated.

First, was the quarry or pit from which raw material was obtained;

Second, was the dump where shale and coarse grained flint had been thrown aside;

Third, was the station where quarry flint was piled in heaps for sorting;

Fourth, was the station where flint had been tested for its chip-





Plate 3a. The refuse at the northern end of the hill is thick and many broken blades are to be found in it.



Plate 3b. E. R. Burmaster and Jefferson Ray examining cache blades in a small pit near the larger quarry. Note the hammer stone on the flint outcrop.



ping qualities, the good to be retained and the poor to be discarded;

Fifth, was the place where good flint had been still further chipped and reduced to work blades, in sizes from three to eight inches in length;

Sixth, were the places where work blades had been reduced to finished points. These finishing stations, save perhaps one, were not on the hill but on the flats around it, mainly on the eastern side where Ray found his thousands.

When we began to collect samples of quarry blocks from the hillside piles in order to determine the kinds of flint yielded by the hill there came another amazing discovery. Among the specimens were red slate, white quartz, rhyolite and a high grade of compact light flint flecked with darker blotches. None of these specimens was native to the hill but had come from other localities. What did this mean? We turned to the arrowpoints and other chipped specimens for an answer.

An examination of the spears, javelin heads and arrow points revealed that many were of flint not found on the hill, many were of rhyolite, jasper, felsite, quartz and argillite. Most of these blades of extra-limital material were from the workshop sites along the eastern edge of the hill.

Here was material for consideration. What did it mean? The conclusion is inescapable: Indians from many widely separated regions had brought their own local material here to be worked into the finished product. Flint Mine Hill was thus not only a prolific source of material but its workshops were manufactories for all who came with foreign stone.

Our imagination was kindled and we pictured visions of a vast aboriginal industry. The hill became a living reality to us and peopled with the master craftsmen of the stone age. We could close our eyes and see the woodland swarming with men, we could hear their shouts and the din of the quarry operations.

Attention was now directed to the problem of how a stone age people conducted their quest for flint. An examination of the quarry floors revealed some evidence of fires but we did not find enough to suggest that the rock enclosing the flint had been broken by a heat and water process. We were thus forced to the conclusion that the great disk hammers had been employed to break away the circumcumbent rock and free the deposits of flint. The method was one of sheer muscular effort, of continual pounding upon the stubborn rock, day after day,



moon after moon. Then would come the flinty seam or mass, which when it projected enough would be broken off. How futile was most of the work, for, alas, the rubbish of the quarries showed that only about one tenth of one percent. of the material removed was flint that could be used. Like gold in the present age, it was the valuable minor thing. Unlike the man of today, however, the savage Indian sought his material and valued it because it could be used and therefore had an intrinsic value; the civilized white man seeks his gold because it is a rare substance that makes fine ornaments and because men have agreed that it should be a standard of value. But like gold the Indian's flint was encompassed about with distressing amount of material that must be rejected as unfit for use. Even when obtained there was another tragedy, for perhaps not one attempted blade in five was completed or proved fit for use. Defects in the material, sudden fractures, or inaccurate blows ruined many blades before one was completed. When an arrow head is found, the marvel is, not how it was made, for the process is simple, but how the material was obtained and selected. Once a good piece of flint was found it was a matter of five to twenty minutes to work the point to completion and make the notches.

From the information which we gathered those of us who worked on the hill thought that we could picture the processes which went on in the quarry workshops, making our deductions from what we saw of the several stations and places.

First there were the men whose patient sinews wielded hammers formed from glacial cobbles, and broke away the rock;

Second, there were the expert quarrymen who broke the flint from its fastenings;

Third, there were the basket-men or carriers who toted the broken shale out of the pits and cast it in places where it would not conceal good ledges;

Fourth, there were the flint carriers who took the dearly bought material to expert sorters;

Fifth, there were the testers who chipped each selected block or spall to test its value to the blade makers;

Sixth, were the blade makers who worked the selected material into roughly shaped blades for still further reduction by experts;

Seventh, were the master craftsmen who took the blades and either finished them as trade blades or finished them as completed implements;



Eighth, were the traders who packed the cache and trade blades in bags, baskets and boxes of bark and took them away with them to barter for pelts, dried fish, wild rice or other commodities.

It is possible that one man did all the kinds of work enumerated above, but a division of labor seems more probable. From what we know of the old Indians we are safe in postulating that there was a division of some sort and that it is more probable that one person did not run the gamut of all the necessary processes.

