

# “Selecting Stone for Monumental Buildings”

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The article begins:

“When a great public building, a memorial, a fine residence or bridge is to be built, too much attention cannot be given to the selection of the materials that are to go into its construction. As stone in some form is to be the exterior facing, selection again become a matter of prime importance, for both exterior walls and decoration must serve as a barrier against the encroachment of the elements that the interior will be protected. In times past, in this country as in Europe and other parts of the world where great monumental buildings have been erected, all of the known and important stones have been examined for durability and decorative qualities. In some instances the judgement of the architects and builders has not been the best, or if the best stones available were selected, then the weather of the country as such as to militate against the use of any material without forecasting early decay and frequent repairs....”

Note: Also included on the second page of the scanned article is an article entitled, “**World’s Oldest Coral Reef**” (in Vermont). The article begins: “Vermont is a name associated with Marbles and Granites and, to think of the one brings to mind the others. It is with no little degree of wonder, then, that the announcement of Dr. Percy E. Raymond of Harvard University, that he has discovered within the confines of the state the World’s oldest coral reef...The reef is about forty miles northwest of Burlington and five mile east of Chazy, New York....”

This article, which begins on the next page,  
is presented on the Stone Quarries and Beyond web site.

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Peggy B. Perazzo  
Email: [pbperazzo@comcast.net](mailto:pbperazzo@comcast.net)  
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## Selecting Stone for Monumental Buildings

**W**HEN a great public building, a memorial, a fine residence or bridge is to be built, too much attention cannot be given to the selection of the materials that are to go into its construction. As stone in some form is to be the exterior facing, selection again become a matter of prime importance, for both exterior walls and decoration must serve as a barrier against the encroachment of the elements that the interior will be protected. In times past, in this country, as in Europe and other parts of the world where great monumental buildings have been erected, all of the known and important stones have been examined for durability and decorative qualities. In some instances the judgement of the architects and builders has not been of the best, or if the best stones available were selected, then the weather of the country was such as to militate against the use of any material without forecasting early decay and frequent repairs.

In the United States the selection of stone is not a matter of guess work, but of scientific rule and so the selection evolves itself into a choice of those stones best suited for the style of architecture and decorative details into which color injects itself as a dominant factor. In his more important work, it is a matter of history how Sir Christopher Wren invariably insisted that all stone after being quarried be allowed to harden and season for a year before being used in a masonry wall. This procedure is said to be responsible for the satisfactory results he obtained with stone that proved a failure in other buildings. The London climate and the sulphur fumes and other impurities in the air have worked havoc with stones that have withstood centuries of weather in less unsatisfactory places as regards these impurities. A case in point illustrative of the unhappy choice of a soft stone for the rigorous climate of Canada is that of a Montreal cathedral. This same stone in a milder climate would have lasted for centuries, while a harder stone would have saved the Montreal diocese the heavy expense of saving a well designed building through repairs, or through the use of outer preservative coatings.

Frequently the architect is called upon to make use of stone taken from the site of a proposed building and

then his problem is one of adaptation rather than selection. If the material is tough and not easily worked it would be folly to design a structure calling for wrought stone-work; if without cleavage the stone could not be used in course masonry effects such as rubble work, and if the beds run only a few inches thick massive effects will be out of the question. If the material be a coarse sand-stone the carvings and mouldings must be bold and large and the general style broad and simple. Granite also calls for a broad and simple style, while marble, because of its fineness of grain is the exact opposite of granite and can be carved into the most exquisite of designs. In the use of soft stones smooth finish and close joints must be the rule in order to prevent the accumulation of water. As a protection for these very soft stones a harder stone can be used for strings and hood mouldings. The selection of marble for its color and fullness of grain, rather than for its adaptability to carving, open the way for flat planes as the best means of displaying color effects. If for any reason marble is to be moulded large forms should be used, as the high lights of the smooth surface tend to disturb the figure.

