

# ***Indiana Limestone: The Aristocrat of Building Materials***

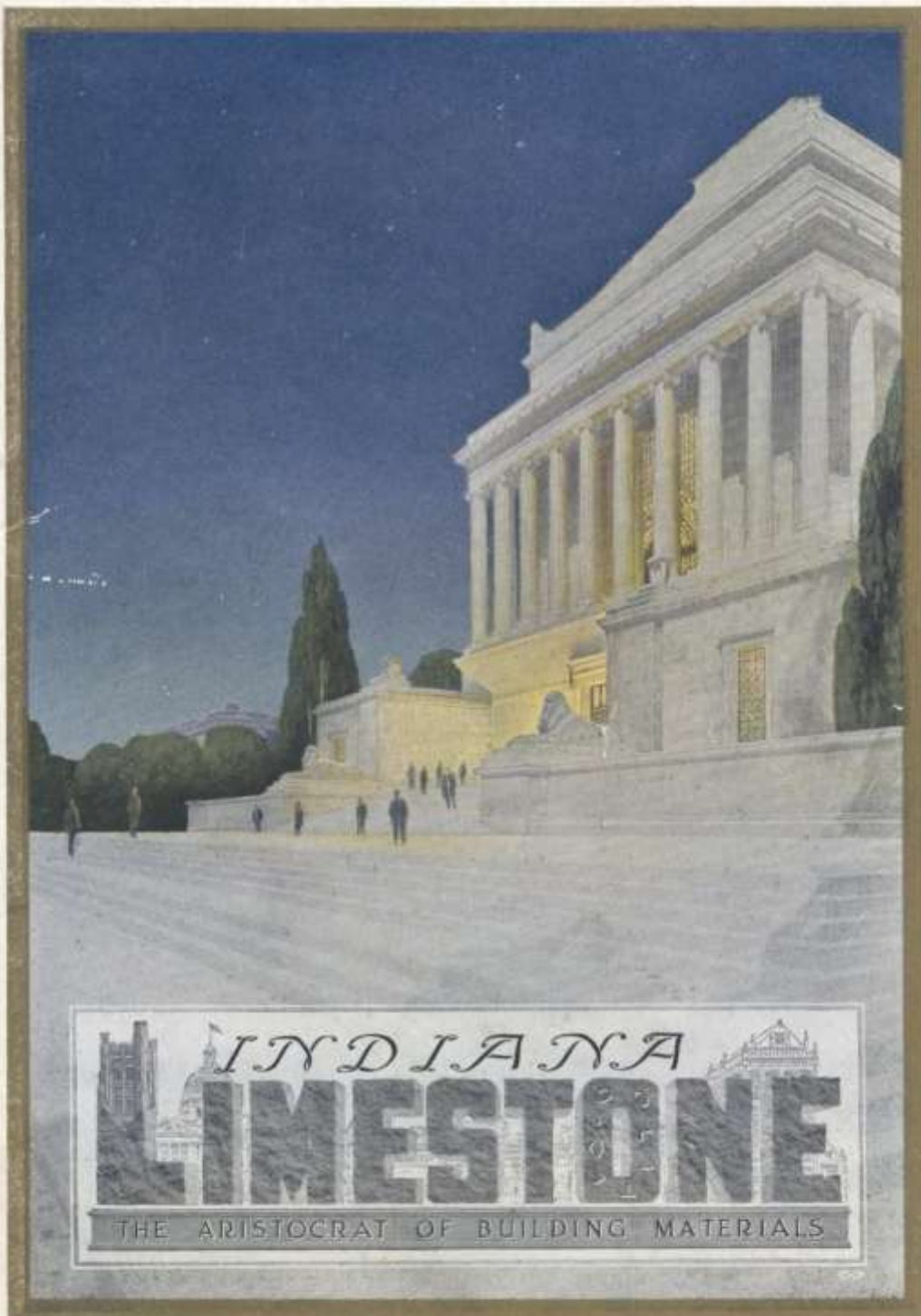
Vol. 1, Sixth Edition, June 1920

Indiana Limestone Quarrymen's Association,  
Bedford, Indiana

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

<http://quarriesandbeyond.org/>

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September 2012



JOHN RUSSELL POPE, N. Y., ARCHITECT

" . . . Dull would be he of soul who could pass by  
A sight so touching in its majesty."—WORDSWORTH

6th EDITION, JUNE, 1929

# INDIANA LIMESTONE

THE ARISTOCRAT OF BUILDING MATERIALS



Seal of the University of Indiana carved in Indiana Limestone for the exterior of the "Old College Building" in 1855 and still perfect (See page 31)

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VOLUME I—SIXTH EDITION

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June, 1920

Indiana Limestone Quarrymen's Association  
BEDFORD, INDIANA

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**T**HIS booklet, Volume 1 of the series on Indiana Oölitic Limestone, is intended to contain information of interest to both Architect and Layman. It does not treat upon any specific use of Indiana Limestone in detail, nor by any means pretend to cover the subject of Indiana Limestone completely.

Other Volumes, each covering a particular phase of the use of Indiana Limestone for building construction and for other purposes, are being prepared and when ready will be sent to anyone desiring them. The publication of these Volumes will be announced from time to time in the advertising of the Association.

The following Volumes are in print at this time (June 1920) and will be sent post free to anyone interested upon receipt of postal request:

Volume 4. The Indiana Limestone Bank Book. A booklet of information concerning the use of Indiana Limestone for Bank buildings.

Volume 27. Prize designs for Indiana Limestone Houses of moderate size and cost.

The following Volume\* is now in course of preparation and will be available soon:

\*Volume 6. Use of Indiana Limestone in School Buildings.

Standard Specifications for the handling, cutting, and setting of Indiana Limestone, data on setting mortars also other technical information and data that is now available and of interest to Architects and Builders, will be cheerfully furnished.

The Indiana Limestone Quarrymen's Association will be pleased to answer any specific questions regarding the grades, finishes, uses, etc., and proper methods of detailing, or to render any assistance within its power to assist Architects and prospective Builders in obtaining the desired results.

Samples of the stone to illustrate the color, texture and finishes will be cheerfully furnished to Architects or Builders desiring same.

*Address*

Indiana Limestone Quarrymen's Association

B E D F O R D , I N D I A N A

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EVER since the days when it took one or two months in a sailing vessel to go to Europe, Americans, in constantly increasing numbers, have made the trip; made it mostly as a pilgrimage to the art and architecture of the Old World. They have worshiped at the shrines of sincere art and sincere craftsmanship.

Before the great Gothic cathedrals (largely built of limestone, by the way) they have stood in admiration and awe pointing out one to another the elaborate stone sculpture and tracery, the feathery spires and pinnacles; viewing with profound respect and delight the wonderful craftsmanship of the stone walls and buttresses and the manner in which stones have been chosen, not for their absolute likeness in color, nor for their perfect similarity of texture, but for the infinitely delicate variety of both tone and texture which they show, thereby making even the plainest and most uneventful surfaces of walls interesting and attractive to the eye.

Having paid their esthetic respects, no doubt from the fullness of their hearts, to the works of the Old World masters; having had their holiday and turned "back to the plow," they have (with a small but very rapidly growing class of exceptions) forgotten all the nobility and beauty which is possible to architecture and built their own buildings by radically different standards or by no apparent standards at all.

