

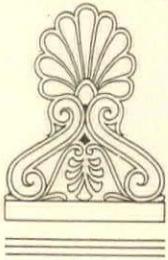


THROUGH THE AGES

DECEMBER, 1923

“The earth has grown old with its burden of care,
But at Christmas it always is young;
The heart of the jewel burns lustrous and fair,
And its soul, full of music, breaks forth on the air
When the song of the angels is sung.”

—PHILLIPS BROOKS



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VOL. 1

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NO. 8

CONTENTS

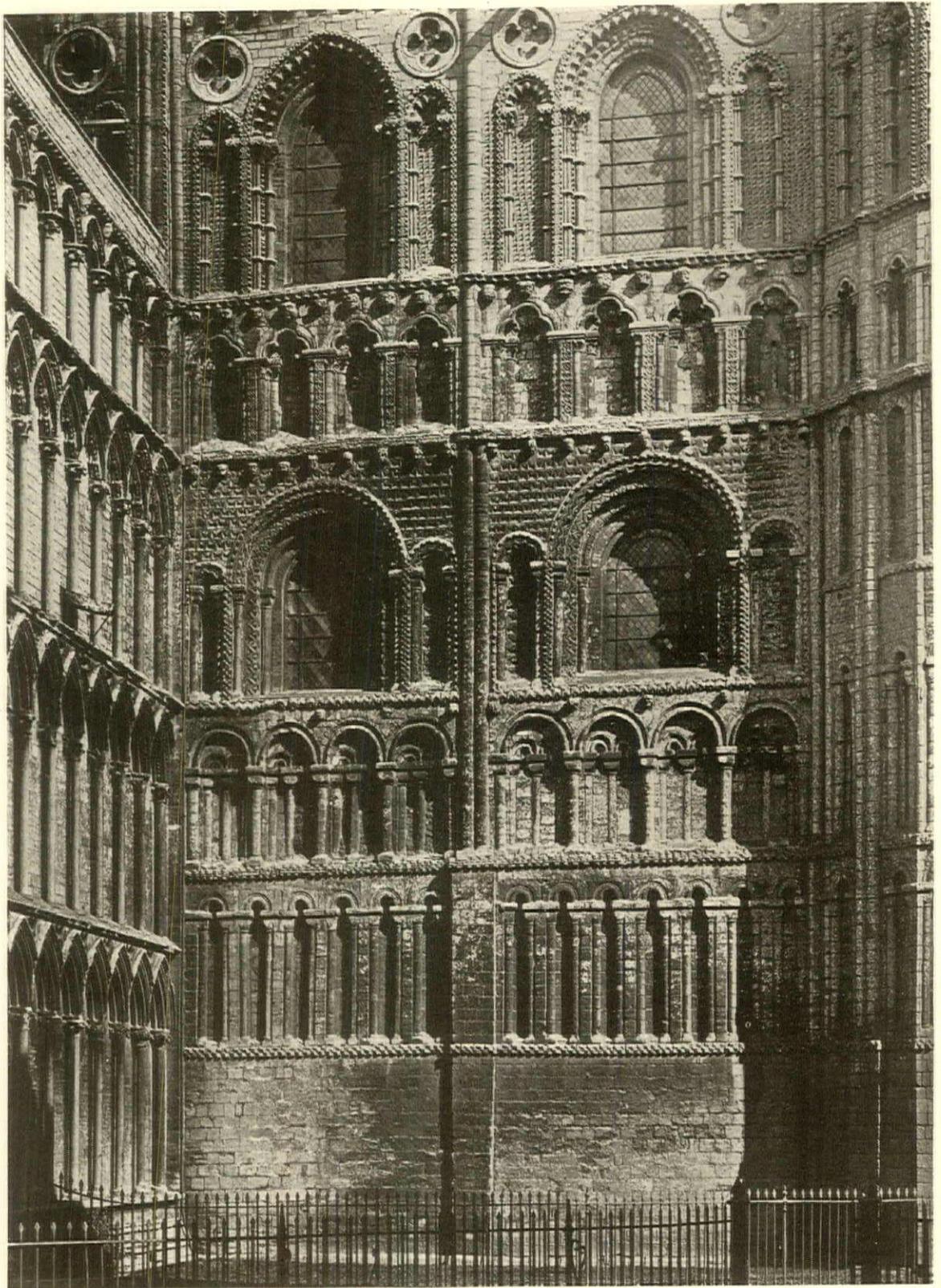
	PAGE
SOUTHWESTERN TRANSEPT, ELY CATHEDRAL	<i>Frontispiece</i>
MARBLES OF GREAT BRITAIN	3
A LIST OF THE WORLD'S MARBLES	5
THE SEARCH FOR MARBLE QUARRIES	8
A WESTERN POST OFFICE	12
A MONUMENT TO WOMEN	13
STORE FRONTS AND INTERIORS OF MARBLE	17
UTAH'S FINE UNIVERSITY	24
NORMAN ARCHITECTURE IN ENGLAND	26
THE MARYLAND INSTITUTE	33
A MODERN HIGH SCHOOL	37
STRENGTH AND DURABILITY OF MARBLE	40
MEMBERSHIP DIRECTORY	42

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Photograph from E. H. Glidden, Architect, Balto., Md.

Southwestern Transept, Ely Cathedral

THROUGH THE AGES

A Monthly Magazine devoted to
the uses of Marble - its universal
adaptability, beauty, permanency
and economy.

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MARBLES OF GREAT BRITAIN

THE British Isles abound with marbles of many varieties. Most of these have been worked for a long time, and are quarried in quantities sufficient to meet all ordinary needs. One exception is a good grade of white marble, which is hardly to be found in all of Britain.

We find many references to the marbles of England in the writings of some of the old authors. Hollingshead, in 1577, spoke of the many marbles of Staffordshire. Hutchings, in 1724, said that several kinds of marbles of a coarse texture, blue, red, spotted and gray (especially the gray), were formerly dug in Purbeck. Polwhele speaks of twenty-four varieties of Devon, and Sir Henry de la Beche also mentions the gray marbles specifically.

British marbles have not been worked as assiduously as they might have been. This is due to the competition of the nearby French and Belgium marbles. There are quite a number of extensive deposits that present stones of good quality and fine appearance, but since no heavy stocks are carried on hand for immediate delivery in England, the custom has prevailed of specifying imported marble, which can be supplied in quicker time. Another thing that has stood in the

way of the complete development of the local quarries has been the excessive freight rates. It cost more (in 1909) to bring marble in block from either Derbyshire or Devonshire to London than from either Italy or Belgium. The trade has been in the hands of Belgian and French firms, who naturally recommend the stocks which they either control or have on hand. Still another obstacle to systematic development has been the backwardness of the British owners in employing modern methods and machinery, as we know them in this country.

The chief areas of marble production in Britain are Devonshire, Derbyshire and Staffordshire in England; Sutherlandshire and the western Hebrides in Scotland; and Galway and Kilkenny in Ireland.

Devonshire marbles are distinguished in particular by their beauty. They vary from light pink and yellow to dark gray, almost black. Some of the red stones possess great luster. Among the places noted for their special marbles are Ippleton and Silverleigh (gray with red streaks); Stonycombe (yellow); Ashburton and Chudleigh (gray); Radford (red) and Plymouth (red, gray and fossil). Primitive methods, such as blasting, are resorted to in extracting the stone. The

consequent shattering has given to these marbles a reputation for unsoundness.

In Derbyshire, there are found at Worksworth creamy white and medium gray blocks of large sizes, often twenty tons or over. Dark gray fossil is also gotten from there, while black marble comes from near Ashford, as does also the kind known as Rosewood. Some of these marbles have a very close texture and are highly non-absorbent, as a consequence of which they are especially suitable for exteriors because of their superior resistance to smoky atmospheres. In the front of Moot Hall, Worksworth, there are three panels of Hopton-Wood marble dating from 1818 in which the details of the carving are as clear as when first executed. These marbles are also eminently suited for interior decoration since pleasing contrasts may be secured between the light and dark varieties, although the surfaces will not take a brilliant polish.

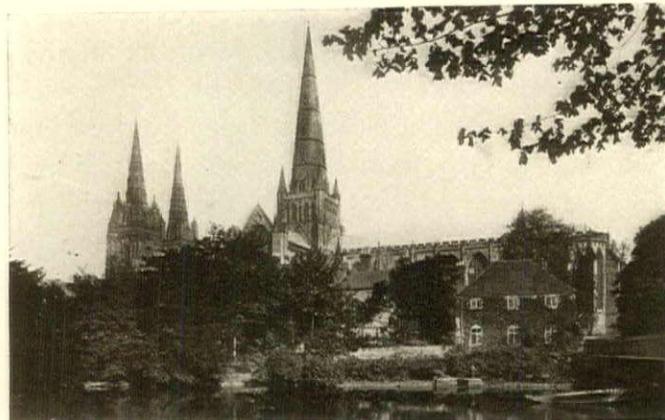
In Derbyshire and Staffordshire, at Fauld, are found deposits of Alabaster, worked mostly for the manufacture of plaster of paris, although sizable sound blocks are set aside from time to time for decorative purposes.

At Iona and Tiree are to be found the sev-

eral shades of green marbles that have come into general use of late years. These are of serpentinous formation, as are the red and green varieties near Lizard Point, in Cornwall, and the greenish-brown at Polyphant.

From Harehope, in Durham, comes a dark gray fossil marble of attractive markings; and a light green shell marble is quarried near Swanage. Other production centers of Great Britain are found at Sutherlandshire (white), Lancashire (gray-white), Somerset (dark-gray), Sussex (blue-gray), Beaumaris (brown-veined), and Swanage (blue-gray shell).

In Ireland, in County Cork, is quarried the reddish and brownish marbles so extensively used in Great Britain, the Cork or Victoria Red being especially popular. Kilkenny blacks and fossils find a ready market and are much used locally, as are several other varieties from the same section. At Connemara are seen the green serpentines that compare favorably with any of this type in the world. These have found their way to the United States in considerable quantities. The best quarries are at Recess, in County Galway, though other workings are at Streamstown and Lissoughter. Black marble is also found in County Galway.



Photograph from E. H. Glidden, Architect, Balto., Md.

Lichfield Cathedral from Minster Pool.

A LIST OF THE WORLD'S MARBLES

By J. J. McClymont

Note—In our May issue, Mr. McClymont proposed, for the sake of convenience, to divide the different marbles into four groups. These arbitrary groupings were as follows:

GROUP A—Any marble or stone sold to the trade in fair-sized slabs or blocks of commercial size, rectangular shape and guaranteed by the seller to be sound, free from natural defects, that can be finished at a minimum cost, and sold to the consumer as sound marble.

GROUP B—Any marble or stone sold to the trade in slabs or blocks of fair or medium size, generally rectangular shape, guaranteed to be sound and free from natural defects, the finishing of which, because of texture, the size of slabs, the shape and size of blocks, is somewhat more expensive than those in Group A.

GROUP C—Any marble or stone that cannot be sold as sound but contains a minimum amount of natural defects, such as dry seams, old fractures, partially or completely healed surface voids, etc., to be treated by the manufacturer in the most approved manner, reinforced where necessary by liners on back or metal inlays and sold to the consumer as semi-sound marble.

GROUP D—All marble, stone and so-called serpentine marbles, and Onyx, which, by their peculiar formation are known to be fragile, such as Breccias and nearly all highly colored marbles and serpentines, and that are sold to the trade in irregular shaped blocks or slabs without a guarantee as to their soundness, treated by the manufacturer in the most approved manner, reinforced where necessary by liners on back or metal inlays and sold to the consumer as unsound marble.

Breche De Smyrne—Group D

(Somewhat similar to *Breche Di Smyrne*.)
Quarries near Bagneres, De Bigorre, Hautes, Pyrenees, France.
Reddish brown filler, with fragment of white, pink and fawn. (Watson)
Takes high polish.

Breche De Waulsort or *Breche Francais*—Group D

Hastieres Quarry, near Namur, Belgium.
Reddish brown filler with fragments of black, pink and white.
Some of the fragments are veined. (Watson)

Breche Du Nord—Group D

Landelies Quarry, Namur, Belgium.
Reddish brown with brownish black, light pink, and white fragments. (Watson)
Takes high polish.

Breche Francais—See *Breche De Waulsort*

Breche Jaune De Baudean—Group D

Baudean Quarries, Hautes Pyrenees, France.
Dark yellow filler with angular fragments of white, black and red. (Watson)
Takes high polish.

Breche Medoux—Group D

Medoux Quarries, near Bagneres De Bigorre, Basses Pyrenees, France.
Deep orange filler with fragments of black white, gray, yellow and brown. (Watson)
Takes high polish.

Breche Noir De Baudean or *Breche Noire*—Group C

Baudean Quarries, Hautes Pyrenees, France.
Yellow filler with dark blue-gray fragments marked with fine colored veins. (Watson)

Breche Noire

Same as *Breche Noir Baudean*.

Breche Opal—Group D

Stazzema Quarry, Seravezza, Italy.
Cream-white background with various light colored and purple fragments.
Takes high polish.

