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ONTARIO
DEPARTMENT OF MINES

BUILDING STONES OF ONTARIO
PART II
LIMESTONE

By
D. F. HEWITT

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BUILDING STONES OF ONTARIO

PART II: LIMESTONE

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BUILDING STONES OF ONTARIO

PART II: LIMESTONE

By D.F. Hewitt¹

Limestone building stone is being quarried at Queenston, Thorold, Wiarton and Nogies Creek. Limestone quarries were formerly operated at Kingston, Napanee, Ottawa, Shelburne, Crookston, Longford, Erin, Guelph, St. Mary's, Pelee Island and other localities. Limestone quarrying is mainly confined to the Paleozoic rocks of southern Ontario.

The principal formations which have been quarried in southern Ontario are the Black River and Trenton limestones of Ordovician age and the Guelph and Lockport dolomites of Silurian age. Other formations have been quarried to a minor extent.

The Black River and Trenton limestones form a wide band extending from Midland on Georgian Bay to Kingston on Lake Ontario. These formations also outcrop in the Ottawa - St. Lawrence basin. The Lockport dolomite forms the cap rock of the Niagara escarpment and this dolomite together with the overlying Guelph dolomite outcrop in a wide band from Queenston to Dundas and thence north to the Bruce peninsula.

¹ Senior Geologist, Industrial Minerals, Ontario Department of Mines.

QUEENSTON

QUEENSTON QUARRIES LIMITED

The property of Queenston Quarries Limited is located on the brow of the Niagara escarpment, two miles west of Queenston, in lots 47 to 49, concession X, Niagara township, Lincoln county. It is the largest building stone quarry in Ontario, producing a stone well known in the trade as "Queenston limestone". The quarry is also a large producer of crushed stone, and a new aggregate plant commenced operation in April, 1959. The company is a subsidiary of Canada Crushed & Cut Stone Limited of Hamilton. The dimension stone is fabricated by its subsidiary, the Ritchie Cut Stone Company Limited and other independent cut stone fabricators. Transportation is by truck or rail.

Goudge (1933, p.76) states that "the history of the quarry extends back to 1837 when, it is stated, stone was obtained for the abutments of the original Queenston International bridge. In 1856 the imposing monument to General Sir Isaac Brock on Queenston Heights was constructed of this stone. From 1846 onwards the stone has been extensively used in the construction of the successive Welland canals, for railroad bridges and culverts, and for various other engineering projects in the Niagara district, as well as for general building purposes. The excellent state of preservation of the stone in the oldest structures bespeaks its durable nature."



Building stone ledge at Queenston Quarries.



Stone yard at Queenston Quarries showing overhead crane.

The quarry section exposed is illustrated in the accompanying photo. The 38-foot quarry face consists of 33 feet of light grey to buff, Gasport crinoidal calcitic dolomite or dolomitic limestone overlain by 5 feet of brownish aphanitic Goat Island dolomite. Both these units are members of the Lockport dolomite formation of Silurian age which forms the cap rock of the Niagara escarpment. The upper Goat Island dolomite is distinguished from the underlying Gasport member by a change in colour and lithology. The lower 14.5 feet of the 33-foot section of Gasport dolomite is the building stone ledge from which mill blocks of Queenston limestone are quarried. The stone overlying this ledge is quarried for crushed stone. Within the massive-bedded building stone ledge, bedding partings are not regular over the whole quarry and they govern quarrying practice. At the present east face there is a 4.5-foot bed underlain by a 10-foot bed.

Underlying the Gasport member there is 6 feet of dark grey, aphanitic, buff-weathering Decew dolomite, the upper 8 inches of which is conglomeratic. This unit is underlain by Rochester shale.

The building stone ledge, 10 to 16 feet thick, is overlain by 10 to 24 feet of dolomite, which must be stripped off and is used for crushed stone. Since the building stone ledge is worked only from April to October owing to moisture in the stone, the stripping of the overlying beds for crushed stone allows quarry operations all year round.

Bedding partings occur in the building stone ledge from 2 to 10 feet apart. When a sufficient area has been stripped of the overlying rock, the beds are examined for vertical joints which

may occur 10 to 50 feet apart. The Knox quarrying method using drilling and blasting is employed, and the method requires three free faces. The free quarry face is established at right angles to the jointing by removal of a key block. The block to be quarried is then bounded by the free quarry face on one side and by two joints at either end, or by one joint and an open end where the adjacent block has been removed. Quarry blocks are split off by making a back wall cut parallel to the free quarry face at a distance of 10 to 12 feet from the face. A series of $1\frac{1}{2}$ inch holes are drilled, 12 to 14 feet deep, on 2-foot centres in a line parallel to the quarry face, at the required distance from the face. Jackhammers or Joy wagon drills are employed for drilling. The line of holes may be 10 to 50 feet long depending on the joint spacing.

In the Knox system the drillholes are reamed by a Knox bit, which grooves the hole on each side in the direction along which the break is to be made. The holes are loaded lightly with black powder and fired with instantaneous caps. An air space is left in each hole between the charge and the tamping. This air space is essential to the Knox method and results in the force of the explosion being exerted on a relatively wide surface. Where there is horizontal bedding in the block to be quarried, a charge is placed for each bed.

