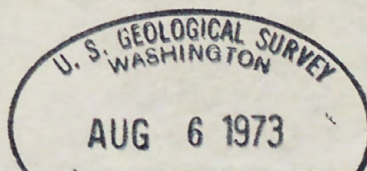


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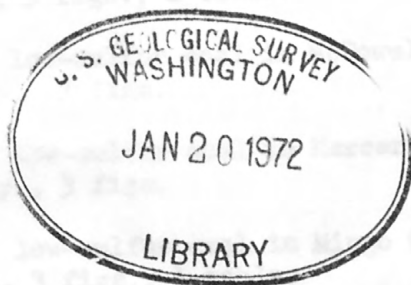
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CHESHIRE GLASS SAND DEPOSITS

IN THE CHESHIRE AREA, MASSACHUSETTS

By
Newton E. Chute, 1907



OPEN-FILE REPORT

This report is preliminary and has not been edited or reviewed for conformity with Geological Survey standards or nomenclature

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12. Cheshire glass sand deposits in the Cheshire area, Massachusetts, by Newton E. Chute. 11 p.

CHESHIRE GLASS SAND DEPOSITS

Introduction

A day and a half were spent on September 15 and 16, 1943 in a reconnaissance study of the old glass sand quarries in the Cheshire Quartzite near Cheshire, Massachusetts.

Acknowledgements

The author is indebted to the following people for information concerning the location and history of the glass sand industry:

Herbert W. Dean, Cheshire - owned and operated the Cheshire White Quartz Sand Company, Cheshire.

R. W. Petitcler, Cheshire - father was superintendent of the Berkshire Glass Sand Company.

T. J. Curtin, Cheshire - former owner and operator of the Berkshire Glass Sand Company.

Thomas Curtin, Jr., Cheshire - owner and operator of the Curtin Sand Company, Cheshire.

Frank Best, Berkshire - formerly a glass blower.

George S. Rogerson, Berkshire - worked for glass sand companies.