When they have used brick it has been because there happened to be a brickyard handy; when they have used stone it has been because there was a quarry nearer than the nearest lumber mill; when they have used terra cotta it has been because some clever salesman has talked them into a fleeting admiration for the Yankee ingenuity and American commercial sufficiency which has made a clever imitation of genuine stone out of burnt clay, shaped into a hollow shell and glazed like crockery. Likewise when they have used an imitation stone of some cement, sand and crushed stone or gravel composition cast in molds to simulate the natural product as fashioned by skilled craftsmen, it has been because they were the victims of clever salesmanship or



Trinity Building, New York City; Francis H. Kimball, Architect. Often referred to as the great Fire Wall of lower New York. Indiana Limestone from sidewalk to skyline, like many of the greatest and most beautiful office buildings in New York, Chicago and other large cities.

*Four*

“Trinity Building, New York City; Francis H. Kimball, Architect. Often referred to as the great Fire Wall of lower New York. Indiana Limestone from sidewalk to skyline, like many of the greatest and most beautiful office buildings in New York, Chicago and other large cities.”



# INDIANA LIMESTONE

THE ARISTOCRAT OF BUILDING MATERIALS

promotional effort and have accepted at its apparent face value, a cheap and inferior imitation of uncertain permanency, for nature's own product.

At about the time of the Civil War a few of the excellences of Indiana Limestone as an architectural material came to the attention of a small public. From the time when the first carload was shipped to Chicago from Bedford, down to the present, the use of Indiana Limestone in all the worthier sorts of buildings has increased by leaps and bounds until today substantial proportions of all the monumental buildings of the country of all classes are built of it.

One of the best qualities of this stone and the one which was largely instrumental in calling attention to it, namely, its uniformity and easy working quality has, in a measure, proved to be detrimental to its more general use. Great quantities of perfectly homogeneous fine grain stone being available, builders, in spite of the lessons of European architecture and despite the fact that several distinct kinds of Indiana Limestone are to be found in every quarry, have until late years made it a practice to insist upon absolute uniformity in tone, color and texture throughout a building. Although many wonderful buildings have been built in this way, the practice has tended to rob the stone of its distinction and increase the temptation to use factory-made substitutes in its place.

Happily this practice, except in those legitimate cases where for special reasons uniformity is desired, is decidedly on the wane; and, through the new American demand for sincerity in artistic expression, which is only possible in a worthy and genuine material, Indiana Limestone, "The Aristocrat of Building Materials," has come into its own.

Why we, living on an Earth which is nothing but one great solid rock covered with a thin skin of soil and water; why we, with the authority of the whole history of human civilization to lead us in the direction of stone for a building material, should permit ourselves, even temporarily, to be turned away from it or to express ourselves in it wrongly it is hard to see. The only likely explanation seems to be

*"The Aristocrat of Building Materials"*



Shelby County Courthouse, Memphis, Tennessee. Hale & Rogers, Architects.  
A fine example of monumental beauty in Indiana Limestone.

“Shelby County Courthouse, Memphis Tennessee. Hale & Rogers, Architects  
A fine example of monumental beauty in Indiana Limestone.”



the youth of the American nation and its youthful enthusiasm for commercial efficiency.

Many of us get even more enthusiastic over a clever imitation or a substitute that "will do" (if it is salable) than we do over the original, worthy, true and genuine thing on which the imitation is based. Of course this state of mind is wrong and with the zealous assistance of the sincere and able architects of the country it is rapidly giving way.

## Limestone

Limestone, because of its workability and especially pleasing qualities, has always easily held the leadership among building stones wherever it could be had at all. The principal Pyramids are built of it. All European countries are filled with beautiful and historic examples of its use. Most of the great Gothic cathedrals that are well preserved to this day are wrought from it. St. Paul's Cathedral, and other ancient buildings in London are of Limestone—Oolitic Limestone. They stand among the greatest and most beautiful of man's works of building art, venerable and venerated.

## Indiana Limestone

Yet the celebrated Portland Limestone of England, which is undoubtedly the best European building stone, is but a poor second to that great deposit which occurs in Lawrence and Monroe counties, Indiana, known geologically as the Indiana Oolitic Limestone.

Although a large proportion of the many kinds of buildings of any real importance in the United States are built of this material, its value and importance to the building industry is but half-realized and comparatively few people even know it by name.

Indiana Limestone is just the sum of all the qualities which an architect, an engineer and a prospective builder together could ask for in a building material. It is beautiful in color and in texture; it is extremely strong. It can be worked with great facility and perfection. Yet, even when

*"The Aristocrat of Building Materials"*



Calvary Church, Pittsburgh; Cram, Goodhue & Ferguson, Architects. From piers to pinnacles all Indiana Limestone. The full height of the noble spire is included in this statement.

*Eight*

“Calvary Church, Pittsburgh; Cram, Goodhue & Ferguson, Architects. From piers to pinnacles all Indiana Limestone. The full height of the noble spire is included in this statement.”



finely carved, it is, from any practical standpoint, everlasting. It is abundant, and this with its workable quality makes it far from costly. Its fire resisting quality is high. It can be had in blocks of practically any size. Finally, it bears upon its face the stamp of the original, the true and genuine, product of the great unfaltering hand of Nature, which has placed it far above the power of man's efforts to imitate.

In beauty, and dignity, the first consideration in a building material, Indiana Limestone is beyond compare. First, it is to be had in various shades and textures nearly all of which are found in the same quarry and although certain distinctive varieties are more prevalent in certain portions of the deposit, a range of color and texture is produced by nearly every quarry. Thus a choice of effects can be had.

### Buff Indiana Limestone

The so-called "buff" Indiana Limestone is very extensively used, particularly the finer textured variety. The beautiful effects to be obtained by the use of the coarser or "Rustic buff" for the field work of walls and for other purposes should not be overlooked. This stone when sawed across the grain and combined with carved trim of the finer variety is especially suitable for certain types of building including residences. As in other cases, this designation (buff) describes "buff" Limestone but poorly. When it comes from the quarry it is what might perhaps be called a sort of buff, but on exposure to the air it quickly changes to a beautiful yellowish gray which never alters thereafter, except for the better, though exposed to all sorts of atmospheric conditions, for hundreds of years. Since, in our "young country," Indiana Limestone has been used for building only about fifty years, this would seem at first sight a hard thing to prove. But it must be remembered that we are talking of civilization's first building material, the "Rock of Ages," part and parcel of Mother Earth. It is the naturally exposed ledges of Indiana Limestone, which have resisted the attacks of the elements for untold centuries, which prove its permanence in color as well as in form.





Federal Government Building and Post Office, Oklahoma City, Oklahoma. A large proportion of all United States Post Offices are now built of Indiana Limestone, because the stone has stood not only the test of time and use, but the searching scientific tests of the Government laboratories.

“Federal Government Building and Post Office, Oklahoma City, Oklahoma. A large proportion of all United States Post Offices are now built of Indiana Limestone, because the stone has stood not only the test of time and use, but the searching scientific tests of the Government laboratories.”

## Gray Indiana Limestone

Buff Limestone comes from the upper part of the quarry. From the lower part comes the beautiful gray (sometimes called "blue" by the trade). When freshly quarried it is a rather dark bluish-gray, which changes on seasoning, (exposure to light and air) to a silvery, hazy gray very beautiful and pleasing to the eye. In the color, both of buff and of gray stone, there is an indescribable softness, a wonderful depth of tone which belongs to Indiana Limestone alone.

## Variegated Indiana Limestone

The rarer Limestone of mixed colors (the trade calls it "mixed stone"), occurs in the quarry only where the buff stone joins the gray. It is variegated in color, no two blocks being exactly alike, thus capable of producing, when laid up in the wall of a building, an effect of infinite and beautiful variety, sometimes described as "vibrant." Even the plainest unbroken wall may be rendered interesting by the effect of texture which the variegated stone gives. Properly handled by a skillful architect it can also be so used as to convey the impression of dignified maturity in a new building.

