

Novaculite in Arkansas

Gazette

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Novaculite is dressed down by almost the same methods used by the Indians centuries ago, the only difference being the substitution of a plain hammer of modern type for the round, greenstone mallet of the Indian. The pile of stone shown at the right in the above picture has already been dressed and all cracked and imperfect parts removed.

Useful Stone Quarried Near Hot Springs Is Shipped Throughout the United States and Many Foreign Countries For Manufacture Into Whetstones.

Beneath the green, wooded slopes of the Ouachita Mountains in western Arkansas, layers of a rare, glistening-white stone lie in wait for the quarryer's tool. Sought and valued by mankind through many centuries, it continues to be useful today without much recognition by the average individual. When plain John Doe thinks of it, if he does at all, it is as a finished product—a grayish, grimy square of rock known as whetstone—with which a knife may be sharpened, perhaps, but surely nothing to get unduly excited over, even if our own Arkansas hills are the only source from which the world must draw its supply.

But, as is true of so many of the natural wonders in this world, this stone which laces our mountains with its chill, white veins holds beauty, romance, and a world of usefulness for those who take the time to seek for it.

Its origin is unknown. Given the name "novaculite" in 1819 by a geologist named Schoolcraft, it has been described as a "peculiar, massive chert, composed of minute crystals of silica, whose hard, sharp edges, surrounding microscopic cavities make it the finest natural whetstone in America." Today, three theories are presented as to sources of the silica. One is that it is the sediment of some ancient, prehistoric sea; another, that it was formed by skeletons of minute, one-celled animals, and finally, that it is an ash formation produced by volcanic action. Probably no definite decision will ever be made as to the true sources of this miraculous stone,

but we do know that it must have been formed in some dim, distant era when the bare beginnings of life were still wallowing in the muddy warmth of Paleozoic seas.

Several eminent geologists of earlier days believed that there is a direct connection between the hot springs found in the region and the origin of the novaculite.

It is true that present-day quarries hover close to the boundary of Hot Springs National Park, where 47 hot springs have been harnessed and controlled for the benefit and use of the people of this nation. It is equally true that some of the richest veins of this stone probably lie within the park area and therefore will never be quarried. Still, its proximity to the hot waters is not conclusive proof to modern geologists that there is any connection whatever between the mysteriously heated waters and the equally peculiar strata of rock known as novaculite.

The stone was first discovered in this section about 1818, while Arkansas was yet a territory and for the most part wild and rugged country. The annual report of the Geological Survey for 1890 tells us that the stone was "first quarried a few miles from Hot Springs." The stone met with instant popularity when placed on the market. Encouraged, the quarrymen floated it down the Ouachita river on flatboats to New Orleans, where it sold readily for from \$1 to \$2 per pound. The sudden appearance of this strange, marble-like stone in the Southern markets stirred the curiosity of all who saw it. Questions concerning its origin brought only the response that it had arrived by crude flatboats from the Ouachita

river, and gradually the stone became known as Ouachita Stone. One variety of novaculite is known in commercial markets today as "Washita Stone."

The purest type of the stone is known as Arkansas Stone. While that known as Washita Stone resembles the Arkansas Stone in all its physical characteristics, it is less dense and its porous quality excludes it from the true novaculites. Its porosity gives it a dead, unglazed appearance, while the Arkansas Stone has a waxy, lustrous surface.

Most of novaculite is white—lily-white, cream-white, or a clear translucent blue-white. In addition, however, there is scarcely a color that cannot be found in the delicate shadings of this stone and there is one quite marketable "black sheep" in the family, since certain veins are found that are so deeply, darkly blue that they are known as Black Whetstone. In some instances, the coloring matter seems to denote important variations in quality; in others, it seems to have no bearing whatever on its physical composition. Beyond doubt, it does add interest and beauty.

In fact, novaculite is more than kind to the lover of beauty. There are no more scenic spots in our state than the wild and rugged mountainsides upon which one must quarry this flinty stone, and ask any man who has delved for it if there is a more beautiful sight than the sudden appearance of a strata of this rock, fringed with the sedimentary soil of the ages and strewn with the common stones of later times, shimmering beneath the point of his questing pick. As a general rule it is found only a few feet from the surface and its procure-

ment entails little or none of the discomfort that accompanies the mining of other valuable stone. It is quarried during the mildest and most enjoyable seasons of the year, since the tendency of the freshly-quarried stone to split and crack when exposed to freezing weather prohibits its procurement during the cold, winter months. It comes from the ground in cleancut slabs, some of massive proportions, others smaller, but all possessing certain marks of beauty and interest.