Breche Opal Flurie—Same as *Breche Opal*

Breche Pavonazzo—See *Pavonazzo*

Breche Porter—Group D

Quarry at Bagnères De Luchon, Hautes Pyrenees, France.

Brownish gray filler with black and dark gray fragments. (Watson)

Takes high polish.

Breche Rose (Canadian)

Bancroft Quarry, South Ontario, Canada.

Light rose with occasional gray markings.

(Watson)

Breche Rose Malaga—See *Breche Rose* (Spanish).

Breche Rose (Norwegian)

This name is sometimes applied to Numidian Rose.

Quarried at Furuli Fauski, Nordland, Norway.

Light rose with white patches and occasional light green veins. (Watson)

Breche Rose (Spanish)

Quarried near Malaga, Malaga Province, Spain.

Light pink filler with fragments of white. (Watson)

Breche Sanquine—See Red Numidian.

Breche Vert—See *Breche Stazzema*.

Breche Violet or *Violette*

Same as *Breccia Violetto*.

Brescia Marbles—See *Botticino* and *Breccia Aurora*.

Bretteville Stone—See *Lamaladrerie*.

Bricnoles Marble—See *Jaune De Province*.

Brilissus Marble—See *Pentelic*. (Greek)

The ancient name of Mt. Pentelicus in Attica, Greece.

Brilon Marble—See *Green Poppenberg* and *Red Brilon*.

Bristol Marble—See *Encriental* and *Cotham*.

British Columbia Marble

Same as *Kootenay*.

British Columbia Marble Deposits

"Marble occurs on Texada Island. The colors range from gray to white, sometimes handsomely mottled. White, gray and pinkish varieties are also reported from White Cliff Island. Gray handsomely variegated varieties from Beaver Cave on the east coast of Vancouver Island. Gray mottled varieties from White Cliff Island. Gray mottled from Nimpish Lake and a considerable variety from Horne Lake."—G. P. MERRILL.

British Isles

For principal marbles produced see—

Alston	Gray Clouded
Alwalton	Petitor
Armagh Red	Gray Fossil
Ballachulish	Gray Ipplepen
Bird's-Eye	Gray Ogwell
Black Madrepore	Hooe Lake
Bradley Woods	Hopton Wood
Castletown	Iona
Chudleigh	Irish Black
Connemara	Irish Dove
Cork Red	Irish Drab
Cotham	Irish Gray
Dapple Limestone	Jasper Stone
Dark Ashburton	Kilkenny Black
Deadman's Bay	Kilkenny Black
Dent Black	Fossil
Dent Fossil	Kingsteignton
Derby Black	Little Beltor
Derby Fossil	Little Island
Dinorben	Middleton
Dove Happaway	Pembroke
Draycot	Penmon
Duke's Red	Plymouth Black
Dunbar	Pomphlett
Dunlewy	Poolvash Black
Frosterley	Prince Rock
Galway Black	Purbeck
Galway Gray	Radford
Golden Breccia	Red Ipplepen

Red Ogdell
 Red Petitor
 Rosewood
 Silverleigh
 Skye

Stoney Coombe
 Sussex
 White Limestone
 Yellow Clouded
 Petitor

Brocadillo or *Broccadillo*—Group B

Quarried at West Rutland, Vermont.
 Greenish white ground criss-crossed with
 veins and clouds sometimes running to
 green or lighter shades. (Vermont State
 Geological Survey.)
 Takes medium polish.

Brocadillo Siena

See Siena Old Convent Yellow.

Brocatelle D'Espagne

See Tortosa Brocatello.

Brocatto—Brocade

Brun—Brown

Brunatre—Brownish

Brunezzo—Brownness

Bruno—Brown

Bruno Lumiere—Light Brown

Buchan (Fawn)

Quarried in Buchan Parish, Gippsland,
 Victoria, Australia.
 Fawn-colored background with light gray
 markings. (Watson)

Buchan Fawn and Gray

(Buchan Gray and Fawn)
 Quarried in Buchan Parish, Gippsland,
 Victoria, Australia.
 Background of gray and fawn with light
 gray patches. (Watson)

Buchan Gray

Quarried in Buchan Parish, Gippsland,
 Victoria, Australia.
 Dark gray background with light gray
 markings. (Watson)

Buckfastleigh—See Silverleigh

Bueno—Good

Buixcarro—See Marmor Rosa

Buono—Good, fine, best quality.

Burlington Lime Stone

Name given by American geologists to a
 compact limestone belonging to the Mis-
 sissippi or lower carboniferous formation.

Burma (Jade)

See Burmese Jades, Emerald Green Jade,
 and Mandalay White

Burmese Amber Jade or *Yellow Amber Jade*

Quarried at Uru River Mines, Myitkyina
 District, Upper Burma.
 Amber colored. (Watson)

Burmese Blue Jade

From the Uru River Mines, Myitkyina
 District, Upper Burma.
 Blue colored. (Watson)

Burmese Mauve Jade or *Lavender Jade*

From the Tawmaw Mines, Myitkyina
 District, Upper Burma.
 Pale amethystine shade. (Watson)

Burmese White Jade or *Pan Tha*

From the Tawmaw Mines, Myitkyina
 District, Upper Burma.
 White with spots of light green. (Watson)

Burra Mines—See Australian Malachite

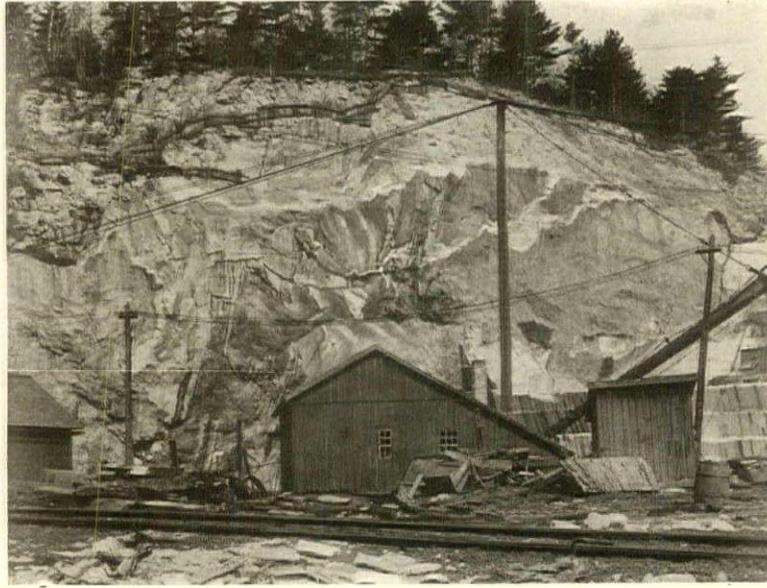
Butler Grove—See Kilkenny Black

Bwana Nkbuwa Mines

See Rhodesian Malachite.

Byzantine

Bancroft Quarries, South Ontario, Canada.
 Delicate rose ground with occasional dark
 gray markings and broad wavy green
 bands. (Watson)



For many years this marble quarry was a center of activity.
Now it is nearly full of water.

THE SEARCH FOR MARBLE QUARRIES

THE story is told of how the late W. S. Stratton, of Colorado, threw up his hat, declaring that where it came down he was going to dig. Then they proceed to explain how in the carrying out of that resolution he struck the Independence mine, one of the richest gold deposits in the Rocky Mountains. Thus by a peculiar twist of fortune he went to bed at night a penniless prospector to appear the next morning in the rôle of a multi-millionaire.

This may be more or less of a fairy tale and yet it is a story that has had a wide circulation. It has led some people to believe that it is quite the ordinary thing to uncover gold mines in Colorado. They never take up the other side of the picture. The men who spend their lives—and their savings, maybe—in an unrewarded search for the yellow metal are never given any attention. Stories of the failures never seem to be worth the telling.

Yet the tourist who goes to Cripple Creek invariably wants to know about the piles of dirt which dot the mountain sides. In the distance they appear no larger than the mounds which the woodchucks build. The traveler will be rather surprised to learn that each of those excavations marks the spot where someone has started a gold mine and found nothing but dirt. Beneath some of them have been buried the hopes of a lifetime. All of which goes to show that Mr. Stratton's case was one of the exceptions.

What is true of gold in Colorado is also true to a limited extent of marble in Vermont. At any number of points up and down the Otter Creek valley one may look upon piles of rock which are serving as monuments to someone's mistaken judgment. Perhaps the work was stopped when only a few floors had been removed. On the other hand, perhaps it is a large opening, one which was operated for some time with only



The search has been extended even to the wilds of Alaska, where quarrying operations are beset with difficulties.

a few good blocks to its credit. In that event the loss has been correspondingly greater.

Ever since 1785, when the first quarry was opened at Dorset, there has been an untiring search for new veins. In those days the marble was cut into fire jambs, chimney backs and hearths and fitted into the old Colonial fireplaces. It is recorded in *THE MARBLE BORDER OF WESTERN NEW ENGLAND* that "people came a hundred miles for these beautiful fireplace stones and considerable trade in them soon sprang up."

In the years that followed a great many other sterling quarries were brought into line, but with every success came innumerable failures. Men thought they had marble when they had nothing but stone, while those who owned the real quarry land could see only the rocks. No one knows how many farmers have toiled over the ledges that were even then pointing down toward the

hidden treasure. Less than a century ago it was hardly possible to give away the useless swamp and the barren hill under which nature had laid away the great West Rutland quarry. The development of the marble industry has been slow and every step has been an expensive one.

The cost of getting a new quarry into actual working condition is enough to discourage any weak-hearted prospector. On some of the openings at West Rutland the expense account reached a total ranging from \$40,000 to \$75,000 before any marketable marble was taken out. Anyone who has never tried cannot know what it means to strike a new level in solid rock. More or less dirt and stone must always be carted away. Sometimes this preparatory work consumes the entire capital of the operating company, leaving the concern literally and figuratively on the rocks.

Then there is the transportation problem. Marble prospects are seldom on the line of railroad. It often happens that they are far away in the mountains, where even the highways are barely passable, and a wagon bearing fifteen or twenty tons of marble is hard to handle on a good road. And, more than all else, the hauling of quarry blocks to the mills by team is an extremely slow process.

In the early days of the industry the subject of distribution had to be considered. There was a dearth of railroads in many sections of the country and it was no easy matter to deliver marble after it was once sold. No doubt the uncertain shipping facilities, together with the lack of labor-saving machinery, had a part in many of the first failures.

Although these stumbling blocks no longer stand in the way of the quarrymen, those that remain are fully as formidable as ever. The press agent who has stock to sell will do

his best to minimize the obstacles. He will provide figures that are irresistibly attractive—so many cubic feet of solid marble at so many dollars a foot. He draws the curtain over the unsound marble and the tons of waste. He says nothing about the enormous expense of operating and marketing. He turns the spotlight on a slab of polished marble and keeps it there. All else is left in the shadow.

Suppose you are a capitalist who has become interested in some undeveloped marble prospect. You know nothing about the business save what you have learned as a sightseer at some old-established plant. It looked like a safe investment from that angle. The marble was coming through the shops with impressive regularity, indicating an easy supply and a stable market.

As a preliminary step, perhaps, you consult an expert. One of the sincere, imaginative kind, who believes in starting in a big



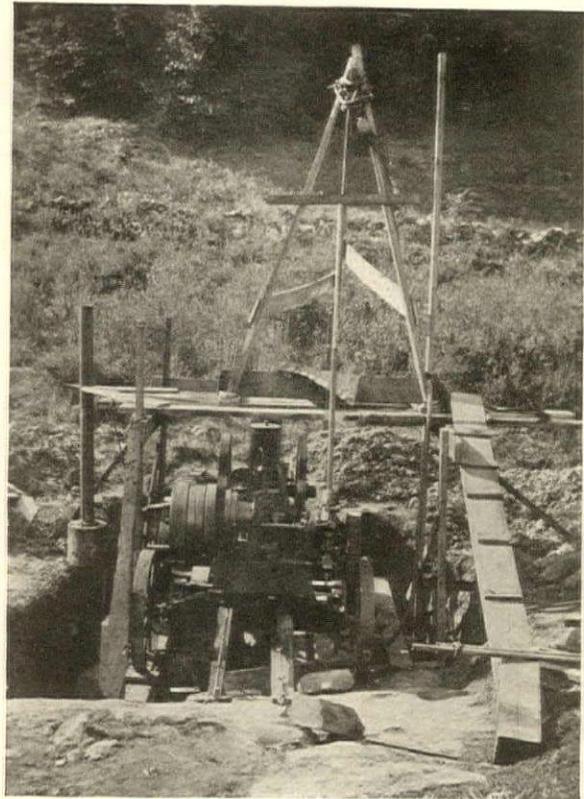
A neglected marble cliff. To the uninitiated it might appear to be the outcrop of a matchless deposit.

way. He paints a picture of a complete plant—derricks, cranes, mills and shops—he even shows you the big lathe and the diamond saw in place. More than likely he traces the course of the strip of railway you should build and the tenements you will need to erect. If you say anything about beginning in a small way, he will shake his head and give you the same picture in a cheaper frame.