Cram, Goodhue & Ferguson, architects, of New York, who are famous as creators of Gothic architecture in America, have so used the Variegated Indiana Limestone in several notable churches with telling effect. Among these is the Fourth Presbyterian Church of Chicago, which is illustrated on page 12.

There are many buildings in America built of the uniform buff and gray limestones for which a European architect, his imagination influenced by the daily contact with buildings of venerable age, would have chosen the variegated stone. Its use where special effects are desired, is rapidly increasing among thoughtful architects, however, especially for churches and public buildings (except those of classic design), although its comparative scarcity must of course preclude the possibility of its use becoming general.

*"The Aristocrat of Building Materials"*

*Elenox*





Fourth Presbyterian Church, Chicago; Cram, Goodhue & Ferguson, Architects; Howard Shaw, Associate Architect. Variegated Indiana Limestone throughout. Note the delicate and interesting variety of tone in the walls due to the rare beauty of the Variegated stone.

*Twelve*

“Fourth Presbyterian Church, Chicago; Cram, Goodhue & Ferguson, Architects; Howard Shaw, Associate Architect. Variegated Indiana Limestone throughout. Note the delicate and interesting variety of tone in the walls are due to the rare beauty of the Variegated stone.”



The Variegated stone is particularly suitable for the construction of residences where the color and texture may be called upon to add interest to an otherwise simple design and replace the architectural detail of a more elaborate structure. Here also the variation of color and marking, while taking nothing from the dignity of the building, lends a homelike and livable atmosphere to it, compared with the more formal suggestion of the stone of uniform color and thus tends to make *homes* of houses.

### Special Varieties

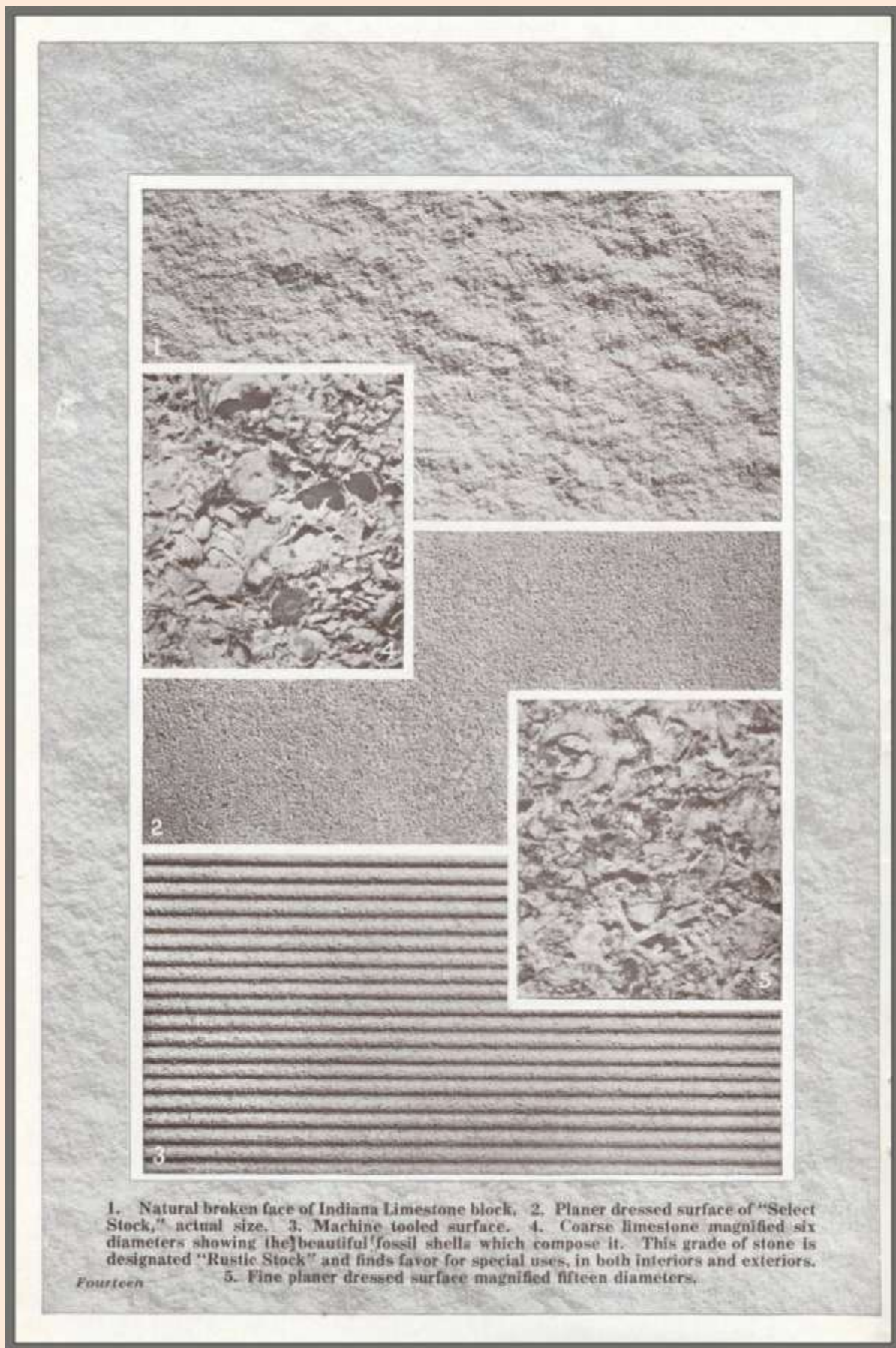
In addition to the main varieties of Indiana Limestone just described there should be mentioned the following which are in demand for special purposes.

1. A stone of occasional occurrence and of rich dark and distinctly bluish gray color. 2. A rather scarce variety, extremely hard and nearly pure white, of very fine and somewhat crystalline structure. 3. An extremely hard variety of gray, very useful for base courses, steps and similar purposes. 4. An especially hard buff selected for these same purposes. 5. Indiana Travertine, a variety of Indiana Limestone of special decorative possibilities which has an appearance somewhat like the much used and distinctive foreign Travertine.

### Structure

The structure of Indiana Limestone is very interesting geologically. The formation is called Oolitic from the Greek *ὄον*, egg, and *λίθος*, stone, because the many little bodies of which it is composed suggest the roe or eggs of fish.

In the Lower Carboniferous or Mississippian age Indiana was the bed of a great inland sea which abounded in small shell-bearing animalculae, mostly bivalves and univalves, and of hundreds of different species. Dying as they did by hundreds of thousands of millions through centuries of time, their shells, mostly smaller than pinheads, and some of microscopic size, formed on the sea floor a great massive bed of carbonate of lime over 97% pure.



"1. Natural broken face of Indiana Limestone block. 2. Planer dressed surface of 'Select Stock,' actual size. 3. Machine tooled surface. 4. Coarse limestone magnified six diameters showing the beautiful fossil shells which compose it. This grade of stone is designated 'Rustic Stock' and finds favor for special uses, in both interiors and exteriors. 5. Fine planer dressed surface magnified fifteen diameters."



To examine any piece of Indiana Limestone with a powerful glass is to lay before the eye a most entrancing exhibit of the minute sea life which existed no one knows how many hundreds of thousands of years ago. There are shells like those of tiny oysters, tiny clams; shells like tiny snails, tiny bits of lace, and tiny things you never saw before.

Indiana Limestone consists wholly of these shells cemented together with a film of similarly pure carbonate of lime.

In certain corners and pockets of the Limestone quarries and at the thin edges of the stratum where evidently the sea water was shallow, large fossil shells are abundant, but the stone containing the large fossils is not ordinarily used as building material.