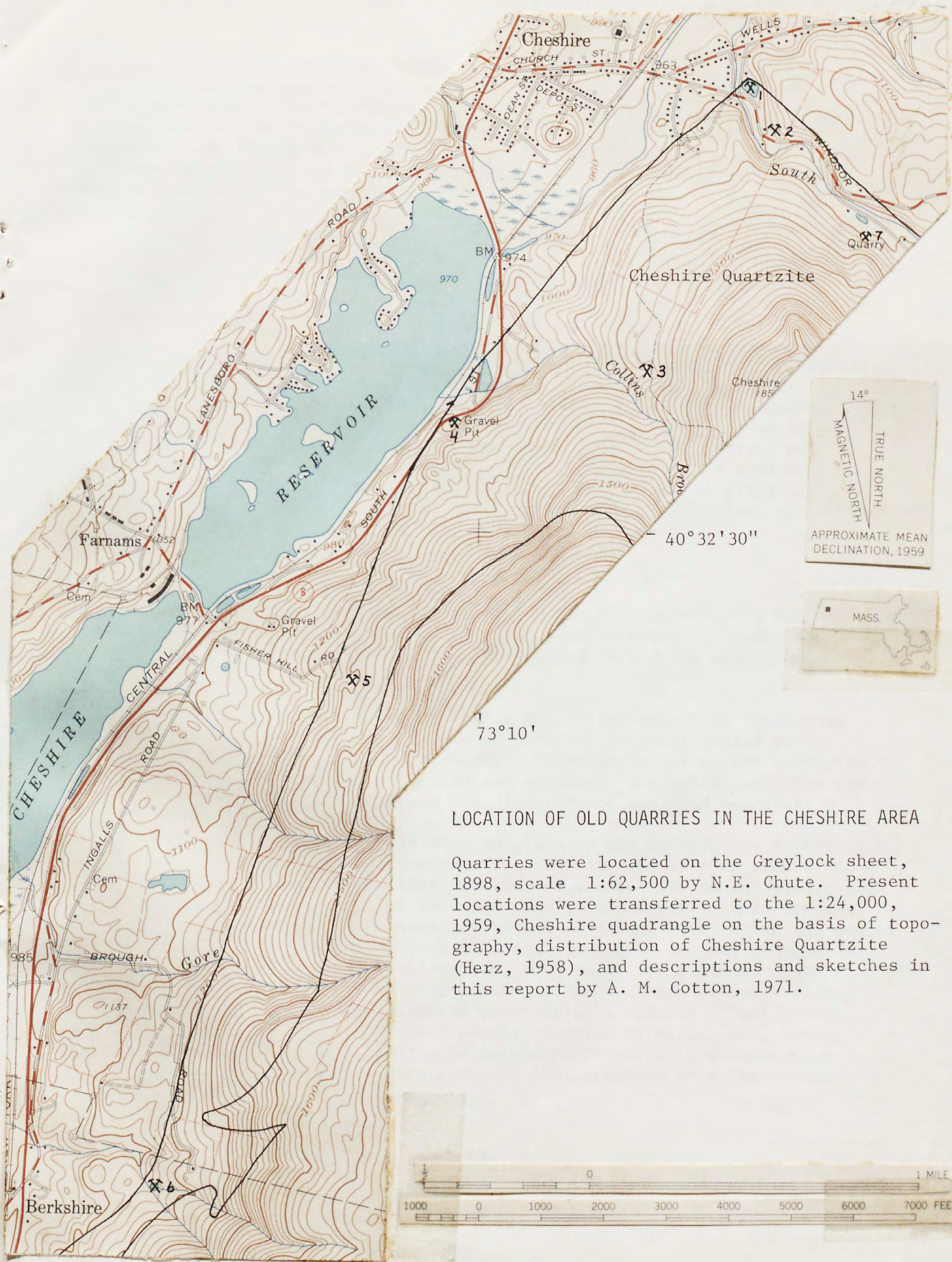
Location

The Cheshire glass sand quarries were in the Cheshire Quartzite between the villages of Cheshire and Berkshire (see map, p. 2). The rock is suitable for use as glass sand. The old quarries appear to be located where the rock was most easily accessible.

A glass factory operated by the Lenox Iron Company in Lenox quarried glass sand from Washington Mountain south of Lake Ashley in the Pittsfield East quadrangle according to W. G. Harding. The author did not visit this quarry. Emerson (1899) also refers to this deposit and Norton (1967) refers to a couple of glass sand quarries in the Windsor quadrangle.

History

The Cheshire Quartzite was first used for glass sand in 1813 when the



LOCATION OF OLD QUARRIES IN THE CHESHIRE AREA

Quarries were located on the Greylock sheet, 1898, scale 1:62,500 by N.E. Chute. Present locations were transferred to the 1:24,000, 1959, Cheshire quadrangle on the basis of topography, distribution of Cheshire Quartzite (Herz, 1958), and descriptions and sketches in this report by A. M. Cotton, 1971.

Cheshire Crown Glass Works was built and put in operation. In 1853 the Berkshire Glass Company began operations which operated fairly continuously through at least 1943 although it changed hands several times. In 1923 this company, then known as the Berkshire Glass Sand Company, was sold by Mr. Berget to T. J. Curtin and C. J. Curtin. In 1936 the company was taken over by Thomas Curtin, Jr. and the name was changed to the Curtin Sand Company. This company controlled extensive "sand" rights in Cheshire handed down by the old company.

About 50 percent of the sand produced by this company was sold for use in mechanics soaps. The rest was sold for sand blast, abrasives, and other uses. Mr. Curtin said that a small amount of sand was sold in the late 1930s and early 1940s to glass companies in the middle west.

The Cheshire White Quartz Sand Company was the only other company operating in the Cheshire area in 1943. This company, owned and operated by H. W. Dean of Cheshire, was started in 1876 by Mr. Dean's grandfather. According to Mr. Dean, 90 percent of the production was crushed quartzite used in the bottom of drop forges as a furnace lining. The remaining 10 percent was sold as sand for abrasive purposes. In early days this company sold sand to glass companies but practically none was used for the manufacture of glass after 1918. Crushed quartzite commanded a higher price than the sand. The last glass factory in this region was closed about 1900.

