BUILDING AND DECORATIVE STONES IN JACKSON COUNTY

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FOREWORD

The following is not a detailed report on the building and decorative stone resources of Jackson County but rather an attempt to assemble information from diverse sources, including personal observations, dating it whenever possible, regarding the present building and decorative stone industry of the County together with what historical or related information is at hand. While historical to a degree, the report does pinpoint at least some of the major sources of building stone in the county and mentions structures in which stone from these sources has been used where its actual performance as a building material can be judged. Information of this sort is often critical to the introduction or reintroduction of a building stone to the commercial market and hence has a practical significance.

BUILDING STONES IN JACKSON COUNTY

The known information regarding building stones in Jackson County is compiled herewith and comes from Survey publications, field notes and personal observations. A discussion is included as a matter of record of the use of the Makanda Sandstone outcropping at Bosky Dell for making concrete artificial grindstones.

The following data are given by A. H. Worthen in his "Geological Survey of Illinois", volume 3, 1868, pp. 78 and 79.

"Building Stone. The southwestern portion of this county contains an inexhaustible supply of excellent building stone of various kinds, including marbles that are susceptible of receiving a high polish, and suited to the construction of elegant and costly buildings. The massive layers of siliceous sub-crystalline limestone, that are intercalated in the cherty beds of the lower Devonian series at "Bald Rock" and "Back-bone," afford some layers that are delicately colored, sometimes nearly white, or streaked with pink, yellow and blue, these colors being so blended as to have a pleasing effect on a highly polished surface. Some of these layers contain considerable chert in small nodules, but others are quite free from this pernicious material, and will dress evenly and receive a high polish. These beds have never been worked for building material, but recently a commencement has been made at "Bald Rock," and quarries will be opened, so that the extent of these marble beds may be fully determined. Specimens from this locality, brought to this city, and polished by the marble workers here, proved to be susceptible of receiving a very high polish at a moderate cost of labor.

The Onondaga and Hamilton limestones at the "Bake Oven," afford a durable material for foundations, culverts and rough walls, and some of the lower beds would probably dress well, and are so situated that they can be conveniently quarried for shipping from their outcrop at the water's edge.

The limestones of the lower Carboniferous series, at Walker's hill, will afford an inexhaustible supply of limestone suitable for all ordinary building purposes.

The limestones of the Chester series are generally siliceous and cherty, but they are for the most part durable, and may be used for foundation walls when no better material is at hand.

The sandstones of the Chester series, and the Conglomerate, afford some good building stone to supply the local demand in the vicinity of their outcrops. Locally, they are thin-bedded and afford a good flag-stone. On Drury Creek, the Illinois Central Railroad Company has opened an extensive quarry in the Conglomerate sandstone, on the northeast quarter of section 9, township 10 south, range 1 west, where the rock is quarried for building stone and for

ballast for the road. About fifty feet in thickness of the sandstone is exposed here, in a bluff close to the road, about thirty-five feet of which is thinly bedded, while the lower fifteen feet is in tolerably heavy beds, and afford some good dimension stone. The rock is finely grained, somewhat micaceous, and of a brownish-yellow color. It is rather soft when just quarried, but hardens considerably on exposure, and makes a durable building stone. In the northeastern portion of the county, good building stone is comparatively scarce, but some of the sandstones and the limestones of the Coal Measures, which outcrop on the streams in this portion of the county, may be made available to supply the local demands for such material."

Comments by J. E. Lamar. The Bald Rock referred to by Worthen is apparently that part of Grassy Knob that abuts the Big Muddy River in the N½, SW¼, sec. 27, T. 10 S., R. 3 W.

The Backbone is a narrow roughly NW - SE extending ridge about 0.65 miles long that lies in the southwest corner of section 24 and an adjacent part of sec. 23, T. 10 S., R. 4 W. along the east side of the Mississippi River northwest of Grand Tower. The rock in the ridge has been extensively quarried, particularly on the riverward side of the southern part of the ridge.