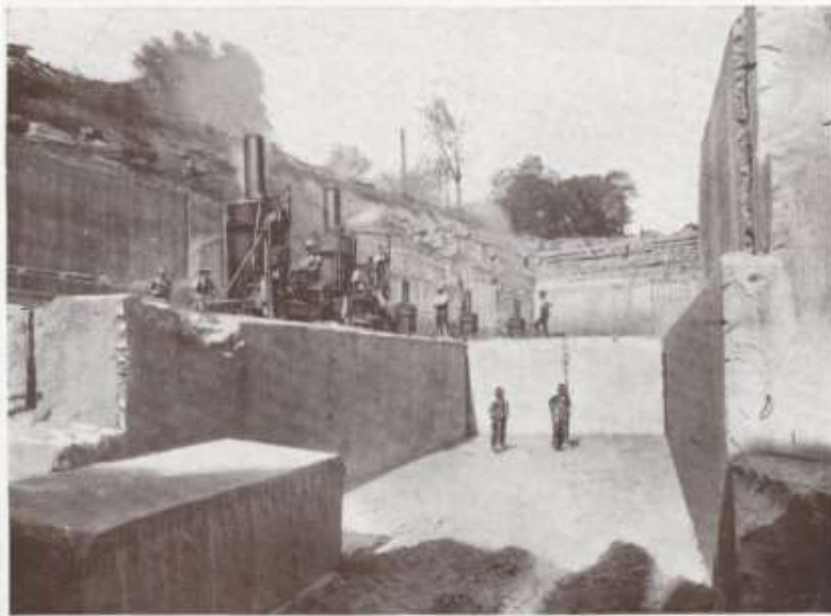
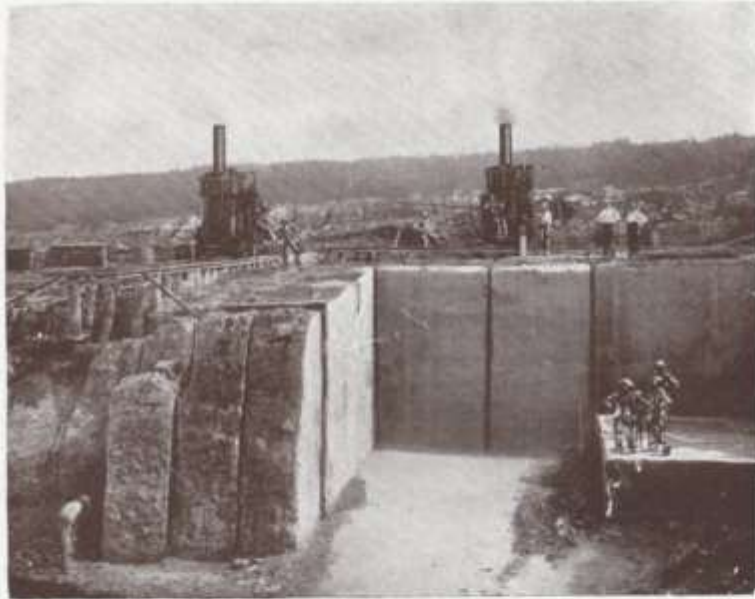
It is because Indiana Limestone is composed almost entirely of pure shell lime with only an infinitesimal proportion of silica, magnesia, and oxide of iron that it is so inert chemically as to resist perfectly the corrosive gases and acids contained in our smoky city air.

The expert testimony of Geologists attest this fact even under the worst conditions of atmospheric exposure. This is a most valuable quality for all buildings of a permanent character.

## Texture

The texture of Indiana Limestone varies from almost invisibly fine to rather granular. For carved interior work and sculpture the very finest, most homogeneous texture is frequently demanded, but discriminating architects now rarely require it also for general exterior use, giving preference to the varieties having somewhat coarser grain for such purposes. The present, and unquestionably the right practice, is to avoid the more nearly monotonous effect of too perfect uniformity throughout, by using both finer and more pronounced grain in proper proportions to get what is known architecturally as "texture" in the wall itself, except when, for special reasons, uniformity is desired. Some architects prefer to use the fine grained stone for the lower courses of their buildings, and the more granular stone higher up.





Two views of quarrying operations showing with what precision the great blocks are channeled out and broken up. Notice the vast surfaces without noticeable crack or blemish. Indiana Limestone contains no constituent which affects or tends to affect adversely its appearance either at first or after any length of time.

*Sixteen*

“Two views of quarrying operations showing with what precision the great blocks are channeled out and broken up. Notice the vast surfaces without noticeable crack or blemish. Indiana Limestone contains no constituent which affects or tends to affect adversely its appearance either at first or after any length of time.”

## Practical Qualities

If Nature had set about laying down the Indiana Limestone deposits with no other end in view than man's convenience, she could not improve on what she has done. This stone when it comes from the quarry is not too hard to be cut with the greatest ease into any required architectural or sculptural shapes, yet is tough enough to be carved and undercut into the most delicate tracery or ornament and when exposed to the air for a time as in a building and has seasoned, becomes quite hard and practically everlasting.

Most of the simpler architectural forms, such as ashlar blocks, sills, lintels, moulded courses, rails, copings, balusters, columns and plain moulded cornices are turned out with the greatest ease by machinery with none of the great cost of hand tool work, but with all its character and with the result that Indiana Limestone can be produced and delivered at comparatively low prices with the facility and promptness of a manufactured article.

Considering the dignity and worth imparted to any building by even a porch or entrance feature of this stone and its wide usage as a trim for all sorts of moderate cost buildings the importance of this workable quality is appreciated.

## Why Indiana Limestone is Easily Worked

It is not only its workable quality, however, which makes Indiana Limestone so kind to the stone cutter, to the architect or artist who designs the building or statue, and to the man who pays the bills. There are plenty of kinds of stone soft enough to cut readily, which are not workable, and plenty more not worth working. Indiana Limestone is a massive formation, homogeneous, tough and free from the cleavage planes or partings along which some stones split or scale on exposure to the weather. Many stones have a distinct layer formation, and consequently will split in one direction more readily than in another. Indiana Limestone, on the contrary, will split, chip or cut with almost equal facility up and down, crosswise, or at any angle.

*"The Aristocrat of Building Materials"*



# INDIANA LIMESTONE

THE ASSOCIATION OF BUILDING MATERIALS



Bird's eye view of the new Grand Central Terminal Group, New York City (New York Central Lines); Works. This is one of the greatest building projects of modern times, and the terminal is of Indiana Limestone. The famous residence of Mr. George W. Vanderbilt, a director of this railroad, is also of Indiana Limestone, and the knowledge which Mr. Vanderbilt thus gained of the virtues of this stone had much to do with its selection.

Eighteen

“Bird’s eye view of the new Grand Central Terminal Group, New York City...”  
(left side of photo – see below for combined photo)



# INDIANA LIMESTONE

THE ARCHITECTURE OF BUILDING MATERIAL



new Grand Central Terminal Group, New York City (New York Central Lines); Warren & Wetmore, Architects; the greatest building projects of modern times, and the terminal is of Indiana Limestone. "Biltmore," the George W. Vanderbilt, a director of this railroad, is also of Indiana Limestone, and it is said that the illustrious Mr. Vanderbilt thus gained the virtues of this stone had much to do with its selection for the great terminal.

Nineteen

"Bird's eye view of the new Grand Central Terminal Group, New York City..."  
(right side of photo – see below for combined photo)

# LIMESTONE



Bird's eye view of the new Grand Central Terminal Group, New York City (New York Central Lines); Warren & Wetmore, Architects. This is one of the greatest building projects of modern times, and the terminal is of Indiana Limestone. "Biltmore," the famous residence of Mr. George W. Vanderbilt, a director of this railroad, is also of Indiana Limestone, and it is said that the intimate knowledge which Mr. Vanderbilt thus gained of the virtues of this stone had much to do with its selection for the great terminal.