In ancient times cost was not the dominant factor in the selection of stone as it is today and, despite the fact that a trifling difference in cost rules selection in many cases to the life and the extent of shortening beauty of a structure yet builders over-rule their architects and demand that the saving be made. Then in order of their importance the ruling factors in selection of stone may be said to be cost, color, prevailing fashion and durability. Color frequently is the determining factor and this coupled with the durability of a stone is known to have started a fashion and resulted in wide demand for the particular stones having the much to be desired color tones.

While fashion and foibles are not to be despised the nature of the building must be considered. A commercial building may become antiquated within 100 years, or even within fifty years and in their construction the architect can well consider a softer stone than he would use in a monumental structure such as a cathedral or memorial hall, a college or institutional house. Gener-

ally, however, it becomes the duty of the designer to obtain the best stone for the money available no matter what lesser considerations might warp his judgment. Having decided to use a certain stone it then becomes the architect's duty to assure himself that delivery from quarry and mills will be prompt, that the stone will be uniform and that it will be seasoned, for there is often



New Home of the Kearney National Bank, Kearney, N. J. A Structure of Pleasing, Yet Substantial Design, Especially Attractive for a Suburban Community. Exterior of No. 1 Buff Indiana Limestone furnished by the Indiana Quarries Company. Davidson Brothers, cut stone contractors. Salmans, Scrimshaw Company, architects and general contractors.

as much objection to green stone as to green lumber. That architects and builders and building committees may be assured that the stone they propose to use will meet all requirements of uniformity, color tones and that the quarry is equipped to make prompt deliveries, quarrymen and cut stone contractors welcome visits to their quarries and mills. Tables showing various tests for absorption, strength and other qualities pertinent to building stones, are always available, making this feature of the selection a matter of investigation rather than hear-say. Thus the selection of stone in America is not the task that it might be in countries where the industry is not firmly established with respect to quarrying methods, means of transport and location with respect to the building site. Stone in its natural state is of little intrinsic value, but when quarried, cut and perhaps carved it becomes a commodity of value. A quarry following antiquated methods of quarrying, poorly drained and operated by untrained men cannot compete with the well organized, well drained and well manned quarry of a competitor in the same district. For buildings of great size, therefore, it is well for the specifying architect to visit the quarry. In fact this is a practice followed by many noted architects and many buildings, especially monumental structures, were designed after the stone had been selected and assurances given that the quarry could produce stock of uniform grade and color and that deliveries could be made at specified periods as the work progressed.

### World's Oldest Coral Reef

Vermont is a name associated with Marbles and Granites and, to think of the one brings to mind the others. It is with no little degree of wonder, then, that the announcement of Dr. Percy E. Raymond of Harvard University, that he had discovered within the confines of the state the World's oldest coral reef, was received with surprise in geological circles. Dr. Raymond describes his discovery in the Report of the Vermont State Geologist for 1923-24, devoting considerable space to the location of the reef and a diagram of a portion of it. The reef is about forty miles northwest of Burlington and five miles east of Chazy, New York. The outcrop occurs in a pasture within a short distance of the Goodsell quarries. The bare rock rises above the surrounding land and is covered with a turf and in places with cedar trees. The best exposure is rectangular in form, about 700 feet long by 200 feet wide,

but the reef, according to Dr. Raymond, can be traced to the south for a distance of half a mile. The corals are most abundant at the highest point of the relief, which is about seven feet. The surface shows numerous patches of corals grouped together in irregularly over areas separated from each other by dark grey rock made up of calcareous sand, and columnals of various pelmatozoans. These patches are often wholly or partly engirdled by areas of rock which weathers to a rusty yellow, and which contains great numbers of Stromatocera and Bryozoa. The individual heads of coral, an undescribed form to be known as Lamotia, are mostly white, and from six to one foot in diameter. Many are, however, smaller, although one specimen over eighteen inches in diameter was collected. In places individuals are grown together to make masses over three feet across, and in a single patch about twelve feet in diameter there are over 100 heads which are so close together that they cover practically the whole surface. There are several such areas.

Dr. Raymond says in his article that it is not claimed that this ancient coral reef is either an atoll, a barrier, or a fringing reef, and therefore unnecessary to show its relation to any land. It is maintained, however, that it was a coral reef, in the sense that it was a mass of coral growing above the general level of the surrounding sea floor and projecting relatively near the surface.