

Certain Southern Indiana Sources of Lithic Artifact Material

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An artifact, as properly defined, is "anything made or modified by human art." A basket woven from reeds, or an arrow in which wood, stone, and feathers are combined to create an implement of warfare are both truly artifacts. In the present discussion we refer solely to such artifacts as have been fabricated from stone—for which no specifically appropriate term has applied. If one may consistently adopt a word coined from combined Greek and Roman roots, the term "lithofact" may perhaps serve our present need.

Since artifacts of stone were required to serve diverse purposes, both utilitarian and decorative or ornamental, the choice of adaptable materials embraced a wide variety of rocks and minerals. The more primitive aboriginal tribes utilized, we may be sure, only such readily available materials as pertained to their local habitat. Those more restless tribes, who were inclined to see the world, and to conquer a part of it, came quite naturally into contact with the sources of supply of other materials—these more appropriate to their needs or more attractive in coloration or texture than were locally available. Such materials, one knows, were often mined or quarried under some sort of mutual agreement. On the other hand, a species of monopoly sometimes existed in respect to the control of the source; thus the resident tribes bartered or exchanged the raw materials, or even finished artifacts, with other alien, tribes.

When one discovers, in Indiana, artifacts of obsidian from the Yellowstone or from Mexico, or of Lake Superior copper, or of Wateree-Catawba quartz, it becomes obvious that two widely separated regions have been linked at sometime or other by tribal contact or intercourse. Until all the facts have been ascertained, however, it cannot be determined whether this contact was direct, as through tribal migration, or indirectly resultant from incidental contact with tribes who possessed these materials.

Many of the extensively utilized lithic materials are, unfortunately, difficult or impossible to localize; they cannot be referred to a precise, or even relative, locality. Generally speaking, the granites, basalts, argillites, and such-like erratics, since they are almost invariably derived from drift-deposits remote from their point of origin, are of no possible value in a study of tribal movement and contact. Conversely, there is an equally extensive range of materials, as the flints, cherts, marbles, hematites, etc., whose sources may be referred to a circumscribed region, or even to a distinctly local geologic horizon. In such case it often becomes possible to follow the intricacies of tribal movement through an observation of the areal distribution of this characteristic lithic material. The problem, here, is sometimes relatively simple, sometimes extremely difficult, since materials from a specific locality may vary so greatly in appearance and character or may even appear very like similar materials of exotic origin; hence it may develop that

their actual placement may be determined only through consistent observation in the field and by precise tests in the laboratory.

In the choice of materials equally available in a specific locality, that is to say in a location where the excellent and inferior are both at hand, the utilization of one or the other material by the aboriginal craftsman may provide as definite an index of cultural advancement or insufficiency as would his relative artistic proficiency or imagination.

The archeological opportunities which are involved in a conscientious study of these diverse lithic materials and their utilization by primitive man are numerous and varied. Such a study, it must be granted, should be combined with an equally consistent study of the related skeletal material in any well-ordered attempt to trace the migratory movement of our aboriginal tribes. It is to this phase, perhaps, that a fuller understanding of the sources of lithic materials may be best applied.

In the museum of the University of Michigan an unusual involvement is illustrated. Here are two banner-stones from the same habitation-site, the forms of which have not been considered as pertaining to an identical culture-group. It is indisputable, however, that the two artifacts have been fabricated from a single block of porphyry—quite probably by the same artisan. The technique employed is identical in each case, and it is highly probable that a microscopic examination would reveal the use of the same abrading-tools.

In Southern Indiana, as is now sufficiently proved, vast quantities of native flint have been quarried, fabricated in part or wholly, and transported to very remote regions. These aboriginal quarries have been the most abundant source, it now appears, of the projectile material utilized by early tribes living east of the Mississippi. Even the prolific quarries of the Flint Ridge region, in Ohio, were evidently far less important. Within an area involving 255 square miles in Harrison and Crawford counties, these ancient quarries may be observed by the hundreds. There are similar quarries, as well, in Meade County, Kentucky, and in other contiguous counties in Indiana, so that it is probable that the areal extent of the quarry region may be found to embrace at least 500 square miles. In some localities the material is so abundant that many acres sometimes appear entirely covered by a compacted mass of weathered and broken fragments, with interspersed broken and rejected projectile points.