The question arises whether there were not master minds that directed all this labor. It seems reasonable to believe that there must have been chief quarrymen who ruled these activities and overseers who kept the workmen at their tasks. In the language of the Walum Olum might we not say, "Master Flint Worker,—he was chief?"

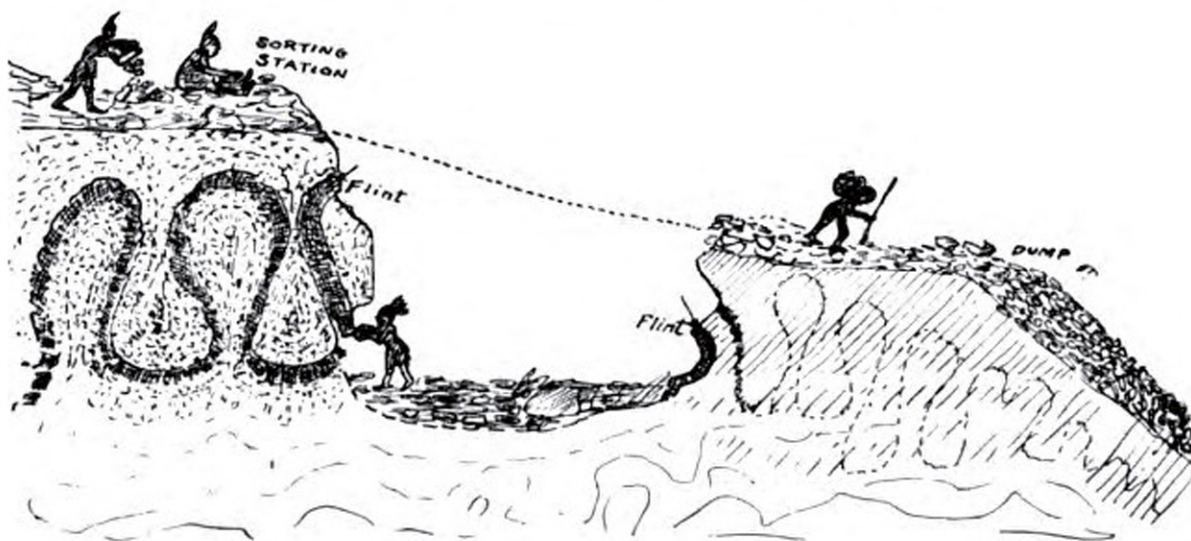


Fig. 3. A conjectural cross-section of the larger quarry. Note the folding of the rock and flint layers. The Indian is pounding out the flint at the point shown in Fig. 2.

The task of quarrying was a most arduous one and one in which cuts and bruises must have been frequent. Were the rough workers slaves, or were they free apprentices set to learn the art? Some no doubt were unhappy wretches captured during raids and held in bondage for the heavier work.

From what we know of the secrets of Flint Mine Hill, I think we may picture its smoking camp fires among the tall oaks and hemlocks, we may conjure to our ears the sounds of the incessant hammering, stone upon stone. There must have been a noisome din punctuated by the shouts and laughter of the workers or by their wild chants to the demon of the rock. We may even hear a mother's lullaby



as she rocked her babe in a swinging cradle fastened safely to a projecting limb. But the sharp ringing sounds of innumerable hammerstones must have been the characteristic note of the hill and have been heard for a considerable distance, an everlasting knock, knock, knock.

Flint Mine Hill was an industrial area and not a place selected for domiciliary purposes. If there were once wigwams on and about the hill and if there was a seasonal village, the dwellings were on a rise of ground to the north-west along a small stream. There were probably scattered houses on the flats both east and west of the hill and even on the nose where our camp was located, but the usual signs of extensive village occupation were lacking. Nevertheless there were overwhelming suggestions of a numerous population of workers. Where then did they live?

It is quite natural to suppose that the village or villages of the quarrymen must have been near the Hudson river, for the hill is about four miles from that stream,—long known to the red people of the valley as the Mahikan-ittuck.

