

*NAGS HEAD
AND FULGURITE*

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Nags Head is a tiny settlement on that sandy peninsula extending along the coast line of North Carolina, in Dare County. No one can be certain why Nags Head is so called, but it is generally thought that pirates gave it this name. Steeped in legend and superstition concerning pirates, shipwrecks, and spirits, rich in Indian lore, it would take a historian nearly a lifetime to do justice to its many aspects. And from a geologist's point of view it is of equally provocative interest.

The terrain consists entirely of clean, light-yellow sand, strewn with a scant growth of desert grass. The Nags Head sand hills, like the well-known Kill Devil Hill, which is one of them, have moved in the direction of the prevailing winds through the years. These mountains of sand creep up on forests, engulfing and smothering them, reaching eventually many times the heights of the highest trees in their path. As the sand hills move on centuries later, there is nothing left of the forests; they have completely disintegrated. However, the hills leave other more durable residue in their wake, and it is only in the wake — close to the hill itself — that objects can be found because of the extreme weathering forces which attack them after they lose the protection of the marching dunes.

Once there were many Indian villages in these parts; this is evidenced by piles of oyster shells, much crude pottery, and an occasional arrowhead. We can deduce that the material from which these arrow points were fashioned must have been brought to this area by friendly tribes as trading material. It must also be remembered that there were once forests here; the Indians did not live in such a desolate place as Nags Head is today, as will be seen.

Also to be found here are many rocks that are not native to any locality for hundreds of miles around nor could they have been of any use to the Indians: sandstones, pudding stones, and crumbling black igneous mixtures. To explain this we must remember that Nags Head is only three miles from Roanoke Island scene of the famous Lost Colony episode and birthplace of Virginia Dare (1587). John White, Virginia's grandfather, drew maps of this area which seem to indicate that a small inlet once cut through the sandbar at the place where Nags Head is now situated, and he reported that much ballast was thrown off his ships to permit them to pass through this shallow waterway. The rocks mentioned above I believe to be undoubtedly a part of this ballast. I have found them to be practically identical with those rocks on Roanoke Island known to be ballast from these ships. Since I have not found this supposition in any of the records of this period, I offer it to any historian who might be interested.



But this raises the question of which came first — the Indians or the inlet. There are three other circumstances which add to the confusion. First, seashells of the recent venus and arca types and beach pebbles are scattered about this area. Second, the ground is strewn with human bones, evidences of ancient cemeteries of early settlers or of the Indians themselves. There are no signs of beads or of the customary ornaments that we have learned to expect of Indian burial places, however. The third is the presence of white fossiliferous sandstone of Cretaceous age in masses a foot square. This might have been among the ballast rock but I have not found its counter part on Roanoke Island. Arrowheads, ballast, shells, skeletons, and fossils—all to be found within a thirty-foot radius! The whole setup resembles a geologist's practical joke.

Some years ago while wandering about this interesting locality and pondering its many mysteries I discovered the specimen which first aroused my interest in collecting rocks and minerals. The specimen was lechatelierite, or fulgurite, as it is more commonly called.

Detailed information regarding fulgurite is both scarce and hard to find. All the information I was able to find will be contained in this paragraph. As you may know, it is sand (quartz silica) fused into a hollow shaft by the action of lightning. It seems to occur by two methods: A bolt of lightning may strike a tree and ground itself through one or more of its roots, thus

forming a thin glassy crust about the tapering root; or lightning may strike sand or be drawn into the sand by an object which attracts it, fusing a hollow, tapering shaft without any shaping agent. (Certain sources I have found also mention fulgurite occurring as a constituent of other rocks. I do not believe that this is of a variety brought about by lightning.)

To this I am now able to add something more. The shafts are hollow since this is in the nature of electricity itself. High voltage wires and lightning rods are often cast hollow since the current travels only on the surface. In both the above mentioned formations of fulgurite the shafts are identical except for the presence of root matter in the former case; the sand grains are completely fused on the inner surface and are therefore more transparent and glassy, while the outer surface is grainy and resembles dull sand stone.