The quarry block is separated from the solid ledge by the blast and is then drilled and split by plug and feather into random mill blocks 4 to 20 tons in size. Horizontal holes may be drilled to lift beds where necessary.

The quarried blocks are handled in the quarry by six 20-ton derricks, four electric and two steam. Five of the derricks are on production, while one is used for stockpiling. Mill blocks may be loaded directly on railway flatcars or hauled to the mill building by a Mack truck with a semi-trailer 20-ton float.

A stone cutting plant is operated at the quarry. A 30-ton Morris travelling crane services the mill, and a $7\frac{1}{2}$ -ton Provincial travelling crane serves customers from the mill yard. The mill is equipped with 3 diamond toothed gang saws and 3 gang saws using silica sand as the abrasive to cut the mill blocks, a 60-inch diamond saw and a 36-inch diamond saw. Guillotines are used to make split-faced ashlar.

Queenston limestone is a medium-crystalline crinoidal dolomitic limestone which weathers to a pleasing silver-grey colour. It is readily sawn, machined and carved, but is somewhat harder than Indiana limestone. Queenston limestone is very durable and has low absorption and porosity. It is the most widely used limestone building stone in Canada and may be seen in many buildings including the East Block of the Parliament Buildings in Toronto.

Physical properties of specimens of Queenston limestone collected by the author from the quarry are as follows:

Compressive strength, p.s.i.,	maximum:	15625;
	minimum:	14500;
	average:	14900;

Absorption, 0.81 to 0.97 percent;
Bulk specific gravity, 2.62 to 2.66;
Weight per cubic foot, 163 to 166 pounds;
Abrasive hardness, 15.4 to 18.7.

For comparison, physical properties of Indiana limestone tested by the Ontario Department of Mines are as follows:

Compressive strength, p.s.i., maximum: 7000;
 minimum: 6425;
 average: 6770;

Absorption, 4.01 percent;
Bulk specific gravity, 2.33;
Weight per cubic foot, 145 pounds;
Abrasive hardness, 8.2.

THOROLD

PENINSULA LIMESTONE LIMITED

The Niagara quarry of the Peninsula Limestone Limited (formerly Niagara Cut Stone Limited) is located in lots 44 and 45, concession TL, Thorold township on the brow of the Niagara escarpment, one mile east of Thorold. The quarry produces only building stone.

The quarry section consists of 20 to 22 feet of Gasport crinoidal calcitic dolomite. The upper six feet of the section is dark grey, medium crystalline medium bedded crinoidal dolomite which is stripped off and sold to the nearby Walker Brothers quarry for crushed stone. The lower 14 to 16 feet of the section,

which is quarried for building stone, is a light grey, medium crystalline, crinoidal, massive bedded calcitic dolomite. A further 5 feet of Gasport dolomite is exposed in the quarry sump.

Some 6 to 20 feet of overburden is stripped by bulldozer or dragline. The upper 6 feet of dolomite is drilled, blasted, loaded and trucked to Walker Brothers quarry. The upper 12 inches of the building stone ledge is stripped off by drilling and black powder. The remainder of the 14- to 16-foot building stone ledge is worked in two beds 5 to 8 feet thick.

Drilling is done by jackhammers, two of which are mounted on each of three quarry bars. These drills cut vertical channels in two directions, one set normal to the quarry face, the second set parallel to the quarry face at a distance of 15 feet from the face. The blocks are lifted by horizontal holes drilled 24 inches apart, wedged by plug and feather. The quarry blocks are split vertically by rows of holes 6 to 12 inches deep spaced about 4 inches apart and wedged by plug and feather.

The blocks are handled in the quarry by a 20-ton Westinghouse Tournacrane. The blocks are cut in the mill at the quarry into slabs $2\frac{1}{2}$ inches and $1\frac{1}{2}$ inches in thickness, from which products are manufactured such as copings, sills, ashlar, etc. The mill at the quarry is equipped with a 20-ton Gantry Crane 60 by 192-foot, and three gang saws to cut the quarry blocks into slabs of various thicknesses. All of the gang saws are drag action saws, using 7-inch steel blades set with diamond teeth. The rate of sawing with this type of saw is 12 to 14 inches per hour, compared to $1\frac{1}{4}$ to $1\frac{1}{2}$ inches per hour with silica sand abrasive.



Building stone ledge at Peninsula Limestone quarry.



Quarry bars and drills, Peninsula Limestone quarry.

Physical properties of limestone (No. 1) from this quarry are as follows:

Compressive strength, p.s.i., maximum: 15400;
 minimum: 11600;
 average: 12700;

Absorption, 1.14 percent;

Bulk specific gravity, 2.63;

Weight per cubic foot, 164.2 pounds;

Abrasive hardness, 18.1.

OWEN SOUND - WIARTON AREA

In 1962 six small building stone quarries were operating in the Owen Sound - Wiarton area producing ashlar, flagstone, sills, coping, etc. from the thin-bedded Eramosa member of the Amabel (Lockport) dolomite.

CRUICKSHANK QUARRY

OWEN SOUND LEDGEROCK LIMITED

The Cruickshank quarry of Owen Sound Ledgerock Limited comprises a 38-acre property in lot 17, concession IV, Keppel township, Grey county, 0.4 miles west of the Shallow Lake road. The quarry turn is 3.6 miles north of the highway No. 6 junction with the Shallow Lake road.