Geology

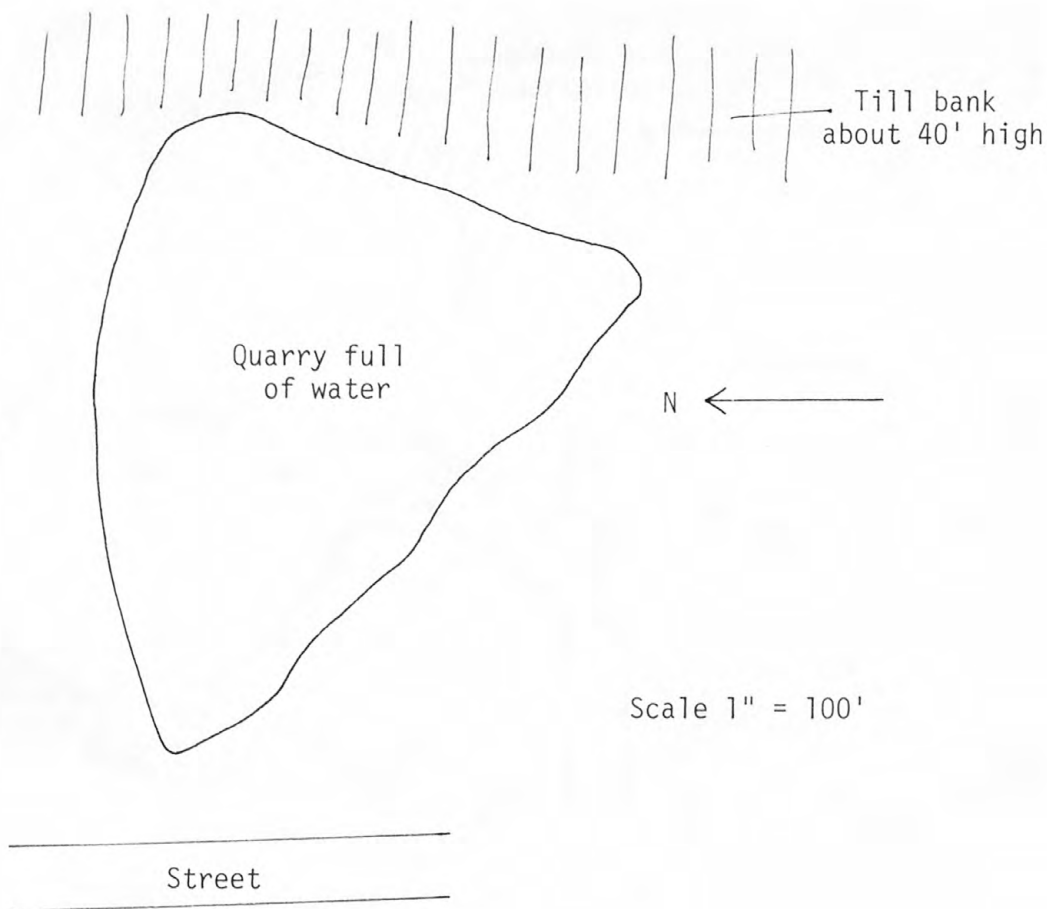
The distribution of the Cheshire Quartzite on the accompanying map was taken from Herz (1958). Outcrops of the quartzite were scarce in the area where the pits were located and the author studied only a few exposures outside of the quarries.

Near the surface much of the quartzite had disintegrated to loose sand or was so friable that it could be crushed into its original grains rather easily. This material was used for "sand." Preparation for market consisted of crushing to free the original grains and washing. The solid quartzite was too hard to crush satisfactorily and was discarded in the sand quarries.

The Cheshire Quartzite, where seen in place by the author, was a white, very pure rock of even grain. Some joint planes near the surface were stained with limonite. Outcrops were notably scarce. The cause for marked differences in the degree of consolidation of the formation is not known. There appears to be a definite correlation between the extent of disintegration and the amount of weathering, for in places the rock has been reduced to sand at the surface and is friable for at least several tens of feet below the surface. In places, however, quartzite is present at or near the surface. There was no evidence that quartzite grains had been cemented together by a soluble cement. Most probably, parts of the formation were poorly cemented by silica and, hence, were not true quartzite but rather a sandstone which tends to disintegrate upon weathering. The disintegrated parts of the formation were the source of the relatively pure silica sand.