"Bird's eye view of the new Grand Central Terminal group, New York City (New York Central Lines); Warren and Wetmore, Architects. This is one of the greatest building projects of modern times, and the terminal is of Indiana Limestone. 'Biltmore,' the famous residence of Mr. George W. Vanderbilt, a director of this railroad, is also of Indiana Limestone, and it is said that the intimate knowledge of Mr. Vanderbilt thus gained of the virtues of this stone had much to do with his selection for the great terminal." *(This is a combined view of the separate pages 18 and 19 shown on previous pages. Peggy B. Perazzo)*





Above: the Prevost's Tower, University of Pennsylvania, Cope & Stewardson, Architects, shows what beauty and dignity is added to an otherwise plain wall of brick, by trimmings of Indiana Limestone. This applies with equal truth to any rough structural material. Below: a column of the building shown on our cover, 30 feet, 2½ inches long and 4 feet, 2 5/8 inches in diameter, is being turned on a lathe.

*Twenty*

“Above: the Prevost’s Tower, University of Pennsylvania, Cope & Stewardson, Architects, shows what beauty and dignity is added to an otherwise plain wall of brick, by trimmings of Indiana Limestone. This applies with equal truth to any rough structural material. Below: a column of the building shown on our cover, 30 feet, 2 ½ inches long and 4 feet, 2 5/8 inches in diameter is being turned on a lathe.”

## Stone Cut Up by Diamonds

The diamond saws generally used are circular saws with teeth of diamonds set into them. These teeth are true diamonds, but unlike the costly jewels that grace dainty fingers, they are not transparent, and consequently have no value as jewels, but being the hardest substance known, they can actually cut through hard stone at the rate of several inches per minute.

The blocks and slabs as they come from the saws of course show slightly the marks of the saw teeth, and these are either mechanically rubbed or planed smooth (Fig. 2, page 14), machine-tool finished (Fig. 3, page 14), or hand dressed.

An astounding process which furnishes an everyday sight at the stone cutting plants is the turning of stone columns on a lathe apparently with the greatest ease. (See cut, page 20). The long rough blocks are clamped and centered in a lathe, and, slowly revolving, are turned down with automatic precision by a chisel-like cutter to any required dimensions. This makes the hewing of stone columns a comparatively simple matter, and turned work, from small posts or balusters to massive columns, a single one of which is a big carload, is handled with ease and perfect accuracy.

## Large Scale Production

The production of Indiana Limestone is a great modern industry in the truest sense of the term.

If your conception of what it may be like is based on youthful memories of "the old stone quarry" where you probably used to hide or swim as a youngster, you would surely be astonished at the actual facts.

The Indiana Limestone industry is organized on what may be termed a factory basis. Two whole counties are liberally sprinkled with enormous quarries from which *mountains* of Indiana Limestone have been taken. Millions of dollars are invested in modern machinery, equipment and buildings, and a network of railway spurs. Great and highly organized forces of men are employed.

*"The Aristocrat of Building Materials"*





The home of Mrs. S. R. Hitt, wife of the late Senator Hitt; John Russell Pope, Architect. \* An Indiana Limestone house of stately elegance. Lower picture: A trainload of great blocks from which Statuary is to be carved. One block makes a big carload.

*Twenty-two*

“The home of Mrs. S. R. Hitt, wife of the late Senator Hitt; John Russell Pope, Architect. An Indiana Limestone house of stately elegance. Lower picture: A trainload of great blocks from which Statuary is to be carved. One block makes a big carload.”

## Strength

An astonishing thing about this astonishing stone is that in spite of its easy-working quality it is extremely strong. Few building stones in commercial use compare with Indiana Limestone in this respect.

The average crushing strength of seasoned Indiana Limestone in two-inch cubes is over 10,000 pounds per square inch and the freshly quarried stone before hardening will develop a crushing strength of well over half that amount. In units of the sizes ordinarily used for building it is even stronger. Furthermore unlike most building stones it is unnecessary to set this stone with the grain in same position as in the quarry bed, as it possesses strength in all directions.

The weight borne by the piers which support the enormous (Portland, Eng.) limestone dome of St. Paul's Cathedral in London is only about 278 pounds per square inch. Even the solid masonry shaft of the Washington Monument, 555 feet high, puts a pressure on its foundation of only about 313 pounds per square inch; and the stone piers of Brooklyn bridge, supporting the vast weight of the causeway in addition to their own weight, exert a pressure of but 396 pounds per square inch on their bases. It is thus easily seen that Indiana Limestone can support very much more than any load likely to be put upon it.

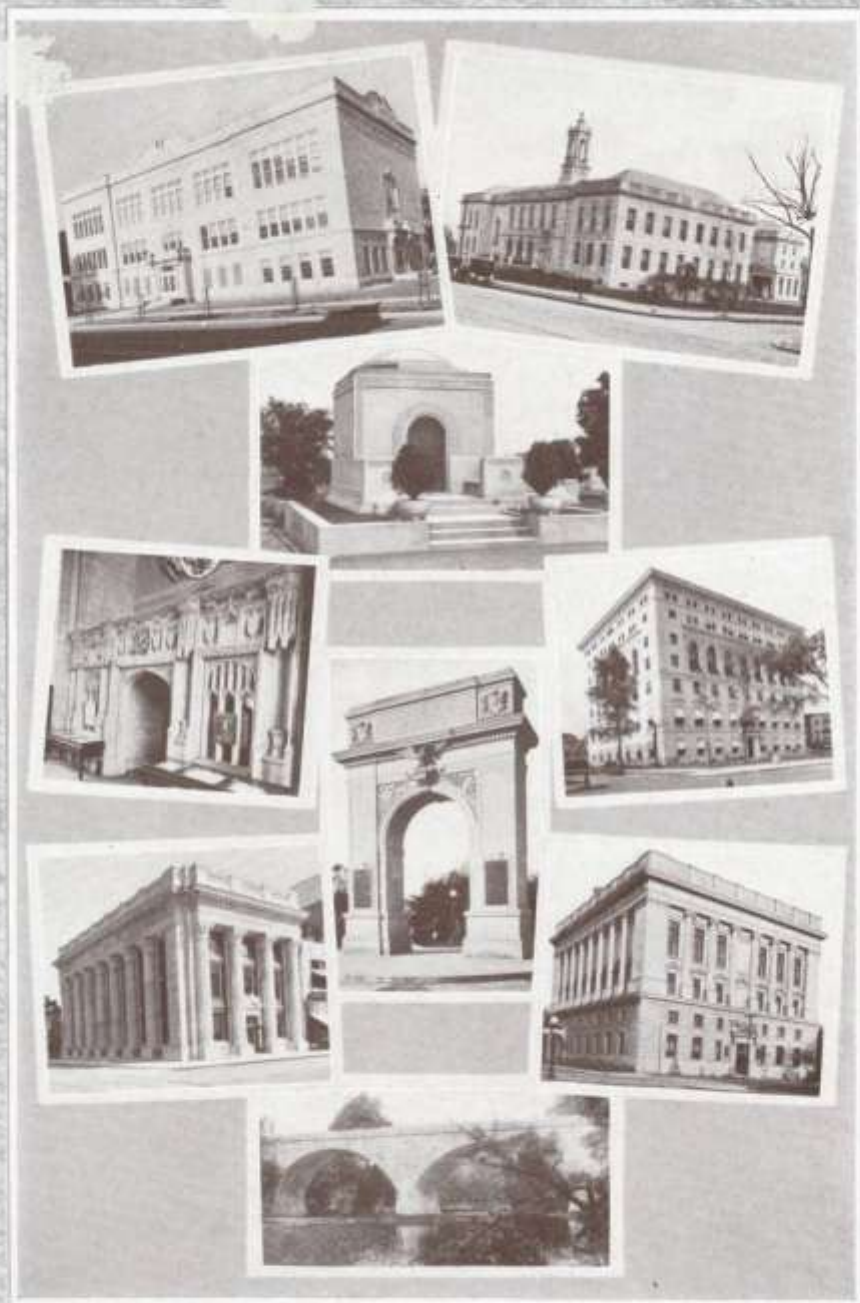
## Elasticity

Perhaps the quality of Indiana Limestone that the layman would be least likely to expect is its great elasticity. A bar of Indiana Limestone three or four feet long can be noticeably bent or deflected by the application of sufficient pressure, and, when released, will instantly spring back to its original straightness. When struck with a hammer it gives out a clear, metallic bell note almost like that of a bar of steel. This means that Indiana Limestone is the most elastic of all kindred substances.