The Bake Oven is a small, circular hill fronting on the Mississippi River and lies about 0.1 miles northwest of the northern end of the Backbone at the center of the west line SE¼, NE¼ sec. 23, T. 10 S., R. 4 W.

Further information regarding the sandstone "along Drury Creek" mentioned above by Worthern appears in Lamar, J. E., "Geology and Mineral Resources of the Carbondale Quadrangle," Illinois Geological Survey, Bulletin 48, 1925, page 161 as follows.

Building Stone

"The Carbondale quadrangle is for the most part amply supplied with building stone. Formerly a considerable amount of local stone was quarried for construction purposes, but the introduction of concrete has put an end to this use of stone except in a small way. The largest present use of stone is for foundations, and for walling wells and cisterns.

The Makanda sandstone which outcrops just east of the town of Boskydell was formerly extensively used for construction purposes. The Presbyterian and Baptist churches, the basal portions of the Roberts Hotel and the original building of the Southern Illinois Normal University at Carbondale and many bridges and culverts were built from this stone. The stone is comparatively free from shale inclusions and iron staining, and holds its color well

when exposed to the weather. The chief objection to its use as building stone was that the beds in the quarry did not have a uniform color. It was therefore necessary to quarry a great deal of stone to get a sufficient number of blocks of the same color to construct a building. It is reported that the quarry was eventually abandoned because of this difficulty."

The quarries in the Makanda sandstone, mentioned above, are located in the east bluff of Drury Creek at Bosky Dell and particularly in the NE¼, NE¼, sec. 9, T. 10 S., R. 1 W. Evidences of quarrying at a number of places in the bluff are visible. There are in places comparatively large piles of waste rock and dirt that may have been part of the thin bedded sandstone overburden above the heavy sandstone beds that appear to have been the principal sources of building stone. Or the piles may have been waste material resulting from the production of ashlar or other types of cut stone from rough quarry blocks.

The massive sandstone was exposed 15 to 40 feet above the level of the valley flat of Drury Creek. It is fine to medium grained and occurs in beds about 8 feet thick. The maximum thickness exposed was 30 feet with the base of the sandstone unit covered by talus. It is overlain by medium and thin bedded sandstone of which 10 feet was the greatest thickness seen but its full thickness probably is greater than this. Loess caps the bedrock. (From J. E. Lamar, field notes for the Carbondale quadrangle, 1923.)

Further data on the Bosky Dell deposit appears in 1930 field notes by Lamar as follows.

"A ledge of massive sandstone outcrops from the road running up the E bluff of Drury Creek east of Bosky Dell, south for at least ½ mile. At the road the sandstone is about 40' above the valley flat to the west. To the south the sandstone rises and about ½ mile south of the road is in the top of the bluff and about 60-80' above the flat.

At the road the sandstone has above it 15-25' of thin bedded, irregular bedded, crossbedded sandstone in layers 1' to a foot thick, and in addition loess which is about 3' thick at the edge of the bluff but rises back from it, to an estimated thickness of 25'±. To the south the amount of sandstone overburden gradually decreases until only loess remains. The sandstone overburden appears to have no use.

The massive sandstone ledge as exposed is 10-15' thick. Probably the normal thickness is about 15', at least this is about the thickness formerly quarried. The stone near the road appears to be and to contain more purple sandstone than that at the south end of the outcrop (½ mile south) where the stone is principally brown. The purple and other colors as tan, light cream, etc. are not constant vertically although it seemed that the purple stone was often at the base of the ledge and then brown at the top. The bed contains conspicuous joints at any angle but they are not common. It has "sheet weathering." In places, especially along joints there are fantastic shapes resulting from differential Fe deposition. Some of the stone is badly marked with drip and iron concretions.

Old quarry workings are visible from the road for about 1/2 mile south. Plug and feathers and a channeler wire used, the last in the quarry above the "ice house."

It seems that the easily won stone has been worked out. Further operations will run into considerable overburden. The face has probably been worked back 15 to 20 feet, but, at least, it is "cleaned up" and development could go right ahead.