Or maybe your first interview is with the promoter. Then you are indeed walking on thin ice. A word of encouragement from you and he will move into your house, and stay until the wheels are turning in the new industrial center which he proposes to build. He will take everything off your shoulders—except paying the bills—leaving you free to attend to other matters. You are simply to be ready to take command when the ship reaches easy sailing. All the vexatious details of construction and adjustment are to fall on him.

Once the promoter begins talking there will be no chance to suggest a modest start. With him it will be a big start or nothing. His theory is that everything depends on the first impression. You must let people know you are ready to fill orders, and the orders will come.

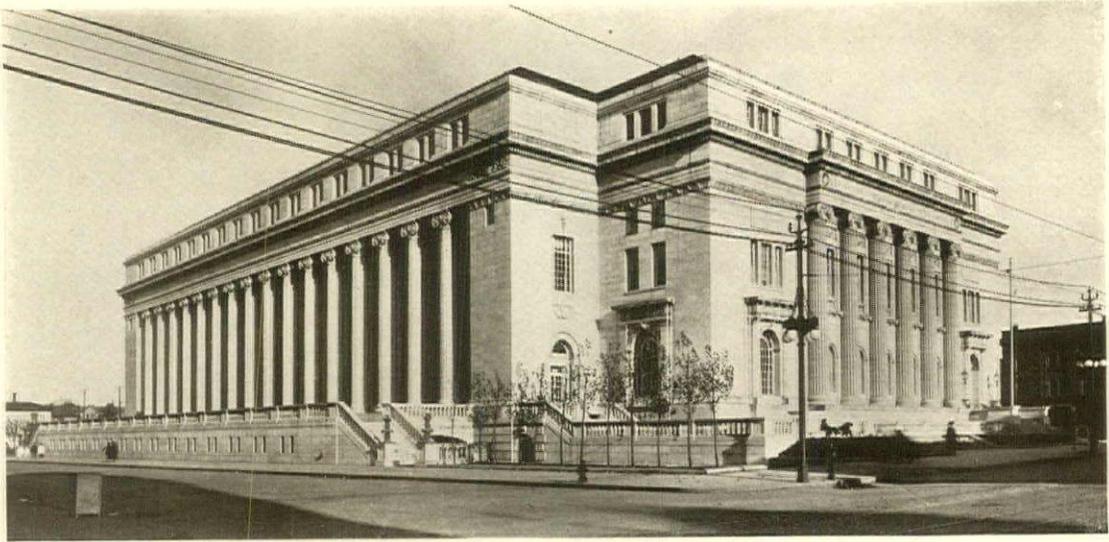
In the face of such arguments one fact should always be kept in mind. The most essential thing in the marble industry is the quarry. Unless the quarry turns out to be a producer of good marble, your buildings and equipment are anything but a desirable investment. And no one can tell what the quality of the output is going to be until the channeling machines are in motion and the marble is in the mill. Tests may indicate that the marble will come, but there is no way of determining before the ground is broken what may be the extent or soundness of the deposit. One has only to travel the



The coring machine, which drives a hollow drill into the ground and draws forth a sample of the marble.

length of the Vermont marble belt to find relics of shops and mills which were no doubt planned in a hurry and rushed to completion because someone thought he had found a great marble quarry.

The farmer who locates a promising ledge in his back pasture would do well to keep a tight grip on his enthusiasm. It may be nine-tenths stone and one-tenth marble, and that fraction of marble may be full of cracks. Or it may be something really worth while; but, even so, it will take thousands of dollars to reach it. If the man happens to have the spirit of a gold miner he will be sure to go into the game. Maybe he will win. It is not likely that all the good marble quarries have yet been opened, but there are no signboards on the road that leads to them.



A WESTERN POST OFFICE

THE square bounded by Champa, Stout, 15th and 16th Streets in Denver, Colorado, is occupied by the impressive Post Office building shown here. It was completed about eight years ago at an approximate cost of two million dollars.

The Greek style seems to be particularly well adapted to structures of this nature, and the Ionic order has been happily used in

the Denver Post Office. The commission to design this building was won in competition under the terms of the Tarsney act by Tracy, Swartwout and Litchfield.

The material used was white marble from the mountains of Colorado, known as Colorado Yule. It is streaked with beautiful light fawn-colored veins, and was also employed in the Lincoln Memorial, Washington.





A MONUMENT TO WOMEN

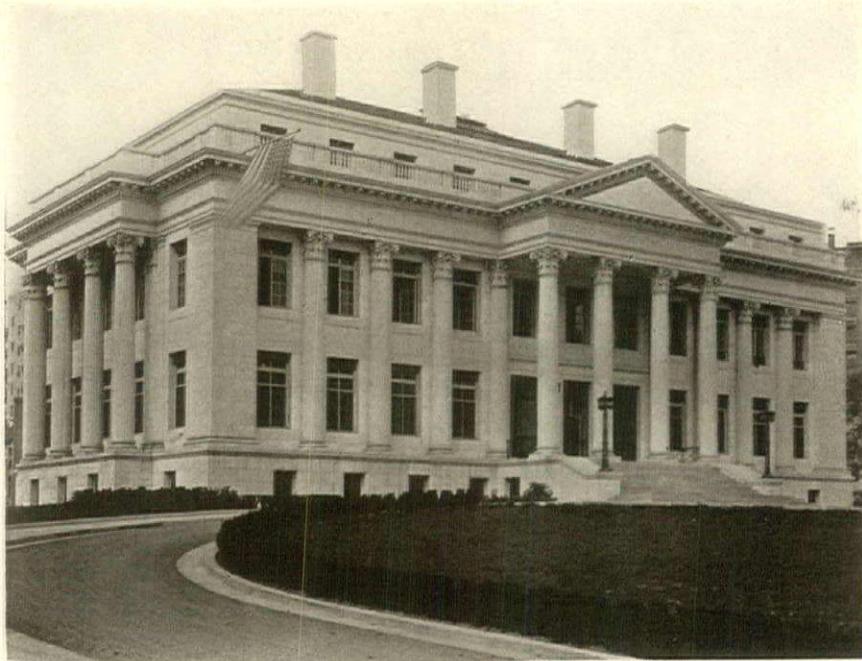
This \$800,000 Marble Building a Memorial to the Heroines of the Civil War

WHEN President Wilson, trowel in hand, spread mortar over the huge block of marble that was to be the corner-stone of the new building for the American Red Cross in Washington, his act marked the beginning of what was to be the finest monument to women in the world. There is, it is true, one other memorial, the famous Taj Mahal, at Agra, India, that surpasses it; but the creation of Shah Jahan stands to the memory, not of womenkind in general, but of one woman alone—his favorite wife. The Washington memorial is to all the women of the Civil War, Union as well as Confederate, who worked to alleviate the sufferings of that dreadful struggle.

The story of the splendid building that

stands like a white temple on an avenue which contains some of the most beautiful structures in the National Capital, is one of romantic interest. It is the story of a woman's courage and devotion, of unflagging zeal and all-embracing pity. It is also the story of a man's friendship for a man.

The tale begins in April of '61, when President Lincoln issued his call for seventy-five thousand volunteers. Two young men, Francis Barlow and James Scrymser, close friends and living in the city of New York, enlisted in the Engineer Corps of the Twelfth New York Regiment. Barlow was engaged to a young and lovely woman of no inconsiderable intellectual attainments and of assured social standing, Arabella Griffith. They



East and South Porticos.

were married the day before his regiment left for Washington. She immediately enlisted in the Sanitary Commission, and reached Harrison's Landing on the 2nd of July, 1862. Death had reaped a great harvest and thousands of wounded and dying men were arriving. Mrs. Barlow gave every energy of body and mind to their relief. While nursing in a field hospital at Antietam her husband was brought in on a stretcher, severely wounded. When he recovered consciousness, it was to find his young wife leaning over him, ministering to his hurts—like an angel of mercy.

Upon his recovery, he returned to the battle-front, while she continued her work in other fields. At the Battle of Gettysburg he was desperately wounded again, and within the Confederate lines. Mrs. Barlow learned of his plight and sought General Hancock for permission to cross the lines, but important strategical conditions made this undesirable. Thereupon, at the risk of her life, she crept to the picket lines and under cover

of darkness, succeeded in crossing the open space that separated the armies, though fired upon by sentries of both sides.

Again she nursed her husband to health and for the remainder of the war until her death on July 27, 1864, she displayed tireless energy in organizing the work of relief that brought comfort and aid to many wounded soldiers. Her death was directly due to her incessant labors, for it was typhus contracted in the army camps that brought an

untimely end to a noble life.

Captain Scrymser had remained a devoted friend of Barlow, now a major-general, and after the war the two were in close touch with each other. After Barlow's death, he began to take definite steps toward securing the necessary funds for the erection of a suitable memorial to the women of the Civil War who had, like the wife of his best friend, given up so much for the cause of mercy. The idea of a building in Washington that would be both a memorial and a practical home for the Red Cross appealed to the Military Order of the Loyal Legion, and received its active support. Captain Scrymser urged upon Congress the appropriation of a sum of money sufficient to care for the cost of such a structure. Finally, in 1913, Congress set aside \$400,000 for a building and site, provided that not less than \$300,000 more were donated.

Contributions to the amount of \$400,000 were shortly received, including \$100,000 each from Captain Scrymser and the Rocke-

feller Foundation, \$150,000 from Mrs. Russel Sage and \$50,000 from Mrs. E. H. Harriman. Trowbridge and Livingstone, of New York City, were chosen as architects and construction work was shortly begun.

The corner-stone was laid on March 27, 1915. Two years later, on February 3, 1917, the Red Cross moved in. It seems now almost like a wise provision of destiny that the building should be ready for occupancy just when most needed. Without it during the World War, it is hard to imagine just what the Red Cross would have done, with its quarters already overgrown and its officers scattered in various buildings about Washington.

The building occupies a whole block on Seventeenth Street, and is flanked by the Corcoran Art Gallery on the north and the Memorial Continental Hall on the south. Its white marble, that stands in bold relief against the dark, graceful elms, was taken from the hills of Vermont, the product of the Danby quarries. The façade is simple in line, quiet and stately after the wonderfully dignified style of the Grecian Corinthian. The portico, with its quartette of towering free standing columns, topped by impressive acanthus capitals, is a fitting introduction to the majesty to be found within. On either side is a similar portico, while across the front are ranged eight semi-engaged columns, between which are windows in two tiers. Above the cornice is a marble balcony, an effective device for

breaking the altitude and yet allowing, without loss of proportion, for the addition of a third floor and the necessary fenestration. The whole mass is of a pleasing harmony. Particularly happy are its surroundings. A wide sweep of driveway, its arc embracing a verdant lawn, provides a charming contrast to the severe and gleaming whiteness of the marble pile.

The entrance corridor is as beautiful as the exterior. The white marble walls are a fitting frame for the handsome marble stairway that strikes the eye immediately upon entering. Indeed, the columns of Royal Antique furnish the only variation in the scheme of the interior marble treatment. Over two hundred carloads of White Cloud Rutland were used.

Ascending this broad stairway, there is soon reached a landing where the steps divide. Here, in the three windows, are three marble busts by Hiram Powers, personify-



The entrance lobby and main stairway.



The columns of the grand stairway are Royal Antique marble, the rest is Light Cloud Vermont.

ing Faith, Hope and Charity. Just below, in letters of gold, a marble tablet informs us that the building is

A MEMORIAL

Built by the Government of the United States and Patriotic Citizens

TO THE WOMEN OF THE NORTH
AND THE WOMEN OF THE SOUTH

Held in Loving Memory
By a now United Country

That their labors to mitigate the sufferings of the sick and wounded in war may be perpetuated, this memorial is dedicated to the service of

THE AMERICAN RED CROSS

On the second floor is the Assembly room, occupying the whole north end of the building. It contains the famous gift windows, three in number, that are said to occupy greater wall space than any stained glass windows of modern times. They are by Tiffany, of New York, and are exquisite in de-

sign, execution and color. The one on the left, representing St. Filomena and her handmaidens, was the gift of the Women's Relief Corps of the North. The right window, showing Una and her attendants, was given by the United Daughters of the Confederacy. The finest of them, the central window, was the joint gift of the two organizations. It shows a Good Samaritan in armor giving a healing draught to a wounded comrade.

The remainder of the second floor is taken up by a large conference room and offices. The third floor also contains offices and a library where are kept the records of the Red Cross.

In the rear of the main building, on the same lot, are other buildings connected by covered passageways. These house various departments necessary to the maintenance of the Red Cross service. Other departments were necessary during the World War, but as normalcy returned, eliminations and contractions could be effected, and the work reduced to a pre-war basis.



The front portion of this store in Pittsburgh is all Black and Gold with Siena pilasters at either side of the door and Italian Pavonazzo panels on the side walls.