At first glance one is inclined to class this quality as "interesting but not important." Yet as a matter of fact

*"The Aristocrat of Building Materials"*





Group showing the varied use of Indiana Limestone, from the rough masonry bridge to the beautifully carved interior screen of a university library, including a school, bank, town hall, club, Masonic temple, mausoleum and memorial arch.

*Twenty-four*

“Group showing the varied use of Indiana Limestone, from the rough masonry bridge to the beautifully carved interior screen of a university library, including a school, bank, town hall, club, Masonic temple, mausoleum and memorial arch.”

the power to submit to distortion without permanent deformation is among the most valuable qualities a building material may have.

Consider the strain put upon a block of stone whose inside surface within a building may be 50 or 60 degrees hotter or colder than its outside surface exposed to the weather. One side of the block is contracted, and the other expanded, and in addition to the internal stresses thus created the enormous pressure being put upon it by the expansion of its fellows. Consider a change of temperature between midnight and noon of 50 to 70 or more degrees which often occurs in perpendicular walls exposed to direct sunlight. Only an elastic material can withstand this year after year without damage. *This quality alone makes Indiana Limestone the ideal material for the enclosure walls of steel frame structures* and is one of the great points (to say nothing of its artistic merits) by which Indiana Limestone shows its wonderful adaptability to building purposes and also one of the great points by which manufactured substitutes for it always fail.

### Blocks of Any Size to Be Had

The only limit to the size of the blocks of Indiana Limestone which may be had is what a derrick may lift and a freight car carry. The stone is ordinarily cut from the quarry ledge in blocks much larger than it is possible to lift out (see cut, page 16) and then split up into less unwieldy sizes before lifting.

Although this is no special advantage with regard to the majority of building units it makes Indiana Limestone invaluable for certain purposes. Large statuary groups and monuments can be sculptured from single pieces of stone. Each of the Sphinxes in front of the building on the cover of this book were cut from a single block,  $16\frac{1}{2} \times 7\frac{3}{4} \times 8\frac{1}{2}$  feet in size and weighing about 200,000 pounds as it came from the quarry. One-piece columns and pedestals of most massive and impressive dimensions (see single-piece columns over 30 feet tall in building on cover) can readily be had. The very essence of a beautiful column is in its imposing

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"Before and After." The National Union Bank Building withstood the terrible test of the great Baltimore fire so well that the Indiana Limestone front was afterward put into first-class condition for a few hundred dollars. As you see, the principal damage was caused by the fall of adjacent buildings. Here is conclusive proof of high fire-resistance.

*Twenty-six*

"'Before and After.' The National Union Bank Building withstood the terrible test of the great Baltimore fire so well that the Indiana Limestone front was afterward put into first-class condition for a few hundred dollars. As you see, the principal damage was caused by the fall of adjacent buildings. Here is conclusive proof of high fire-resistance."

upward thrust, unbroken by joint, crevice or blemish. And what can convey a more affecting impression of dignity than a column, mightily made by Nature through a billion infinitesimal deaths, mightily thought, mightily wrought, and mightily transported by the brain and hand of man, grown cunning through the passing of ten thousand generations?

### Fire Resistance of Indiana Limestone

What else should a perfect building material have to its credit? Well, fire-resistance, for one thing. Here as in all other qualities Indiana Limestone stands preëminent.

Fire-resistance is a term that does not fully express all that the experienced mean by it. It should really be called "fire-and-water-resistance."

Indiana Limestone, under laboratory test, shows complete absence of ill effect when heated up to temperatures of about 1,000 degrees Fahrenheit and drenched with water.

At the temperature of melting aluminum, about 1,157 degrees Fahrenheit, the stone shows a slight tendency to crumble at the edges when drenched with water.

Samples heated to cherry red, about 1,500 degrees Fahrenheit show appreciable calcination and at temperatures considerably above this point calcination gradually becomes more and more complete until finally the stone is converted into quicklime.

These experiments have been repeated on a sufficient number of specimens from various localities to make the test conclusive, and show beyond a doubt that Indiana Limestone, up to the point of calcination (turning into quick-lime) is a fire-proof material and up to that point is less affected or damaged than other finished masonry materials, with good brick work as the sole possible exception.

The great point is that it also embraces just as high resistance to damage from the application of water while the stone is hot. When tested, as the limestone above referred to was tested, most other kinds of stone, some of which have a higher resistance to fire alone than Indiana Limestone, crumble, burst, or go to pieces like glass.

*"The Aristocrat of Building Materials"*





The Capitol of the State of Mississippi at Jackson. Theodore C. Link, Architect.  
One of a number of splendid state capitols built of Indiana Limestone.

“The Capitol of the State of Mississippi at Jackson. Theodore C. Link, Architect.  
One of a number of splendid state capitols built of Indiana Limestone.”

Let the truth be told and it will be found that ALL other architectural or decorative materials (eliminating purely rough structural materials) are liable to be ruined or greatly damaged by exposure to extremely hot fires, dense smoke and douchings with cold water. The walls may stand, and be serviceable *as walls*, after the fire, but they will seldom retain much value in the way of appearance if the fire has been anything like severe enough to test the resistance of Indiana Limestone.

Indiana Limestone will come through the ordeal of fire better than almost any other material for these reasons:

1st. Any fire hot enough over any considerable area and period of time to cause calcination of Indiana Limestone would mean "building and contents a total loss," *no matter what it might be built of.*

2nd. Indiana Limestone has *fire-and-water-resistance* to a degree which gives it a very high degree of *damage-resistance* and damage-resistance is really the thing desired.

3rd. Indiana Limestone, even when stained by smoke (or smoke and water) can easily be restored to its original color by scouring or rubbing.