Under the guidance of Jefferson Ray we examined the sites along the river shore near Four Mile point. Here were found a cluster of village sites extending from the Bailey farm to Old Orchard point, a distance of two miles. The evidence of a long occupation by a considerable body of people was convincing. That these people were either the quarrymen of Flint Mine Hill or had close relations with them could not be doubted. Material from the hill was everywhere to be found. On the Bailey farm, at the foot of the road leading riverward from the Athens highway from the "White Elephant cut," is an area where thousands of work blades have been picked up. Here also are finely formed points, knives and spear heads and curiously formed spool stones.

Further south on the old Houghtaling or Melcher place are other evidences of village occupation, especially in the orchard and inland from the sand dock where there is a large flat at the foot of the hill. Here some celts, adzes, pestles and a gorget have been found. Pottery fragments were reported from this site but we were unable to dig for any because the ground had been seeded to clover. A grooved axe was reported from the beach at this point.

All along the upland bordering the river to Four Mile point light house signs of former Indian occupancy were visible. Beyond at Old Orchard point they spread over a wide area and at the point



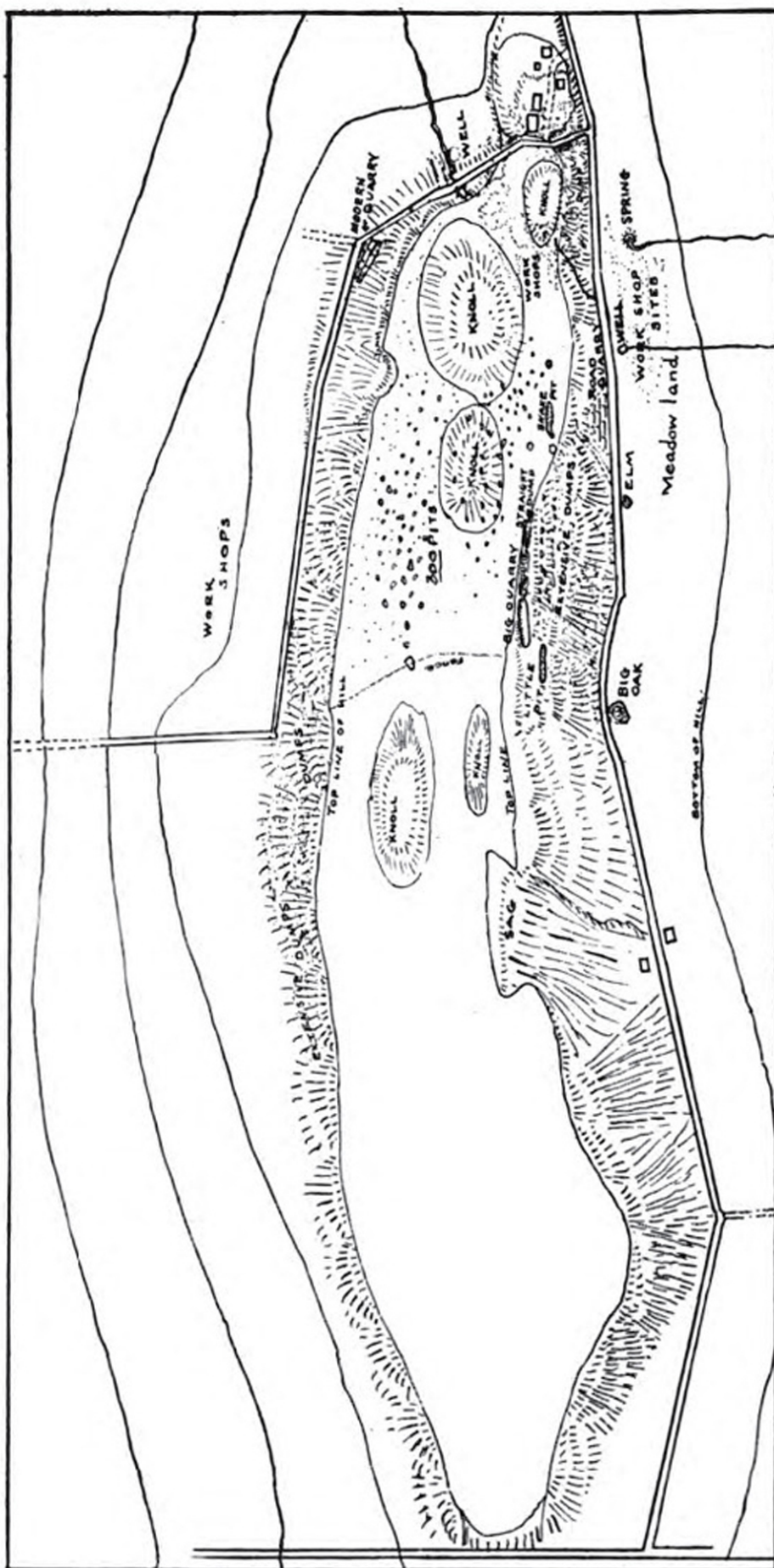


Fig. 4.