STORE FRONTS AND INTERIORS OF MARBLE

The modern tendency is towards the more lavish use of this most beautiful of materials

By JOHN FREUND, Architect, Baltimore

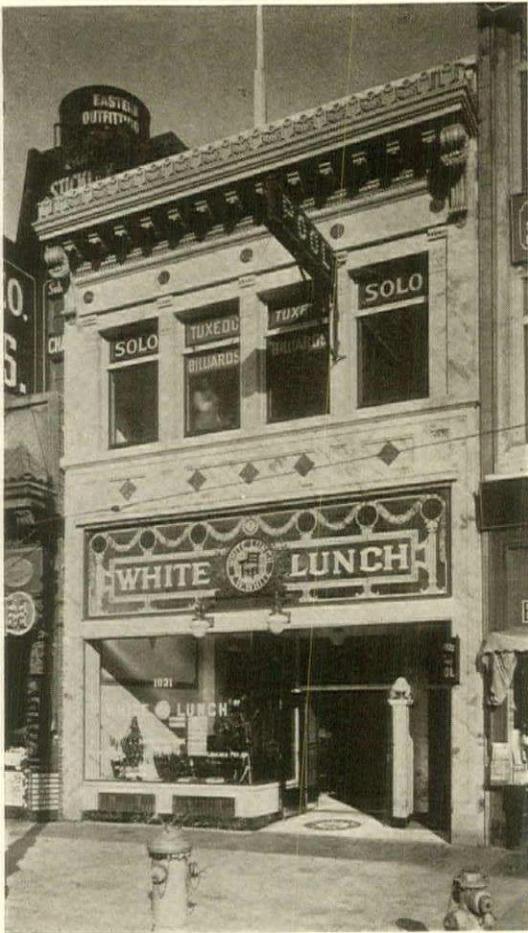
IT hardly needs the eye of an expert to see that a decided change has come about in the course of the past few years in the construction of fronts for stores, especially in those of comparatively small dimensions, located in crowded shopping districts.

For years it was the custom to use wood. The average main street in any of our cities would present a succession of plate-glass windows framed by wood, with wooden base-work and cornices, the monotony relieved only by variations in the color of the painting. This condition prevailed up to within

the past dozen years, when the demand for store fronts of individuality brought about the introduction of other materials in the construction of the lower parts of these façades. Today we find on every hand many store fronts built of brick, tile, limestone and marble in lieu of wood, carefully planned and successfully executed.

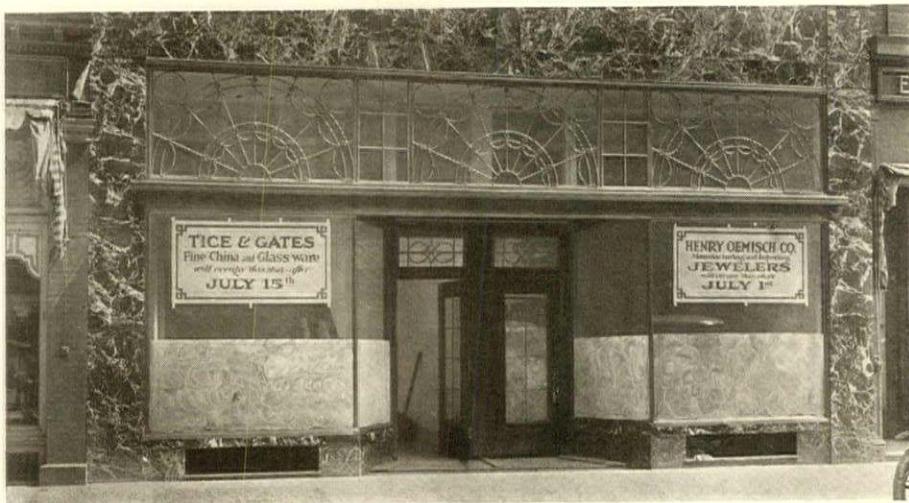
This is especially true of marble. Not only are the basework and sills fashioned from this material, but the window flooring, cornices and general exterior ornamentation are built of it. Even entire fronts up to the

THROUGH THE AGES



Token marble from Alaska plays a very important part in this front.

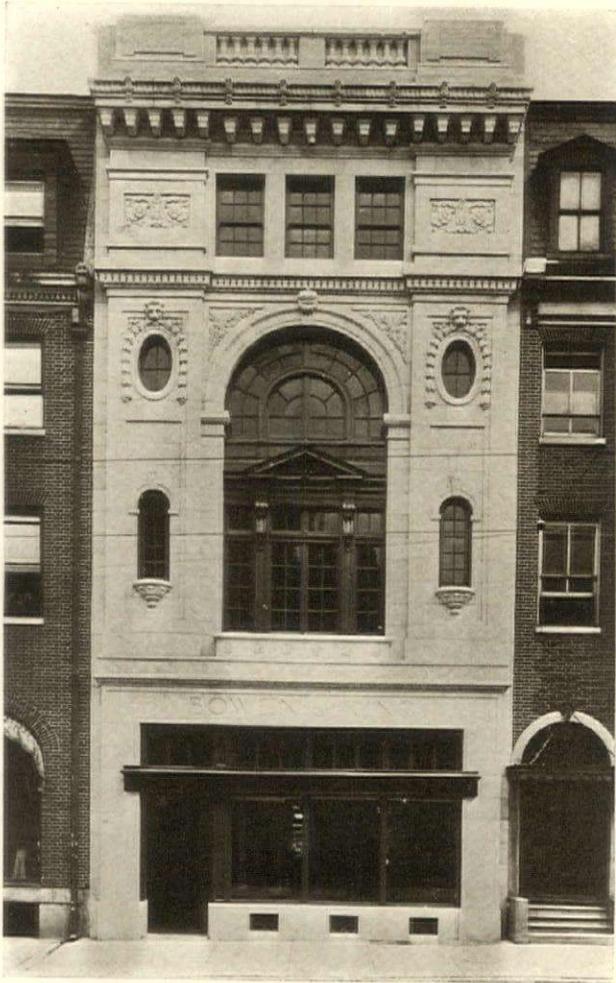
One of Baltimore's "smart" shops—made attractive by combining a Vermont green with a dull white marble. The architect was John Freund, of Baltimore.



This small shop is in New York. Verde Antique marble from Vermont was used entirely. Claude Bragdon was the architect.

THROUGH THE AGES

Marble from Beaver Dam, Maryland, gives a fine effect to this well-designed store in Baltimore. Theodore Wells Pietsch was the architect.



Vermont marble of a creamy whiteness was the material chosen for this front. Jos. Evans Sperry, of Baltimore, was the architect.

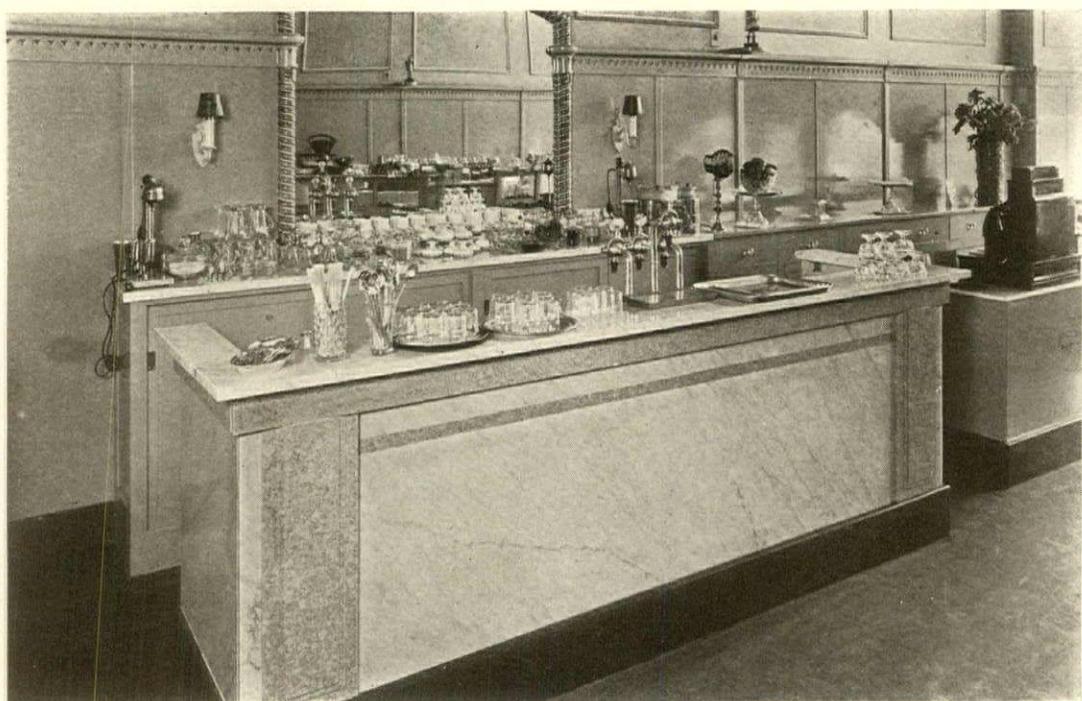
These stores in Oakland, California, present an attractive appearance. Verde Antique from Vermont was used here also.



THROUGH THE AGES



This is a candy shop at Lincoln Avenue and Lawrence Street, Chicago. Cool, dainty and generally inviting, through the use of marble.

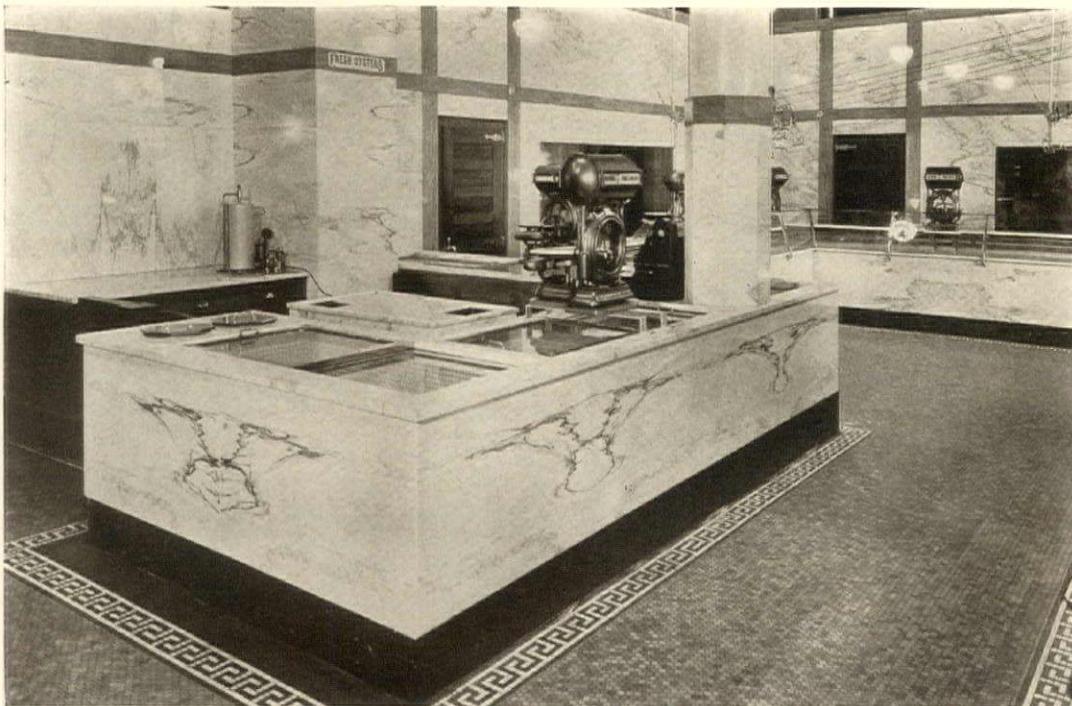


The soda fountain of the same store. Tennessee Pink and two kinds of Vermont marbles were used.

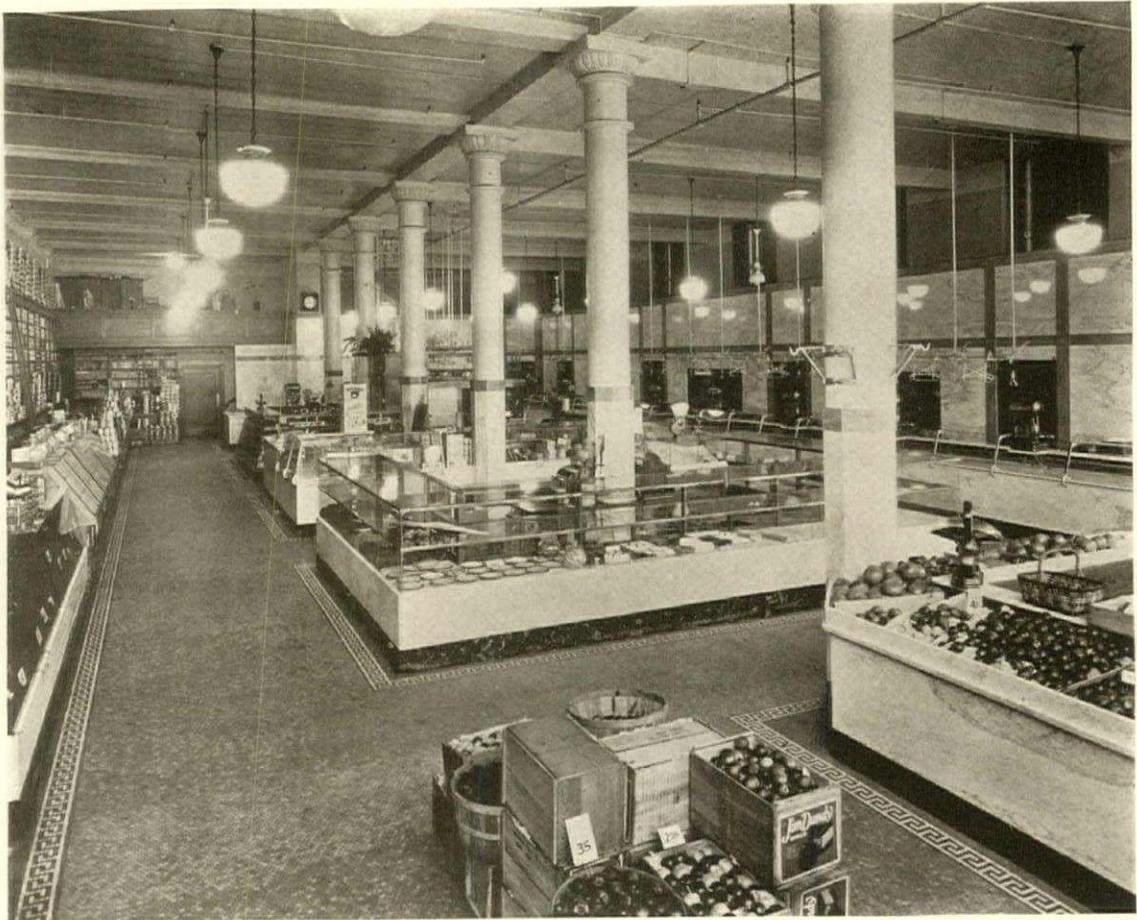


© Underwood & Underwood, N.Y.

