

## The Economic Utilization of the Burlington Limestone in the Quincy Region\*

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The Burlington limestone formation crops out at a great many places in western and southwestern Illinois. It is characteristically cherty so that chert-free beds more than a few feet thick are generally rare. Although the formation is also cherty in the Quincy region, it is distinguished by the presence of a chert-free stratum 20 to 30 feet thick. It is this stratum which is now of chief commercial importance.

The chert-free bed is usually a coarse grained, crystalline crinoidal stone or medium crystalline limestone and is characterically white or very light gray. Chemically it is of high purity. A calcium carbonate content of over 98 per cent is usual and analyses showing 99 per cent are recorded. Magnesium carbonate is usually less than 1½ per cent and iron oxide, alumina, and silica together less than 1½ per cent.

Due to its white color and high calcium carbonate content the non-cherty Burlington limestone is used for a wide variety of purposes. Worthen in his "Geological Survey of Illinois," dated 1870, reports at Quincy a flourishing lime business which used the chert-free stone as a raw material. At the present time as well, large amounts of limestone are burned annually for lime which is sold for building purposes, for agriculture, for use in various chemical processes, and for making paper. In the form of small chips or when finely ground, the limestone is used for poultry grit, paints, kalsomine, rubber filler, wall board, stock feeds and medicines, polishes, putty, pottery making, floor filler, etc. Important uses for the broken stone include concrete aggregate, road metal, rubble, rip-rap, blast furnace flux and agricultural limestone. The value of the total output of the limestone and lime industry at Quincy in 1934 amounted to \$200,000.

There are three open pit quarries producing crushed and broken stone in or near Quincy, three principal mines in the Mississippi bluff south of Quincy, and one mine along Mill Creek at Marblehead. At the four mines quarrying was conducted by open pit methods for some time but the overburden of loess and cherty limestone eventually became too heavy to be economically stripped. Subsurface mining was resorted to and is now employed by all three of the operators, although some

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stone is also produced from open pits. Room and pillar mining methods are employed and trucks are used to haul the stone from the mine to the lime kilns or crushing plants.

Aside from the major production of high calcium limestone from the chert-free bed of Burlington limestone, other parts of the formation provide the raw materials for a number of comparatively small quarries which have been operated in the county, many of them periodically, for the production of agricultural limestone, road metal and rubble.

A new development in the Quincy area is the manufacture at Marblehead of rock wool, an insulating material. The raw material used is a blend of dolomitic Burlington limestone obtained from strata lying above the non-cherty Burlington stratum previously mentioned, and a siltstone of Kinderhook age which lies below the non-cherty stratum.

The crystalline, chert-free Burlington limestone takes a high polish and yields an attractive commercial marble, of light gray or white color. Much of it is stylolitic. In places parts of this stratum and other strata as well are colored buff by iron oxide and give rise to an attractive light brown stone for exterior construction which also appears to have promise for interior use. As colored marbles, rather than white marble are in demand at present, the Illinois Geological Survey some years ago undertook a preliminary study of means of coloring Illinois building stones, particularly those for use as interior decorative marble. It was found that the white Burlington took dyes and stains very satisfactorily and it appears that possibilities for increased utilization of the stone may lie along these lines.