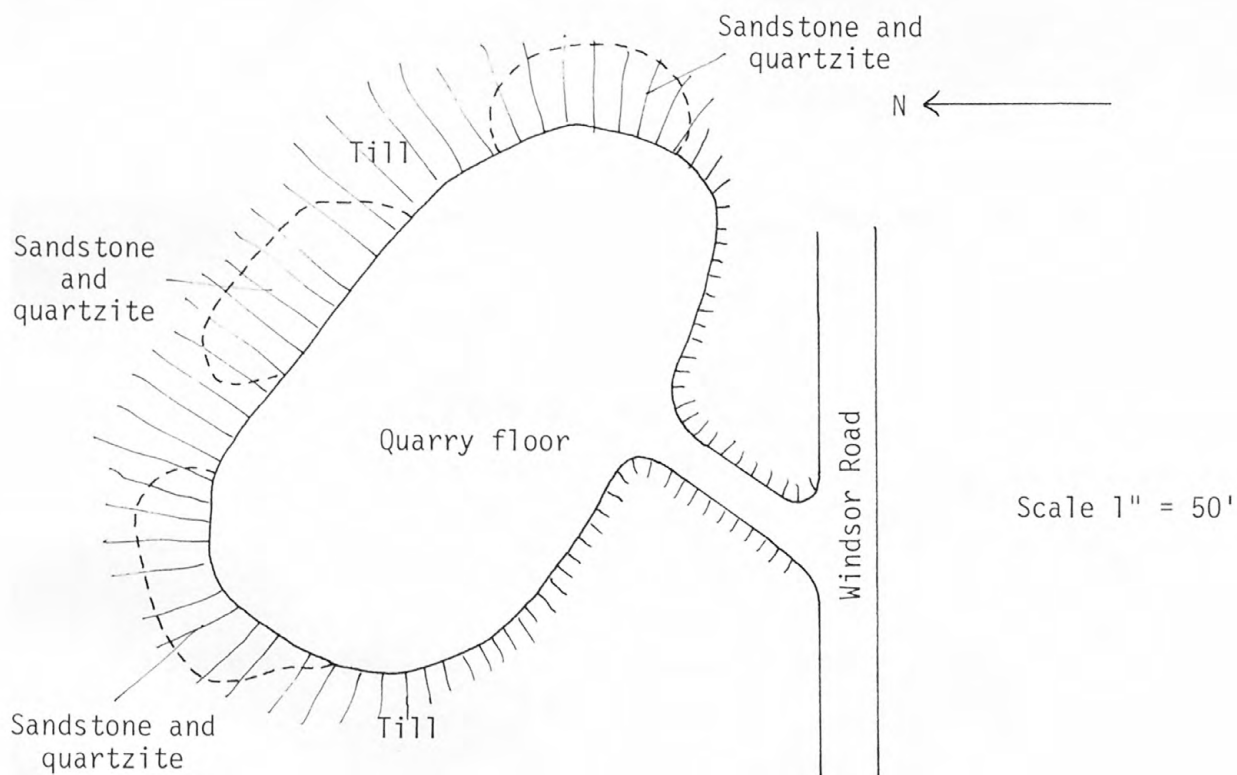
Description of quarries

Quarry 1 - Quarry 1 (see map, p. 2 and sketch below) east of Cheshire was the largest and most important quarry in the area. It was worked by the Berkshire Glass Sand Company, but it has been abandoned for over fifty years. The pit was said to have contained excellent sand, plenty of which remains. It was abandoned because the pit was 100 feet deep and the pumping costs became too great; furthermore, the glacial overburden was 30 to 40 feet thick. The quarry is now filled with water. At the surface it was triangular shaped and about 300 feet long. Old pictures owned by R.W. Petitchler showed that the quarry walls were nearly vertical.