The Horn and Hardhart Lunch Room in the basement of the Astor Trust Building, New York. Pilasters and wainscoting in Napoleon Gray marble.



The sea food department of this Omaha store is wonderfully clean looking—suggesting fresh goods—and all on account of the marbles used.



View of the interior of the New Central Market, in Omaha. The counters and walls are Marde Veined Alabama, the bases Westfield Green, and the trim Napoleon Gray.

roof are often constructed altogether of marble. Shop interiors as well have found the need for its use, in flooring, counters, paneling columns and the like.

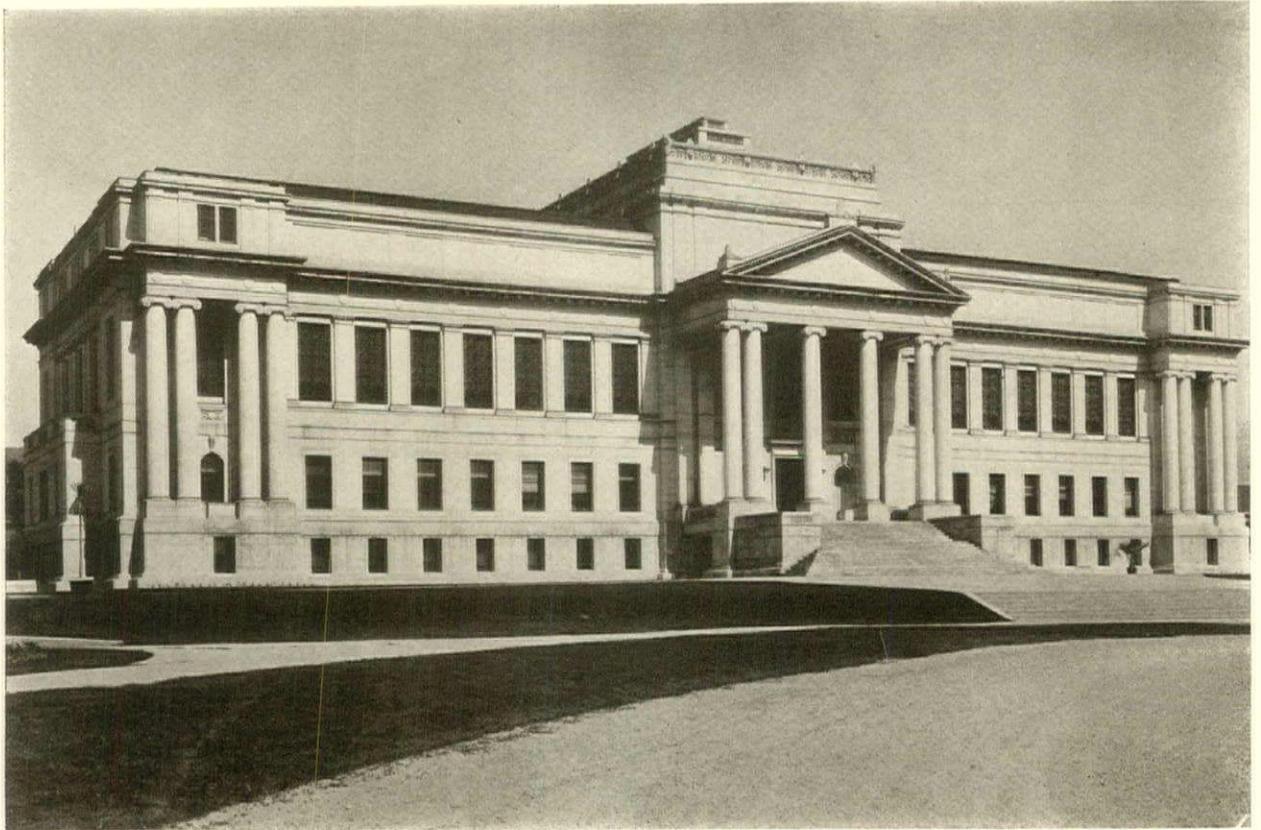
The reasons for its choice are not hard to find. Its richness, beauty, dignity and permanence make it particularly suitable for this character of work. Effects can be obtained with it that cannot be secured with any other medium. Color combinations, kept within the bounds of good taste and practical purposes, may be wisely employed. The suggestion of "class" is conveyed to the prospective customer, and since, after all, the whole object of the store front is to tell the passerby the character and quality of goods he may expect to find within, the

shopkeeper succeeds best who tells this story most effectively.

A marble front always stands out prominently beside one of the old-style wooden fronts, and certainly holds its own in comparison with those built of any other material. The cost of marble is not excessively greater than wood, and when the considerably lower upkeep cost and immeasurably greater attractiveness are taken into consideration, the argument is entirely in favor of the more pleasing and lasting stone. If the proper kinds of marbles are chosen, they are easy to keep clean; and, when cleaned, retain their "newness," as well as colors and textures, for a greater number of years than do other materials.



Altar of St. Mary Magdalen Cathedral, one of several fine churches in Salt Lake City, Utah. The top and sides are Dark Golden Travise marble. The die is Utah Cream, with Chocolate Onyx inserts. Risers are alternate Utah Cream and Golden Travise.



UTAH'S FINE UNIVERSITY

The Cultural Center of the Rocky Mountain District

UTAH is famed for its excellent climate and Salt Lake City. Salt Lake City is famed for its beauty. Beautiful streets, broad and shady, welcome the visitor. Beautiful buildings meet the eye—magnificent public edifices and splendid private residences. From most any point in the city inspiring views may be had of the surrounding mountains, the scenes of the vast mining interests of the state. Many of these mills, smelters and refineries may be reached by the street cars, and the many mines, including the largest copper mine in the world, that of the Utah Copper Company, are accessible by railway.

Salt Lake City is known for its interest in

education, music, art and the drama. It is, indeed, the very center of the cultural activity of the Rocky Mountain district. Among the institutions that influence for good the life of the city and state, not the least is the University of Utah, which occupies a ninety-two acre tract of land on the Fort Douglas Reservation, and known as one of the three most beautiful college plots in the country.

The University of Utah consists of twenty-five buildings located around or near the campus, a short distance east of Thirteenth East Street, on a plateau commanding a view of the city, valley and the Great Salt Lake to the west. To the east, tower the wonderful Wasatch Mountains. The John R. Parks

Memorial dominates the group. This building contains the general administrative offices of the University, as well as the University Library, the Art Gallery, the Archaeological Museum, the Law School and the Post Office. To the north of the central circle are the Physical Science Building, occupied by the School of Engineering; and the Liberal Arts Building. The Museum Building, housing the departments of Geology, Botany and Psychology, and the Industrial Education Building, are close by, as is also the Mechanical Building. The Medical Building, which is one of the newest on the campus, contains the most modern equipment, and the course is ranked of class A standing.

Other buildings are the William M. Stewart Hall, for kindergarten and normal training work; the Metallurgy Building; various laboratories; a fine gymnasium with a large swimming pool; and the Dining Hall, with space for 500 persons at one time. A center heating plant is provided with modern appliances for both heating and ventilating the group.

The University was not always located on the present site, nor did it bear at first the present name. Originally called the University of Deseret, it was opened in 1850 in a small way in a building in Salt Lake City, but was discontinued in 1851. Instruction was commenced again in 1867. Two years later, Dr. John R. Parks reorganized the institution, and in 1884 the Legislature bestowed the power to confer degrees. In 1892 the name was changed to the University of Utah, and in 1894 the grant was made of a sixty-acre tract, part of the present location. To this was added thirty-two acres adjoining, a gift of the Government. The State provided for the construction of buildings and in 1899 the removal was begun.

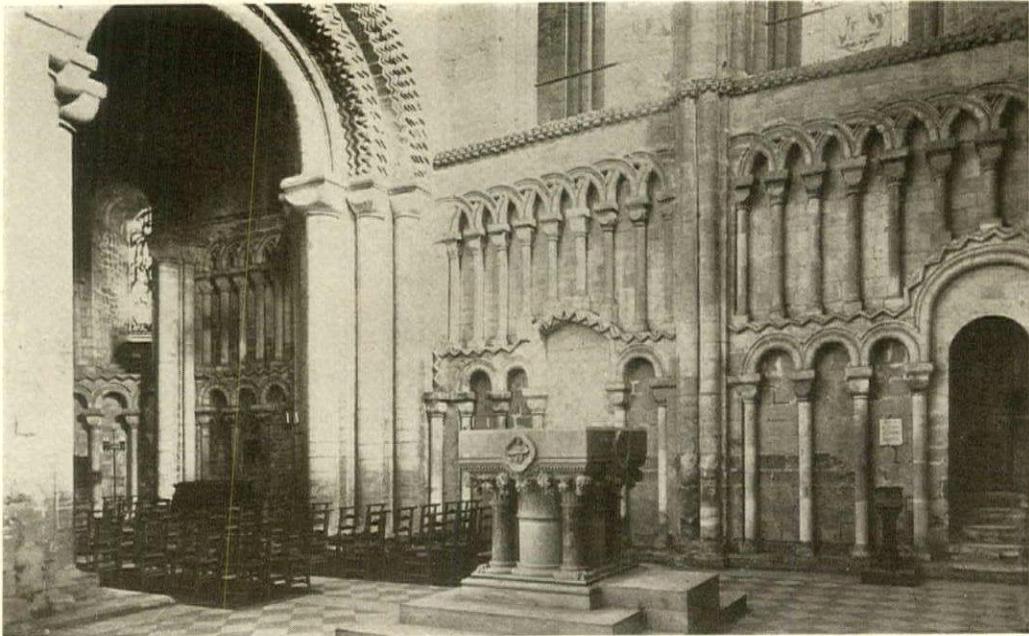
The John R. Parks Memorial Building was



Matched panels in central stairway.

erected in 1912 at a cost of \$300,000. The structure is 150 feet wide by 250 feet long and consists of three stories and a basement. The style is a modern adaptation of the Grecian Ionic; the severely classical lines of the façade are softened, however, by the introduction of two pairs of free-standing columns at either end supporting a broken-out cornice. The entrance portico is effective, with the six columns arranged in a way that harmonizes with the general design.

Within, the main corridor of the lobby vestibule is panelled with marble from Alaska, furnishing an effect of richness that is quite in keeping with the exterior dignity. The central stairway is also of this same material. There is, all told, a total of over ten thousand square feet of wall space covered by this Alaskan marble, and in many cases the matched panels are so striking as to attract the admiration of the most casual passerby. The whole of the second floor is occupied by the University Library, and contains over 70,000 bound volumes and about 30,000 pamphlets. The third floor contains the Art Gallery. The Museum and the Post Office both being in this same structure, it naturally takes a commanding position among the many fine buildings of the University as the center of the educational as well as the social life of the institution.



Photograph from E. H. Glidden, Architect, Balto., Md.

St. Catherine's Chapel, Ely Cathedral.

NORMAN ARCHITECTURE IN ENGLAND

"In Norman strength, that abbey frown'd
With massive arches broad and round,
That rose alternate row on row
On ponderous columns, short and low;

Built ere the art was known
By pointed aisle and shafted stalk
The arcades of an alley'd walk
To emulate in stone—"

Sir Walter Scott

PREVIOUS to the Norman Conquest of 1066 the buildings of England, even until a period not long before the advent of William of Normandy, were mostly of timber. This included the largest churches. The plan of the later stone-built Saxon church seems to have been a single-aisled nave with a small square-ended chancel, it being easier to build a square end than a circular apse. During the time when all church building was Norman, the apse form prevailed. There was a reversion to the traditional form after the country had to some extent freed itself from Norman influences.