G. W. Featherstonhaugh, one of the first geologists to view the Arkansas novaculite, recognized the beauty that surrounded its quarries, and the historical significance of the old Indian workings he found on the mountainside in those early days. His writings describe them at length.

An entire book might be written on the Indian's connection with the early use of novaculite and the story of his life as it is revealed by excavation in and around the sunken, old quarries, grown over with wild brambles and sweet-smelling flowers, that are found

today on our mountainsides.

It has been fairly well established that for the most part the Indians spent only enough time at the quarries to procure workable blocks of the stone. These blocks, or "blanks" as they have been called, were carried to the site of their lodges for the fashioning of spear points, arrowheads, knives, hatchets, scrapers, etc., and here all of the finer finishing work was done. That this was the established practice of the Indian quarryer is more or less proved by the fact that few finished implements are found by present-day quarryers at the sites of the old Indian workings, while practically every old Indian campground yields its waste pile of novaculite chips and innumerable finished or half-finished implements.

My father, who has been supplying novaculite to native and foreign markets for a number of years, has, in his own experience, found many evidences of the early activities of the Indians in connection with the quarrying of this stone. Early this year, while opening a new quarry in the mountains near Hot Springs, his men inadvertently dug into an old Indian working. In this particular instance, there was no sunken place in the earth's surface, or mark of any kind, to hint of the earlier activity. A peculiar, hollow sound that came from the ground when they started to dig was the first indication they had that they were delving into another volume of the Red Man's book of history.

After going through about two or three feet of soil, they struck a pocket of loose, novaculite chips. These they recognized at once as the refuse left by some ancient Indian quarryer as he had dressed down desired blocks of stone. The chips extended downward for a depth of approximately nine feet, then they struck solid rock and something else intensely interesting.

There, reposing on the smooth surface of the stone, was a heap of charcoal, as fresh, dry and glistening as if the fire that had formed it had burned only the day before. Further excavation revealed a number of greenstone mallets—round stones of all sizes no doubt used in breaking and chipping the novaculite.

Finding the charcoal in this manner gives added weight to the stories told of the Indian's method of getting the rock from the earth, which, as you can imagine, was no small problem considering his lack of suitable implements. Presumably, he dug through the topsoil until he reached a strata of the coveted stone. He then proceeded to build a great fire upon the rock, heating it through. When he considered that the stone was sufficiently hot, he carried water from a nearby creek and dashed it upon the fire, causing the hot stone beneath to

crack and break into pieces of a size that he could readily handle.

Indian Mountain, which adjoins Hot Springs National Park on the east, has been the source of some of the finest novaculite in the world. Rising in rough and craggy splendor from the rocky gorge below, through which flows Gulpha creek, it has no doubt been the scene of just such activity as is suggested by the pile of charcoal recently unearthed. Since the region is still in a primeval state, if one but disregards the white ribbon of road that is wedged beside the creek between Indian and North Mountains, it is a simple matter to imagine oneself back a 100 years or so.

As we have no written history of the Indian before the white man came, we do not know how far abroad our Arkansas novaculite went, but since many artifacts made of this stone have been found spread across the country from New Mexico to Virginia, it seems reasonable to presume that novaculite from this area reached these widely separated points, either through trips made to this region for the specific purpose of securing the stone, or through extensive trade between the far-flung tribes.

The Caddo Indians, who occupied the Red river country in Arkansas and Louisiana, left some remarkable examples of their work, not only as posters and molders of clay, but as novaculite workers. Many fine specimens of their work may be seen today in the museum exhibits at the administration building of Hot Springs National Park. These, of course, represent only a small portion of the novaculite artifacts that are in both private and public collections.

From its beginning, the novaculite industry in this state has followed a strange and perverse course. Today, as was true in the past, most of the stone is shipped out of the state in a semi-rough condition. The Pike Manufacturing Company of New Hampshire, which originated in 1827, remains the largest buyer of the material in this country. About 1860, whetstone mills in New Albany, Ind., used a large quantity of the novaculite and at that time it brought about six cents per pound at the quarry and about \$3,000 worth of rock was cut out annually. By 1889, about 1,100,000 pounds of rough novaculite were being produced annually, the Barnes Brothers at Hot Springs were manufacturing whetstones by rubbing down small pieces of stones on a rub-wheel which was operated in connection with a small grist mill, and

George Chase of New York and the Pike Manufacturing Company were buying about equal amounts of the rough stone. Also, at about this same time, certain individuals were urging that Arkansas realize the importance of its potential novaculite industry and center its manufacture within the state.