The fulgurite that I found was of the first type described above and contained root matter. I picked up a few inches of it that I found lying on the ground and took it to the University of North Carolina for identification, since at that time I knew nothing about fulgurite. There I learned its identity and how very rare it is. I was told that this specimen was the first fulgurite reported found in North Carolina. Later I learned it was even more rare than I had at first supposed. Few collections boast a specimen, it is expensive when offered for sale, and few museums — not even the Museum of Natural History in New York City — have representative collections of it. I was quite pleased with my find and traded bits of it for other minerals with collectors and with several museums.

The next summer my father and I returned and found the shaft without much trouble, since we now knew what to expect. There in the broiling sun we dug four feet of shaft from the hot white sand. In filling the hole we had dug, we placed in it a five-foot iron rod to mark the spot for further digging, as our vacation was short. Then two years ago, my wife, father, and I went to the spot but found our marker gone. Each of us was equipped with spade and bucket and we proceeded to spade up the whole side of the hill. We found neither the marker nor the fulgurite.

This summer (1945) we returned and found that the hill had moved considerably, exposing new ballast rock, pottery, and many more skeletal remains. The ground was strewn for acres with human bones, wet from a recent rain and stained a brilliant green probably from copper or mold. The shifting of the sand had also brought the shaft of fulgurite to the surface once again. Taking turns digging, we unearthed a few more feet.

On trips made to neighboring localities we found several shafts of a different sort of fulgurite which did not contain root matter. Moreover, the tops of the shafts were not cylindrical at all, but foliated masses often more than an inch across. Among other prized pieces were four tubes from which small shafts an eighth of an inch diameter branched off for a few inches from the main shaft.

Unfortunately, most of these pieces were dug from sand saturated with water, which caused an incessant caving-in, breaking and burying the shafts. This rare item is not dug like a root, but must be handled with great care as it is extremely fragile. It is virtually impossible to remove a piece of any great length in wet sand because of the caving-in, or indeed, under the most favorable conditions, because of the fragility of the fulgurite itself.

One week of digging during this summer netted us around fifty feet of fulgurite from tiny fragments to pieces measuring eleven inches in length. Diameters ranged from three-quarters of an inch to as small as an eighth of an inch. While the tubes taper, I have never encountered a termination, or any fulgurite of a diameter of less than an eighth of an inch, since at this point they are so thin and frail they seem actually to merge with the sand. Some were pure white, often quite transparent in the case of the smaller diameters, grading to an opaque gray.

The question arises: how is it that this fulgurite is of a gray color while the sand from which it is dug is light yellow? The reason, I think, is either that at the time of its formation the sand, or sandy soil as it might have been since it is supported vegetation, was of this gray color, or that the shaft is, gray from carbonized root matter which fused into the silica. While the

latter explanation sounds simpler it does not seem so probable, since the fulgurite which did not form around roots was also of this gray color. It is impossible to determine the age of the fulgurite by examining it, but the location in which it was found would seem to indicate that it was formed a century or more ago. The trees themselves no longer exist. Their former existence is only evidenced by the root matter found encased by the fulgurite shaft, which in the specimens I have collected, has disintegrated into frail bits of black fiber with the appearance of charring.

Nature guards this treasure well. The price we had to pay was agony from mosquitoes, red bugs, and all too frequent contact with quicksand. Have I forgotten to mention sunburn? Furthermore, every time we went prepared with spades and buckets we never found any fulgurite, but when we went wholly unprepared and had only our hands to dig with, we found quantities and had to extemporize a conveyance to bring back the specimens. No one who wishes to live to a ripe old age should go into the fulgurite business, at least not at Nags Head.

THE EVENT

PETRIFIED LIGHTNING FROM CENTRAL FLORIDA

A PROJECT BY ALLAN MCCOLLUM

CONTEMPORARY ART MUSEUM
UNIVERSITY OF SOUTH FLORIDA
MUSEUM OF SCIENCE AND INDUSTRY
TAMPA, FLORIDA