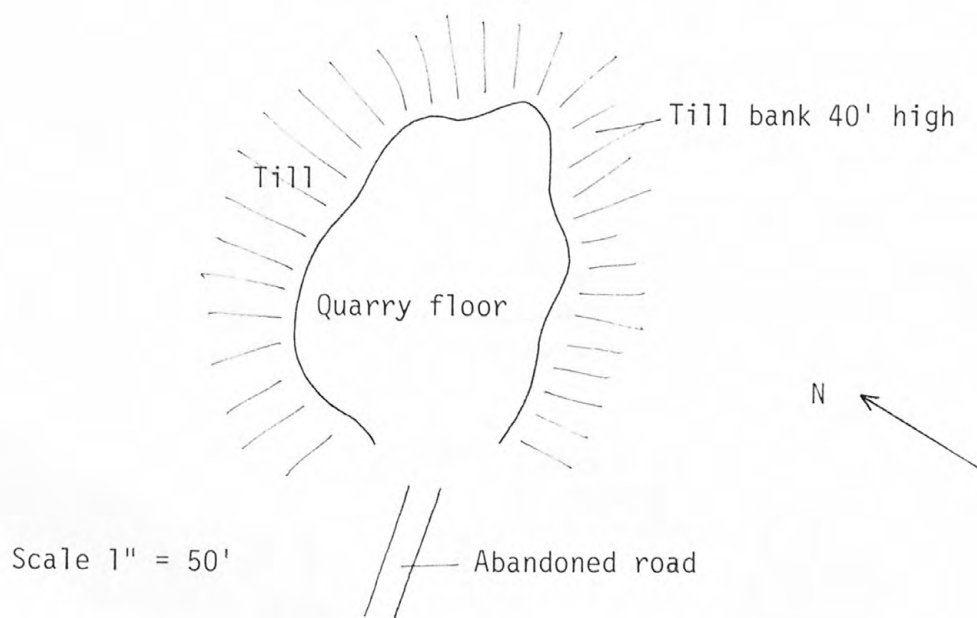
PLAN SKETCH OF QUARRY 1

Quarry 2 - After quarry 1 was abandoned, the Berkshire Glass Sand Company began quarry operations about an eighth of a mile to the southeast. The sand obtained at the new site was not as good as the sand obtained at quarry 1 according to Mr. Petitchler.



PLAN SKETCH OF QUARRY 2

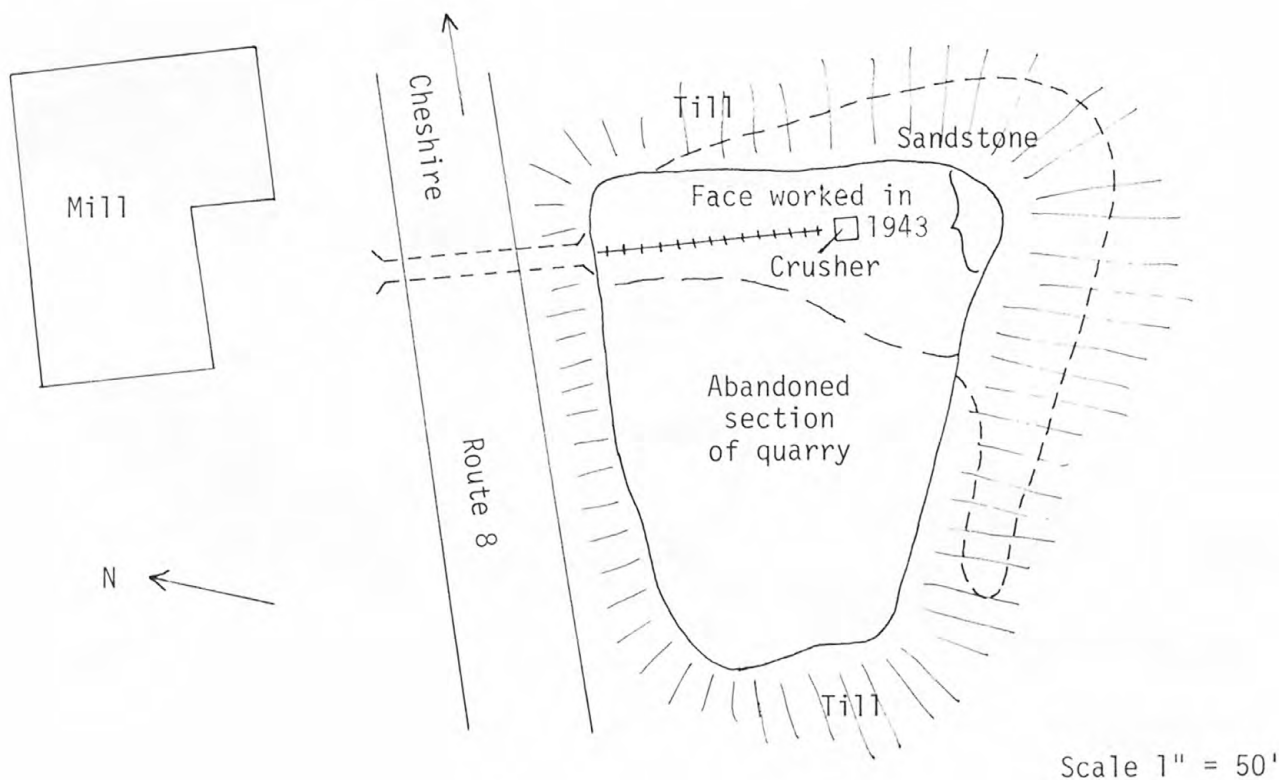
Quarry 3 - This quarry has been abandoned for a long time. Slumped till and gravel wash conceal sand rock that was once exposed. No outcrops were seen near the quarry. The pit was about 50 feet by 75 feet at the bottom and had high banks on three sides. It could be reached on foot by an abandoned road that started behind a house about 3,500 feet northeast of the quarry. The quarry was on the old Collins farm which was owned by W. T. Horn in 1943. The pit was opened by Levi Brown and later sold to the Berkshire Glass Sand Company according to Mr. Petitchler.