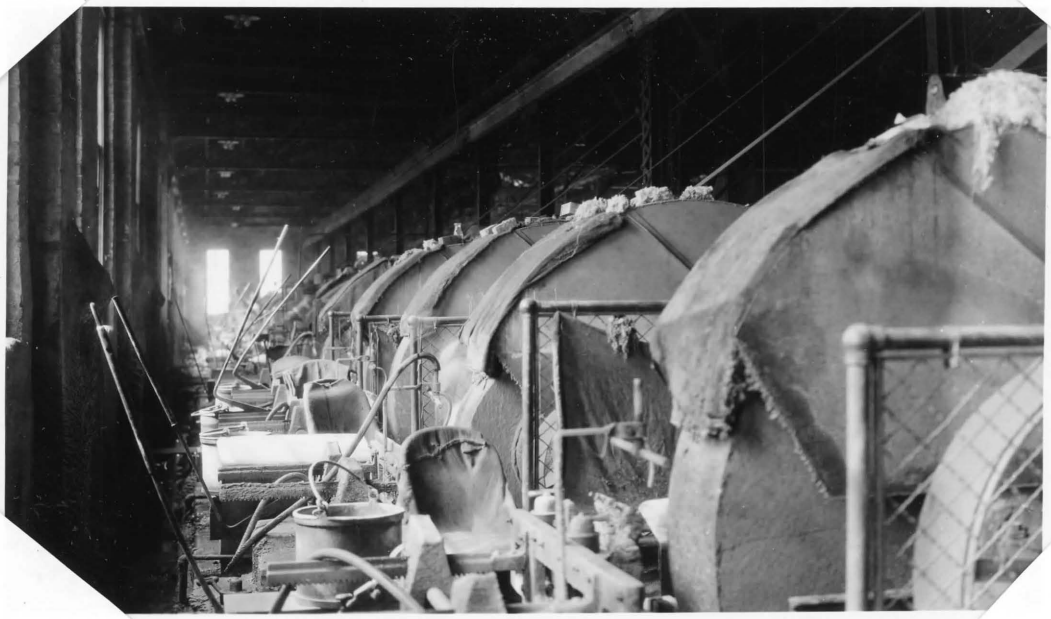
Experience has shown that the sandstone should not be blasted in producing it for building stone."

Another chapter in the history of the Makanda sandstone at Bosky Dell involves its use in making synthetic grindstones which came about as follows.

In 1929 the Herschel Manufacturing Company of Peoria made mower blades, among other things. The mower blades were flat pieces of metal about an eighth inch thick that were shaped approximately as shown below.

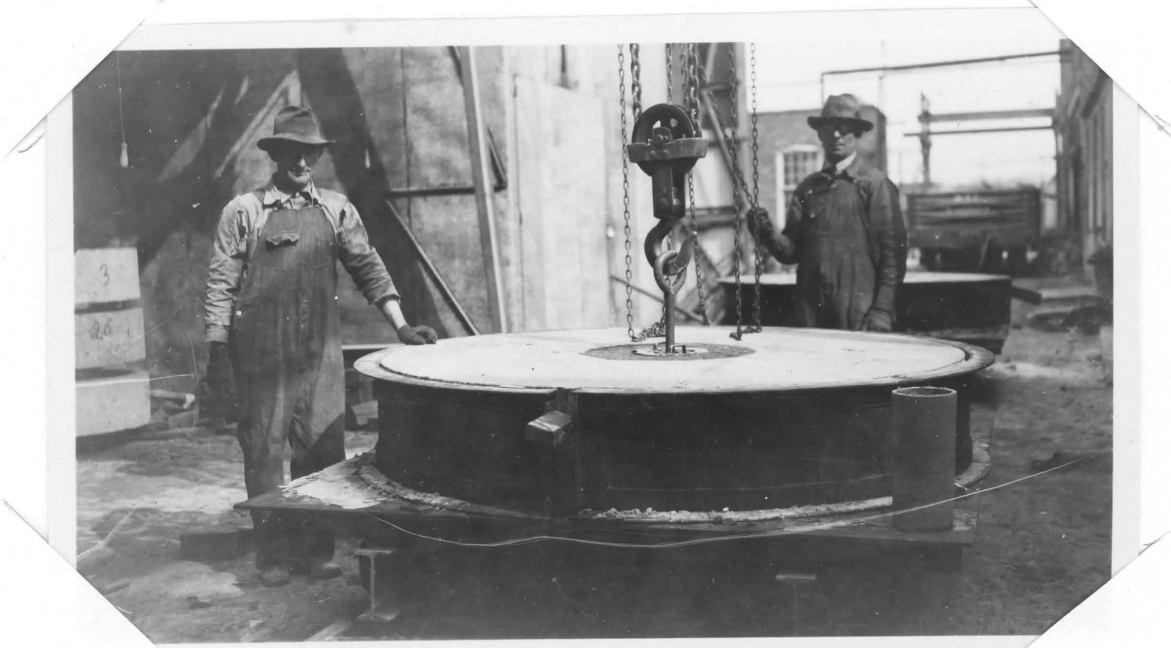
Edges A and A' were sharpened, and the sharpening was done by placing a number of the blades in the holder that a workman moved back and forth across a large grindstone. Figure 1 shows the size of 5 of the grindstones actually used and the seats in which the workmen sat. The grindstones were about eight feet in diameter and one foot thick and were natural sandstone quarried in the Cleveland, Ohio, district. The stones were used until they were about four feet in diameter.