It is debatable whether this excellent material should be classed as flint, hornstone, or chert. It is, as a matter of fact, scarcely less pure than the true English flint. It possesses a perfect conchoidal fracture, and lends itself to the creation of blades of remarkable thinness, symmetry, and delicacy. Its color-range is from a faintly pale gray to deep blue-grays which are almost black. Its geologic horizon is within the Mitchell limestone strata of the Mississippian series. In the two Indiana counties mentioned it occurs usually in the form of almost truly spherical nodules varying from an inch to two or three feet in diameter; however, it likewise occurs in thinly stratified deposits, as within Wyandotte cave. It is from its abundance in this cave, in fact, that the name Wyandotte flint has been quite generally applied to the material. There is indis-

putable evidence that it has been quarried, and fabricated in a limited degree, within the cave itself; yet the site comprised one of the least important quarrying locations.

In their extra extension, these flints of the Mitchell formation depart conspicuously from the characteristic form and color displayed in the Harrison-Crawford region. In Lawrence and Orange counties, where the material is usually referred to as Lost River flint, the nodular variety is rarely spherical, though it sometimes occurs in this form in southern Orange County. The stratified form is, in this general region, more chert-like in character than that found farther south, while the nodular concretions are sometimes dark brown, or red-brown, in color, and are highly siliceous.

While it has been long apparent that the preponderance of projectiles found throughout Southern Indiana were derived from the Harrison-Crawford quarries, it is only recently that an attempt has been made to study the wider distribution of the material. This has certainly extended as far to the northeast as the vicinity of New York City, where it has been observed at village-sites within Van Cortlandt Park, at a site at 215th Street, and at several sites on Long Island. There is slight doubt that the eight-thousand-odd flint discs recovered by Moorehead and others from the Mound City Group, in Ohio, are of Indiana origin. The material is rather well distributed along the Ohio River, from its upper tributaries to its mouth. It has been reported from various sites in Kentucky and Tennessee, and probably has a fairly extensive southern distribution. So far as has been observed, it appears infrequently, or not at all, within the Great Lakes region dominated by late Algonquian peoples.

At the several Clarksville sites about the Ohio Falls, and at all other sites observed in Clark County, the Wyandotte flint appears rather abundantly upon the surface, both in worked form, and in its original quarried state. It has not so far appeared, however, within the older deposits of village debris at the Clarksville sites, even though flint blades have been frequently discovered there as burial accompaniments. One may assume that the earlier occupants of the Clarksville sites were ignorant of, or for some reason did not utilize, this excellent material from a nearby source. For this reason it appears possible that the circumstance may possess a certain chronologic value. On the other hand, it is possible that some other reason may be found for its absence.

Of secondary importance to the material we have just described is another occurring in the same region. Projectiles fabricated from it have an extensive distribution throughout southern Indiana and northern Kentucky. It was generously used by the occupants of the Clarksville village-sites. This is an oolitic chert which is quite inferior to the Wyandotte flint. It is compact in texture, yields readily to percussive flaking, though not to pressure flaking, and is not easily spoiled in the process of manufacture. Worked points or blades of the material are rarely notched, and are almost invariably of slender lanceolate form. The worked blades are often of large size, and of excellent symmetry. Under a microscope, these oolitic cherts appear as a compact aggregate of minute, rounded concretions, with which are associated diminutive fossil

organisms. It is, in fact, an impure silica resulting from siliceous replacement within former oolitic limestones. The color-range of the material is from light warm grays to very dark grays, reds, and purple-reds. When the silicification is quite advanced, it is only by means of microscopic examination that its oolitic character may be discovered.

The source of this much utilized material is obviously from the Gasper-Fredonia oolites of Indiana and Kentucky, though it is probable that investigation will disclose a considerable extension of the deposits toward the south. Numerous aboriginal quarries may be observed within the region of the Mitchell limestones in Indiana. They may be expected to appear in Kentucky as well.

Within Wyandotte Cave great quantities of cave-alabaster, or veined calcite, were aboriginally quarried, principally from the enormous stalactitic column known as the Pillar of the Constitution. Many tons of the quarried, but unremoved, material lie at the base of the column. Among this the primitive quarrying-tools of stone and bone are often found. It has been difficult to imagine the feasibility of transporting the quarried material over the long and obstructed avenue which connects with the present cave mouth; but it seems very apparent that a short and direct passage, now closed by fallen debris, was available to the aboriginal quarrymen.

Probably because of its perishable character, but possibly because the quarried material was transported well beyond the region of its source, artifacts derived from this material are among the rarest pertaining to Southern Indiana. A pipe of similar material was recently recovered from a village-site near Memphis, Clark County. Beads and other decorative artifacts are infrequently found which appear to have been developed from it. Until a great many collections have been studied, however, the use and distribution of the material must remain a problem.