PLAN SKETCH OF QUARRY 3

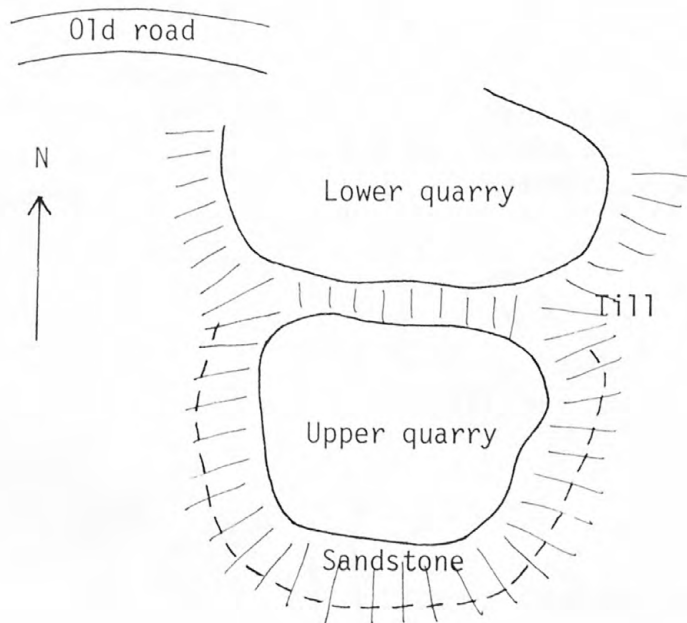
Quarry 4 - This quarry, previously worked by the Berkshire Glass Sand Company, was worked by the Curtin Sand Company in 1943. In the northeast corner of the pit the Cheshire Quartzite was closely fractured and sufficiently friable so that it could be scooped up by a steam shovel with very little blasting necessary. The steam shovel dumped the rock into a crusher in the quarry which broke the rock into pieces less than a few inches in diameter. The crushed rock was hauled in mine cars to a mill across the road where it was crushed to its original grain size, washed, and screened several times. The finished product which was sold was fine-grained white sand.

The quarried rock was closely jointed and the joint faces were coated with limonite which did not effect the use of the sand. Purer sand could be obtained elsewhere, but this quarry operated because it was favorably located to the mill of the Berkshire Glass Sand Company and because the glacial overburden was less than 10 feet thick.



PLAN SKETCH OF QUARRY 4

Quarry 5 - This quarry was high on the mountain side and accessible only by a poor steep road. Two quarries operated there, but the author only found one which was about 50 feet in diameter, 20 feet deep, and inactive. The rock appeared to be free of impurities and crumbly enough to be easily crushed with a hammer. The Curtin Sand Company had the "sand" rights on this property. The quarry was on the north end of a ridge about 1,000 feet long and 300 feet wide which appeared to be composed of friable "quartzite" with very little overburden. Loose white sand covered the surface. The quarry was on the farm of W. T. Horn.