#### SKETCH MAP OF FLINT MINE HILL.

(Directions: Northward to right; Eastward to bottom).

The principal flint workings are on the north end of the hill with the large quarries in the middle. The main features of the site are sufficiently indicated and further explanation may be found in the text.

The hill is formed from an upthrust of folded Normanskill shale, between the layers of which are the strata of flint, (chert). The convolutions run about 20 degrees east of north which is the general direction of the hill. The road bounding the hill on the north is about 920 ft. long which will afford a comparative scale.



itself is a favorite hunting ground for collectors. Hundreds of arrow and spear points have been found here, many of them particularly fine. Here is a cobble floored canoe landing place and a marsh that encroaches into the river. It still supports a growth of wild rice and acres of yellow pond lilies. It is even yet a favorite spot for ducks. In ancient times the Indians must have found it an unusual source of food, for rice, lily tubers, fresh water clams and fish were ever favorite foods. The rich, loamy alluvial soil was soft and fertile for cornfields and the white man still grows this native grain here.

Across the river in the region about Stockport creek were other village sites with plummets, stamping them as influenced by the New England Algonkian culture. One site on the old Abram Staats' farm was of particular interest. It yielded many chipped points of Flint Mine flint, and there were celts, a grooved axe, metates, pestles and even bone implements. Graves and pottery were also found here. An Athens collector, Mr. Andrew Ploubert, found a fine bannerstone protruding from the bank.

On the west shore of the Hudson we followed the sites to Athens, pausing to examine a place where numerous graves had been found and in one a string of more than 100 native copper beads, together with shell beads and a pendant gorget. Some sites yielded fragments of polished stone and slate implements and steatite shards.

Our examination showed that it was along the river and not back in the Cocksackie flats or upon the hills that the ancient Indians lived and had their homes. Through the courtesy of Dr. Andrew Webster Van Slyke of Cocksackie we visited the hill country, the caves and the occasional camp sites, but our experience demonstrated by ocular evidence that it was along the river that we must look for the story of Indian village life.

So well did these Indians love this particular region that they continued to abide here well up into the historic period and at Four Mile point was the Dutch mission station where the Dutch labored for the conversion of the red man and where the rum traders bartered firewater for pelts. It was the settlement known as Klinkenberg. The old cemetery is still to be seen in the farmyard pasture.

As time went on these Indians moved to the tract north and west of Cocksackie where they had a little village, their farm lands and cemetery. Here they were much under the influence of the settlers and gradually lost many of their native habits,—a loss which did not improve them much, for it will be remembered that Hudson “—found



them a very loving people." But civilization pressed their thinned ranks a bit too hard and about a century ago they found refuge with the broken river tribes who under the name of Minsis, Mahikans and Stockbridge settled with the Oneidas of Madison county, later removing with their protectors to Wisconsin. But we are a long way ahead of our story. We have seen the end when it is the beginning which is before us for consideration. Yet, when we examine works on local history we find that many important matters about the Indians are forgotten or are written from vague tradition and even conjecture. Few know who the local Indians were or whither they went.

### CONCLUSIONS

A view of Flint Mine Hill leads to the conclusion that it is one of the most important Indian localities in the entire state. To the Indians it was a great discovery and it remains today the outstanding monument of aboriginal endeavor. Flint to the red man was a vital necessity; it was as necessary to the aborigines as steel is to the present age. Here on Flint Mine Hill was a vast aboriginal industry. Here Indians from far and wide obtained flint for their chipped implements and from these quarries flint was sent to distant regions.

An examination of the points found on the workshop sites shows that Indians from scattered localities brought their own local material for manufacture and their completed implements for barter.