The engineer of Herschel Manufacturing Company, Mr. M. W. Watson, conceived the idea of using the discarded grindstones after crushing as aggregate with cement for making artificial concrete grindstones.



General view showing a number of grindstones and the seats of the workmen who used them.

Fig. 1



Mold used for casting grindstones with grindstone about to be removed.

Fig. 2

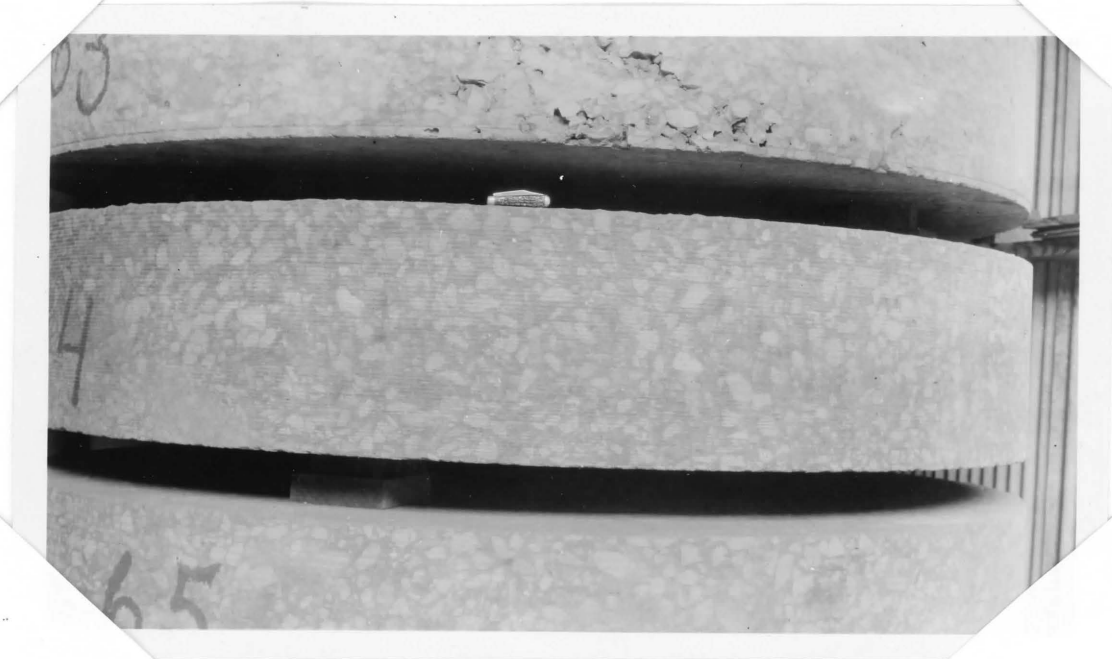
After considerable experimentation, Mr. Watson succeeded in making satisfactory artificial grindstones and used all the scrap grindstones in the company's yard in the manufacture of such stones. When he attempted to buy crushed sandstone from the company that had originally supplied the grindstones, he was unable to make satisfactory arrangements. He, therefore, approached the Survey to see what sandstones might be available in Illinois that he could use in place of the material from Ohio. After preliminary testing of a number of samples, he and Lamar spent several days in southern Illinois visiting sandstone outcrops and obtaining sizable samples for additional tests. Among others, the sandstone at Thebes was sampled, the Degonia sandstone north of Cobden, as well as Pennsylvanian sandstones from several outcrops, including the sandstone at Bosky Dell, a settlement along the Illinois Central Railroad, four miles south of Carbondale. Mr. Watson's tests showed that the Bosky Dell sandstone was a potentially suitable substitute for the Ohio sandstone, and he consequently arranged with persons at Bosky Dell to ship him a carload which he made into artificial grindstones. These were put into production, and it was found that not only did they do as well as natural grindstones, or the artificial grindstones made from crushed natural grindstones, but that they gave better production and, as I recall it, had a longer life.