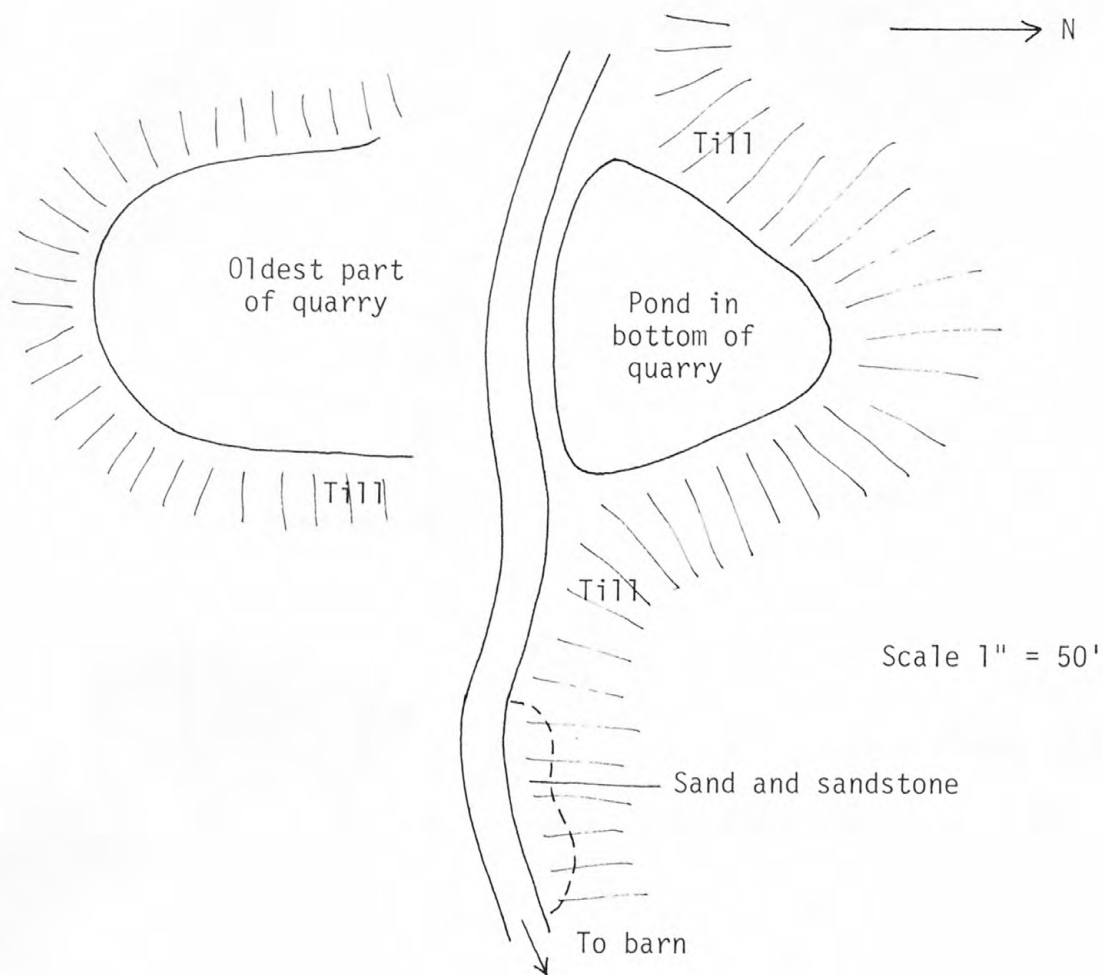


Scale 1" = 50'

PLAN SKETCH OF QUARRY 5

Quarry 6 - This quarry has been abandoned for many years. It formerly supplied sand for the glass factory in Berkshire. The quarry was on the farm of Anthony Wolak a few hundred feet downhill from the barn. It could be reached most easily by the road to the Wolak farm which took off from the side road shown a half of a mile north of the quarry.