At some remote time, perhaps in the first Algonkian period, the first Indians found the hill and began to work it. Its fame began to spread and a large settlement sprang up on the river two or three miles away. Other Algonkian tribes heard of the mines and either seized them by force of arms or were compelled to barter for the flint. As time went on, and as the eastern Algonkian culture became fixed, a brisk trade was built up and *Mahellesaki* (Flint Land) became the most famous Indian industrial location in all the domain of the Mahikan people. Its busy workers swarmed the hill and by sheer power of will-directed muscles wrested the stubborn flint from its encasements of shale. Burden bearers removed the detrius in great baskets and spilled the refuse down the sides of the slopes. Others took the precious flint in baskets to sorting stations where skilled testers tested it for its chipping quality. In the pits and quarries were the workers, ever busy with their stone hammers, knocking away the shale or breaking away the layers of flint. At the north side of the hill and



on the flats below were the master craftsmen engaged in splitting out spalls suitable for work blades and then reducing them to finished blades and points.

The demon of failure lurked in every cranny to cause sudden fractures of a nearly completed blade and many were the specimens broken in process. To drive away this demon strange amulets were made, usually depicting a serpent devouring some animal. May it not be that the very name Cocksackie comes from *ahgooks* (or skooks) and *aki*, "serpent place," from the tradition that flint was the congealed blood of the primal serpent?

It seems quite probable from an examination of the hill that from 50 to 100 Indians worked upon it for a period of at least 1,000 years during seasons when such work was possible, necessary and profitable. It may be that our time estimate is too conservative and that, as suggested by several who examined the hill, the workings in the quarries represent an intermittent labor covering 5,000 years and even vastly more.

#### FLINT MINE HILL AS A SCIENTIFIC RESERVATION

At the 1923 meeting of the Trustees of the New York State Archeological Association held in Albany, it was moved by Dr. John M. Clarke that Flint Mine Hill be acquired as a state reservation. The motion was seconded, duly put, and carried unanimously. The State Archeologist was authorized to draft a bill and with the advice of the legal bureau of the University of the State of New York to have it introduced. This bill was introduced April 13, 1923, by Senator Bouton of Greene County as follows:

To provide for the creation and management of the Flint Mine Hill State Reservation and for the purchase of lands, and making an appropriation therefor.

The people of the State of New York, represented in senate and assembly, do enact as follows:

Section 1. The sum of three thousand dollars, or so much thereof as may be necessary, is hereby appropriated out of any moneys in the treasury not otherwise appropriated, to be paid by the treasurer on warrant of the Comptroller, to the Commissioner of Education, to be expended by him in the purchase and improvement of lands situated on the west side of the Mineburg road in the town of Cocksackie, Greene County, said lands embracing the ancient Indian flint



quarries and their environs, and which property when purchased shall be and set aside as a state reservation under the name of Flint Mine Hill State Reservation.

§ 2. Of the amount so appropriated not more than five hundred dollars shall be expended for the purposes of improving said property.

§ 3. The State Museum shall have control and jurisdiction of said reservation and the director of the state museum shall be the administrative officer.

This bill was supported by the press of New York, Albany, Catskill, Coxsackie and Rochester and by several scientific organizations. Many citizens were interested enough to write directly to the Governor or to their representatives in the legislature endorsing it. The bill passed both branches of the legislature but the Governor did not sign it. A reason given was that all parks should come under a joint budget and that the proposed consolidation program sponsored by Governor Smith would take care of the request.

Through the State Council of Parks an endeavor was made to have the necessary fund set aside from the Park Act of 1924. Indeed we were led to believe that the purchase of Flint Mine Hill was contemplated and the necessary appropriation included in the lump sum. Indeed Senator Nathan Straus, Jr., who introduced the special bill in the Senate, wrote, "*You may be assured that we are bearing the matter of the Flint Mines Reservation in mind, and that it is definitely on the program to be taken care of by the lump sum in the appropriation bill.*"

This was welcome news and our association felt confident that the pledge would be redeemed, but the fact remains that the Council of Parks would not agree to have the quarries purchased out of the appropriation mentioned above. There were no doubt technical objections and other matters that outweighed our understanding. Suffice to say that the Council later agreed to include a recommendation for the purchase of Flint Mine Hill out of the sum of \$15,000,000 appropriated for the bond issue agreed upon at the last election (Nov., 1924). The recommendation has gone forth and we may now confidently await the outcome.

Soon Flint Mine Hill will be State property and its labyrinths opened. It will then be a bird sanctuary, a wild flower preserve and a silent memorial to first of all human industries involving cooperation and division of labor on a large scale.