The few extant remains of Saxon and Cel-

tic buildings disclose a poverty of ideas and only moderate skill. The Irish towers, with their conical tops, whose date and purpose are controversial; a few churches and crypts and an occasional doorway or window, are all that are left of this period. Among the most important of these are the church of Bradford-on-Avon, the tower of Earl's Barton, St. Pancras at Canterbury, Brixworth, Reculver and Monkwearmouth.

One feature of Saxon remains deserves mention, and that is the baluster found in two or three instances in the center of a two-light opening. It is unlike any other architectural feature in the world. Some shafts of

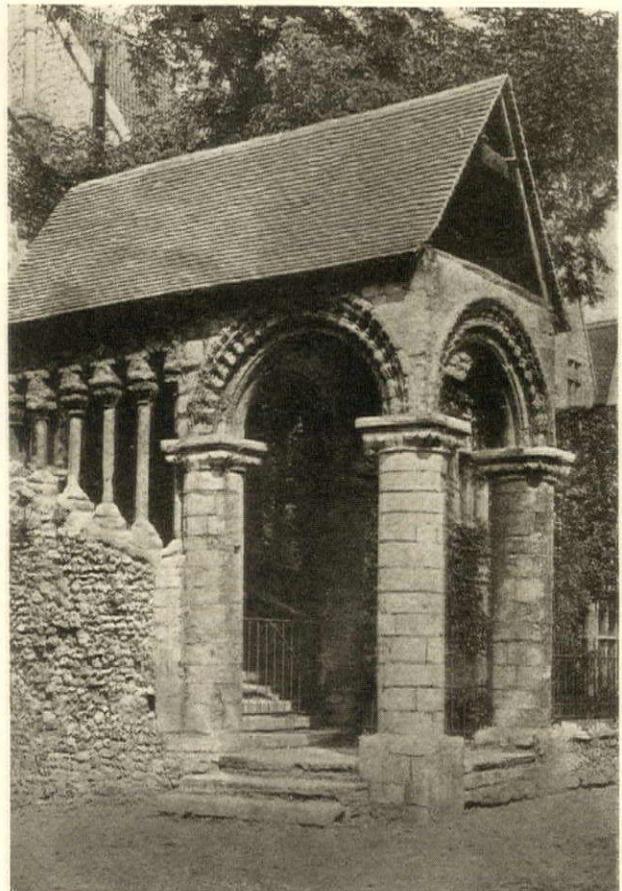


Photograph from E. H. Glidden, Architect, Balto., Md.
Saxon Church Font at Deerhurst.

this type exist in the transept triforium of St. Alban's, having apparently been made use of by the Norman builders when they replaced the older Saxon church by one of their own construction.

Saxon architecture suffered sadly from the invasion of the Danes and Norsemen. We can surmise from the little that we have, however, that it was a rude attempt to imitate the Roman remains in England, with a certain character of its own, and influenced, too, by Lombardic design coming either direct or through Germany or Burgundy. The windows were probably not glazed. In many cases the openings were filled by pierced stone slabs. The capitals generally were of the corbel type common to Romanesque work.

Following 1066 there was an extraordinary activity in the building of churches and abbeys. The architecture of England and Normandy proceeded along identical lines. William the Conqueror himself founded a number of these structures, and it was only natural that his ambitions should be spurred on by endeavors to surpass on English soil the contemporaneous churches of Normandy. The list of cathedrals and great monastic churches built in Britain during the last thirty years of the eleventh century and the first twenty years of the twelfth is astounding. Little seems to have been attempted before 1070. William and his nobles were probably otherwise engaged, and the priests were beginning to familiarize themselves with the customs and sites of the new land.



Photograph from E. H. Glidden, Architect, Balto., Md.
The Norman Stair, Canterbury Cathedral



Photo from E. H. Glidden, Balto., Md.

The Prior's Doorway, Ely Cathedral.

Once under way, the operations were carried on with little delay. Such churches as Canterbury, Lincoln, St. Alban's, Winchester, York, St. Paul's, Ely, Worcester, Tewkesbury, Chester, Peterborough, Waltham, Durham, Norwich and many others were products of this period.

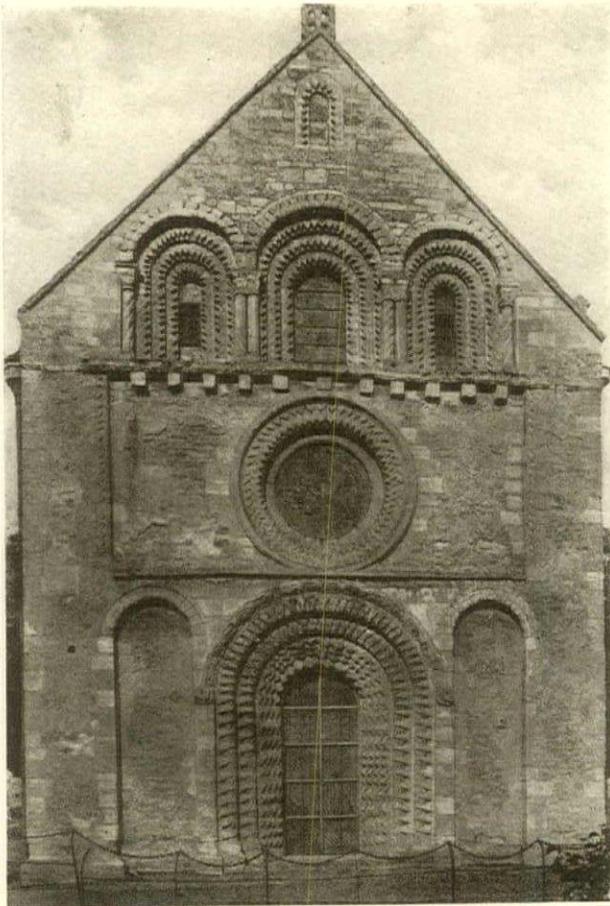
Local influence and the employment of native masons soon gave these buildings a distinctive character. They differed from their Norman prototypes in size. They were longer, narrower and lower, with longer transepts and square instead of apsidal ends. At Norwich, for instance, the total length is nearly six times the width if we leave the transepts out of consideration. But the most important architectural feature of all those which are peculiarly English is the large central tower which rose over the crossing.

This is not the mere lantern of the southern French Romanesque, but a great tower that dominates the whole design, as at Winchester and Tewkesbury. The French builders used the twin towers placed on the western ends, a custom partially followed in England, but they did not place—nor was the greater height of their churches conducive to placing—an emphasis upon the crossing by such towers as these in Britain. Indeed the more moderate height and greater length of these English churches almost demanded the tower as a contrast to the long horizontal line of the nave. Many of these towers have disappeared, but those at Canterbury and York, and others of the Gothic period stand on Norman piers and replace Norman towers that have either fallen or been destroyed. Durham has both the west-



Photograph from E. H. Glidden, Architect, Balto., Md.

The Galilee, Durham Cathedral.



Photograph from E. H. Glidden, Architect, Balto., Md.
West Front of Iffley Church.

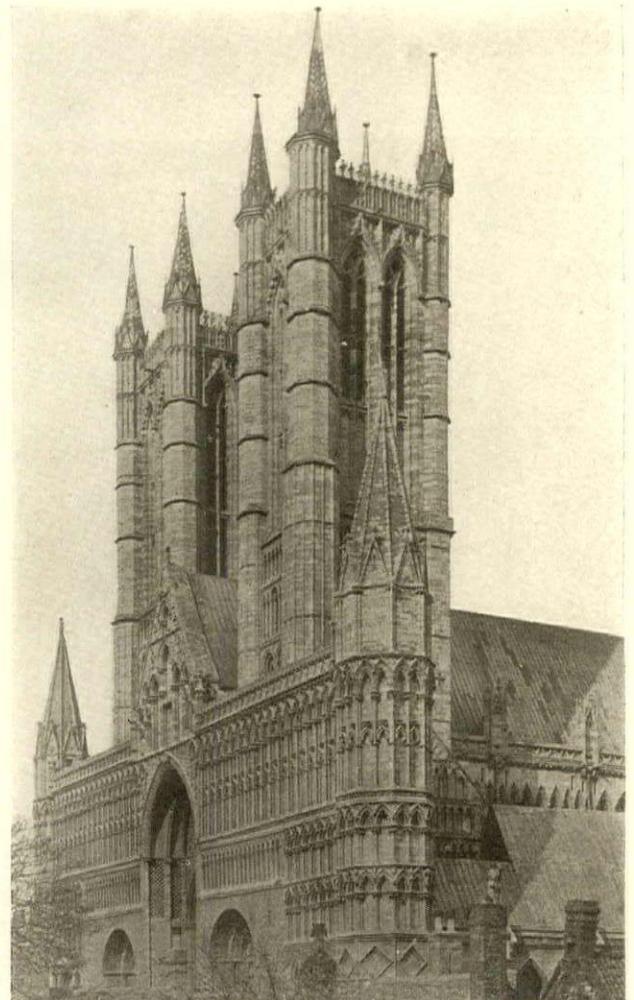
ern towers and the great central tower, this latter completed in the Gothic period, however.

Another important difference between the French and English Norman plans is the comparative insignificance of the western portal in the more northern churches. Lateral entrances near the west end were given greater prominence and called *Galilees*. We find at Durham that a Galilee chapel takes the place of a western porch.

The general features employed by the Romanesque builders of Normandy were used by their English cousins, without their refinement and technical elegance, but with far more picturesqueness. The plan is cruciform, with the transepts having the marked

projection that characterizes the English style. Heavy walls, recessed arches, round mouldings, clustered piers and a door jambshaft for each stepping of the arch were common to both styles.

In all large Norman churches the nave wall was divided into arcades, triforium and clerestory. These divisions were by no means always equal. The cathedrals of Norwich, Winchester and Ely do show approximately equal heights, but in Durham, Tewkesbury and Gloucester the arcade story is by far the highest of the three. The design of the triforium was as varied as its height. The most usual design was a pair of openings enclosed



Photograph from E. H. Glidden, Architect, Balto., Md.
West Front of Lincoln Cathedral.

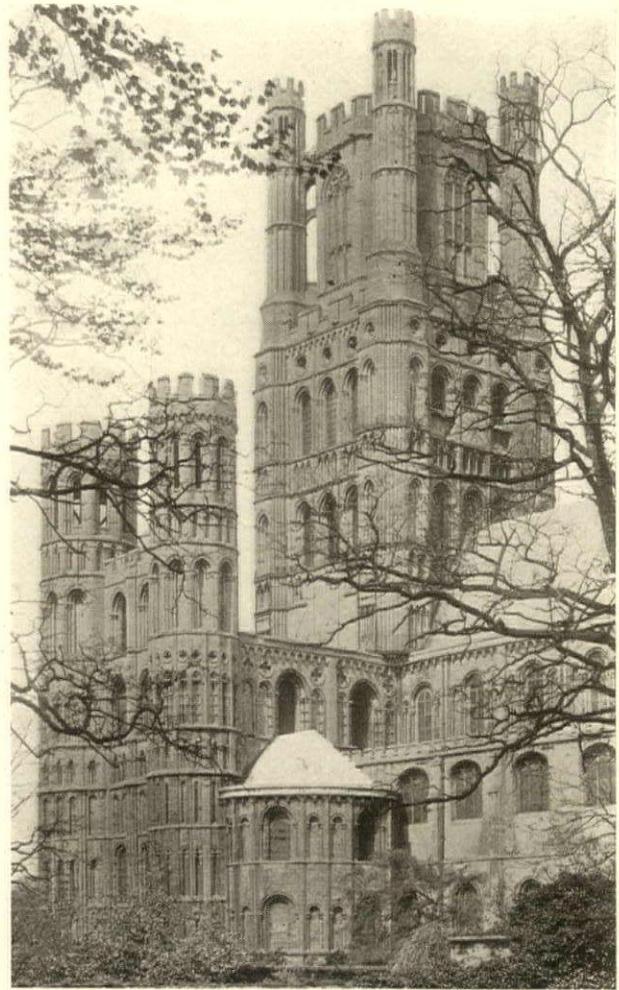
under a single arch as at Ely, Chichester and Peterborough. The stonework of the tympana under the enclosing arches often had chevrons, triangles and other patterns roughly chiselled or axed on its face, as at Christ Church.

About the early capitals and other details of Anglo-Norman work there was a crude clumsiness of design, as in the capital formed with heavy scallops that meets us at every turn as the typical capital of the style. The zigzag ornament was extensively employed. It was repeated over and over. Durham's interior is loaded with it and the doorway of Lincoln shows it in abundance.

The massiveness of the piers and walls suggests an intention of vaulting the nave that was never carried out except in small churches and crypts, though many were vaulted at a later date, as at Norwich, Gloucester, etc. The roofs were of wood and so the clerestory could safely be made lofty, with windows of considerable size. These were placed near the outside of the thick wall and a passage was left between them and a triple arch on the inner face of the wall—a device adopted from the abbeys of Caen. Often we find small windows, narrow and deeply splayed with semi-circular heads.

The side aisles were vaulted and low with wide pier-arches. The piers were often round, as at Gloucester, Exeter and Bristol; sometimes they alternated with clustered piers, as at Durham and Waltham; occasionally clustered piers alone were used, as at Peterborough and in the transepts of Winchester.