Quoting again from the Geological Survey of 1890: "The whetstone business is not a great industry, but as the stones have not been thoroughly introduced into the home market, and are comparatively little known abroad there is a possibility of enlarging it. It would seem that this industry should be the property of the State of Arkansas, and that the state should derive the greatest possible benefit from it. * * * The manufacture of finished stones was attempted at Hot Springs some years ago, but through ignorance of the business and of the stone, through lack of co-operation of quarry owners, and through lack of local encouragement, the business did not succeed. Hot Springs should be the seat of manufacture of the Arkansas whetstones; an industry which will give steady employment to upwards of 50 men, mostly skilled laborers, and bring into circulation in the city \$48,000, as a low estimate, more than it now has annually, is worthy of local encouragement."

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The report goes on to state that the only argument which had been presented against the manufacture of whetstone in Hot Springs was that suitable sand for finishing purposes was not available and they right hardily met that argument with the statement that the sand in the Ouachita river was as good as that used by Chase in New York.

In spite of this exhortation, however, nothing constructive along the

line of centralizing the whetstone industry in Arkansas has been accomplished in the 50 years which have since elapsed. True to prediction, the whetstone business has developed into a great industry, not only in this country, but throughout the world. Abrasive manufacturers everywhere are eager to procure the stone, the demand always exceeding the supply by many barrels.

One reason for this, strangely enough, is the fact that in this age of machinery comparatively crude methods are still used to quarry the stone. Of course, picks and shovels, the crowbar, drill and dynamite are decided improvements over the stone mallet and fire system of the American Indian, but that is about all that can be said of it. The largest producers of novaculite employ small groups of men who procure the stone only after toilsome labor with the pick, the blasting powder, and other similar means. From the rough stone, they select the finest, most flawless pieces and, when a sufficient amount of the stone has been obtained, they squat beside the pile of blocks or blanks and dress them down in much the same manner as that employed in the Indian lodges centuries ago.

In spite of the difficulties that must be overcome in order to import the raw stone and pay for it, German manufacturers are among the heaviest buyers of novaculite. The Nazi regime, as everyone knows, has placed stringent restrictions upon all phases of life in that country today, and the whetstone industry is no exception. Before the stone can be ordered, a specific permit must be obtained from the German government. I quote, in part, from a letter dated January 8, 1938, addressed to W. E. Lewis of Hot Springs by a German dealer:

"In view of the quantities (of whetstone) we require for this year, we are sorry to say that we cannot give you exact numbers of what we need as we are only allowed to import what our government is granting us, but we trust that we can import 10 barrels monthly. The undersigned will be in Berlin next week to get permission for the new 10 barrels, proforma-invoice you have sent us recently, and as soon as we shall have got the permit, we shall give you the order by cable."

With regard to difficulties experienced in making payment for the stone, a letter received from a different firm in the same country says:

"If there had been the slightest possibility for us to remit you the small balance of \$14.17 too, we should have done so with perfect readiness, but as you will be aware, we are not permitted to pay even the smallest sum for which we have no permission. We hope that the matter is thus settled and shall not fail to pass you further orders for stone as soon as we have permission to import further Arkansas stones."

In making the above mentioned payment, \$500 had been remitted but the finality of the Nazi laws prevented this company from over-stepping their permit to pay even the small balance of \$14.17.

These are some of the German headaches in regard to the marketing of novaculite, but each country—France, England, Japan and Holland,

to mention some of the largest buyers—has its own peculiar problems and idiosyncrasies of trade, all of which makes the whetstone business interesting and exciting, as well as profitable.

You couldn't find anything humdrum about it if you tried. In fact, it seems that no matter how the world goes, or what changes are wrought therein, novaculite continues to be a stone of romance and adventure, which refuses to stay forever in its natal bed in the quiet Arkansas hills. Encased in pungent wooden barrels, it goes skimming along the rails, jouncing across the seas, to trickle like white magic into the industrial centers of the world.