A quarry face of 18 inches to 2 feet exposes medium grey brown, thin-bedded, aphanitic, banded Eramosa dolomite. There is fine colour banding due to dark argillaceous partings in the dolomite. The beds are from $\frac{3}{4}$ to $2\frac{1}{4}$ inches thick. Vertical

joints strike N.20°W. and east-west. Overburden amounts to about one foot. Excellent flat bedding planes form the quarry floor. The main quarry opening is 250 yards north of the road and measures approximately 200 by 400 feet. A portable 14- to 18-inch diameter diamond saw is used to cut the stone into blocks measuring several feet square, which can be removed from the quarry by bars and wedges and by a fork lift truck.

The stone is cut by saw or by guillotine. The stone is said to cut better when wet. Thicker bedded stone is available at the Oliphant road quarry near Wiarton. Random split-faced stone is available from this quarry in thicknesses of $\frac{3}{4}$ -inch (wafer) to $2\frac{1}{4}$ inches (bold). This coursing stone is 4 inches wide and of random length. Prices in 1962 were from 60 to 70 cents per foot. Stone is sold on pallets which can be handled by fork lift trucks. Random flagstone $1\frac{1}{4}$ to $1\frac{3}{4}$ inches thick sells for \$8.00 per ton and $\frac{3}{4}$ to $1\frac{1}{4}$ inches thick for \$10 per ton. Wallflag which is thin natural random flagstone from $1/8$ to $3/4$ inches thick is laid up flat in interior walls and makes attractive walls for offices, restaurants, lobbies, etc. Copings, window sills, hearth stones and mantles are produced from the thicker stone available from Oliphant. Ledgerrock may be used inside fireplaces, room dividers, etc. or outside for walls, facings for buildings, etc.

WIARTON

Four building stone quarries are operated west of Wiarton on the Oliphant road. These are Ebel Quarries, Bruce Peninsula Stone Quarries, J.S. Cook Stone Quarry, and Owen Sound Ledgerrock Limited.



Thin-bedded Eramosa dolomite at Wiarton.



Portable diamond saw used for cutting Eramosa dolomite near Wiarton.

EBEL QUARRIES

Ebel Quarries are located on the south side of the Oliphant road 1.8 miles west of Wiaraton in lots 6 and 7, concession XXIV, Amabel township, Bruce county.

A seven-foot section of medium brown aphanitic thin to medium bedded Eramosa dolomite is exposed. Quarry faces worked are 2 to 3 feet in height. A prominent set of vertical joints trends N.75°E. to N.85°E. Beds vary from $\frac{1}{2}$ to 10 inches in thickness. Bedding is extremely even and uniform. Overburden is light. Up to 3 feet of stone is stripped in some areas of the quarry which extends south for several hundred feet from the road. The stone is quarried by cutting the beds into rectangular blocks using portable 12- to 18-inch electric diamond saws. East-west joints are spaced 15 to 18 feet apart in the portion of the quarry being worked at the time of the writer's visit. Four- to eight-inch saw cuts depending on the thickness of the beds were made perpendicular to the joint faces at 24-inch intervals. The 15- to 18-foot length of stone 24 inches wide is raised by bars and a fork lift truck. Stone is moved by front end fork lift trucks. The stone is cut by diamond saw or guillotine. Random flagstone is raised by bars and wedges.

"Rockface coursing" or ashlar is sawn to size and laid on the sawn bed with a hand-dressed face exposed. "Strataface coursing" or ashlar is sawn to size and laid on the sawn surface with the natural bedding surface exposed. These are available in heights of $2\frac{1}{4}$, 5 and $7\frac{3}{4}$ inches and are $3\frac{3}{4}$ inches wide on the bed.



Raising stone beds by fork lift at Ebel Quarries,
Wiarnton.



Ashlar split by guillotine is loaded on pallets for
shipping at Ebel Quarries, Wiarnton.

"Split face coursing" or ashlar is produced by cutting with the guillotine and is laid on the natural bed with a natural rock face exposed on the face. This coursing is available from 1 to 6 inches in thickness and in variable widths.

The stone is widely used as natural stone veneer facings for buildings. Sills, hearths, mantles, steps, coping and flagstone are also produced.

Physical properties of dolomite (No. 21) from the Ebel quarry are as follows:

Compressive strength, p.s.i.,	maximum:	24750;
	minimum:	19750;
	average:	22833;

Absorption, 1.20 percent;

Bulk specific gravity, 2.60;

Weight per cubic foot, 162.3 pounds;

Abrasive hardness, 27.1.

BRUCE PENINSULA STONE QUARRIES

Bruce Peninsula Stone Quarries are located on the north side of the Oliphant road, 2 miles west of Wiarton, in the south half of lot 7, concession XXIV, Amabel township, Bruce county.

From 6 to 8 feet of medium brown, thin to medium bedded, aphanitic Eramosa dolomite is exposed in the quarry face. Overburden is thin averaging about one foot. About $2\frac{1}{2}$ feet of stone is stripped to reach the marketable stone beds which are 1 to 5 inches thick. About 3 feet of this stone is worked. The formation

stone in place in the quarry to quarriable sizes. The stone is raised by bars and wedges. Besides using the diamond saw, the stone is also cut by chisel and hammer, and, if desired, by plug and feather. Coursing stone, flagstone, sills, steps and rubble are produced.