Figure 2 shows the mold in which the grindstones were cast. It was mounted on a small railroad car. In Figure 3 the manner of removing the grindstone from the mold is shown. Figure 4 indicates the size of the sandstone aggregate used in making the grindstones, Figure 5 shows finished grindstones awaiting use, and Figure 6 a carload of Bosky Dell sandstone as it arrived at the plant.

After the Bosky Dell sandstone had been in use about three years, the company introduced automatic grinding machines that used carborundum grinding

Grindstone after removal from mold. The stone is 8 feet in diameter.

Fig. 3.



Close up of grindstone showing the size of the sandstone aggregate used in its manufacture.

Fig. 4.

Grindstones in storage.

Fig. 5

A carload of Bosky Dell Sandstone at the Herschel plant.

Fig. 6

wheels. This put an end to the use of the Bosky Dell sandstones for the making of synthetic grindstones.

The significance of the foregoing is that the sandstone at Bosky Dell is of such character that it could be used in making natural grindstones as well as artificial grindstones or in other ways in which a sandstone abrasive is required.

Other Jackson County Building Stones

The lodge at Giant City State Park is constructed of sandstone said to have been obtained locally.

There is, or was, a fruit stand, now abandoned, on the west side of Route U.S. 51 between Cobden and Carbondale, probably within a few miles of the turn off to Giant City, that is built of Pennsylvanian sandstone said to have been "picked up out of the creek" nearby.

In Grand Tower the town built a small building from sandstone reported to have been obtained by breaking up a large talus block of sandstone, probably Pennsylvanian, found at the base of the Mississippi bluff east of town. When last seen, about 1957, the color of the sandstone was not unattractive but there was a copious white efflorescence on the stone.

Shaw, E. W. and Savage, T. E., Murphysboro-Herrin Folio, No. 185, U.S. Geological Survey, 1912, page 15 it is stated that "The limestones of the Carbondale and McLeansboro formations are not thick but yield local supplies of rough building stone." A sandstone quarry is mentioned in sec. 7, T. 7 S., R. 3 W., about three miles north and a little east of Ava, where a layer "70 feet below the top of the Pottsville is quarried and the product has been hauled 10 to 15 miles for use in foundations and bridge abutments."

A small sandstone quarry also is mentioned in the NW¼ sec. 35, T. 8 S., R. 1 W. in the east bank of Crab Orchard Creek, a little over three miles southeast of DeSoto. The sandstone is the Vergennes and belongs to a "horizon about 70 feet above coal 2." The stone was 10 feet thick, rather massive in 2 or 3 massive ledges and rather firmly cemented by iron oxide. The writers (Shaw and Savage) approve the stone's use for "foundation work and cellar walls" but question its durability "as a building stone".

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