The details were mostly of the simplest character. One exception, however, was the doorway, where we find rich carving and clustered jamb-shafts. The variety of decoration was poor, the zigzag mentioned above being the most common, supplemented by the appearance of birds' heads with the beaks pointing to the center of the arch.



Photograph from E. H. Glidden, Architect, Balto., Md.

West Tower, Ely Cathedral.

Few really important examples remain of Norman façades in their original form. When the round arch was displaced during the latter part of the twelfth century by the pointed arch, these façades were altered to conform to the new style. Iffley Church, at Oxfordshire, dating from about 1135 to 1160, is a good example of the original form, the west front being one of the richest specimens of Norman work in the country.

In the naves of Ely, Durham, and Peterborough, English Romanesque can be seen in its perfection. Tewkesbury Abbey and Gloucester Cathedral offer very fine naves but spoiled by later vaults. The capitals and

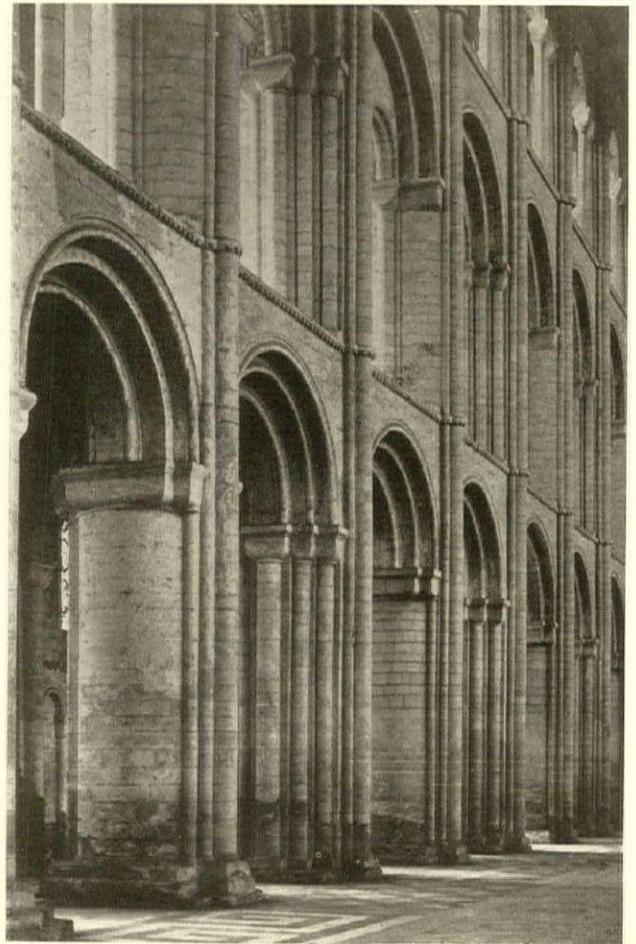
arches are overly plain, and the columns possibly too high, whereas at Hereford the columns are too low and the capitals and arches too elaborate. Durham differs from all the others in having its nave vault of approximately the same date as the rest of the church. It is also the only example in England of a completely vaulted Romanesque church on a large scale. Begun in 1093 by Bishop Carileph, it really dates from 1128 to 1133 when the present nave vault with its wide spans and pointed arches was built. The diagonal ribs start awkwardly from corbel heads instead of from the side vaulting shafts. On each side of the capitals of the main piers there is a head, and over each column a pair of heads under one abacus, from which spring the two diagonal ribs that meet here. There is no transverse arch above this point.

Durham is generally considered to be the finest Norman cathedral in England. Gothic builders remodeled the east end, replacing the apse with the Chapel of the Nine Altars (1242 to 1280), and added the western and central towers, the former at the beginning of the thirteenth century and the central tower about 1470. The chapter-house was mutilated by Wyatt in the last part of the eighteenth century in carrying out his scheme of "restoration," but was afterwards brought back into harmony with the original design. The original high, oblong, ribbed vaults are thought to be the earliest examples of their kind in England, and possibly in Europe.

The mouldings of the English Norman were much superior to the French. There was indeed a general similarity between the designs, but in many cases the hard edges found on the Continent were replaced by a much finer and more varied style. In the doorways alone do the many moulded portals of the French cathedrals surpass the

Anglo-Norman work. In the larger arcades and arches, the English mouldings are far worthier. No finer example of this in all England can be found than in the great exterior arch of the west front of Tewkesbury, almost as sharp and clean-cut now as the day it was built.

To all the Romanesque builders we owe our thanks for the progress that led straight to the Gothic style. To the Normans, especially, are we indebted for the eventual solving of the vaulting problem by the Gothic builders, who made use of the form of the pointed arch for their vaulting ribs. It was in Northern France, in and around Normandy itself, that the new Western style of architecture sprang into existence.



Photograph from E. H. Glidden, Architect, Balto., Md.
Columns in Nave of Ely Cathedral.



THE MARYLAND INSTITUTE

A Beautiful Monument, as well as a Practical
School Building

ON the 5th of February, 1824, the Franklin Institute of Philadelphia was organized—the first of its kind in the country, and still in successful operation. A year later, the first Maryland Institute, patterned after its predecessor, came into being in the city of Baltimore. A fine library was established and courses of scientific and general lectures were conducted in the Athenæum, at the corner of Lexington and St. Paul Streets. In 1835 the building was destroyed by fire and the entire property of the Institute consumed.

It was from the ashes of this Institution that the present Maryland Institute arose

twelve years later. At a public meeting held on the 1st of December, 1847, plans were laid to form a school of design, with a course of annual lectures and an annual exhibition with premiums for excellence in manufactures and mechanic arts. The name was to be the Maryland Institute for the Promotion of the Mechanic Arts. The first lecture was by Horace Greeley, then a member of Congress from New York, upon the subject, "Self-Culture, the Paramount Duty of American Young Men."

Four years later a site was secured for a building to be devoted to the Institute's purposes and in 1851 the new hall on Marsh



In this grand stairway of the Maryland Institute, marbles from Tennessee, Georgia and Greece were used.

Market was occupied. The *Scientific American* of October of that year devoted considerable space to a full description of it, stating that the floor of the main hall was "the largest clear floor in America." The affairs of the organization prospered. New departments were added from time to time. In 1858 George Peabody donated a sum of money yielding an annual income of \$500 to be distributed as prizes to pupils of the graduating class. The exhibitions were usually opened by speakers of distinction and some of the most noted men in the country made addresses on these occasions. The large hall of the building was used frequently for public gatherings. Here on June 1st, 1852, General Franklin Pierce was nominated for

President by the Democrats; two weeks later the Whig Convention nominated General Winfield Scott in the same hall. In 1856 Millard Fillmore was nominated for President by the National Whig Convention, and in 1860 John C. Breckinridge by the seceders from the National Democratic Convention. The building was a model of substantial and workmanlike construction. It stood for more than half a century, and was pointed out to visitors as one of the show-places of Baltimore.

In the great fire of 1904 the building was practically wiped out of existence. The contents were completely destroyed. Strangely enough, this was on the anniversary of the burning of the old Athenæum sixty-nine

years before. While the fire was still raging, the staff of the Institute gathered in the President's office, and immediate steps were taken for the continuation of the classes. These were held in scattered quarters while plans were being perfected for a new building.

The State appropriated \$175,000; Andrew Carnegie added to this the gift of \$263,000, and a public-spirited townsman, Michael Jenkins, donated the splendid lot on which the structure stands. The City of Baltimore built upon the old site a new market house with two upper stories for the use of the Evening Schools. In the competition of thirty-one architects, the plan of Pell and Corbett, of New York, was selected. Later, this plan received the award of a gold medal by the Chapter of Architects of the State of New York for the excellence of their design.

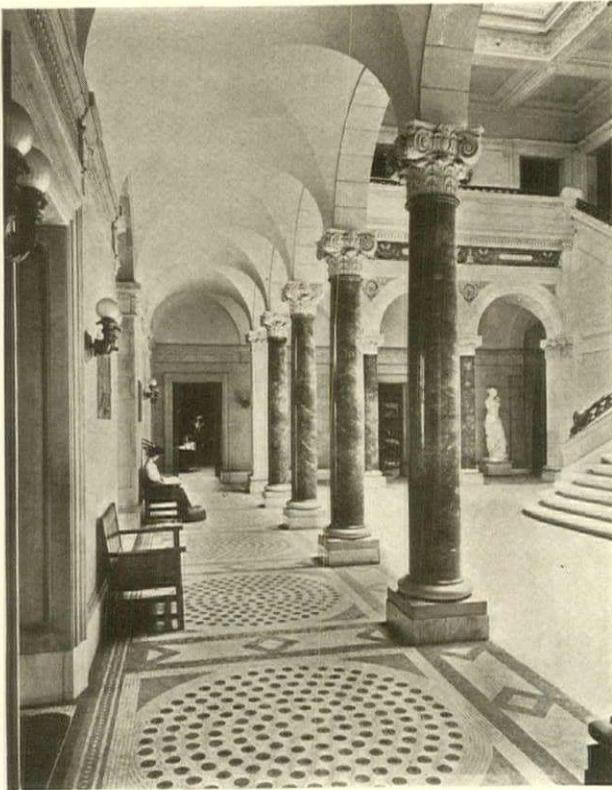
The ground was broken in 1905, but the actual completion was not accomplished until three years later. The dedication took place on November 23, 1908. The practical requirements of the plan and the almost square form of the lot, 140 by 115, suggested a building of simple outline and dignified proportion. The fact that the higher branches of art were to be taught led to the use of an exterior treatment that would properly express the work to be carried on within. There could be no truer source of inspiration than the fountain-head of all our mod-



The handsome columns in the main lobby are of Numidian marble.

ern art—the Italian Renaissance. The Florentine palaces, with their fine proportion, great unbroken wall surfaces and richly carved cornices are surely a fitting model for a building intended to house a school of art.

The peculiar interest of the new building lies in the combination of ancient palace and modern school. We find in the pleasing exterior of Vermont marble the suggestion of the best Italian work and in the interior every practical requirement well cared for, with an abundance of natural light in every part of the building. The main entrance is by a broad flight of steps at the center of the long front on Mt. Royal Avenue. Mag-



The floor tiling is of Tennessee marble.

nificent bronze doors which, when open, form with the transom bar above a bronze entrance vestibule, mark the entrance to a vaulted hallway which leads to the central court. This court is the principal architectural feature of the interior, and here again we feel the inspiration of the Italian palace. The great arcaded court which we almost always find as forming the heart of the palazzo, and into which opened all parts of the edifice, is found here. This broad open space is 40 feet by 60 feet, and is two stories in height. It leads directly to every part of the building and is the distributing point for all classes. An arcade of Monolith Numidian marble columns supporting arches with carved spandrels and cornices and forming the gallery at the second floor level, runs around three sides of the court. The frieze of the cornice is of faience decorated with garlands and plaques on which one reads the

names of artists famous at the time of the Italian Renaissance, and the colors recall the tints of the marble columns and the mosaic floor below.

On the fourth side of this court, and directly opposite the entrance to the building, the main stairs lead in a single flight, branching into two symmetrical side flights to the second floor level. These stairs are of Tennessee, Pentelic and Georgia marble with a beautifully carved rail of bronze. Around the second floor gallery a polished marble wainscot rises to a height of twelve feet. Above this is a frieze, while higher up is the decorated coffered ceiling forming a frame to the delicately tinted leaded glass light. This whole spacious hall thus becomes a great top-lighted exhibition space for the permanent display of sculpture.

On either side of the main entrance are the rooms for the principal and actuary, while in the west corner is a room 25 by 28 feet, used as the headquarters of the Board of Managers. Twelve feet above the floor is the spring line of the great arched windows of the main front. Above this line an elliptical vault with penetrations rises to a height of 20 feet above the floor level. The Library is also on the main floor, as well as two large classrooms and a large lecture room in the rear.

At the point where the main stairs join the balcony at the second level two doors lead to the art gallery. This room, 74 feet long by 31 feet wide, with a clear height to the vaulted leaded glass light of 25 feet, is the principal one of this floor, containing as it does the art treasures of the Institute. The balance of the floor, forming two sides and front of the building, comprises uninterrupted space for classes, getting its light from the unbroken band of double arched windows which is the architectural feature of the interior of the building.

A MODERN HIGH SCHOOL

The Theodore Roosevelt School at Wyandotte, Michigan, contains large quantities of marble

WYANDOTTE, Michigan, is a suburb of Detroit, but it is so complete in itself that it has practically an entity of its own. Located in the "Down-river" industrial district, its 20,000 inhabitants are forward-lookers in every way, and this spirit is evidenced in the many fine buildings erected in the town. Perhaps the most impressive of these, to the practically minded, is the new Theodore Roosevelt High School, between Eureka, Sycamore, Seventh and Fifth Streets, facing Eureka.

This structure is 300 feet on Eureka and 178 feet deep, of U shape and fireproof construction. It has a capacity of 1,400 pupils and cost \$952,000. The architect was B. C. Wertz & Co. The location of the lot

allows for future extensions on the rear. It is estimated that at very little additional cost accommodations for 600 more students can be secured. There is, besides, a playground on the west side, with a complete athletic field and running track.