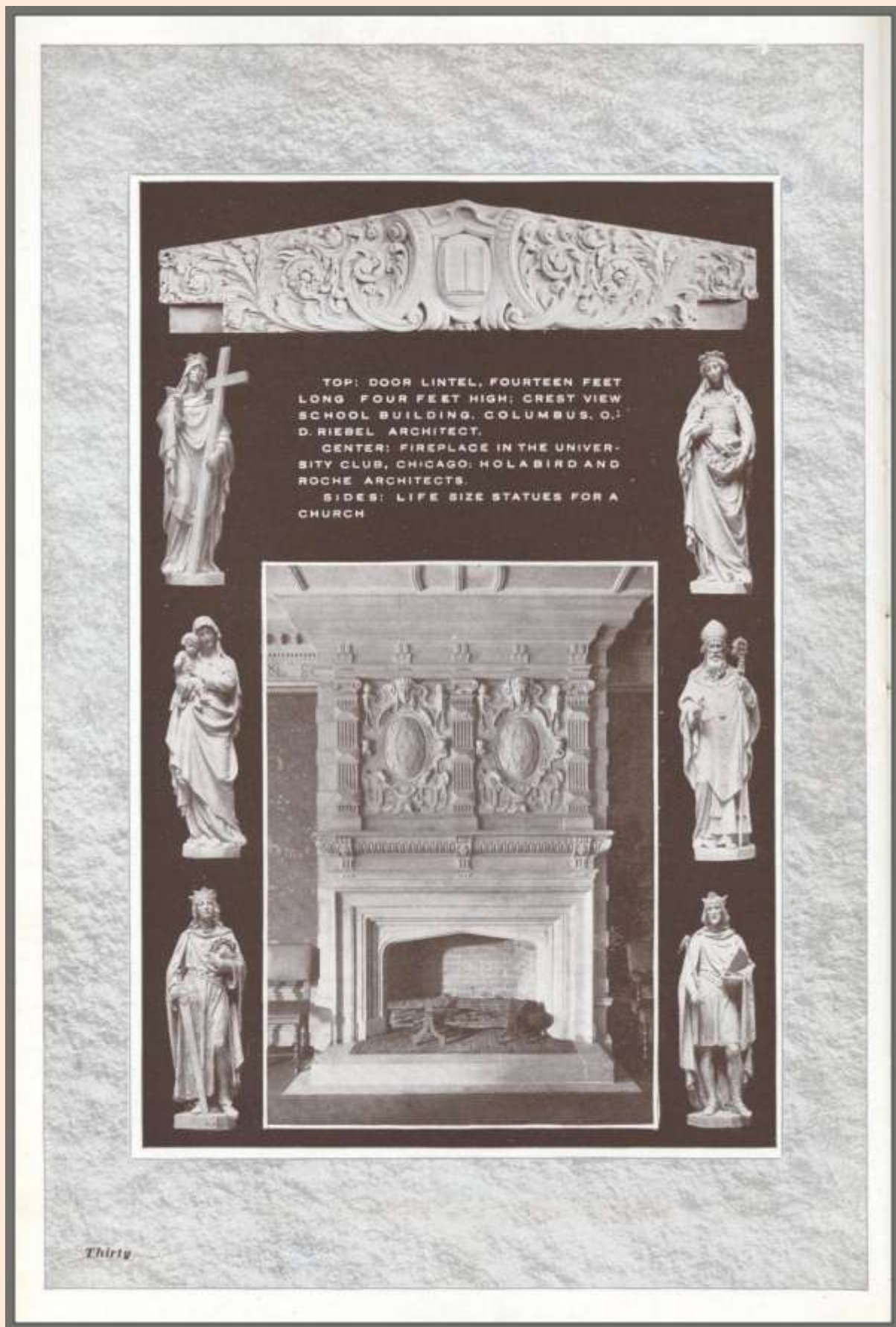
We offer the proof of the above along with the assertions. Having told the truth, we now ask that you look at the picture on page 26, read what is under it and consider how well it bears out the facts we have stated.

## Durability

One who has never seen it before would be vividly impressed by the apparant massive solidity, permanence and rugged elegance of Indiana Limestone as it comes from the quarry but would not guess that the Great Sphinx, the Pyramids of Gizeh, the main parts of the temples Abydos and the Sun Temple of Abusir, as well as a large proportion of the famous temples of Karnak, their ages measured not in hundreds but in thousands of years, are built of it, or, rather,

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Top: Door lintel. Fourteen feet long, four feet high: Crest View School Building, Columbus, Ohio, D. Riebel Architect. Center: Fireplace in the University Club, Chicago; Holabird and Roche Architects. Sides: Life size statues for a church.

of a limestone of similar shell formation, but geologically probably *hundreds of thousands of years younger* and of inferior quality, as most Egyptian Limestones contain chemical elements which render them less capable of withstanding the rigors of moisture and acid laden atmospheres. The great purity of Indiana Limestone makes it practically immune to the action of frost, moisture and other destructive elements. And such being the case, we can only smile at the thought of looking for signs of deterioration in the "old" limestone buildings of the United States, some few of which have reached the lusty youth of fifty years.



The cut at the left is an unretouched photograph of the seal of the University of Indiana, which was carved from Indiana Limestone for one of the University buildings in 1855, and was later removed after a fire to its

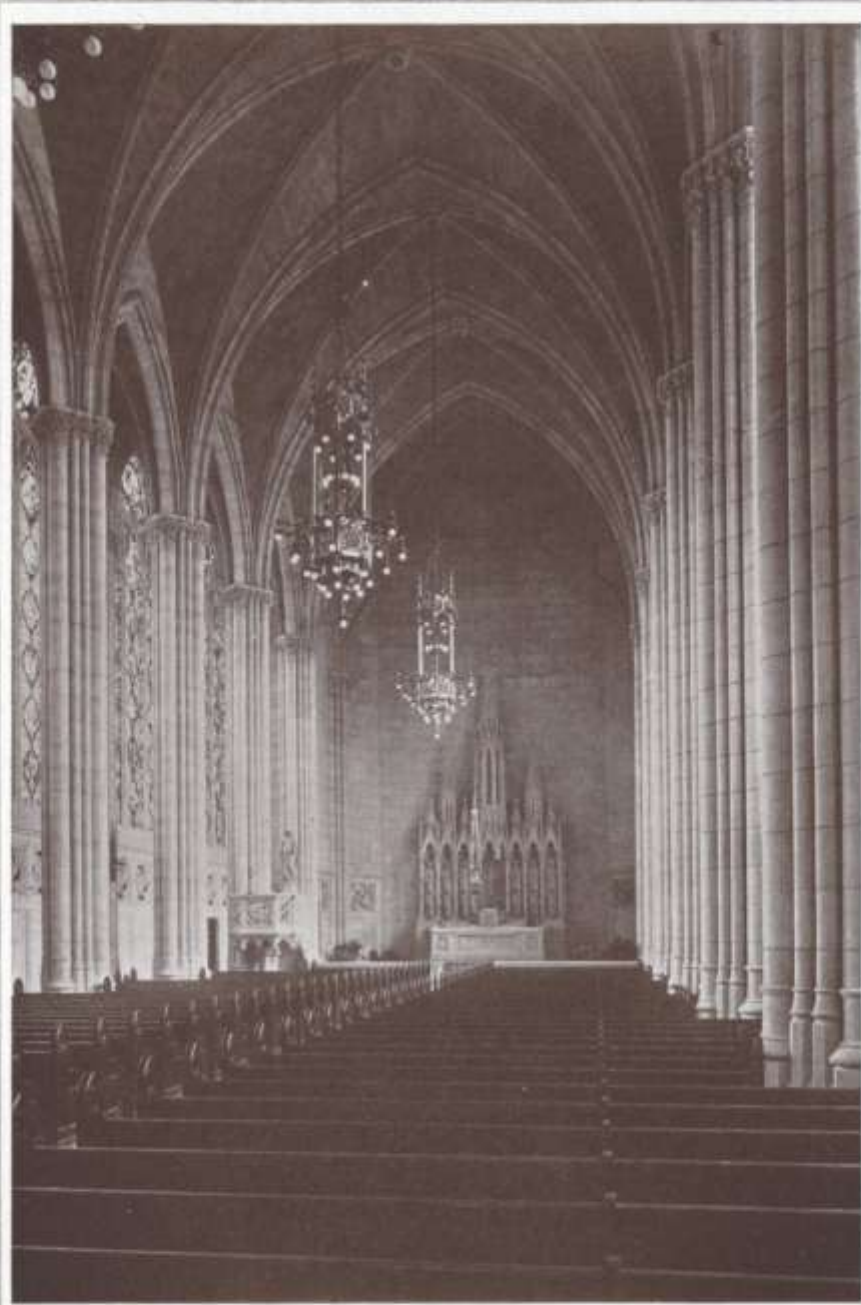
present position in the ornamental housing over the so-called Rose Well on the University campus. During all the sixty years which have since passed this Seal has been constantly exposed to the weather; yet the lettering and delicate carving is as sharp and clear as the day it was cut. All the arrises are perfect. Even the marks of the stone-cutter's tool on the surrounding surface of the block, and its neighbors in the wall, are so perfect that they look as though just made.

