

PIONEERS OF NEW BRUNSWICK ARCHAEOLOGY II: ABRAHAM GESNER

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During the 19th century, natural historians attempted the first comprehensive accounts of the landscapes, flora and fauna, people, and economic potential of New Brunswick. In this second essay in my series examining the contributions of these naturalists to the study of archaeology in the province, I consider the work of Abraham Gesner (1797–1864). I summarize Gesner's life very briefly. Readers interested in learning more about this fascinating Maritimer should consult the biography of Gesner, and the sampler of his work, written and edited, respectively, by Alison Mitcham (1995a&b), and Gwen Martin's (2003) book on the history of mining in New Brunswick.

Gesner (Figure 1) was born in Nova Scotia and trained as a physician in Britain, where he also studied chemistry and geology in his spare time. Throughout his life, he had bad luck in the business ventures he undertook and constantly struggled to provide for his large family. For a time, he practised medicine in the Parrsboro area of Nova Scotia (famous for its fossil and mineral deposits), and was employed on occasion by the governments of all three Maritime Provinces to conduct geological, economic and natural history research. In addition, he found time to devote to private research and writing, and gained a reputation as a compelling lecturer on a diversity of subjects. Gesner's published work is eclectic, containing comments on physical geography, geology, natural history, mining, lumbering, agriculture, fisheries, emigration, and antiquities.

Throughout his life, Gesner exhibited interest in, and compassion for, the Native people of the Maritime Provinces. In his capacity as a physician, he introduced vaccination of Native people against smallpox. He employed Mi'kmaq (Micmac) and Wolastoqiyik (Maliseet) as guides on his geological surveys, and as taxidermists to prepare animals for museum displays. In 1848–49, he acted as an Indian Commissioner for the Nova Scotia government.

Among his many interests, Gesner's passion was geology. While in England, Gesner attended lectures on this subject, most notably by Charles Lyell (the "father" of modern geology). He met Lyell again during the latter's 1842 visit to Nova Scotia and acted as Lyell's guide to locations of geological interest. Gesner was acquainted with other natural historians of the day, such as fellow Nova Scotian John W. Dawson, who became principal of McGill College (now McGill University) in Montreal, and wrote *Acadian Geology* (Dawson 1855). Gesner's first book, *Remarks on the Geology and Mineralogy of Nova Scotia* (Gesner 1836), which he researched and wrote while practising medicine, laid the groundwork for Dawson's book.

The New Brunswick government appointed Gesner as provincial geologist from 1838 to 1842, the first such appointment in a British colony; he conducted geological surveys in several parts of the province during those years. While in New Brunswick, he was a founding member of the Saint John Mechanic's Institute and established a Natural History Museum (his collections became the nucleus around which the New Brunswick Museum developed). In 1846, he conducted a geological survey of Prince Edward Island. However, Gesner is best known now for

his discovery of the process by which kerosene (coal oil) is produced, and, thus, for his contributions to gas lighting and the development of the modern petroleum industry.

Below, I focus on three contributions Gesner made to archaeology through his geological work: 1) his description of chert associated with “trap rock” (basalt) in what is now known as the North Mountain Formation on Nova Scotia side of the Bay of Fundy (Figure 2); 2) his account of the Washademoak Lake chert source in New Brunswick (Figure 3); and 3), his recognition, during his work on Prince Edward Island, that Native people sometimes transported stone for making tools over long distances (Figure 4). In the following passage from his first book, Gesner shows interest in Native antiquities and describes how he related them to the minerals he had observed in the North Mountain basalt:

On the south side of the island [one of The Brothers, two small islands located on the north shore of Minas Basin] the cliff reaches its greatest altitude; here a large vein of beautiful jasper winds its way through the compact rock. We were surprised to find small pieces of this jasper on the border of a lake [Newville Lake?, Economy Lake?] fifteen miles from the Two Islands [now The Brothers], knowing it was impossible that it could ever be found among the strata of that neighbourhood. But pursuing our inquiries further, we discovered that on the side of the lake, the aborigines of the country had manufactured their “arrow points,” and the fragments of jasper now found upon the spot, had been brought from the Islands, and were the discarded splinters from the points of their weapons. We have now in our possession perfect spear-shaped arrow points, composed of jasper, identical with that in the vein near Swan Creek [which empties into Minas Basin west of The Brothers], and others which have been made of pieces of chalcedony from Blomidon. The Indians, in these instances, certainly selected the hardest of stones for cutting instruments, but by what means they could have broken them into such regular lances, it is not easy to determine. (Gesner 1836:257–258)

Gesner devoted almost 100 pages to describing rocks and minerals associated with the North Mountain Formation. Among these, he included a range of siliceous minerals (chalcedony, agate, jasper, hornstone, opal, cacholong¹) that archaeologists now often include in the category “chert.” The chalcedony Gesner refers to from the Cape Blomidon area is probably the type of stone from Nova Scotia most widely distributed in Native archaeological sites elsewhere in the Maine–Maritimes area (see the specimen in the lower left of Figure 2). The final statement in the passage above shows that although Gesner could distinguish the different types of chert found in the North Mountain Formation, he did not understand the principles of flint-knapping by which Native people manufactured tools from the chert.