The approach on Eureka Street is laid out in such a manner as to secure the best effect, at the same time furnishing the maximum of safety for the entrance of the pupils. It consists of steps and horizontal surfaces worked out in brick patterns flanked with a circular seat and lamp posts on each side, the earth terraced to meet the approach. In the rear are openings in the driveway, allowing the coal supply to be dropped directly into the bunkers, eliminating any fur-



Main Entrance Vestibule of Wyandotte High School.



Marble wainscoting and built-in lockers on first floor.

ther handling beyond the transportation by car to the boilers.

The exterior is in the Tudor Gothic style in brick and stone. There are three stories above ground, the basement being excavated only for the heating and ventilating rooms, coal storage and vent ducts. The main entrance is in the center of the building with an entrance on each side and two rear entrances. Stairs lead from the first floor to the third floor at each entrance, and these are surfaced with non-slip tile and terrazzo. On the second and third floors are rest rooms, while toilets are provided on all floors for both sexes. The building is heated with direct steam heat and ventilated with a duct system that delivers 30 cubic feet of conditioned air to each pupil per minute. A humidifying apparatus keeps the moisture content of the air between 40 and 60 per cent at all times.

The chief interior feature of the building is the main entrance lobby or vestibule. This floor is exceptionally imposing, with a Verde Antique marble body set off by diagonally arranged blocks of white Italian marble. The

wainscoting is Light Cloud marble from Vermont, with bases of Verde Antique from Roxbury, Vermont. The steps, consisting of three risers of unusual width, are of white marble from Carrara, Italy. The richness of the marbles is accentuated by the ceiling, which is of wooden beams.

The main corridor is fourteen feet wide and the branch corridors are eleven. That on the first floor has a composition floor, with the wainscoting similar to the vestibule treatment. Above

stairs, the corridors all have linoleum floors; otherwise they are the same as the main level. There are twenty-five classrooms of standard size located on the outside walls of the building. These all have floors of battle-ship linoleum cemented directly to the concrete. This insures a minimum of noise, and lengthens the life of the material.

Two special departments are on the first floor. The Commercial department consists of a group of rooms separated by glass partitions, each room thoroughly equipped with the necessary apparatus for the instruction of bookkeeping, stenography and typewriting. The use of the glass partitions facilitates supervision. The Manual Training department is in the right wing, and consists of lathe and machine rooms, bench-room, tool and locker rooms, washroom, and lumber and finishing rooms. These all have finished brick walls and wood-block floors without creosote. The lumber room receives its supply of material from the driveway at the rear of the building. Special racks have been provided for twenty different kinds of lumber.

In addition to these departments, the first floor contains the executive offices, the Auditorium, the Community Room and the Swimming Pool and Gymnasium. The Auditorium has seats for 1200, with stage, dressing-rooms, balcony and moving-picture machine booth. It is finished in oak and the colors of the school. Besides providing a suitable assembling room for the high school, it is frequently used as a community theater by the general public. The Swimming Pool is a feature that provides for healthy amusement. It is lined with tile and has a tile floor around the pool with non-slip tile curb. The walls are white enameled brick. In connection with the pool are the boys' and girls' locker rooms and toilets. All have tile floors, enameled brick walls and steel lockers. Two physical directors' rooms for examination of the pupils are nearby. The Gymnasium, with running track and balcony for spectators, is 60 by 90 feet.

The Community room on the first floor is used as a music room as well as for various other activities. The walls are Caen stone up to ten feet high, with ornamental low-relief plaster work on the ceiling and walls above the wainscoting. At one end there is a small stage.

The stairs leading to the second floor carry out the same general marble treatment

found in the entrance vestibule, having steps of white Italian and walls of Verde Antique and Light Cloud from Vermont. The second floor contains the General Science department, with laboratories and apparatus rooms. The Library is also on this floor. The treatment here consists of ornamental plaster decorated in soft tones, with a ceiling of low-relief plaster work, as in the Community room.

On the third floor is the Domestic Science room, with its cooking laboratory, and the adjunct sewing and fitting rooms; the Drawing department; the Physical Science department, with laboratory, and two lecture rooms with raised seats; Chemical Science department, with a laboratory able to care for 128 students daily, and thoroughly equipped with gas-hoods, chemical desks, darkroom and storerooms; and a Dining-room, with its nearby Teachers' Rest Room, with a seating capacity of 364 people.



Main stairway leading to second floor. This is all marble.

STRENGTH AND DURABILITY OF MARBLE DUE TO ITS STRUCTURE

[Reprinted through courtesy of "Stone"]

THE ease with which it is wrought, its delicacy and beauty of color and translucency of texture lead many people to believe that marble is rather fragile and perishable. But the builders of the olden days, even a thousand years before the beginning of the Christian era, knew better than this and they knew from experience, which, coupled with scientific tests made in our own time, justify geologists in saying that marble is justly recognized by architects and builders as one of the choicest and most enduring of constructional materials. Experience has established the fact and science confirmed it that marble is strong enough for all needed structural purposes and that it will outlast generations and races of men.

The strength of marble depends upon its structure, but as strength is not always a necessary quality in determining its usefulness, this is a question of no concern to many marble producers. Two marbles of the same general outward appearance of color and texture may differ radically when subjected to strength and pressure tests for the reason that their constituent parts are made up of elements of strength and of weakness not apparent on mere casual examination. The compressive strength of marble, as shown in tests on some fifty varieties made by the Bureau of Standards, ranges between 7,850 and 50,250 pounds per square inch. These tests also showed that some marbles were weakened after repeated freezing and thawing, that some were very little affected and that still others were actually strengthened by the rapid changes of temperature. It was also demonstrated that marbles expand ir-

regularly on heating and that a part of the increase is retained and is permanent.

No other stone shows so wide a variation in strength and durability as do different kinds of marble, even when of the same general appearance. These differences are apparent only when thin sections of the different varieties are put under a microscope. The lens discloses structural features that alone explains a marble's strength or its weakness as the case may be. Microscopic examinations have proved that, as a rule, the fossiliferous is the more enduring of all marbles and is the least liable to crack. This is due to the fact that the fossils cross each other in a network of reinforcements and are so firmly packed together that it is difficult to start a crack at any point in the mass. Microscopic study of stone structures is a most interesting one and requires little equipment other than the instrument itself. The method followed by most lithologists is to grind a small block or chip of marble so thin as to be transparent and to mount it, preferably in Canadian balsam, for inspection under the lens. This process brings out details of structure that would otherwise escape notice.

While fossiliferous marbles withstand pressure and are more enduring in exposed places, there are marbles of a white or clouded variety that contain no fossils, but which have been proven to be of equal durability. An example in illustration of this point is the fact that certain European marbles that do not weather well in some sections of this country are probably weakened by poor quarrying methods that shattered their struc-

ture. On the other hand, these same imported marbles when subjected to microscopic examination disclose certain defects in the stone itself, such as soft crystals, somewhat decomposed and loosely knit together, or fine materials between the crystals that make it easy to start a rift at almost any place. Instead of these imperfections working to the commercial disadvantage of the foreign marbles just described, they actually add to their value, for they are easier worked than some varieties of American marbles with the edges of crystals clean, firm and often knit together like a bone structure, there being scarcely a loose particle between them. The structural characteristics make the American marbles immune to average climatic changes and accounts for the large number of marble monuments, erected a century ago, that are still standing in almost perfect condition.

It is asserted by certain authorities that marbles of good quality and in large blocks are more durable even than granite and that they will carry a heavier load. In this connection it is of interest to note that the makers of the Egyptian obelisk in Central Park, New York City, were aware of this fact and under the shaft they placed a foundation of marble obtained, undoubtedly, at considerable expenditure of time and labor. The climatic changes that are causing the obelisk to crumble show no effect whatever on the marble foundation work, except for the loss of the sharp edges and corners. One reason assigned for this superiority of marble to withstand weight and pressure is that it is somewhat flexible and will adapt itself, to a certain extent, to the inequalities of its bed. It also contains so little water that it will continue for a long period almost

without alteration in its physical condition.

Both the chemical and microscopic analysis of marble show it to be strong enough for all needed structural purposes. Marble buildings thousands of years old have come down to us to awaken our delight in craftsmanship that has not been bettered by succeeding generations. Colors that were delicate when fresh from the quarries may have faded a trifle in the centuries, but time has mellowed the marble to golden tones. It was not age that wrecked the Parthenon at Athens, that matchless building of all time, but the vandalism of war. The carved statues from the pediment still exist, the greatest of all museum treasures.

When architectural art provides us with the best of which it is able in design, it is but natural that we should seek to carry the work in one of Nature's choicest materials, and the imagination of the architect cannot carry him beyond the possibilities of marble.

When the nation, a state, or a great municipality plans to erect a monumental building, marble is one of the first materials that naturally suggests itself. Two of the most notable of our state capitols are of marble, those of Minnesota and Rhode Island, and of an earlier date and less elaborate design is that of Connecticut, while marble figures largely in the walls of the National Capitol at Washington. When we seek to commemorate the virtues of our foremost leaders we choose marble, as in the Washington monument and the Lincoln Memorial. So, too, our tribute to the nation's heroic dead—the Arlington Memorial Amphitheatre — is in marble. All of these structures of marble testify to the beauty and durability of the stone. They stand up well and grow richer and mellowed with the lapse of the years.

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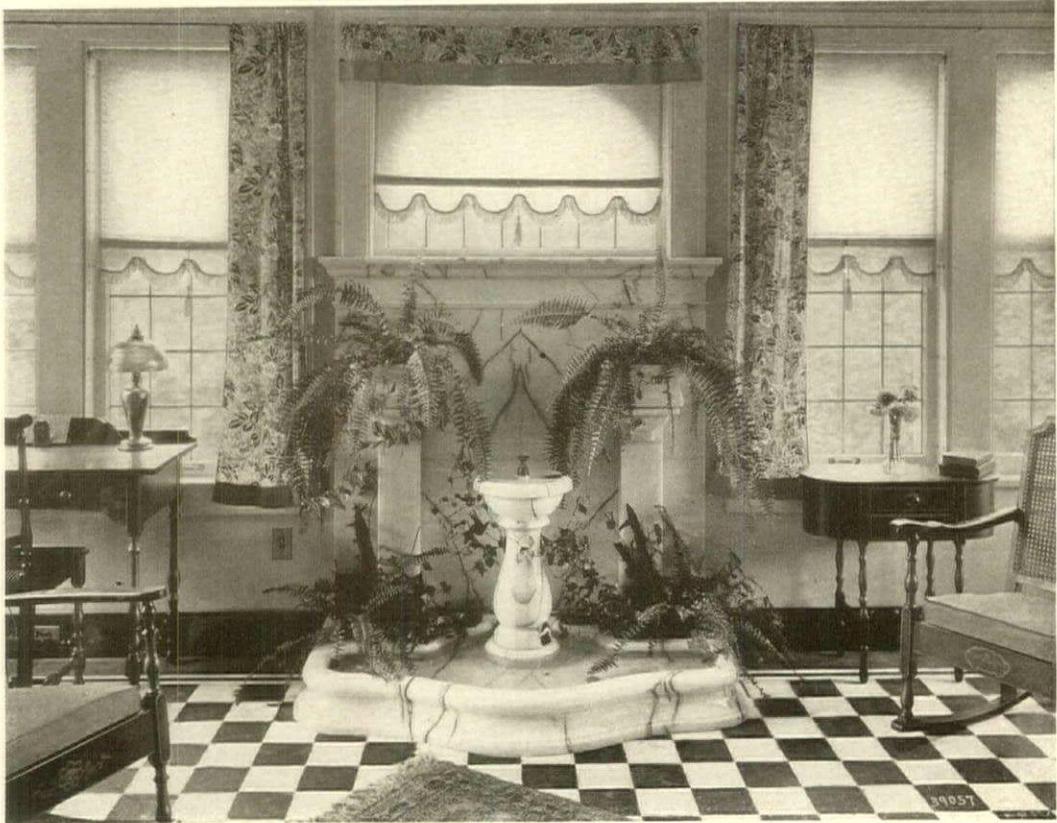
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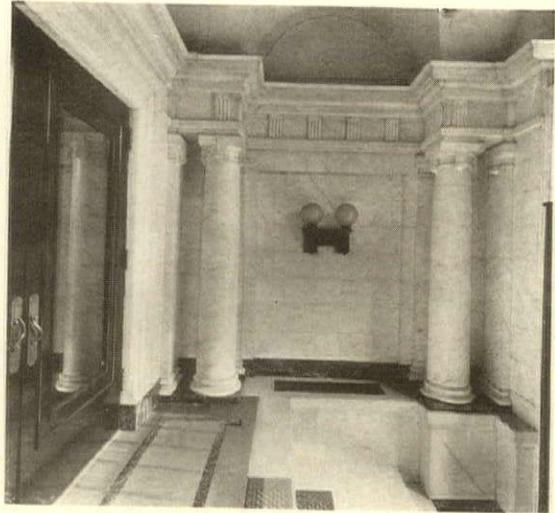
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