Parks (1912, p.262) gives the following physical specifications for the stone:

Specific gravity	2.831
Weight per cubic foot, lbs.	158.237
Pore space, percent	10.44
Ratio of absorption, percent	4.13
Coefficient of saturation,	0.45
Crushing strength, lbs. per square inch	21162.
Crushing strength after freezing	18555.
Transverse strength, lbs. per square inch	2280.

Chemical analysis:

Insolubles	1.24
Ferrous oxide	.33
Ferric oxide	.65
Calcium carbonate	56.03
Magnesium carbonate	41.03
Sulphur	.021

OWEN SOUND LEDGEROCK LIMITED

The Oliphant road quarry of Owen Sound Ledgerock Limited comprises a property of 100 acres on the south side of the Oliphant road, 3 miles west of Wiarton, in lot 10, concession XXIII, Amabel township. Two to three feet of medium to dark brown, buff-weathering, thin bedded, aphanitic Eramosa dolomite are exposed. Vertical joints strike at N.75°E. Beds range from one inch to 8 inches in thickness. Little stripping is required as the area is mainly a limestone plain. Joints strike at N.75°E. and dip vertically. Stone is quarried by portable 14- to 18-inch diamond saws. Ashlar, flagstone, sills and steps are produced. A guillotine is available for splitting ashlar coursing stone at the other quarry.

Physical properties of dolomite (No. 3) from this quarry are as follows:

Compressive strength, p.s.i.,	maximum: 17800;
	minimum: 17425;
	average: 17612;

Absorption, 1.62 percent;

Bulk specific gravity, 2.53;

Weight per cubic foot, 158 pounds;

Abrasive hardness, 18.1.

PERFECT STONE COMPANY

The Perfect Stone Company quarry is located west of highway No. 6 on lot 3, concession I, Albemarle township, Bruce county, $12\frac{1}{2}$ miles north of Wiarton, on the farm of J.H. Rouse. The quarry was opened in 1960. There is little overburden and the stone is exposed in an area of limestone plain. There is a quarry opening measuring 30 by 40 feet with a face up to 2 feet in height. An area of 300 by 100 feet is stripped. The stone is thin bedded, light brown to medium brown, banded aphanitic Eramosa dolomite. Prominent vertical joints run at $N.70^{\circ}E.$ and $N.30^{\circ}W.$ Large irregular slabs are removed and cut by hammer and chisel to a size suitable for cutting using a guillotine.

CHARLES LAKE QUARRY

North of Charles Lake, seven miles east of Wiarton, in lot 23, concession XXIV, Keppel township, Grey county, there is a small quarry opening where a few mill blocks have been removed. Overburden is shallow on a small limestone scarp north of the lake. Several hundred square feet of stone have been stripped. Three to five feet of light buff and grey banded, fine crystalline, massive bedded Amabel dolomite is exposed. It is an attractive building stone.

BOAT LAKE QUARRY

A small building stone quarry was opened on the northeast side of Boat Lake in the 1950's by Lew Ross in lot 14, concession XXII, Amabel township, Bruce county. The quarry is 3 miles west of Wiarton. The quarry area is in a limestone plain with very little stripping, generally less than one foot. The stone is a light buff coloured, light buff weathering, aphanitic, massive bedded Guelph dolomite. Some brownish colour banding is evident. The quarry opening measuring 60 by 60 feet by 3 feet deep. A single massive bed 30 inches thick has been quarried. The second bed is 12 inches thick. Jointing is not pronounced. Several large mill blocks have been removed. Two hundred yards southeast of the quarry opening an area of several thousand square feet has been stripped, and a one foot bed has been removed in places. The weathered surface of the stone is smooth but somewhat hollowed by water action. Glacial striae strike S.40°W.

Physical properties of dolomite (No. 32) from this quarry are as follows:

Compressive strength, p.s.i.,	maximum: 22875;
	minimum: 16225;
	average: 18483;

Absorption, 1.68 percent;

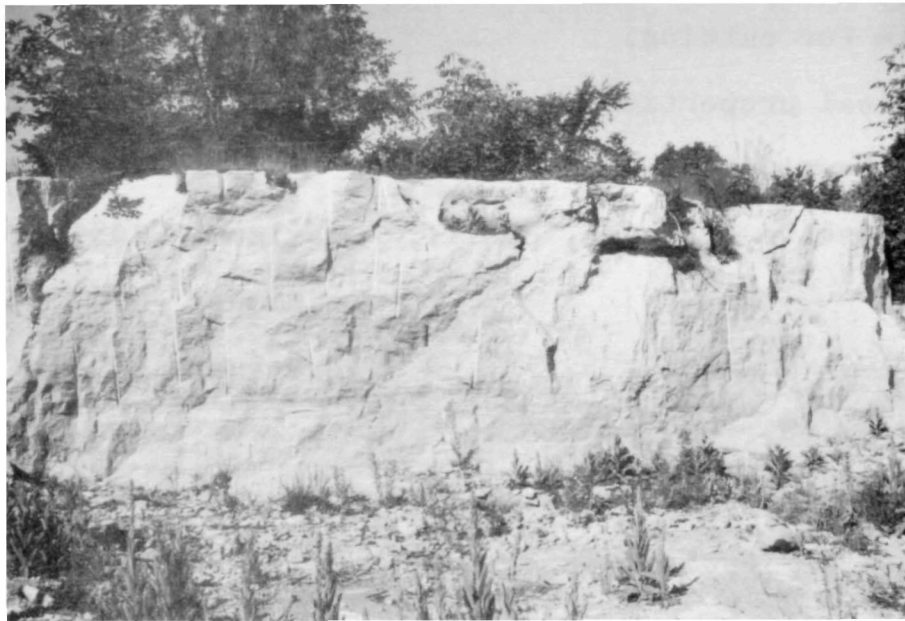
Bulk specific gravity, 2.54;