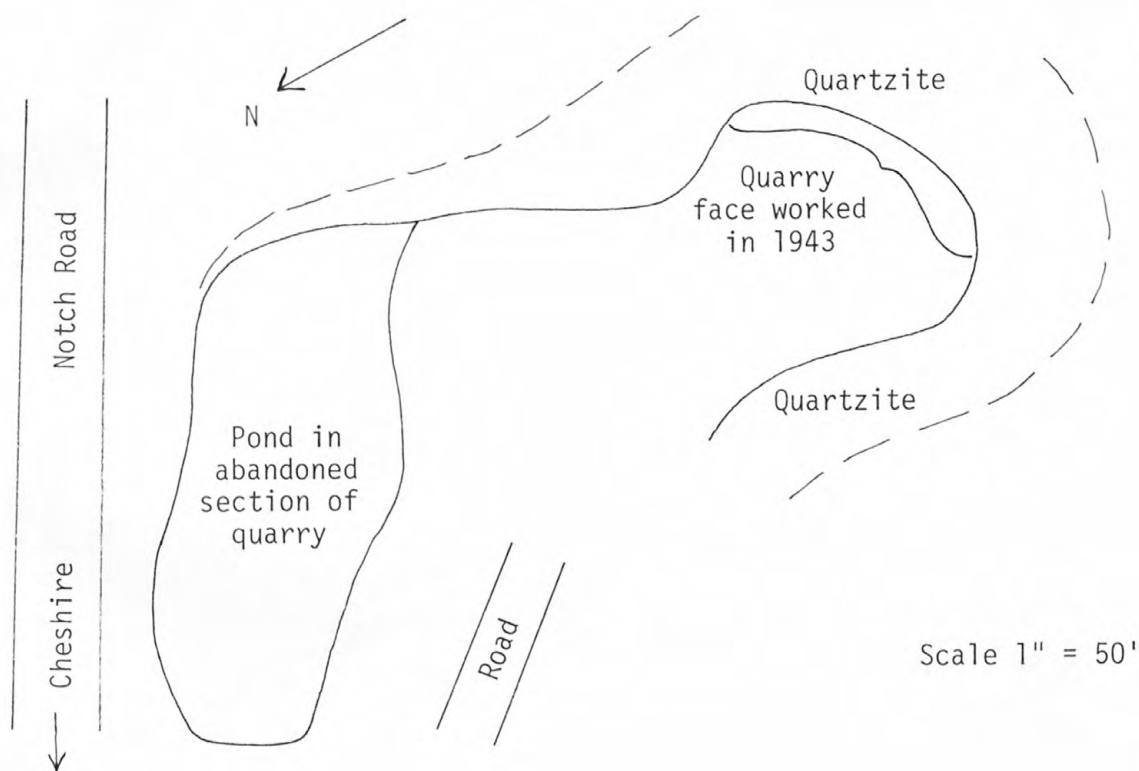
The quarry was about 75 feet in diameter and has a shallow pond in its bottom. No sand rock is now exposed in it. About 100 to 200 feet northeast of the quarry along an old roadway leading to the Wolak barn are small exposures of buff Cheshire "quartzite" sand that can be picked easily with a hammer.



PLAN SKETCH OF QUARRY 6

Quarry 7 - This quarry was worked by the Cheshire White Quartz Company owned and managed by H. W. Dean of Cheshire. This quarry produced both sand and crushed quartzite. The crushed quartzite was used as a refractory for lining the bottom of drop forges. The larger part of the quarry was abandoned and is filled with water. The part being worked in 1943 was further uphill and above the water level.

The quartzite was jointed with the joint spacing several inches to several feet apart. Bedding was not easily distinguishable. The fresh quartzite was snow white, very even grained, and appeared to be quite pure. A small plant for crushing and preparing the quartzite and sand for market was maintained at the quarry.



PLAN SKETCH OF QUARRY 7

References

- Child, Gazetteer of Berkshire County, 1725 to 1885, p. 31.
- Emerson, B. K., 1899, The geology of eastern Berkshire County, Massachusetts:
U.S. Geol. Survey Bull. 159, 139 p.
- Harding, W. G., 1894, Glass manufacture in Berkshire: Collections of the
Berkshire Hist. and Sci. Soc., Pittsfield, Mass., p. 29-44.
- Herz, Norman, 1958, Bedrock geology of the Cheshire quadrangle, Massachusetts:
U.S. Geol. Survey Geol. Quad. Map GQ-108.
- Norton, S. A., 1967, Geology of the Windsor quadrangle, Massachusetts: U.S.
Geol. Survey open-file report, p. 69-71, 195-196.