Within the region dominated by the Southern Indiana "Knobs," which embraces, also, a considerable extension within Kentucky, there lies the source of various lithic materials which have been adapted to a wide variety of uses, and which have had a widely extended distribution. Among these materials are the so-called Riverside and Kenwood sandstones, of the Knobstone formation, which vary so greatly in texture and coloration as sometimes to be distinguished with difficulty from those of the Chester and other horizons. They have been utilized for mortars, cupstones, abrading-stones, etc., and for the more specialized pipes, gorgets, tablets, beads, and other artifacts characteristic of the region.

Quite easily identified are the widely-utilized lenticular concretions of manganese-iron oxide from the New Providence shale. Such concretions are abundant, both "in situ" and as eroded from the shale strata, in which latter case they appear strewn over the stream-beds. They are, in fact, massive concretions of impure, uncrystallized hematite, brown or kidney-red in color. They are very hard, and consequently are difficult to fabricate. They are the "liver stones" of the English country-folk, which name conveys a very proper idea of their form and coloration. From this material a large proportion of the celts, grooved axes, and similar implements of regional usage have been fashioned. In addition, its adaptation has extended to include many more delicate artifacts,

some of which have been polished so that they are not easily distinguished from objects fashioned from true hematite. If accidentally dropped, the larger artifacts rarely break through, but a fairly thick, bark-like layer of very hard character separates from an inner core, so to speak, of the implement. The enamel-like layer exhibits a polished patina, while the surface of the core appears coated with an efflorescent bloom of yellow pigment. This, in reality, is a limonite. Much of the "red ocher" included with burials at the Clarksville sites, and perhaps also at Indian Knoll, has been derived from these concretions, crushed and macerated. The more brilliant vermilion ochers of the Clarksville sites were probably obtained from the "red keel" deposits in southern Harrison County.

In the vicinity of the Ohio Falls a local variety of lithographic limestone, from the Devonian, has been utilized for the roller-pestles characteristic of the locality. Some of these pestles are of unusual length, and they are often polished. The same material has been adapted, locally at least, to the manufacture of pipes, banner-stones, and a variety of objects of utility and ornament. In the same quarter, the Devonian and Silurian cherts have been extensively utilized for projectiles, those from the former strata being most generally used, since they occur in nodular form. The Devonian coral-reef at the Falls provided the principal source, it is believed, of the small fossils, often polished or perforated, which have had a general distribution along the Ohio. At the base of the Pleistocene deposits at the Falls, the five-foot stratum of erratic boulders provided the source of perhaps all the larger implements locally fabricated from lithics of igneous origin.

At the Clarksville sites, though doubtfully elsewhere, the relatively soft New Albany shale has been utilized for digging implements, for fleshing and skin-dressing tools, and for the numerous disc-like objects of local occurrence whose use is problematical. Slabs of this material, sometimes worked into rectangular or ovoid form, served as a sort of pillow upon which the head was placed as a burial custom. A variety of yellow ocher, impregnated with sulphuric acid, and likewise derived from these shales, was often sprinkled over the pelvis in burial, which practice has resulted in the generally complete destruction of this part of the anatomy.

At practically every Clark County site, and often at sites fairly remote from outcrops of the New Albany shale, small or large fragments or sections of fossil wood from the Devonian tree, *Callixylon*, appear within the village debris. Their use is undetermined, since no objects definitely fabricated from it have been met with. That it has often been broken into small sections by transverse scoring is evident, and that such small sections are occasionally roughly squared indicates that they may have sometimes served as a material for artifact fabrication.

In the Bedford-Bloomington limestone district, where geodes from the Harrodsburg limestone are numerous, the small quartz-crystals of their interior have been used as a tempering material for the aboriginal pottery typical of the region. Wherever they have been so utilized the small crystals are readily apparent under the microscope. A study of many hundreds of sherds from the region discloses the fact that the use of these geodes for tempering material is practically universal. Similar

geodes, appearing in the New Providence shale of the Knobstone, seem not to have been so used; in fact, only shell-tempered pottery has been so far encountered in the region of the Ohio Falls.

Enough has been said to indicate the diversity and the extent of distribution of some of the principal lithic materials characteristic of Southern Indiana. At best, the present study is no more than superficial. It is hoped, however, that it may serve to stimulate an interest in the latent possibilities of the region in so far as this phase of archeologic research is concerned.