Weight per cubic foot, 158 pounds;

Abrasive hardness, 22.2.



Mill blocks of Guelph dolomite at the Boat Lake quarry.



Hope Bay quarry, Hope Bay.

ADAMSVILLE

SCOTT QUARRY

A small quarry opening for removal of mill blocks is located on the Scott farm a mile and a half north of Adamsville in lot 8, concession VIII, Albemarle township, Bruce county. Several mill blocks were removed in the 1950's by Argo Block Company.

Dolomite is exposed in low bare ridges west of the road, and shows much solution weathering. A quarry opening measuring 25 by 30 feet and six feet deep lies 150 feet west of the road in an open field. The six-foot face exposes a single bed of light grey mottled, fine crystalline, massive-bedded Amabel dolomite. There is rhythmic and rather uniform light grey colour banding in the stone. The colour is attractive. Mill blocks were shipped to Cooksville for cutting.

Physical properties of dolomite (No. 31) from this quarry are as follows:

Compressive strength, p.s.i.,	maximum: 19875;
	minimum: 17250;
	average: 18958;

Absorption, 0.93 percent;

Bulk specific gravity, 2.63;

Weight per cubic foot, 164.2;

Abrasive hardness, 19.7.

HOPE BAY

HOPE BAY QUARRY

A small test quarry opening was made near Hope Bay on the west side of the road in lot 2, concession VIII, Albemarle township, Bruce county. The quarry opening measuring 50 by 20 feet has a 5- to 9-foot face exposing light to medium grey mottled, banded, fine-crystalline, massive-bedded Amabel dolomite. The massive bed is at least 9 feet thick. Jointing is poorly developed.

COOKSVILLE

COOKSVILLE QUARRY

DOMTAR CONSTRUCTION MATERIALS LIMITED

Lots 19 and 20, Concession I S, Toronto Township

The Cooksville quarry of Domtar Construction Materials Limited is located on lots 19 and 20, concession I S, Toronto township, Peel County. The quarry has a 53-foot face of Dundas shale. In the shale formation there are 10 to 15 percent of hard layers which are grey, green and rusty-weathering, fine aphanitic, arenaceous limestone. These hard layers are from 2 to 8 inches thick. They are separated out and are used for building stone. Much of this stone has a rusty-brown weathered surface and is known by the trade name "Cooksville Rust".

NOGIES CREEK

BLACK RIVER LIMESTONE PRODUCTS

A small quarry is being operated a mile north of No. 36 highway in lot 23, concession XIV, Harvey township, Peterborough county by A. Metcalfe of Black River Limestone Products. The north opening located 150 feet south of the road measures 300 feet by 50 feet and is on the east edge of a low Paleozoic scarp. The quarry face is 30 inches to 4 feet in height. The stone is pink to red and green mottled, grey-weathering, aphanitic to fine crystalline, thin bedded lower Black River limestone. Beds range from 2 to 6 inches thick, with some thicker beds up to 24 inches. Some beds are grey and some red mottled. Red colouration is characteristic of the lower portions of the lower Black River formation. Vertical joints strike at N.5°E. and N.80°W. and are widely spaced. Stone is removed by drilling and plug and feather.

Six hundred feet south of the north opening is a second quarry with a 2-foot face opened along the east face of the limestone scarp for a length of 300 feet. Beds are 2 to 5 inches thick. Jointing is not regular but vertical joints at N.75°E. and N.5°E. were observed.

Ashlar and flagstone are the principal products.

Physical properties of the aphanitic reddish limestone (No. 29) from this property are as follows:

Compressive strength, p.s.i.,	maximum:	28375;
	minimum:	21500;
	average:	25708;

Absorption, 0.39 percent;
Bulk specific gravity, 2.77 ;
Weight per cubic foot, 173 pounds;
Abrasive hardness, 46.5.

Red Pamela limestone for building stone was quarried at one time from the Britnell quarry several miles to the west near Burnt River in lot 13, concession VI, Somerville township, Victoria county: see Parks (1912, p.225).