Dr. James A. Woodburn of the History Department of the State University of Indiana has, at our request, investigated the exact facts with regard to this carved emblem, and has kindly written for the Indiana Limestone Quarrymen's Association the following short historical sketch, headed:

### The "Weather" Quality of Indiana Limestone

"This Portal was erected and the Seal was carved for the 'Old College Building' in 1855 after fire had destroyed the original building in 1854. The inscription reads: 'Indianensis Universitatis Sigillum. Holy Bible.





Interior of the Cathedral Chapel of the Queen of All Saints, New York City; Reiley & Steinback, Architects. Nearly everything you see (except pews and chandeliers) is of Indiana Limestone.

*Twentieth*

“Interior of the Cathedral Chapel of the Queen of All Saints, New York City; Reiley & Steinback, Architects. Nearly everything you see (except pews and chandeliers) is of Indiana Limestone.”

Lux et Veritas. MDCCCXX.' These dressed stones in the front with the inscription were transferred from the old building (now the Bloomington High School Building) and placed in the Rose Well House in 1908. The letters of the inscription are as clear as when they were carved sixty years ago. At the time the carving was executed, Rev. William Daily was President of the University, Hon. John I. Morrison was President of the Board of Trustees and Hon. Joseph A. Wright was Governor of Indiana. The stone lasts from age to age."

Let us allude again to the limestone cathedrals of Europe both on the continent and in England, many of them built in past centuries of softer and chemically inferior limestone and especially to St. Paul's, built of Portland Limestone which is petrologically identical, though chemically inferior to Indiana Limestone. And let us allude again to the clear sharp arrises of the anciently exposed ledges in the Bedford-Bloomington quarry district. No further proof of durability seems necessary.

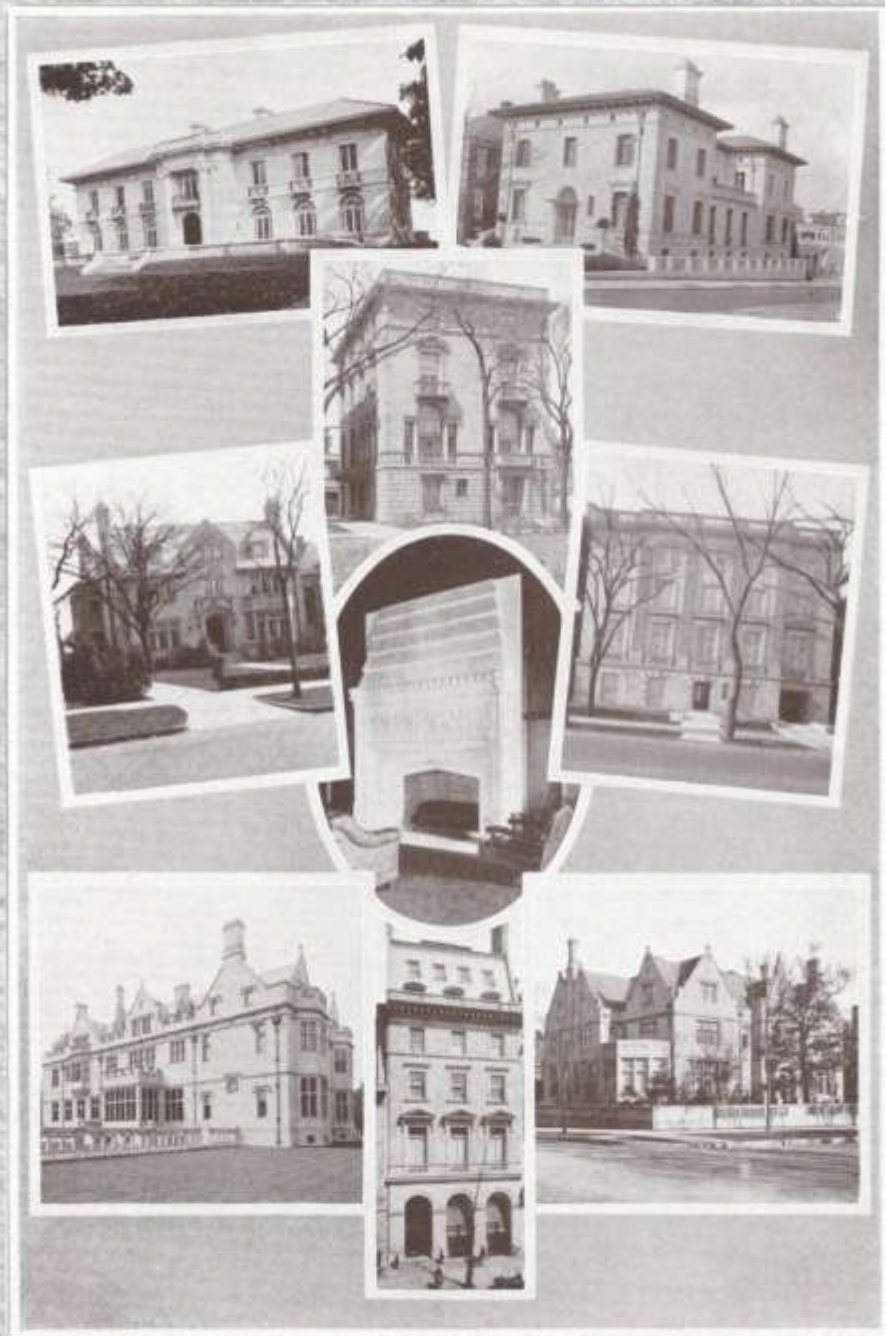
### Ideal Shipping Location

Another point by which Nature was kind to Indiana Limestone is in having located its deposit at what is now almost the center of population of the United States. Bedford and Bloomington, Indiana, in Lawrence and Monroe counties respectively, are the centers of production and their central location coupled with excellent railroad facilities has made Indiana Limestone in actual practice "The Aristocrat of Building Materials" in every state of the Union and in most of the provinces of Canada.

The wonderful architectural qualities of Indiana Limestone, coupled with the three things which tend toward reasonable price—shipping location, modern production methods and abundant supply—all co-operate as though by a carefully arranged plan to concentrate in Indiana Limestone the very acme of merit as a material for the construction of all classes of buildings which are wholly or in part of decorative purpose, from the small residence, the dignified apartment, store, bank or school to the great edifices for commercial,

*"The Aristocrat of Building Materials"*





Group of city and suburban residences from various parts of the United States, showing several styles of architecture all beautifully rendered in Indiana Limestone.

*Thirty-four*

“Group of city and suburban residences from various parts of the United States showing several styles of architecture all beautifully rendered in Indiana Limestone.”



Carved Indiana Limestone surrounding clock on Utica, N. Y., Passenger Station; Stem & Sellheimer, Architects. It is fourteen feet, seven inches long, twelve feet, six inches high, and a man could stand erect in the opening which contains the clock. The inscription is, of course, imaginary, but much to the point.

PHOTO BY J. W. BLACK & CO., CHICAGO

“Carved Indiana Limestone surrounding clock on Utica, N. Y., Passenger Station; Stem & Sellheimer, Architects. It is fourteen feet, seven inches long, twelve feet, six inches high, and a man could stand erect in the opening which contains the clock. The inscription if, of course, imaginary but much to the point.”



"THE ARISTOCRAT  
OF BUILDING MATERIALS"