¹ Cacholong is an out-dated term for milk-white chalcedony and white opal (see <http://www.answers.com/topic/cacholong>).

Lucy Wilson and I conducted a study of the Washademoak Lake chert source in Queens County, New Brunswick (Black and Wilson 1999), which Gesner examined in 1840. Here is his description of the locale, from his third report on New Brunswick geology:

Having procured Indians and canoes, in order to ascend the Washademoak, I proceeded to explore the rocks, where they are exposed on the banks of that stream and its tributaries. Such a method of conveyance is necessary in a part of the country, which is but partially inhabited... This river, in its whole length, passes over and intersects the grey sandstone and conglomerate of the Grand Lake coal measures... After passing through a narrow and deep channel, on the south side of the Musquash Islands, the rocks may be seen to advantage on the south side of the stream, a few miles above its embouchure [mouth]...²

On the south-east side of a small cove [Belyeas Cove], the shore is strewn to the distance of half a mile with loose masses of hornstone, jasper, Egyptian jasper, calcedony [sic] and quartz.— The jasper is chiefly of a red colour, and passes into a milky calcedony, being arranged in spots and clouds, and shaded with smoky imitative figures. Associated with the jasper, is that variety called *Egyptian jasper*, which is distinguished from the other by peculiar zones, circles and clouds of different colours. With these, a few small pieces of carnelian were found; but, in general, this mineral is too much fractured to afford good specimens. These minerals evidently belong to some trap dike in the neighbourhood. The sandstones here form cliffs on the shore, or appear beneath its broken fragments. (Gesner 1841:59–60)

The Washademoak Lake chert source will figure more prominently in essays I am preparing on the archaeological contributions of two nineteenth-century geologists who followed Gesner: Loring W. Bailey and George F. Matthew.

In the first passage quoted above, Gesner noted that Native people transported stone short distances from geological sources to camp sites, where they worked it into tools. Gesner may have been the first natural historian to recognise that Native people in the Maritime Provinces transported desirable rocks for making stone tools over much longer distances, as this passage from his report on the geology of Prince Edward Island shows:

On the east side of Colville Bay... [the] shore was evidently inhabited in former days by the native Indians, and, from the character of their relics, they appear to have been Micmacs, the descendants of whom are still upon the Island. These relics consist of axes, spears and arrow points, and rude pots made of stone — barbed fish bones, which they employed in fishing are also found. Some of the arrow heads are made of Labrador feldspar, agates, hornstone and jasper [sic]. The feldspar is identical with that found at Labrador; the agates are like those of the Bay of Fundy, and as none of

² Gesner does not distinguish between Washademoak Creek, Washademoak Lake and the Canaan River; apparently, at the time he wrote, all three were together referred to as the Washademoak River.

these minerals has been found *in situ*³ on the Island it is very probable that the pieces used by the Indians were brought from those places. Alexander Leslie, Esq., of Souris, has made a fine collection of these relics. (Gesner 1847:7)

The “feldspar” Gesner referred to is probably the toolstone we now know as “Ramah chert” or “Ramah quartzite,” which occurs only in rock outcrops in northern Labrador. Native people transported and exchanged this stone through the coastal areas of eastern Canada and Maine during the Late Archaic and Late Woodland periods. The agates, hornstone and jasper Gesner refers to are the minerals from the North Mountain Formation, with which he was familiar from his geological work in Nova Scotia. Native people transported and exchanged chert from Nova Scotia throughout the Maine–Maritimes area during the Late Woodland period.

Gesner made other observations of interest to archaeologists. For example, during his work on Prince Edward Island, he discovered a Native burial eroding into the sea at Savage Harbour. He observed farmers on the Island using shells and soil from Native shell middens to fertilize their fields, a common nineteenth-century practice that contributed to the destruction of the prehistoric archaeological record in many places. In his report on the geology of Grand Manan, Gesner (1981) mentioned a source of green chlorite that Native people carved to make the bowls of smoking pipes. There may be other contributions to archaeology embedded in his work, waiting to be brought to light.

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³ Here, Gesner uses *in situ* in a geological sense, meaning “found in a bedrock formation.”



Figure 1: Portrait of Abraham Gesner (adapted from wikimedia).



Figure 2: Nova Scotia chert variants from Minas Basin/North Mountain outcrops (DWB photo) .



Figure 3: Chert from Washademoak Lake, New Brunswick. This piece was sawn and polished by Tim MacAfee (DWB photo).



Figure 4: Chert (quartzite?) from Ramah Bay, Labrador (DWB photo).