KINGSTON - NAPANEE AREA

Black River limestone beds ranging in thickness from 4 to 15 inches have been quarried extensively in the Kingston and Napanee areas for building stone. The upper part of the lower Black River (Pamelia) limestone and the lower part of the middle Black River (Lowville) limestone contain many beds of light grey, medium-bedded, microcrystalline limestone which weathers to an attractive silver grey. This limestone has been so widely used in the Kingston area that Kingston has been referred to as the "Limestone City". For many years the buildings at Queen's University were built of Kingston limestone from the Black River quarries, but recently since the last of the building stone quarries closed, Queenston limestone has been employed. The most readily quarried section of about 20 feet in thickness belongs to the middle Black River formation and outcrops along Division Street. Beds of sufficient thickness to produce mill blocks of limestone suitable for the modern cut stone industry are not

available and this has undoubtedly been one of the causes for the cessation of quarrying. The microcrystalline limestone is also quite brittle and tends to crack; the stone is susceptible to shock so that dynamite and blasting powder cannot be employed in quarrying for building purposes.

KINGSTON

Typical of the building stone quarries formerly operated in the Kingston area is Wallace's quarry on Patrick Street, described as follows by Parks (1912, pp.210-11):

"The quarry is situated on the margin of the bluff which has been opened in an almost continuous line of quarries. The present workings are about 400 feet long and have been carried back 200 feet into the hill. I am informed that 500 to 600 feet in, the various layers become so "tight" that they cannot profitably be worked. The succession of beds is as follows:

- 67 feet: overburden.
- 13 inches: good stone for general work but too hard to chisel.
- 6 inches: shelly.
- 13 inches: good stone.
- 7 inches: good sill bed.
- 4 inches: shale.
- 4 inches: shelly stone, rubble.
- 12 inches: good stone for general purposes but is seamy.
- 6 inches: shelly, rubble.
- 14 inches: good stone: specimen No. 63.
- 6 inches: good stone.

8 inches: good stone.
4 inches: good stone.
4 inches: good stone.
7 inches: good stone; coursing bed.
6 inches: good stone.
5 inches: good stone.
4 inches: good stone.
15 inches: good stone.
6 inches: good stone.
7 inches: good stone.
8 inches: good stone.
6 inches: good stone.
9 inches: good stone: specimen No. 64.
7 inches: good stone.
7 inches: good stone.
4 inches: good stone.
12 inches: good stone.

Total 24 to 25 feet.

"The jointing is irregular with general east and west direction for the main partings. Large stone can be obtained with ease and many blocks 12 feet long by 3 feet wide have been taken out."

"Although the stone is much alike throughout, the two beds from which specimens were selected as above are regarded by Mr. Wallace as representing the standard quality of his output."

Specimen No. 64 is described as follows: "the stone is exceedingly fine grained and of lithographic appearance."

The physical properties are as follows:

Specific gravity	2.725
Weight per cubic foot, lbs.	169.766
Pore space, percent	0.177
Ratio of absorption, percent	0.0651
Coefficient of saturation	0.4
Crushing strength, lbs. per square inch	29506.
" " after freezing	33420.
Tranverse strength	2100.

Chemical analysis:

Insolubles	4.20
Ferrous oxide	.57
Ferric oxide and alumina	1.01
Calcium carbonate	87.46
Magnesium carbonate	7.00
Sulphur	.042

"The removal of the stone is effected by sinking $2\frac{1}{2}$ inch holes to a depth of about 6 feet along a line 10 to 15 feet back from the face. The holes are placed about 8 feet apart; they are loaded with black powder and fired simultaneously. The thinner beds may be cut to size by lining with the chisel, etc. The thicker beds are cut by plug and feathers."

The increased interest in ashlar coursing stone may lead to future utilization of some of these thin bedded stones in the Kingston area. Goudge (1938, p.62) describes the Wehman building stone quarry active on Division street in the 1930's.

NAPANEE

Considerable tonnages of Black River limestone were quarried northeast of Napanee in the valley of the Napanee river from Napanee to Newburgh. Parks (1912, p.215) states that most of the good stone occurred at a low level along the river or in hollows, the hill tops being composed of thin shelly material. Bergins quarry (Parks 1912, p.212) was located close to town and was opened along the bluff for 400 feet with a width of 150 feet and a face of 16 feet, with beds ranging from 3 to 8 inches thick. The Pybus quarry two miles east of Napanee exposed 50 feet of stone in an opening 200 by 300 feet. Parks (1912, p.213) states that "the upper 15 feet is thin and shelly and is succeeded by a 10 inch bed of blue stone, a 20 inch bed of white and a 2 foot bed of blue. The 20 inch white bed is most prized; it is soft and easily dressed and has been used for trimming many of the buildings in Napanee. The formation is almost free from joints so that the stone may be obtained in practically any size desired This stone may be observed in the Church of England, the Court House, and in business blocks in Napanee. The white colour as well as the sharpness of angles is preserved for many years."

The Aylesworth quarry was located a mile north of Newburgh and was worked to a limited depth only. "The upper bed is from 12 to 15 inches thick and is underlain by two beds of from 10 to 12 inches each " (Parks 1912, p.214).

Parks (1912, p.215) gives the physical specifications of the stone as follows:

Specific gravity	2.717
Weight per cubic foot, lbs.	169.286
Pore space, percent	0.166
Ratio of absorption	0.061
Coefficient of saturation	0.26
Crushing strength, lbs. per square inch	29654.
" " after freezing	25756.
Transverse strength	2382.

The stone is a cryptocrystalline, grey Black River limestone which weathers white on exposure. This stone is among the whitest weathering of the Black River limestones.

