

been bonded for \$45,000. Some of the ledges were in granite, and carried galena containing \$210 of silver to the 2000 pounds. One location I visited, not bonded, had two shafts sunk 25 feet deep, 100 feet apart, both showing solid carbonate ores valued at \$56 per ton. The width of the deposit has not yet been proved, or the length either. Returning we came by the old overland route, now deserted, and got safely through the sloughs where, in olden times, so much mail matter was used as ballast; we passed high crags of black limestone; passing the "divides" of the Dugway and Point of the mountain into Rush Valley. We were four days also in returning: the last day doing 65 miles from 7 a. m. to 2 a. m. We camped out also once on returning near the Dugway, and had rather a cold night, for one inch of ice formed in the puddles from the melted snow accumulated the day before. Other nights we slept on the floor of cabins, or small shanties.

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ART. IX. ON THE CONSTRUCTION OF A BEAVER DAM IN DIGBY COUNTY, NOVA SCOTIA, SEPT., 1871. BY J. BERNARD GILPIN, A. B., M. D., M. R. C. S.

(*Read March 11, 1872.*)

ON the 14th September, 1871, we left the town of Digby, and skirting along the southern ridge of those low Silurian hills which under the name of South Mountain, Horton Mountain, and Ardoise Hills, run north-east and south-west almost the entire length of Nova Scotia, we came after descending their southern slope to the lake basins forming the upper waters of the Sissiboo River, falling into St. Mary's Bay.

We passed Grand Lake, having now abandoned our horses for canoes, and were floated gently over lakes, lakelets, rapids, and still waters, till on the 18th we camped at South-west Falls, about thirty miles south of Digby. Here the granite, that we had on our left almost from Digby, occurring in dykes of porphyry, with large crystals of white felspar, pervaded the whole scene. The lakes were studded with granitic boulders, their milky-white shores were granite sand, the rapids foamed through boulders, and we toiled

over rocky portages of the same. It had lost its porphyritic character, resembling the Shelburne granite of the sea coast, except here and there an erratic of the red or Egyptian variety—which lay fastly disintegrating and poised on the summits of the white.

That the country still rose south of us for ten miles, and was still granitic; and that on either hand we were bounded about twelve miles to the right by the Silurian slates through which the Sissiboo pours the most beautiful fall in Nova Scotia; and about the same distance to the left by the Bear River hills, also Silurian;—all we can vouch for, leaving it for the future Geological Report to confirm if the granite is continuous with that on the sea coast, or if it disappears beneath the slates of Fairy Lake and the great Rossignol.

Soon after leaving camp on the 19th, James Meuse, our Indian hunter, pointed out to us a beaver dam. The stream flowing gently out of a long still water was narrowed to about twelve yards by granite boulders on either side, one or two of which projected out of the middle. Here was the spot they had chosen, their object being to raise the water of the still water about eighteen inches. They had first dammed the stream to a rock about ten feet from the shore, then thrown the dam to a second rock lying up stream, and from thence carried it to the opposite side. It resembled a brush water fence, the water falling about eighteen inches, and pouring over and through white bleached sticks and twigs of trees lying in the water, with their butts up stream, otherwise laced and interlaced in endless confusion. It was of a horse-shoe form, its convex side lying up stream.

From observations as far as the height of the stream would allow, and from the remarks of James Meuse, a very intelligent Indian, I could only conclude that the beavers formed their dams by first choosing a narrow part of the stream studded by rocks, and then felling down trees up stream, which they floated down with their butts up stream until they grounded in the narrows. Thus soon a number of trees would be lying parallel, butts up stream, and branches down, and interlaced in endless confusion. The beaver then gnawed the butts off, and floated them athwart or cross-ways the branches. In this he is assisted by the rocks in the bed

of the stream. An obstruction now being made to the water he fills in the interstices with mud, with stones, and especially dried grasses, which abounded on the margins of the stream, hay, as every practical man knows, being a capital substance for stopping a water breach. This structure was evidently of a late formation, and small in comparison with those we read of in the north-west territories. It probably held a community of ten or twelve.

It is idle to describe the sylvan beauty of this scene: the sweet music of the water trilling through its milk-white and endlessly interwoven barriers,—the deep green of the waving grasses,—above dam, the still water losing itself in a reach, or in the reflections of the dark overhanging pines,—the perfect water carpet of lily pads, and the solitude steeping this scene dedicated to instinct labor. Our canoe was floating above dam, its graceful bow held lightly in the interlacing twigs, and a few sweeps of the paddle carried us across the still water, some five hundred yards to where the owners of those mill privileges had built their homes. Standing in and out the water, there literally carpeted by lily pads, and embayed by the thick water grasses, and cranberry bushes, were two domes. A twist of the paddle and we grounded on its white and withered thatch, the beavers escaping under the water.

On the sloping side, down stream, of a granite boulder, lay a confused heap of white and peeled sticks crossed and re-crossed in every direction, forming an irregular thatch. A little clay and moss showed here and there between the interstices. The whole mass made a very flat irregular dome resting on the side of the rock, with two horns as it were running into the water and concealing the water galleries, by which the beaver had access to the interior. The long diameter was about twelve feet, the short six feet, and the height above water about three feet. The entire mass resembled a cart load of white peeled sticks thrown down against a rock. The same instinct that had taught them to make the dam, convex side up stream, had here as I said before, taught them to place the dome against the down-stream side of the rock. In both cases to preserve them from the pressure of ice.

We had the grace to spare an inhabited house, but meeting a deserted one, which wonderfully resembled an old barn with its

thatch broken, and rafters bleaching in the rain, we cut with our hands and axes through the top. It was composed of a layer of sticks, clay, moss and grasses, very firm and about two feet in thickness. Peeping in we saw a shelf running round the interior which sloped to a central hole at, perhaps, an angle of thirteen, and through this hole we got glimpses of the water, and the arch of the submarine water galleries by which the beaver passed out and in. Here all was desolation and ruin, but in an inhabited house, the sides of the interior are gnawed neatly into line by cutting away the projecting sticks, and lined with grasses and moss. The shelf sloping gently almost to the water's edge, touched by ruin though it was, seemed well fitted for the inmates to rest their head and fore parts upon, whilst their hind paws and tail rest in the water, a favorite position of the beaver. The higher and more interior part of the shelf with its warm lining of grasses made a snug bed. Though we saw none, yet there must be air passages on the land side above the water line (and therefore not used for galleries) to afford air. So real was the air of labor and design wreathed around their dilapidated pile of bleached sticks and mouldy clay, that the speculations one has, half sad, of the old inmates of a deserted house as we wander past the fireless hearthstone, seized us as we floated off. "Got ten dollars out of that house year before last," said James Meuse, bending to the water's edge, as he toiled in shoving our canoe all but high and dry stranded on a carpet of lily pads. Sometimes these domes are seen covered only with clay, and hard frozen, the beavers seemingly caught by the early frosts before finishing their homes with their rough thatch.

Hearne, a most accurate writer, describes these structures as eight feet in thickness, and a large dome constructed of many small ones, or wings set off from the central one, some of which having internal communication. No doubt he is correct, and the high northern latitudes and greater abundance of the beaver, makes the difference between the lowly structures I have endeavoured exactly to describe as seen by myself. Seeing a hundred years have passed since Hearne faithfully wrote, there can be no excuse for modern works, aided by the most beautiful etchings, misleading their readers, as they habitually do, even down to our own times.