CROOKSTON

Building stone was formerly quarried at Crookston along the C.N.R. line from massive bedded Black River limestone in lot 10, concession IX, Huntingdon township, Hastings county. The Gibson and Quinlan and Robertson quarries are described by Parks (1912, pp.218-220), who gives the following physical specifications for stone from a compact 3 foot bed about 7 feet from the top of the quarry:

Specific gravity	2.713
Weight per cubic foot, lbs.	168.135
Pore space, percent	0.699
Ratio of absorption, percent	0.26

Coefficient of saturation	0.11
Crushing strength, lbs. per square inch	18826.
" " after freezing	13935.
Transverse strength, lbs. per square inch	2545.

Goudge (1938, p.94) states that the quarries have been worked at intervals from 1890 to 1927 for building stone, monument bases and large dimension stone for engineering construction. These are among the most massive-bedded sections of the Black River formation. The piers for the South Shore and Victoria bridges at Montreal came from Crookston. Crookston limestone may be seen in the Catholic church and school at Belleville, (Parks 1912, plates XLVI, XLVII).

LONGFORD

LONGFORD STONE

Cryptocrystalline, white weathering, medium-bedded middle Black River limestone forms a bluff on the west shore of Lake St. John just north of Longford, in Rama township, Ontario county. A continuous line of quarries extended north for half a mile from the village between the lakeshore and the C.N.R. tracks. These quarries were first opened in 1883 and until 1933 the white-weathering middle Black River (Lowville) beds were quarried. Below these white-weathering limestone beds there is a section of 12 feet of lower Black River buff-weathering magnesian limestone on which quarrying was begun in 1933 to produce what was known to the trade as "Rama stone". The major production from the Longford

quarries was the white-weathering middle Black River stone, a harder, more durable stone than the Rama stone.

The quarry section in the middle Black River stone is given by Parks (1912, p.229) as follows:

18 inches: dark blue limestone, thin bedded, decayed; used for rubble and furnace flux.

9 inches: good average stone (specimen No. 152).

5 inches: good average stone, sill bed.

14 inches: high grade stone, (specimen No. 149).

7-14 inches: variable bed but good stone like 149.

20 inches: shelly, rubble only.

12 inches: good footing stone, (specimen No. 150).

14 inches: good building stone (specimen No. 151).

Base of workings

5 feet: shale and rotted material.

10 inches: good average stone.

27 inches: good average stone.

20 inches: good average stone.

12 inches: good average stone.

12 inches: good average stone.

12 inches: good average stone.

5 feet: brownish stone in different beds, friable, sandy.

"The 9 inch bed and the two 14 inch beds are regarded as the most desirable stone. The 12 inch bed second from the bottom is not so good for dressed work, but makes an excellent coursing stone. The lower 14 inch bed is the best for heavy construction; it is very solid and even in texture and is capable of being

removed in large blocks. One series of joints runs almost due east and west; the other set, however, has a direction a little west of north so that the blocks are not rectangular in shape. On the stripped surface, places were observed where the joints are sufficiently far apart to permit the removal of blocks 10 by 20 feet in size."

The white-weathering lithographic limestone has the following physical specifications (Parks 1912, p.230):

Specific gravity	2.71
Weight per cubic foot, lbs.	168.5
Pore space, percent	0.373
Ratio of absorption, percent	0.13
Coefficient of saturation	0.27
Crushing strength, lbs. per square inch	22968.
" " after freezing	21625.
Transverse strength, lbs. per square inch	2281.

The stone is hard and brittle.

Parks states (1912, p.231) that "with the exception of the top layer which is removed by the use of powder, all the stone is quarried by plug and feathers. It is found that holes 1 foot apart and 3 inches deep suffice for the splitting of the thickest layers. As the parting planes between the different beds are well developed nothing more than crowbars is required to raise the layers."

The white Longford stone has been very widely used in Toronto in churches and homes.

Among the buildings using Longford stone are the Roman Catholic cathedral and bishop's palace in North Bay, the C.P.R. station in Sudbury, the custom house and collegiate in Peterborough and the Church of England, Roman Catholic church, post office and library in Orillia.

RAMA STONE

LONGFORD QUARRIES LIMITED

The production of Rama stone has been described by Goudge (1938, pp.135-8): "the production of the buff and grey magnesian limestone, known to the trade as "Rama" stone, was begun (at Longford) in 1933 by Lake St. John Quarry Company Limited. The stone takes a good polish and is marketed for use as marble, as well as for exterior building stone. Because of its even texture and pleasing colour the buff bed has been used for sculpture. These strata were not reached by previous operators as they lie from 3 to 12 feet below the floors of the old quarries, and elsewhere are covered by 25 feet of nearly flat-lying, high calcium limestone that forms a bluff along the shore of the lake. The dense-textured, white-weathering, high calcium limestone is well known by the name of "Longford" stone throughout central and eastern Ontario, where, until 20 years ago, it was extensively used as a building stone. With the changing requirements of the construction industry, however, the demand for the dense-textured, brittle Longford stone, which is available only in relatively thin beds and is not well suited for working by machinery, became less and less and the quarries were finally closed."

"The buff and grey magnesian limestone was first quarried (1933) along the west shore of Lake St. John, but is now obtained from the floor of an old quarry a short distance to the north. To date seven beds of magnesian limestone have been uncovered but only the first, second and fourth beds, 32, 26 and 9 inches thick respectively, have been marketed. The second bed lies at the low water level of the lake and the others are below the lake level."

"A generalized section of the 39 feet of limestone exposed on the property is as follows:

1 to 4 feet: soil

3 to 5 feet: mostly heavily bedded, very fine grained, dark brown, high-calcium limestone, mottled with lighter brown high-calcium material and containing large fossil corals that have been replaced by white calcite.

7 feet: light creamy brown, dense-textured, high-calcium limestone in even beds 4 to 17 inches thick, separated by only the thinnest of shale partings. This 7 feet of beds was formerly quarried for building stone.

16 feet: less regularly bedded, dense textured calcium limestone in beds up to 20 inches thick, many of which are seamed with films of black shale, and interbedded with occasional thin beds of green shale. The lower beds of this part of the section are darker brown than those above, and the thicker beds are badly fractured.

32 inches: (First Rama stone bed) Buff and variegated, fine-grained magnesian limestone, mottled and veined with small crystals of

dark grey semi-translucent calcite. The top six inches of this is greyer and harder than the remainder and is frequently in a separate bed or cap. This bed yields the stone know as "Rama buff". Thin seams of clay-like shale separate this bed from the high-calcium limestone above and from the bed below.

21 inches: (Second bed) Pearl-grey, fine-grained magnesian limestone, very faintly mottled and also speckled with small crystals of dark grey calcite. In places a stylolitic parting occurs 4 to 5 inches from the top of this bed, which reduces the merchantable thickness to 16 inches. This bed yields "Rama grey" stone.

10 inches: (Third bed) Grey fine-grained hard magnesian limestone containing considerable pyrite and a number of thin horizontal films of black bituminous matter.

9 inches: (Fourth bed) Grey fine-grained magnesian limestone separated by a thin seam of green shale from the bed beneath.

7 inches: (Fifth bed) Grey fine-grained magnesian limestone.

28 inches: (Sixth bed) Brownish grey, fine-grained, magnesian limestone that takes a good polish.

32 inches (Seventh bed) Brownish grey, fine-grained, magnesian limestone similar to the bed above."

"In quarrying the blocks, the overlying high-calcium limestone is lightly blasted with black powder and after further loosening with crowbars it is removed by a derrick. The beds of magnesian limestone are quarried by drilling and broaching, supplemented by the use of plugs and feathers. Thin vertical seams of calcite occur in the two upper beds and are somewhat

more numerous in the first bed than in the second. These seams, however, only occasionally prove to be lines of weakness. Jointing is rectangular and widely spaced, permitting the extraction of large, sound blocks."

"Rama stone has been used for the exterior facing of the head office of the Imperial Bank at Toronto, and also for exterior trim in the post offices at Weston, West Toronto, Georgetown, Brussels, Cannington, Burks Falls and Kingsville in Ontario. As a polished marble it is to be seen in the Montreal postal terminal building, and in the post offices at Notre Dame de Grace (Montreal), Fort William, and Guelph, as well as in a number of buildings in Toronto."

SHELBURNE

A small building stone quarry was operated in the late 1920's by Ritchie Cut Stone Limited a mile and a half east of Shelburne in lot 32, concession I, Amaranth township, Dufferin county. The quarry measures approximately 80 by 100 feet and a face of 16 feet of buff, aphanitic, medium bedded Amabel dolomite is exposed. The quarry is situated on the southwest flank of a domical reef structure. The beds dip southwest at 10 to 20 degrees and the beds thicken to the southwest. One bed was observed to thicken from 9 inches to 36 inches in 80 feet down dip.

The stone is soft and easily worked. Vugs lined with calcite crystals are sometimes present and these detract from its use as dimension stone. This stone was used in the lobby interior at the East Block of the Ontario Parliament Buildings. Some ashlar was produced.

ERIN

A building stone quarry was operated four miles southwest of Erin station in lot 15, concession VI, Erin township, Wellington county in the early 1930's by Ritchie Cut Stone Limited. The stone is a medium-brown, buff weathering, aphanitic, medium to thick-bedded Guelph dolomite. It is exposed in a 16-foot face extending for 75 feet along the west bank of a small stream. Beds range from 8 inches to 2 feet in thickness. Some mill blocks of the stone which is known as "Wellington limestone" were removed but proved too irregular and seamy to yield substantial quantities of mill blocks.

The stone may be seen in the College of Pharmacy building on Gerrard street in Toronto.

Parks (1912, p.271) gives the following physical specifications for the Erin stone:

Specific gravity	2.853
Weight per cubic foot, lbs.	149.78
Pore space, percent	15.88
Ratio of absorption, percent	5.56
Coefficient of saturation	0.48
Crushing strength, lbs. per square inch	13183.
" " after freezing	14965.
Transverse strength, lbs. per square inch	2022.

BIBLIOGRAPHY

Goudge, M.F.

1938: Limestones of Canada, Part IV, Ontario; Canada
Dept. Mines and Resources, Report 781.

Parks, W.A.

1912: Building and ornamental stones of Canada; Canada
Dept. Mines, Report No. 100.

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